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Improving Psychological Therapies for Psychosis: Exploring the Utility and Benefit of Using Metacognitive Training within Standard Psychological Care – A Case Series.

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Abstract

Cognitive Behavioural Therapy for Psychosis (CBTp) is currently recommended by National Guidelines (NICE) as an adjunct to antipsychotic medication. However, access to CBTp remains generally poor. Moreover, its effectiveness on positive symptoms and other outcomes including stigma remains modest, highlighting the importance of continuously improving "gold standard" therapies for psychosis further.

For this project, first a meta-analysis on the correlates of personal stigma in psychosis was conducted. Stigma was associated with a range of symptoms including positive symptoms, depression, hopelessness and suicidality. Moreover, stigma was inversely related to a range of well-being outcomes including recovery, self-esteem and quality of life; highlighting the importance of routinely offered psychotherapeutic interventions to not only target symptoms, but to also address feelings of stigmatisation.

One recently developed intervention, with a focus on the cognitive infrastructure implicated in the formation and maintenance of delusions, whilst also targeting issues of stigma and self-esteem is Metacognitive Training (MCT). Whereas studies are still emerging, individualised MCT (MCT+) appears particularly effective in targeting delusional symptoms, with studies showing both short and long term effects. The second, and empirical part of the project was therefore to evaluate the benefit of utilising MCT+ within standard treatment across NHS Lothian, Scotland, in order to evaluate whether MCT can be used to improve psychological therapies for psychosis further. To do this, a quasi-randomised case series was conducted, where individuals currently receiving non-structured psychological support or were on the waitlist to receive CBTp, were invited to take part, and allocated to receive up to 20 sessions of standard CBTp or MCT+.

Study one sought to evaluate whether MCT+ would lead to additional improvements in delusions compared to CBTp, and to explore potentially differential mechanisms of action between the two treatment modalities. Data on delusions and self-reported cognitive biases

were collected weekly during a four week baseline period, on a session-by-session basis throughout therapy, weekly for four weeks after therapy as well as at a follow up session 12 weeks after therapy. Graphical representations of change before, during and after therapy and multilevel modelling (MLM) was used to analyse data. Out of 19 individuals allocated to treatment 16 participants completed 4 or more sessions of CBTp or MCT+ and were included in the analysis. Results indicated comparable reductions in delusions and the jumping to conclusions bias across both treatment modalities. However, individuals receiving MCT+ also showed reductions in self-reported belief inflexibility as well as the external attribution bias, the latter of which predicted delusion reduction across sessions. Both treatment modalities were also associated with improved functioning and reduced general psychopathology, whereas no significant change in self-stigma was seen.

Study two sought to build on Study one, and utilised thematic analysis to evaluate qualitative feedback given by patients on their experience of therapy, as well as interviewing clinicians about the experience of using MCT+ within standard care. Feedback from both patients and clinicians indicated that MCT+ may be a useful resource that can be feasibly implemented and effectively utilised in order to maximise access and choice to psychological treatments for psychosis. Moreover, reflecting the findings of study one, both patients and clinicians found the material on attribution particularly useful.

Based on the outcomes of this project, it was concluded that whilst MCT+ did not enhance delusions reduction above standard CBTp, it may be an effective complement to standard therapy for delusions through its focus on cognitive biases, where MCT elements focussing on attribution appeared to be particularly useful. Due to its modular structure and ease of administration, the finding that MCT+ performed similarly to standard CBTp is encouraging. To build on the current project, future studies should therefore evaluate the feasibility and utility of implementing MCT within practices where psychotherapy is not routinely offered such as in psychiatric nursing settings. This is particularly important in

order to increase access to effective psychological support for individuals with psychosis, who may otherwise not have access to CBTp.

Lay summary

Some people may believe things that others do not or may be worried that others are out to cause them harm. Such experiences are sometimes referred to as delusions, which someone with psychosis may experience. The National Institute for Health and Care Excellence (NICE) currently recommend that people with psychosis receive a therapy called Cognitive Behavioural Therapy for psychosis (CBTp). However, whilst many people find CBTp helpful, it is important to study ways in which such therapies can be improved further, which was the main goal of this thesis.

For the current project, firstly a meta-analysis on the associations of stigma in psychosis was conducted. A meta-analysis is a type of study that combines data from many others studies. The study looked at different aspects of stigma, including experienced stigma, perceived stigma as well as internalised stigma. It was found that these aspects of stigma were associated with a range of negative outcomes, including depression, feelings of hopelessness and symptoms of psychosis, where the relationship was particularly strong for experienced and internalised stigma. It also appeared that stigma had a negative impact on well-being such as quality of life and self-esteem. This study showed that it is important to tackle stigma. But whilst tackling the main cause of stigma is key, that is societal stigma and discrimination, it is also important to help individuals therapeutically in order to also target feelings of internalised stigma to help individuals feel empowered.

One recently developed intervention, that mainly focuses on certain thinking styles (so-called cognitive biases) relevant to psychosis, whilst also addressing feelings of stigma and self-esteem, is Metacognitive Training (MCT). This training has been shown to be particularly helpful for individuals who may be experiencing delusions. The second and main part of this project, therefore, consisted of evaluating whether MCT might improve current standard CBTp treatments. This was done through a study that included 16 individuals with delusions, who either received individualised MCT (MCT+) or standard CBTp. Data on

delusions and cognitive biases that MCT targets was collected, as well as data on internalised stigma and other outcomes such as functioning and quality of life. Data was collected weekly for four weeks before treatment started, and during treatment at each session, as well as weekly, for four weeks after treatment finished (this is called an ABA case series design). However, participants were also invited to a follow up session 12 weeks after treatment had ended. Participants could receive up to 20 sessions of therapy as a part of the study. For both the CBTp and MCT+ groups, delusions improved throughout treatment. Moreover, for the group receiving MCT+, particular improvements were seen on a bias called the "external attribution bias". Through statistical analysis, we found that improvements in this bias predicted improvements in delusions, which means that focusing on attributional style might be particularly important in therapy. However, no group improved regarding feelings of stigma, which means more work needs to be done to investigate how this can be tackled better within therapy.

To build on the findings of the first study, a second study sought to conduct interviews with patients and clinicians in order to obtain feedback on what elements patients find useful in therapy. There were elements in both CBTp and MCT+ that patients found beneficial, which suggests that combining aspects from both treatments could be used to optimise outcome. Patients and clinicians particularly found that the therapeutic material in MCT+ that targeted attributional style was useful, which reflected the findings of the first study.

Based on the outcomes of this project, it was concluded that MCT+ can be as effective as CBTp when it comes to targeting delusions, and may therefore be a useful complement to standard therapy. Due to its structured format and its ease of administration, the finding that MCT+ performed similarly to standard CBTp is encouraging. To build on these findings, future studies should test benefits of implementing MCT+ within practices where psychotherapy is not routinely offered, such as in psychiatric nursing settings. This is

particularly important in order to increase access to effective psychological support for individuals with psychosis, who may otherwise not access CBTp.

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List of abbreviations

Abbreviation	Meaning
BADE	Bias Against Disconfirmatory Evidence
BCIS	Beck Cognitive Insight Scale
BI	Belief Inflexibility
CBQp	Cognitive Biases Questionnaire for Psychosis
CBTp	Cognitive Behavioural Therapy for psychosis
CDSS	The Calgary Depression Scale for Schizophrenia
CPN	Community Psychiatric Nurse
CR	Cognitive Remediation
DACOBS	Davos Assessment of Cognitive Biases Scales
DTD	Draws to Decision
EA	External Attribution
ES	Effect Size
GAF	The Global Assessment of Functioning
ICC	Intraclass Correlation
ISMI	Internalised Stigma of Mental Illness Questionnaire
JTC	Jumping to Conclusions
MADS	Maudsley Assessment of Delusions Scale
MCT	Metacognitive Training
MCQ-30	Metacognitions Questionnaire-30
MLM	Multilevel modelling
OR	Odds Ratio
PANSS	Positive and Negative Syndrome Scale
PSYRATS	Psychotic Symptom Rating Scale
Q-LES-Q-18	The Quality of Life Enjoyment and Satisfaction Questionnaire
RCT	Randomised Controlled Trial

List of abbreviations (continued)

Abbreviation	Meaning
RFQ	Reflective Functioning Questionnaire
SD	Standard Deviation
TAU	Treatment as usual
ToM	Theory of Mind

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Chapter 1. General introduction

1.1. Psychosis

Psychosis represents a psychiatric condition where a persons' mood, thoughts, and perceptions are altered (NICE, 2014). The condition can occur as a result of a variety of psychiatric, neurodevelopmental and medical conditions. It is a defining feature of schizophrenia spectrum diagnoses, but is also common in affective conditions, such as bipolar disorder (Arciniegas, 2015; Van Bergen et al., 2019). Psychosis is characterised by 'core' positive symptoms including delusions, hallucinations and disorganised thinking (Sifneos, 1967). Even though positive symptoms tend to be more prominent, negative symptoms including affective flattening, poverty of speech and motivational as well as cognitive difficulties are also common and are associated with poorer prognosis (Tandon, Nasrallah, & Keshavan, 2009), as well as more difficulties in functioning as well as lower quality of life (Galderisi et al., 2014; Kirschner et al., 2017). The term 'negative symptoms' arose due to the idea that these symptoms described a lack, or deficit of functions generally found among so called 'healthy' individuals (APA, 2013), whereas the term 'positive symptoms' arose due to the conception that these symptoms did not exist in the 'healthy' population (NICE, 2009; Patel, Cherian, Gohil, & Atkinson, 2014). However as will be discussed below, researchers have pointed to the relative prominence of experiences of transient positive symptoms also existing in so called 'healthy' individuals (Jim Van Os, 2015). Hallucinations are characterised by sensory perceptions that occur despite the lack of a corresponding external stimulus with auditory hallucinations such as hearing voices or visual hallucinations being the most common, even though tactile, gustatory, and olfactory hallucinations can also occur (APA, 2013). Another aspect of positive symptoms is so called thought disorder; characterised by jumbled thoughts and disorganised speech, resulting from a difficulty in putting thoughts together in an organised sequence (APA, 2013). However, of particular focus in this thesis is delusions. Delusions, are defined as "fixed false beliefs that are not amenable to change in light of conflicting evidence" (APA, 2013, p. 87). However,

this assertion has been criticised for its continuing Jasperian undertones, clinging on to depictions of delusions as 'un-understandable' (Jaspers, 1913) and not open to change through talking therapies (Balzan, Moritz, et al., 2019; Cupitt, 2019).

Symptoms of psychosis usually first emerge in young adulthood between ages 15-37 (NICE, 2009). Incidence rates have been estimated at 31.7 per 100,000 per year (Kirkbride et al., 2012) and in Scotland about 1-2% have been diagnosed with a psychotic disorder (Scottish Government, 2012). The condition is costly, with social health care for psychosis being estimated at 16.7 billion EUROS per year in the UK, and amounts to 93.9 billion EUROS in Europe (Gustavsson et al., 2011). More importantly long-term psychosis often has a major impact on the lives of those affected, and the enduring disability, unemployment, lower quality of life (Chesney, Goodwin, & Fazel, 2014; Marwaha & Johnson, 2004; Vancampfort et al., 2017) as well as stigma associated with psychosis (Thornicroft, Brohan, Rose, Sartorius, & Leese, 2009) highlights the importance of continuing the improvement of evidence based treatments.

1.1.1. Psychosis and Schizophrenia – on the edge of a paradigm shift?

The lens through which psychosis and its aetiology is viewed has changed throughout history, and as will become evident below, continues to change to this day (e.g. Kinderman, 2019; Mander & Kingdon, 2015). Biomedical accounts gained increasing popularity with the advent of the pharmacological revolution in the 1950's, particularly following the discovery that neuroleptic agents work through a blockage of dopamine receptors in the brain (Kendler & Schaffner, 2011; Matthysse, 1974). The idea that dopaminergic dysfunction plays a vital role in the pathophysiology of psychosis is one of the most widely cited theories of the aetiology of schizophrenia (e.g. see McCutcheon, Krystal, & Howes, 2020; Riley, 2020). Whilst dopamine is implicated in psychosis, the precise role of dopamine in the emergence of psychosis remains unclear (McCutcheon et al., 2020) and research has suggested that

dopamine might be a state marker for positive symptoms, rather than a trait marker involved with the aetiology of schizophrenia (Howes et al., 2009; Howes, McCutcheon, & Stone, 2015). Moreover, research on environmental factors have consistently shown that psychosocial stressors such as, birth complications, substance abuse, social isolation, poverty, migration, urbanicity and childhood trauma are implicated risk factors (e.g. see Morgan, Knowles, & Hutchinson, 2019; Stilo & Murray, 2019). In particular, the role of trauma in the aetiology of psychosis has been extensively researched (Hardy, 2017). A comprehensive meta-analysis including 80.000 participants reported that the risk for psychosis increased significantly (OR = 2.78) as a consequence of childhood trauma (Varese et al., 2012). Moreover, environmental factors, including childhood trauma and migration have also been linked to raised dopamine levels (Egerton et al., 2016; 2017) further highlighting the intricate relationship between 'environmental' and 'biological' factors (McCutcheon et al., 2020). Present approaches to psychosis therefore consider various explanatory models; referred to as a biopsychosocial framework, which currently forms the basis of national guidelines for managing symptoms of psychosis (Heriot-Maitland, 2011; NICE, 2014). Such approaches hold that biological factors can increase the risk of developing psychosis, but also highlight the importance of psychological, social and environmental factors involved in the emergence of psychosis (Gianfrancesco, Bubb, & Quinn, 2019). Such conceptualisations emerged in part due to the increasingly unclear results offered by genetic studies, where it became progressively clear that the inherited component is more likely a *vulnerability,* that in combination with environmental 'triggers' can lead to the development of psychosis (Morrison, Renton, Dunn, Williams, & Bentall, 2004; Zubin & Spring, 1977). Moreover, psychological factors, such as cognition, are also accounted for by such models. In particular, cognitive factors, which forms the focus of this thesis, have been shown to be implicated in both the formation and maintenance of psychosis and therefore forms the basis of Cognitive Behavioural Therapies for psychosis (CBTp) (Garety et al., 2001; Morrison, 2001). An

influential account of cognition in psychosis is that of Garety, Kuipers, Fowler, Freeman, & Bebbington (2001). Within this cognitive model, two main routes to positive symptoms are highlighted, namely one where alterations in cognition plays a role in forming anomalous experiences, which are often accompanied by an emotional response and particular appraisals, and another where affective changes alone leads to appraisals of events (Heriot-Maitland, 2011). What remains important within this framework is the emphasis on a person's appraisal being crucial in the development of psychosis. Such cognitions are thought to be triggered by a set of biopsychosocial vulnerabilities, such as adverse childhood experiences. For instance, within a CBTp framework delusional beliefs are linked in with both previous and current experiences, where cognitive biases also shape the maintenance of these beliefs (Heriot-Maitland, 2011). These cognitive biases and their role in delusion formation will be discussed further in subsequent chapters.

1.1.2. Classifying psychoses

The nosological classification of psychoses has been a long source of vivid debate ever since Kraepelin, in his 1896 edition of *Psychiatry: A Textbook for Students and Physicians* initiated the organisation of a set of symptoms, previously described as "catatonic syndrome" (Kahlbaum, 1863), "hebephrenia" (Hecker, 1871) and "adolescent insanity" (Pickett, 1905) into a distinct disorder termed *dementia praecox* (e.g. Bentall, 2003; Heckers et al., 2013; Reininghaus, Priebe, & Bentall, 2013; Smolik, 1998; Tamminga, Ivleva, Reininghaus, & van Os, 2020). As the name suggests, Kraepelin's conception of dementia praecox was that of a deteriorating medical condition that inevitably resulted in intellectual and mental disability (Jablensky, 2010). The main features of the illness were cognitive deficits, including a progressive decay in mental capacity as well as loss of executive functioning including progressive and severe loss of volition (Jablensky, 2010). Whilst depictions of psychosis have moved on since Kraepelin's era, the most influential contribution was his distinction between 'dementia praecox' and 'manic depressive insanity', which he held belonged to two

different disease categories. These different disorders were also separated in terms of prognosis where, as opposed to the deteriorating illness of dementia praecox, manic-depression was characterised by recurrent depressive and manic episodes encompassed by periods of remission (Heckers et al., 2013; Pearlson, Clementz, Sweeney, Keshavan, & Tamminga, 2016). The term *schizophrenia* was first introduced by Eugen Blueler in his 1911 Monograph "*Dementia Praecox or the group of Schizophrenias*" (Jablensky, 2010). As the title suggests, in replacing the term dementia praecox, Bleuler argued that what he described was not one 'disease entity' but a group of diseases referred to as *schizophrenias*. Bleuler also argued that the term 'dementia praecox' was misleading as the illness did not unequivocally lead to extreme mental deterioration, and noted that it was not always 'praecox' having observed the condition to sometimes also emerge in later life (Bentall, 2003. Whilst Bleuler's meaning of schizophrenia ('split mind') alluded to a splitting of the psychic functions, the notion of 'split mind' has led to schizophrenia often being confused with having a 'split personality' – an unfortunate misconception that remains to this day (Cadge, Connor, & Greenfield, 2019; McNally, 2007).

Even though Kraepelin's initial divide of psychoses has been present in psychiatric nosology ever since the first edition of the *Diagnostic and Statistical Manual of Mental disorders* (DSM-I) in 1952, the period around the late 1970's witnessed a neo-Kraepelinian 'boost', with the strengthening position that the medical model gained during this time (Compton & Guze, 1995). This shift has been described as the result of a crisis emerging within psychiatric nosology where psychiatry "… *awoke from a long dream to find itself floating on a couch in the backwaters of medicine"* (Nesse & Stein, 2012, p.1). There were, in other words an anxious need to re-establish the scientific standing of psychiatry as a discipline. This conceptual shift was evident in the DSM-III (Vinet & Zhedanov, 2011), where an increasing reliance on medical models emerged and seemingly vague concepts such

as ‘clinical impressions’ in earlier volumes became replaced by operationalised checklists of symptoms (Nesse & Stein, 2012). Naturally, this came with an eager endeavour to search for the biological origins of different mental illnesses - a search that many would claim remains ongoing to this day (Kinderman, 2019; Leo, 2016; Nesse & Stein, 2012; Tamminga et al., 2021; Torrey & Yolken, 2019).

Kraepelin’s great diagnostic divide of ‘psychotic disorders’ have persisted, where both the DSM-V (2013) and the *International Statistical Classification of Diseases and Related Health Problems* (ICD-11, 2019) continue to differentiate between non-affective and affective psychoses. Accordingly, non-affective psychotic disorders include diagnoses such as schizophrenia, delusional disorder, schizoaffective disorder, brief psychotic disorder and psychotic disorder not otherwise specified (American Psychological Association, 2013; World Health Organization, 1992). Bipolar disorder and depression with psychotic features, on the other hand belong to the cluster of affective disorders (American Psychological Association, 2013). However, an increasing number of researchers now concede that the DSM diagnostic categories do not appear to have delivered valid map through which a successful search for biomarkers has been facilitated (Clementz et al., 2020; Fuller & Reus, 2019), and in terms of clinical presentation, overlap in symptoms between the different diagnoses have also been demonstrated, often resulting in comorbidity being rule rather than the exception (Keshavan, Nasrallah, & Tandon, 2011; Kessler, Wai, Demler, & Walters, 2005; van Loo & Romeijn, 2015). Due to the increasingly recognised diagnostic overlap, several research consortia have therefore started addressing the problems of the categorical approach by combining a broad range of data to gain further insight into the transdiagnostic nature of psychopathology (e.g. RDoC (Kozak & Cuthbert, 2016) B-SNIP (Tamminga et al., 2013, 2014; Thaker, 2008), or HiTOP (Kotov et al., 2020; Krueger et al., 2018)). Findings from the general population also demonstrate that subclinical psychotic symptoms occur in

'healthy' individuals further blurring the boundary between those with 'diagnosable' psychotic disorders and those without (Johns & Van Os, 2001; Linscott & Van Os, 2013; Van Os et al., 2009; Van Os & Reininghaus, 2016). For instance, according to meta-analytic findings, prevalence of subclinical psychotic experiences has been estimated at around 7.2% in the general population (Linscott & Van Os, 2013), with risk factors for such experiences mimicking those for developing psychosis, including immigrant status, exposure to drugs and alcohol, trauma, family history of mental illness and urbanicity (Nuevo et al., 2012). Hence, psychotic symptoms transcend not only diagnostic categories, but also crosses the boundary through to the general population, with both risk factors as well as functional and health outcomes mirroring those seen in more severe psychosis cases.

Indeed, the shortcomings of the current categorical diagnostic system have also been acknowledged by the DSM-5 Task Force and Work group (DSM-5) themselves. For instance, in the introduction to the DSM-5, it is stated that: "*Although some mental disorders may have well-defined boundaries around symptom clusters, scientific evidence now places many, if not most, disorders on a spectrum with closely related disorders that have shared symptoms, shared genetic and environmental risk factors, and possibly shared neural substrates….In short, we have come to recognize that the boundaries between disorders are more porous than originally perceived*." (DSM-5, p. 6). However, whilst it remains to be elucidated whether the 'solution' lies in introducing continuous symptom factors in addition to existing diagnostic systems or completely reconceptualising psychosis by abandoning the current nosological tradition entirely, there are increasing indications that we are moving towards a looming change in our conceptualisation of mental health where the intricacies of mental 'illness' and mental 'health' are increasingly recognised.

1.1.3. A biopsychosocial framework – but have we forgotten the 'social'?

It is, however, important to place the long standing discussion surrounding psychosis and its classification as well as implications for treatment, within a wider context. Recently the *Task Force on Diagnostic Alternatives of the American Psychological Association's Div. 32 (the Society for Humanistic Psychology)* issued an open letter regarding the reform and revision of diagnostic systems. Whilst welcoming alternative diagnostic projects, (e.g. HiTOP, RDoC) they highlight that ultimately, the aim of such projects are 'tainted' by the same inherent ideology, namely that mental illnesses are 'things' existing *out there* and will, as soon as we find the correct methods, be identified. Indeed, in this light, what the current alternative systems propose do not constitute a 'true' paradigm shift as the same inherent ideas remain within alternative models; namely identifying and thereby locating problems as existing *within* humans at the cost of failing to acknowledge the important role that structural and social life circumstances play (Kamens, Robbins, & Flanagan, 2017). In other words, the role that the wider socio-political context, including childhood trauma, migration, poverty, racism, assault or homelessness play, should to a greater extent be integrated into models of emotional distress (Kinderman, 2019). However, whilst this discussion often appears to 'pitch' the efforts of psychiatry (or medication) against alternative treatments, it is important to acknowledge that the two are not involved in a zero sum game. Research on the biological mechanisms implicated in mental distress, and advancements in research on medications that can relieve distressing symptoms whilst minimising damaging side-effects is vital in order to continuously improve treatments for psychosis (Solmi et al., 2017; Walden et al., 2019). However, even though biopsychosocial frameworks inform national treatment guidelines for psychosis, where both medication and psychotherapy are recommended (NICE, 2014; SIGN, 2013), the limited extent to which we actuall*y* take the *psychosocial* into account when considering treatments for psychosis is noteworthy (Aradaib, Schore, Cullor, & Osburn, 1998; Cooke & Kinderman, 2018; Kinderman, 2019; Kinderman, Read, Moncrieff, &

Bentall, 2013; Kinderman, Sellwood, & Tai, 2008). For instance, even though social difficulties, such as trauma are strongly implicated in the aetiology psychosis (Varese et al., 2012), access to appropriate talking therapies remain alarmingly low. In Scotland, surveys have indicated that, a mere 23% of individuals who have received a schizophrenia spectrum diagnosis have been offered CBTp whilst only 9 % of carers of individuals with psychosis claimed that the person they support had accessed CBTp (the Scottish Schizophrenia Survey; Larkin & Simpson, 2014). Indeed, the founding principles of CBTp and other psychotherapies for psychosis rests on the very assumptions of a continuity between 'psychotic' and 'normal' experiences, where symptoms, or experiences that may occur in psychosis are not viewed as indications of a 'medical illness' but rather as responses and coping mechanisms that can, in the context of a person's life history make sense (Messari & Hallam, 2003; Morrison, 2017). Whilst insufficient access to psychological therapies reflects limited therapist capacity (Ince, Haddock, & Tai, 2016), such problems also point to wider socio-structural issues where psychosis, its aetiology and thereby it's treatment, is mainly viewed through a 'biological lens'. Whilst there are continuous efforts to improve access to therapies for psychosis, such as through brief and more targeted interventions that can be delivered by a wider workforce (Cupitt, 2019; Hayward et al., 2020), the underlying issue of lack of resources being devoted to ensuring sufficient availability of talking therapies also point towards a wider structural issues. Hence, whilst discussions surrounding whether someone's distressing experiences should fall on a continuum or be placed in a DSM-category may have important implications around the discourse of psychosis, perhaps a bigger and more fundamental change needs to happen for a true 'paradigm shift' to occur (Kamens et al., 2017; Kuhn, 2010). Indeed, just as medication forms a key part of the 'treatment package' it should be equally important to have access to services that also give individuals an opportunity to talk about their experiences on order to help them *make sense* of their distress; to place it in the context of their 'life story' and to be given treatment

surroundings that enable them to become more than their diagnosis (Johnstone, 2018). Indeed, as will be seen in Chapter 6, which evaluated qualitative feedback from patients having received therapy was that, irrespective of the type of therapy received (CBTp or MCT+), individuals emphasised the benefit of being able to tell their *personal story* and to be listened to as a particularly important part of therapy. However, unfortunately too few individuals with psychosis are ever given this chance (Hayward et al., 2020; Larkin & Simpson, 2015), meaning that a large number of people are left, not only to grapple with their distress, but also with underlying traumatic experiences that may have preceded this, or may have even been brought on by the psychotic experiences itself (Hardy & Mueser, 2017). However, for long, for individuals with psychosis, mainly seen as suffering from a 'medical illness' and particularly for individuals with delusional beliefs, talking therapies were seen as a lost cause (Bürgy, 2008; Jaspers, 1913). As will be seen in subsequent chapters, even though CBTp has consistently been found to alleviate symptoms of psychosis (e.g. Turner, Burger, et al., 2020) debates about the usefulness CBTp continue to this day (e.g. Jauhar et al., 2019; Laws & Gournay, 2018) potentially reflecting remnants of such historical scepticism toward psychotherapies for psychosis. However, whilst the majority of research on CBTp have focussed on symptomatic change (Jauhar et al., 2014; Turner, Reijnders, et al., 2020; Wykes, Steel, Everitt, & Tarrier, 2008), evaluations are increasingly taking recovery oriented frameworks as defined by service users into account, as these have been found to differ from those set out in many randomised controlled trials (RCT's) (Birchwood, Shiers, & Smith, 2014; Greenwood et al., 2010). This is reflected in an increasing number of outcome measures based on service user therapy goals and treatment priorities including empowerment, well-being and dealing with stigma (e.g. Webb et al., 2021). Furthermore, refinements in delivering psychotherapies for psychosis are increasingly taking stakeholder views into account (e.g. Brabban, Byrne, Longden, & Morrison, 2017; Wood, Burke, & Morrison, 2015; Wood, Jacobsen, Ovin, & Morrison, 2022), where service users often

emphasise valuing strong a therapeutic alliance facilitated through engagement, normalisation of experiences and a non-stigmatising therapeutic environment (Kilbride et al., 2013; Messari & Hallam, 2003; Pipkin, Hogg, & Armitage, 2021; Wood et al., 2015).

Recent years have also seen encouraging developments with the advent of so-called '3rd wave' therapeutic approaches (e.g. see Cupitt, 2019) with an increase more targeted CBTp based treatments (Balzan, Ryan et al., 2019; Cupitt, 2019; Lincoln & Peters, 2019). Translational efforts to enhance therapeutic outcome have increasingly utilised advances in our understanding of underlying mechanisms to inform treatment targets (e.g. Freeman, Taylor, Molondynski & Waite 2019, Freeman et al., 2021). In line with the trend to move away from nosological approaches to treatments, there has also been an increase in transdiagnostic modularised therapies, where it is recognised that treatment targets adapted to mechanisms and symptoms, often cross diagnostic boundaries (Dalgleish, Black, Johnston, & Bevan, 2020; Schramm, Rapee, & Furukawa, 2021). As modularised treatments are composed of self-contained units that can be delivered flexibly and independently, such approaches also increases patient choice through enabling better treatment adaptation and personalisation (Freeman et al., 2019), which also facilities effective implementation of such evidence based treatments into services (e.g. Gumport, Yu & Harvey, 2020; Harvey et al., 2021). Recent efforts at adapting brief and more targeted CBTp for the use within acute inpatient settings (Wood et al., 2021; Wood et al., 2022) are also encouraging, reflecting a further move away from historical notions that psychotherapies are not suitable for those with psychosis who may be more severely unwell.

1.2. The current thesis

In spite of recent progress and encouraging developments, continuing to enhance currently offered "gold standard" therapies for psychosis, as well as more clearly entangling *what* therapy components may be more effective in facilitating therapeutic change, and

particularly, how such new treatments can be best implemented into practice is essential. The current thesis represent one such attempt, where the over-arching goal is to investigate whether standard psychological therapy could be further improved by utilising elements from Metacognitive Training (MCT+) , which is a more recently developed intervention with a stronger focus on metacognitive processes whilst also targeting important issues of stigma and self-esteem. **Chapter 2** will begin with a meta-analysis of the correlates and moderators of personal stigma in psychosis, in order to highlight the centrality and damaging impact of societal stigma for such conditions, highlighting how much remains to be done, both therapeutically but also socially to tackle the additional stigma burden that individuals with psychosis face. **Chapter 3** will follow with a literature review of both CBTp and MCT+ , with a rationale for the current empirical study, where a mixed methods case-series will be conducted to compare change across therapy in a small sample of individuals receiving standard CBTp and MCT+. **Chapter 4** will outline the overall study methodology in more detail. **Chapter 5** will describe Study 1, where quantitative results from the case-series will be described, whereas **Chapter 6** will describe Study 2, that followed up with qualitative interviews to asking both services users and clinicians about their experience of therapy and what aspects they found useful. **Chapter 7** will follow with an over-all discussion, concluding remarks and recommendations for future research. In summary, this thesis represents an attempt to not only find out if MCT+ can be used to strengthen therapy outcome, but will also be concerned with identifying therapy ingredients that might be particularly useful, in order to also answer questions of *what* works within therapy, as this is key to continuous treatment improvement.

Chapter 2. Unpacking stigma: Meta-analyses of correlates and moderators of personal stigma in psychosis

Please note that a version this meta-analysis was recently published in *Clinical Psychology Review*. This paper is attached in Appendix 1.

Reference:

Eliasson, E. T., McNamee, L., Swanson, L., Lawrie, S. M., & Schwannauer, M. (2021). Unpacking stigma: Meta-analyses of correlates and moderators of personal stigma in psychosis. *Clinical Psychology Review*, *89*, 102077. https://doi.org/https://doi.org/10.1016/j.cpr.2021.102077

Abstract

Personal stigma entails perceived, experienced and internalised stigmatisation. Mental Health stigma has been widely researched across a range of countries and a meta-analysis of their associations and moderators in psychosis is timely. Meta-analyses were conducted examining the correlates and moderators of personal stigma in terms of: (1) demographic variables (2) illness related variables (3) symptoms/negative outcomes, and (4) aspects of wellbeing. Associations were obtained from a total of 216 records. Several demographic factors including age, economic status, employment, and rural residence had small associations with aspects of personal stigma (*r*'s = .12 – -.13). Personal stigma aspects were inversely related to medication adherence (*r*'s = -.20,-.21), and positively associated with insight (r's = .09 – .19). Most symptoms were positively associated with personal stigma (r's = .10 – .43), whereas inverse relations with wellbeing variables were identified (r's = -.13 – -.54). Moderator effects emerged including that of cultural setting and sex, age and education level, highlighting the role of cultural and demographic factors in shaping personal stigma aspects in psychosis. The present study also highlights the importance of recognising the negative effect of actual stigma and discrimination experiences; particularly its detrimental impact on self-image and its complex role in shaping the internalisation of societal stigma.

"By definition, of course, we believe the person with a stigma is not quite human. On this assumption we exercise varieties of discrimination, through which we effectively, if often unthinkingly, reduce his life chances" Erving Goffman (1963, p. 15).

2.1. Introduction

The multiple ways in which stigma can affect individuals has been widely studied within the social and psychological sciences (e.g. (Au, Wong, Law, Wong, & Chung, 2019; Goffman, 1963; Hilbert et al., 1985; Link, Yang, Phelan, & Collins, 2004; Livingston & Boyd, 2010) Yet, ongoing research on mental health stigma remains critical ("The World Health Report 2001 — Mental Health: New Understanding, New Hope.," 2001; Thornicroft et al., 2019). Despite several efforts at eliminating mental health stigma, such as the 'Time to Change' campaign in the UK (Henderson & Thornicroft, 2013; Taylor Nelson Sofres British Market Research Bureau, 2014) individuals with 'mental illness' are often faced with many negative stereotypes such as being seen as weak, lazy, lacking in empathy, or even dangerous (Abdullah & Brown, 2020; Chen & Lawrie, 2017; Kao et al., 2016; Link & Phelan, 2001; Thornicroft & Kassam, 2008). This not only results in structural discrimination, such as lack of access to employment, housing or health care (Thornicroft et al., 2016) but can also cause individuals to feel 'devalued' (Corrigan, Bink, Schmidt, Jones, & Rüsch, 2016). In particular, public views regarding individuals with psychosis, including schizophrenia-spectrum diagnoses, continue to be characterised by stigmatising misconceptions (Abdullah & Brown, 2020; Bowen, Kinderman, & Cooke, 2019; Wood, Birtel, Alsawy, Pyle, & Morrison, 2014) To paint an even bleaker picture, a recent report from the United States indicates that beliefs that persons with schizophrenia are dangerous may have even increased from 1996 to 2018 (Pescosolido, Manago, & Monahan, 2019). It is deeply concerning that stigmatising misinformation about 'psychotic individuals' still penetrates our culture. Whether it is

everyday news reports or entertainment movies, people with psychosis (often described as *schizophrenics* in media reports) are often depicted as 'crazy', dangerous, unemphatic and impulsive (Bowen et al., 2019; Owen, 2012; Yang & Parrott, 2018).

2.1.1. From 'spoiled identities' to internalised stigma: Theoretical developments

Goffman was amongst the earliest to critically examine the negative consequences of stigma, defining it as an "attribute that is deeply discrediting" (Goffman, 1963, p. 3) He suggested that stigma in regards to an attribute, could be likened to a negative 'sign' that separates a person from what society deems normal, leading to what he termed 'a spoiled identity' (LeBel, 2008). Reflecting a timely shift in moving stigma definitions towards being part of a person's socially constructed identity, Link and Phelan emphasised the stigmatisation process as occurring "when elements of labelling, stereotyping, separation, status loss and discrimination co-occur in a power situation that allows the components of stigma to unfold" (Link & Phelan, 2001 p. 367). Their modifying labelling account holds that shared cultural beliefs regarding mental illness are absorbed by individuals as part of their socialisation. Consequently, when individuals become diagnosed with a mental illness, such beliefs become personally relevant, as rejection and devaluation from others become expected, certain coping mechanisms, including social withdrawal or secrecy, might be employed to avoid stigma (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989). As research on psychiatric stigmatisation increased, so has focusing on mental health stigma from the perspective of the stigmatised (Corrigan & Watson, 2002; Faure & Escresa, 2011; Gerlinger et al., 2013). This led to the term personal stigma where a distinction is made between *perceived, experienced* and *internalised stigma* (Brohan, Elgie, Sartorius, & Thornicroft, 2010). The concept of perceived stigma rests on the foundations of Link and Phelan's work on perceived devaluation (Corrigan, Watson, & Barr, 2006; Link, 1987). Perceived stigma (also called stereotype awareness) therefore reflects an individual's perception of the attitudes

of people in society towards their mental health condition. Linked to perceived negative attitudes towards oneself, is being exposed to actual stigma and discrimination experiences. A review on perceived stigma amongst individuals with psychosis have shown that about 65% of participants anticipate stigma and around 56% reported discrimination and stigma experiences (Gerlinger et al., 2013). However, large scale multinational reports have indicated that as many as 90% of those with schizophrenia report having been discriminated against (Thornicroft et al., 2009). Internalised, or self-stigma, is the process by which the individual internalises negative societal views about their condition (Corrigan & Watson, 2002; Ritsher, Otilingam, & Grajales, 2003). In coining the concept of self-stigma, Corrigan and Watson (2002) separated Link and Phelan's description of perceived stigma from internalised stigma, with the latter reflecting a deeper aspect of stigma where the individual agrees with negative stereotypes about the 'mentally ill' and take these on to reflect their self-image (Corrigan & Watson, 2002; Corrigan et al., 2006). Consequently, in their stigma model, self-stigma is conceptualised as a progressive phenomenon where perceived societal stigma is the starting point from which a process of *agreeing* with negative stereotype about one's condition and *applying* these stereotypes to oneself leads to an *altered self-image* (Corrigan, Rafacz, & Rüsch, 2011; Corrigan & Watson, 2002; Watson, Corrigan, Larson, & Sells, 2007). It has however been recognised that perceived stigma does not unequivocally result in internalised stigma. Instead, reactions to societal stigma can differ - some may react with indifference, whereas for others stigmatising experiences may lead to feelings of anger and empowerment (Corrigan & Rao, 2012; Corrigan & Watson, 2002; Watson & River, 2006).

A model of internalised stigma for psychosis was recently proposed by Wood, Byrne, & Morrison (2017). Drawing on earlier accounts of stigma (Link & Phelan, 2001) this integrative account identifies cognitive, behavioural and emotional processes that contribute to the development and maintenance of internalised stigma. As with previous

conceptualisations of stigma (Corrigan & Watson, 2002; Link & Phelan, 2001) this model places the focus on society and the cultural context as the origin of stigma. Within such a cultural context, internalised negative stereotypes develop from an awareness of stigma *and* an identification with a stigmatized group. In connection with a set of *stigma triggers*, this ultimately leads to a range of self-stigmatising cognitions about the self as well as self-stigmatising emotions and behaviours. Primary external stigma triggers are actual stigma and discrimination experiences, as commonly seen in psychosis (e.g. see Thornicroft et al., 2019), including everything from verbal or physical abuse, social rejection or being patronised and judged (Wood et al., 2017). The model also holds that internalisation of stigma can occur in the absence of stigma experiences, where internal triggers, such as auditory hallucinations, or intrusive thoughts related to stigma can also play an important role in the internalised stigma development (Wood et al., 2017). It is, however, also important to acknowledge that experiences of stigma do not exist in a 'vacuum'. On the contrary, mental health discrimination closely intersects with other sources of discrimination including poverty, racism, deprivation or physical disability, as well as oppression based on ethnicity, gender identity or sexuality (Turan et al., 2019). The concept of 'intersectional stigma' is therefore increasingly utilised in order to capture how multiple systems of oppression can exist at individual, community, as well as wider societal levels (e.g. Rai et al., 2020). Highlighting the intersectionality various forms of oppression is important, as living with what has been referred to as 'multiple stigmas' can exacerbate the stigma burden, which may further impede recovery (Turan et al., 2019).

2.1.2. Previous stigma reviews and study rationale

In light of the expanding research on stigma and its impact on the individual, several systematic reviews and meta-analyses have been conducted (Dubreucq et al., 2020; Ellison, Mason, & Scior, 2013; Firmin, Luther, Lysaker, Minor, & Salyers, 2016; Gerlinger et al., 2013; Hawke, Parikh, & Michalak, 2013; Livingston & Boyd, 2010). Livingston & Boyd

(2010) were the first to meta-analytically synthesise research findings of internalised stigma in DSM-Axis I diagnoses, where they demonstrated that stigma was inversely associated with a range of well-being outcomes, and linked to symptom severity as well as poor treatment adherence. However, whilst their aim was to focus on internalised stigma, their meta-analytic review also pooled correlates of studies that did not directly measure internalised stigma, including the Consumer Experiences of Stigma Questionnaire (CESQ) (Wahl, 1999), which measures stigma and discrimination experiences and Links Devaluation-Discrimination Scale (PDD) (Link, 1987) which focuses on perceived stigmatisation (Livingston & Boyd, 2010). Three years later, Gerlinger et al (2013) published a systematic review, addressing the correlates of personal stigma in schizophrenia spectrum disorders where they investigated the correlates of perceived/experienced stigma as well as internalised stigmatisation. Like Livingston & Boyd (2010), they found that studies on the associations between personal stigma aspects and wellbeing variables mostly reported inverse relations. Whereas positive symptoms and general psychopathology were positively associated with both perceived/experienced and internalised stigma, mixed findings were reported regarding depression, as were studies on negative symptoms and demographic variables. Recently, a large and comprehensive systematic review of the frequency, correlates and consequences of internalised stigma in serious mental illnesses (k = 272) was published by Dubreucq, Plasse, & Franck (2021), with the additional goal to compare internalised stigma levels across different geographical locations. Reflecting earlier reviews (Gerlinger et al., 2013; Livingston & Boyd, 2010), results regarding sociodemographic correlates were mixed, whereas internalised stigma was negatively associated with well-being outcomes including functioning, quality of life, self-esteem and self-efficacy and where positive associations were observed between internalised stigma and most symptom related outcomes, insight into illness as well as experienced and perceived stigma. Elevated internalised stigma were reported in 31.3% of the samples, with higher internalised stigma levels generally being

observed in non-Western regions, including South Asia, South East Asia, Africa and the Middle East. This pattern was particularly evident in South and South East Asia, where, in relation to studies conducted in Europe, elevated internalised stigma levels were observed in SMI, schizophrenia, bipolar and MDD samples. Such regional differences are likely explained by higher public stigma pertaining to mental illness, particularly in Eastern countries, where values of collectivism are high and shame about not meeting ones social and functional role obligations might lead to increased levels of internalised stigmatisation (Dubreucq et al., 2021; Papadopoulos, Foster, & Caldwell, 2013; Ran et al., 2021; Yang & Parrott, 2018). However, as their review focussed on internalised stigma, the correlates of perceived and experienced stigmatisation were not addressed. Moreover, as neither Gerlinger et al. (2013) nor Dubreucq et al. (2021) conducted meta-analytic investigations of the correlates identified, the pooled statistical associations of these personal stigma aspects in psychosis remain unknown. Conducting a meta-analysis that statistically synthesises effect sizes from studies (Metcalfe & Rosenthal, 1994) also come with the potential to investigate study level moderators that can give further insight into variables that may influence the magnitude of the correlates of personal stigma (Borenstein, Hedges, Higgins, & Rothstein, 2009b). Firmin et al. (2016) identified several demographic moderators in a meta-analysis of the associations between stigma resistance and psychosocial outcomes. Amongst these, they found that education level and age moderated the associations between stigma resistance and a range of outcomes including symptoms, self-stigma and quality of life. Similar moderator effects were identified for ethnicity, in that a higher percentage of white participants in studies were associated with stronger associations between stigma resistance and mood symptoms, quality of life and hope. Whilst their study might give insight into potential moderators of the outcomes of personal stigma in psychosis, it is of note that stigma resistance is conceptualised as a construct that is distinct to perceived, experienced and self-stigma, and so should be examined separately (Firmin et al., 2016; Sibitz et al., 2011). Hence,

a meta-analytic investigation of personal stigma correlates, their statistical magnitude and their respective moderators is timely and will help build on existing reviews (Dubreucq et al., 2021; Firmin et al., 2016; Gerlinger et al., 2013) in order to further inform therapeutic and theoretical work on stigma.

Proposed moderators

Cultural setting. Whilst it has been demonstrated that cultural factors appears to influence levels of internalised stigmatisation that individuals with mental health conditions report (Dubreucq et al., 2021), the specific ways in which culture can influence the magnitude of the correlates and outcomes of personal stigma in psychosis remain unknown. A robust and widely used framework for conceptualizing cultural characteristics is through Hofstede's (1980) individualism-collectivism paradigm (Papadopoulos et al., 2013). Many non-Western cultures, in particular South/East Asian societies, tend to be characterised by collectivistic values where the concept of the self is influenced by social roles and relations to others, leading to what has been termed an interdependent self-image (Markus & Kitayama, 1991). This has been contrasted to many Western cultures, such as the United States and the United Kingdom that are characterised by individualistic values where ones' self-image is often constructed independently from others, with individuality and uniqueness often being emphasised, referred to as an independent self-image (Markus & Kitayama, 1991; Rodriguez Mosquera, 2015). Previous research has documented potential links between individualism-collectivism and mental health stigma, where some collectivistic countries have been associated with more stigmatising attitudes towards 'mental illness' (Papadopoulos et al., 2013; Yang & Parrott, 2018). It is therefore of interest to investigate the extent to which cultural context plays a role in how mental health stigma correlates unfold. Statistically investigating the way in which culture might moderate the outcomes of personal stigma, will also build on Dubreucq et al's (2021) findings, who reported higher level internalised stigma

in collectivistic cultural regions. The present meta-analysis will therefore explore whether cultural setting moderates the outcomes of personal stigma in conditions associated with psychosis.

Demographic variables. The way in which demographic variables influence personal stigma aspects in psychosis has yet not been studied meta-analytically. In light of the findings of Firmin et al (2016), who identified several demographic moderators of the associations of stigma resistance and several psychosocial outcomes, the present study will build on these findings and explore whether similar demographic factors impacts on the outcomes of personal stigma. Hence, building on such findings (Firmin et al., 2016), in addition to exploring the effect of culture, the current study will explore whether demographic variables including age, sex and mean education moderates the outcomes of personal stigma in psychosis.

Patient status. Studies have also indicated that additional challenges associated with psychotic episodes such as long term hospital stays can lead to additional stigma burdens (Loch, 2014). It would therefore be important investigate whether patient status moderates the associations of personal stigma, particularly as this might help inform therapeutic interventions in hospital settings. To date, research on the effect of hospitalisation on the outcomes of stigma have been somewhat unequivocal. For instance, Segalovich, Doron, Behrbalk, Kurs, & Romem (2013) found that self-stigma was associated with lower self-esteem and capacity to create intimacy in outpatients with psychosis, whereas these associations were not seen among inpatients. However, other studies of inpatients with psychosis have reported associations between personal stigma as self-esteem, loneliness and depression (e.g. Chrostek, Grygiel, Anczewska, Wciórka, & Świtaj, 2016). This potential moderating factor will therefore be explored in the current study to clarify whether patient status influences the associations between personal stigma and its potential correlates in conditions associated with psychosis.

2.1.3. Study aim

(1) The first aim of the present study is to statistically synthesise research findings on the associations of perceived, experienced and internalised stigma and the following:

- Demographic variables
- Illness related variables
- Psychiatric symptoms and negative outcomes
- Wellbeing aspects

(2) The second aim of this meta-analytic study is to gain further insight into potential factors associated with the observed effect sizes. These exploratory moderators are:

- Country study conducted in (classified as collectivist or individualist)
- Patient status (inpatients or outpatients)
- Demographic variables including sex, mean years of education and age

2.2. Methods

2.2.1. Study selection

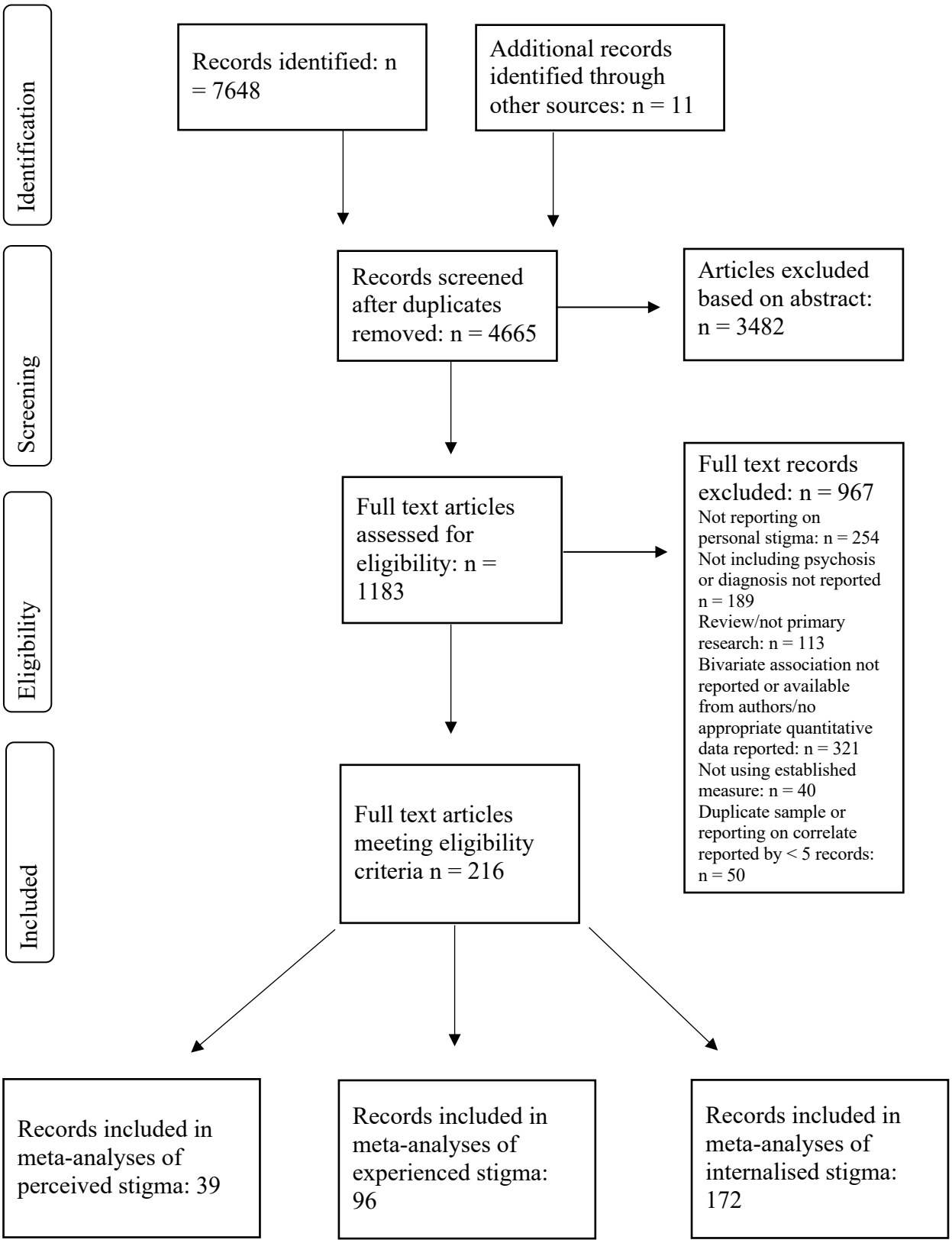
Relevant peer reviewed journal articles were searched for in the following databases: *PsychInfo, Medline, Embase and Web of Science.* In addition, a manual search of reference lists was conducted in relevant literature reviews and meta-analyses in order to identify additional studies that met inclusion. Databases were searched using the following search terms: (schizo* or psychosis* or bipolar or "non-affective psychosis" or "affective psychosis") AND (stigma or "self-stigma" or "personal stigma" or "internalised stigma" or "internalized stigma" or "stereotype awareness" or "experienced stigma" or "perceived stigma" or "anticipated stigma") AND (correlate or impact or outcome or cause or consequence or "randomized controlled trial" or "randomised controlled trial" or RCT or "cohort study" or "population study" or "treatment study"). The final date of the search was up until and including the 25th February 2021. Due to the centrality of the experience of psychosis, articles were included if samples were described as having either; affective or non-

affective psychosis, first episode psychosis (FEP), schizophrenia spectrum diagnoses, depression or bipolar disorder with psychotic features. Moreover, because symptoms of psychosis are a common feature in bipolar disorder (e.g. Smith, Johns, & Mitchell, 2017; Van Bergen et al., 2019), with some studies reporting psychotic symptoms in acute mood episodes at comparable rates to that seen in schizophrenia (Pini et al., 2004), studies of samples with bipolar disorder were included.

In summary, studies that fulfilled the following inclusion criteria were included in the meta-analysis:

1) Peer reviewed article written in English.
2) Reporting on any aspect of personal stigma (self, perceived or experienced stigma) using an established instrument.
3) Majority (>70%) of the sample with affective or non- affective psychosis (as described above). Or correlates reported separately for this group. A 70% cut off was chosen as this was used in a previous systematic review of personal stigma in psychosis (Gerlinger et al., 2013).
4) Reported bivariate cross-sectional correlates between self, perceived or experienced stigma and a demographic, clinical or psychosocial variable (or bivariate correlate available from authors if not reported in article).
5) At least five other studies reporting bivariate data on the same correlates. This inclusion criteria was included to ensure sufficient meta-analytic power (Jackson & Turner, 2017).

Figure 1. PRISMA flow diagram of study retrieval process.



2.2.2. Data extraction

For studies included, data on the following variables were entered into a spreadsheet: Authors and year, sample size, percentage of females, mean age, mean length of illness, years of education, patient status (in or outpatients), aspects of personal stigma reported on, stigma measure used and location of study. A subsample of 20% of included and excluded studies were independently reviewed by a second author (LM) to ensure decision-rule consistency. In the instances where a study reported on multiple effect sizes for the same correlate and a single total score was not given (e.g. by using two separate measures on depression, or only reporting on several subscales of quality of life aspects) the results were averaged into one effect size, in order to avoid including multiple effect sizes from one study as this violates the assumption of independent effect sizes and leads to an inflated weight being given to a single study (Quintana & Minami, 2006; Rosenthal, 2011). When studies reported on both subscales and total scores of stigma scales, the total score was used if this most closely related to the stigma construct measured. However, in the instances where subscales represented the stigma construct measured, scores from relevant subscales were used. When only stigma subscale scores were reported, the subscales most related to the stigma construct measured were averaged into one score. Articles reporting results from the same data sets these were included if they provided effect size estimates for different correlates. On the occasions where the same correlates, based on the same or overlapping sample were reported in different articles, estimates from the largest sample or from the most comprehensive article were used (Borenstein, Hedges, Higgins, & Rothstein, 2009a). If a study provided both continuous and categorical data, effect sizes from continuous data were included as this is statistically advantageous for meta-analyses on correlates (Borenstein et al., 2009a). When articles did not provide non-significant associations, this was requested from the authors. In the instances where this was not provided, an effect size of zero was assigned as a conservative estimate. This approach has been applied in other meta-analyses (e.g. Molloy,

O'Carroll, & Ferguson, 2014; Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012) and is advantageous to omitting non-significant results as this leads to biased conflation of the effect size estimate (Durlak & Lipsey, 1991; Rosenthal, 2011).

2.2.3. Meta-analytic method

Meta-analyses were conducted using the metafor package (Viechtbauer, 2010) in R version 3.6.1 (R Development Core Team, 2011). Pearson's coefficient was chosen as the effect size metric as this is commonly used when estimating the association between variables, and is also easy to compute from other outputs such as chi-square, t and F, d-values and OR's (Borenstein et al., 2009a). Hence, studies that reported other effect size metrics were converted to pearson's *r* when appropriate (Borenstein et al., 2009a). When studies reported Spearman's correlations, these were converted to Pearson's *r* using the formula: $r=2\sin(r_s\times\pi/6)$, as outlined by (Rupinski & Dunlap, 1996). Similarly, in the rare instances where Mann-Whitney U was reported this was converted to Cohen's d throught the Psychometrica website (Lenhard & Lenhard, 2016), and subsequently converted to r (Borenstein et al., 2009b). The decision to convert other effect size metrics was chosen in order to avoid potential systemic loss of information (Borenstein et al., 2009b). A random-effects meta-analysis was used, where the assumption is that the true effects differ between sample groups in different studies and differences in effect sizes are not only attributed to random error within studies (Borenstein et al., 2009a; Field, 2001). For each aspect of personal stigma (perceived, experienced, internalised) separate meta-analyses were conducted for their respective correlates. Publication bias was estimated using Egger's regression intercept (Stuck, Rubenstein, & Wieland, 1998). In accordance with recommendations (Sterne & Egger, 2006), Egger's regression test was only applied when six or more effect sizes were included in a meta-analysis and studies were homogenous, a restriction that has been applied in other meta-analyses (Heeke, Kampisiou, Niemeyer, & Knaevelsrud, 2017). The robustness of significant results were also calculated with the Fail-

safe N using the Rosenthal approach (Rosenthal, 1979). Fail-safe N refers to the number of non-significant studies needed to yield a non-significant meta-analytic result, where a higher fail-safe N is reflects more robust meta-analytic findings (Borenstein et al., 2009b).

2.2.4. Moderator analyses

Heterogeneity between studies was assessed with the Q-statistic, where significant results ($p < 0.05$) were seen as indicators of between study heterogeneity (Sagie & Koslowsky, 1993). The I^2 index builds on the Q-statistic to inform on the extent of heterogeneity present (Higgins & Thompson, 2002), where I^2 values < 25% indicates low heterogeneity, 25-50% indicated medium heterogeneity, 50-75% high heterogeneity and > 75% indicating extreme heterogeneity (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006). Where the Q-statistic was significant and I^2 values above 25% were observed, moderator tests were carried out. Continuous moderators (percentage of females, mean age and mean years of education) were tested with random effects meta-regression using the moment method. For a continuous moderator to be investigated, a minimum of six studies included in the meta-analysis was set (Fu et al., 2011). In order to test for the potential categorical moderators each study was coded according to patient status (outpatients or inpatients) and country study was conducted in (individualistic or collectivistic). Studies that used a mixture of characteristics, such as a mixture of in and outpatients were sorted according to the category that the majority of the sample (>70%) belonged to. For studies where this could not be determined due to not being available or if less than 70% belonged to either category, these were excluded from the moderator analysis. For categorical moderators to be investigated, a minimum of four studies included in each subgroup was set to ensure statistical power (Fu et al., 2011). All moderators were exploratory.

2.3. Results

Over-all study characteristics

Figure 1 outlines a PRISMA flow diagram of the study retrieval process (Moher, Liberati, Tetzlaff, 2009)**.** In total, 216 records based on 180 studies, with a total of 28982 participants (40.2 % females) fulfilled the above inclusion criteria. The mean age of the whole sample was 39.89 (SD = 6.29), mean years of education 12.34 (SD = 1.46) and mean duration of illness was 13.15 years (SD = 5.03). A summary of study characteristics for each aspect of personal stigma is provided in Table 1. Appendix 2 gives a full list of all studies of studies included and Appendix 3 outlines information about the personal stigma scales included.

Table 1. Characteristics of records included.

Perceived stigma n = 39		**Experienced stigma n = 96**		**Internalised stigma n = 172**	
Total sample: 5199		Total Sample: 13685		Sample size: 21567	
Age: M = 37.93, SD = 6.84		Age: M = 39.79, SD = 6.49		Age: M = 40.22, SD = 6.27	
% Females: 39.0		% Females: 38.4		% Females: 40.2	
Education, years: M =12.70, SD = 1.05		Education, years: M = 12.31 SD = 1.32		Education, years: M = 12.31, SD = 1.44	
Years of illness. M = 12.88 SD = 4.97		Years of illness: M = 12.68, SD = 5.12		Years of illness: 13.14, SD = 4.89	
Study Characteristics	**n**	**Study Characteristics**	**n**	**Study Characteristics**	**n**
Publication date:		*Publication date:*		*Publication date:*	
Pre 2010	10	Pre 2010	12	Pre 2010	11
2010 or later	29	2010 or later	84	2010 or later	161
Sample size:		*Sample size:*		*Sample size:*	
1-100	15	1-100	45	1-100	77
101-250	19	101-250	37	101-250	75
251-500	2	251-500	10	251-500	14
500-1000	2	500-1000	3	500-1000	4
1000+	1	1000+	1	1000+	2
Region of study:		*Region of study*:*		*Region of study:*	
Europe	20	Europe	28	Europe	55
North America	10	North America	22	North America	38
South America	0	South America	3	South America	1
Africa	1	Africa	4	Africa	6
Australia	1	Australia	0	Australia	2
Asia	6	Asia	26	Asia	52
Middle East	1	Middle East	12	Middle East	18
*Cultural context**:*		*Cultural context**:*		*Cultural context**:*	
Individualistic	28	Individualistic	48	Individualistic	89
Collectivistic	10	Collectivistic	44	Collectivistic	76

Table 1 continued

Study Characteristics	n	Study Characteristics	n	Study Characteristics	n
Patient status:		*Patient status:*		*Patient status:*	
Outpatients	30	Outpatients	77	Outpatients	139
Inpatients	3	Inpatients	10	Inpatients	16
Mixed/not stated	6	Mixed/not stated	9	Mixed/not stated	17

Countries classified as individualistic and collectivistic based on Hofstede's conceptualisation (https://www.hofstede-insights.com/country-comparison).* = One study (Thornicroft et al., 2009) excluded from count due to being based on data from 27 countries. **Not all records included in count due to not being suitable for classification into individualistic or collectivistic countries due to 1) study conducted across several countries and data not reported separately. 2) Study was conducted in Israel, which is classified as a country with a mixture of individualist and collectivist values. Samples where a classification of culture into collectivistic or individualistic could not be given were excluded from moderator analysis.

2.3.1. Demographic correlates of personal stigma

Table 2 provides a summary of the results of individual meta-analyses on demographic correlates of each personal stigma aspect.

Perceived stigma.

Meta-analytic findings yielded one significant correlate; age was positively associated with perceived stigma even though the small effect size should be noted.

Experienced stigma.

Two small but significant correlates were revealed, namely employment status, where employment was associated with less stigma experiences and ethnicity, where white ethnicity was associated with marginally higher levels of experienced stigma.

Internalised stigma.

Meta-analytic findings revealed four small but significant demographic associations of internalised stigma. Rural residence was associated with higher internalised stigma whereas being married, not unemployed and having higher economic status were all associated with lower levels of internalised stigma. As Table 3 depicts, age moderated the relationship between economic status and internalised stigma ($p = 0.044$) where the association was stronger in samples with a higher mean age.

Table 2. Demographic correlates of personal stigma

Perceived stigma	***k* (n)**	**τ^2**	***Q***	**I^2(%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Age	9 (2038)	.002	11.38	23.58	**.07**	[.01, .12]	2.32	.020	15	-0.19
Education	7 (1670)	.014	20.62**	71.17	.08	[-.03 .19]	1.50	.135	-	-
Sex	11 (2428)	.007	23.61**	57.03	-.07	[-.14, .00]	-1.90	.058	-	-
Experienced stigma	***k* (n)**	**τ^2**	***Q***	**I^2(%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Age	31 (5653)	.004	50.58	43.75	-.03	[-.6, .01]	-1.33	.185	-	-
Economic status	9 (1955)	.015	37.07***	73.64	-.04	[-.14, .05]	-0.86	.388	-	-
Education	27 (5257)	.012	72.70***	69.20	.002	[-.05, .06]	0.09	.928	-	-
Employment status	15 (3668)	.005	29.18*	51.43	**-.07**	[-.12, .02]	-2.52	.012	54	-
Ethnicity	7 (1455)	.000	5.29	0.00	**.06**	[.00 .11]	2.12	.034	6	0.73
Marital status	12 (2637)	.000	10.33	0.00	.00	[-.04, .04]	0.17	.836	-	-
Sex	32 (5597)	.000	44.97*	2.37	-.004	[-.03, .02]	-0.27	.784	-	-
Residence	7 (1872)	.001	13.21*	57.65	.02	[-.06, .09]	0.46	.646	-	-
Internalised stigma	***k* (n)**	**τ^2**	***Q***	**I^2(%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Age	45 (7113)	.008	89.66***	53.71	-.02	[-.05, .02]	-0.94	.350	-	-
Economic status	15 (3380)	.016	68.12***	77.18	**-.10**	[-.17, -.03]	-2.60	.009	115	-
Education	34 (6339)	.009	77.92***	60.93	-.04	[-.08, .00]	-1.78	.075	-	-
Employment status	22 (5105)	.007	61.31***	61.53	**-.13**	[-.18, -.09]	-5.39	<.0001	591	-
Ethnicity	6 (1096)	.000	2.42	0.00	.06	[-.00 -.12]	1.90	.058	-	-
Marital status	16 (3368)	.008	38.41**	61.08	**-.06**	[-.12, -.00]	-2.07	.039	52	-
Sex	48 (8934)	.002	63.26	24.44	-.01	[-.04, .01]	-0.99	.324	-	-
Residence	6 (1684)	.007	13.17*	64.46	**.12**	[.03, .20]	2.57	.010	35	-

Note: K = number of effect sizes used in the meta-analysis. **τ^2 =** statistical estimate of between-study variance. *r* = pooled effect size (significant values ($p \leq .05$) marked in bold). Z = *z*-test for statistical difference of the mean effect size. *Q* = test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. Sex = males. Employment status = not being unemployed (compared with unemployed). Ethnicity = whites (compared with BAME. Note: articles that did not specify comparison groups (e.g. comparing African Americans vs. "other") were not included). Marital status = married (compared with single/divorced/widowed. Note: articles that included divorced/widowed/previously married into the 'married' category were not included). Residence = rural (compared with urban) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 3. Summary of significant moderators of the relationship between demographic variables and personal stigma

Continuous moderators						
Stigma aspect	**Correlate**	**Moderator**	***k***	***Q***	***Z***	**R^2**
Internalised stigma	Economic status	Mean age	14	4.08*	-2.02	.34

Note: k = number of effect sizes used in the meta-analysis. Z = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator. $^{+}$ p <.10 * p < 0.05, ** p < 0.01, *** p < 0.001

2.3.2. Illness related variables

Table 4 provides a summary of the results of individual meta-analyses on illness related correlates for each personal stigma aspect.

Perceived stigma.

Meta-analyses indicated a small but significant association between perceived stigma and insight.

Experienced stigma.

Meta-analyses indicated small inverse associations between experienced stigma and medication adherence as well as age of onset, whereas a small positive association with insight was revealed. As seen in Table 5, age of onset was moderated by mean age ($p = 0.018$), and country ($p = 0.015$), where studies conducted in individualist countries had a significantly stronger association between experienced stigma and age of onset. Insight was moderated by % females ($p = .035$), indicating stronger associations between experienced stigma and insight in samples with more males.

Internalised stigma.

Meta-analyses of internalised stigma and clinical and treatment related variables found that number of hospitalisations and insight were positively associated with internalised stigma with effect sizes in the small range, whereas age of onset and medication adherence were inversely related to internalised stigma, all with small effect sizes. As seen in Table 5, the association between number of hospitalisations and internalised stigma was moderated by percentage of females included in the study ($p = .008$), where the association was stronger in samples with more females.

Table 4. Individual meta-analyses personal stigma with illness related variables

Perceived stigma	***k* (n)**	**τ^2**	***Q***	**I^2(%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Illness duration	7 (897)	.018	18.44**	68.82	.06	[-.06, .18]	0.99	.321	-	-
Insight	6 (692)	.000	3.67	0.00	**.13**	[.05, .20]	3.30	.001	20	1.00
No of hospitalisations	6 (699)	.000	4.24	0.05	-.02	[-.09, .06]	-0.40	.684	-	-
Experienced stigma	***k* (n)**	**τ^2**	***Q***	**I^2(%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Age of onset	13 (2359)	.021	49.47***	77.43	**-.13**	[-.22, -.03]	-2.67	.008	104	-
Illness duration	17 (3544)	.012	53.62***	70.36	.07	[-.00, .13]	1.95	.051	-	-
Insight	14 (1352)	.004	17.57	26.66	**.09**	[.02, .15]	2.58	.010	33	-0.14
Medication adherence	7 (988)	.004	8.45	32.27	**-.21**	[-.29, -.13]	-4.98	<.0001	95	-0.82
No of hospitalisations	7 (893)	.025	27.66***	74.58	.10	[-.04, .23]	1.45	.148	-	-
Internalised stigma	***k* (n)**	**τ^2**	***Q***	**I^2(%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Age of onset	19 (4325)	.000	17.86	0.16	**-.06**	[-.08, -.03]	-3.68	.0002	76	-0.82
Illness duration	28 (4765)	.006	52.22**	47.52	**.04**	[-.00, .09]	2.08	.038	49	-
Insight	24 (3356)	.029	150.09***	78.90	**.19**	[.11, .26]	4.62	<.0001	772	-
Medication adherence	15(1810)	.000	12.94	0.00	**-.20**†	[-.27, -.18]	-9.48	<.0001	514	-2.52*
No of hospitalisations	17 (2212)	.006	28.61*	44.52	**.10**	[.04, .16]	3.36	.0008	107	-

Note: K = number of effect sizes used in the meta-analysis. **τ^2 =** statistical estimate of between-study variance. *r* = pooled effect size (significant values ($p \leq .05$) marked in bold). *Z* = *z*-test for statistical difference of the mean effect size. *Q* = Test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.† ES corrected for publication bias. Note: Age at first hospitalisation included in age of onset correlate. Studies that reported duration of treatment were included in illness duration correlate.

Table 5. Summary of continuous moderators of the relationship between illness related variables and personal stigma

Continuous moderators									
Stigma aspect	**Correlate**	**Moderator**	***k***	***Q***	***Z***	**R^2**			
Experienced stigma	Age of onset	Mean age	13	5.60*	-2.37	.36			
	Insight	% females	14	4.44*	-2.11	.50			
Internalised stigma	No of hospitalisations	% females	17	7.05**	2.65	.55			
Categorical moderators									
Personal stigma aspect	**Correlate**	**Moderator**	***Q***	**Post hoc test**	***k* (n)**	***r***	**95% CI**	***Z***	***p-value***
Experienced stigma	Age of onset	Country	5.95*	Individualist	7 (765)	-.22	[-.31, -.12]	-4.29	<.0001
				Collectivist	6 (1594)	-.03	[-.14, -.09]	-0.51	.613

Note: *k* = number of effect sizes used in the meta-analysis. Z = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

2.3.5. Symptoms and negative outcomes

Table 6 provides a summary of the results of individual meta-analyses on the correlates of symptoms and negative outcomes including correlations between the different personal stigma aspects.

Perceived stigma.

Meta-analyses indicated that perceived stigma was positively associated with depression and general psychopathology, with effect sizes in the small range. Moderate to large effects were observed between perceived stigma and experienced as well as internalised stigma. No associations between perceived stigma and positive as well as negative symptoms were observed.

Experienced stigma.

Meta-analyses of experienced stigma and symptoms revealed positive associations with depression, hopelessness, general psychopathology as well as positive and negative symptoms, with effect sizes in the small to medium range. A large association was observed between experienced and internalised stigma. As Table 7 depicts, mean age emerged as a significant moderator for the association between experienced stigma and depression ($p = .027$), where magnitude of the effect size increased with a higher mean age. Education also moderated the association between experienced stigma and depression ($p = <.0001$) as well as positive symptoms ($p = .036$) where the associations increased with higher education. The association between positive symptoms and experienced stigma was also moderated by percentage females included ($p = .005$), where the association was stronger in samples with fewer females. Finally, country significantly moderated the relationship between experienced stigma and general psychopathology ($p = .005$) and positive symptoms ($p = <.0001$) where post hoc analyses indicated that the associations were significantly stronger in studies conducted in individualistic countries (Table 7) .

Internalised stigma.

Apart from mania, all negative outcomes including depression, hopelessness, general psychopathology, negative symptoms, positive symptoms as well as suicidality/self-harm were positively associated with internalised stigma with effect sizes in the small to medium range. As depicted in Table 7, several moderators were identified for the association between internalised stigma and symptoms. More specifically, age moderated the association between general psychopathology and internalised stigma (p = .050) where the magnitude of the effect size increased with a higher mean age. However, regarding age as a moderator, the opposite effects were seen for suicidality/self-harm, in that stronger associations were observed in samples with a lower mean age (p = .020). Percentage females (p = .025) moderated the relationship between internalised stigma and positive symptoms with a stronger association observed in samples with fewer females. Moreover, as with experienced stigma, country significantly moderated the association between general psychopathology (p = .014) and positive symptoms (p = .009) where the association appeared stronger in studies conducted in individualistic countries. Finally, the association between internalised stigma and negative symptoms was moderated by patient status (p = .009), where the association was stronger among inpatients. However, the small number of studies conducted with inpatient samples (k = 4) should be noted.

Table 6. Individual meta-analyses of personal stigma aspects with symptoms/negative outcomes

Perceived stigma	***k* (n)**	**τ^2**	***Q***	**I^2 (%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Experienced stigma	5 (434)	.001	4.19	1.09	**.51**	[.43, .58]	10.86	<.0001	216	-1.56
Internalised stigma	9 (2180)	.041	81.42***	87.90	**.37**	[.24, .49]	5.24	<.0001	985	-
Depression	19 (2115)	.019	56.95***	67.47	**.20**	[.12, .27]	5.09	<.0001	529	-
General psychopathology	11 (1645)	.005	15.41	37.29	**.10**	[.03, .17]	2.79	.005	43	0.018
Negative symptoms	7 (1570)	.005	10.40	43.50	.03	[-.06, .11]	0.54	.540	-	-
Positive symptoms	8 (1715)	.006	14.18*	48.40	.03	[-.05, .11]	0.66	.507	-	-
Experienced stigma	***k* (n)**	**τ^2**	***Q***	**I^2 (%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Internalised stigma	24 (3665)	.040	177.73***	85.18	**.58**	[.52, .64]	14.63	<.0001	11893	-
Depression	28 (4431)	.025	141.96***	78.84	**.29**	[.23, .35]	8.47	<.0001	3374	-
Hopelessness	9 (914)	.006	12.78	35.47	**.30**	[.26, .40]	8.13	<.0001	336	1.09
General psychopathology	30 (4511)	.015	104.43***	68.20	**.21**	[.16, .27]	7.60	<.0001	1801	-
Negative symptoms	21 (3195)	.015	70.85***	69.59	**.10**	[.03, .16]	2.87	.004	147	-
Positive symptoms	26 (4504)	.024	187.73***	79.52	**. 20**	[.13, .27]	5.57	<.0001	1292	-
Internalised stigma	***k* (n)**	**τ^2**	***Q***	**I^2 (%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Anxiety	10 (844)	.003	10.81	18.36	**.38**	[.31, .44]	9.96	<.0001	421	-1.09
Depression	47 (7306)	.037	281.05***	84.60	**.41**	[.36, .46]	13.84	<.0001	20560	-
Hopelessness	19 (2279)	.016	49.86***	64.65	**.43**	[.37, .49]	12.58	<.0001	3129	-
General psychopathology	41 (6800)	.032	235.55***	83.58	**.29**	[.23, .34]	9.23	<.0001	6897	-
Mania	6 (810)	.009	10.81	51.00	.05	[-.06, .16]	0.95	.341	-	-
Negative symptoms	36 (5333)	.012	85.02***	60.16	**.18**	[.13, .23]	7.42	<.0001	1779	-
Positive symptoms	38 (6613)	.025	304.59***	80.27	**.18**	[.12, .23]	5.88	<.0001	2328	-
Self-harm/suicidality	7 (843)	.121	96.29***	92.92	**.40**	[.14, .60]	3.00	.003	395	-

Note: K = number of effect sizes used in the meta-analysis. **τ^2 =** statistical estimate of between-study variance. *r* = pooled effect size (significant values ($p \leq .05$) marked in bold). Z = *z*-test for statistical difference of the mean effect size. *Q* = Test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. Anxiety included measures of social anxiety. Hopelessness correlate included measures hopelessness and hope, reverse scored. Psychopathology * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7. Summary of significant continuous and categorical moderators of the relationship between symptoms and personal stigma

Continuous moderators						
Personal stigma aspect	**Correlate**	**Moderator**	***k***	***Q***	***Z***	**R^2**
Experienced stigma	Depression	Mean age	28	4.89*	2.21	.16
		Education	11	29.96***	5.47	.87
	Positive symptoms	% females	26	7.77**	-2.79	.29
		Education	12	4.40*	2.10	.31
Internalised stigma	Psychopathology	Mean age	41	3.83*	1.96	.10
	Positive symptoms	% females	37	5.03*	-2.24	.16
	Self-harm/suicidality	Mean age	7	5.46*	-2.34	.48

Categorical moderators									
Personal stigma aspect	**Correlate**	**Moderator**	***Q***	**Post hoc test**	***k* (n)**	***r***	**95% CI**	***Z***	***p-value***
Experienced stigma	Positive Symptoms	Country	15.20***	Individualist	16 (2254)	.28	[.21, .34]	7.88	<.0001
				Collectivist	9 (2161)	.06	[-.04, .15]	1.14	.254
	Psychopathology	Country	8.03**	Individualist	18 (2065)	.26	[.22, .30]	12.06	<.0001
				Collectivist	12 (2446)	.14	[.05, .22]	3.01	.003
Internalised stigma	Neg. symptoms	Patient stat.	6.93**	Outpatients	27 (4266)	.16	[.12, .21]	6.50	<.0001
				Inpatients	4 (316)	.35	[.24, .44]	6.31	<.0001
	Psychopathology	Country	6.04*	Individualist	19 (2334)	.36	[.29, .42]	9.75	<.0001
				Collectivist	22 (4217)	.22	[.14, .31]	5.00	<.0001
	Pos. Symptoms	Country	6.91**	Individualist	21 (3561)	.24	[.16, .32]	5.68	<.0001
				Collectivist	17 (3052)	.10	[.03, .16]	2.90	.004

Note: k = number of effect sizes used in the meta-analysis. Z = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

2.3.6. Wellbeing variables

The results of individual meta-analyses investigating the relationship between personal stigma and wellbeing outcomes are presented in Table 8, whereas significant and trend level moderators are shown in Table 9.

Perceived stigma.

Meta-analyses showed that functioning, quality of life and self-esteem was negatively associated with perceived stigma with effect sizes in the small to medium range. No significant moderators were observed.

Experienced stigma.

Meta-analyses revealed negative associations between experienced stigma and functioning, quality of life and self-esteem, perceived support and recovery, mostly with effect sizes in the medium range. As seen in Table 9, country moderated the association between experienced stigma and functioning (p = .026) where the association was stronger in studies conducted in collectivistic countries. Whilst recovery was moderated by percentage of females included (p = 0.010) and country (p = 0.038), this might have been driven by one study that was coded as r = 0 (Lysaker et al., 2008) due to unavailability of NS data. When this study was removed, moderator effects only reached trend levels (p = .092 and .063 respectively).

Internalised stigma.

Meta-analyses indicated that internalised stigma was negatively associated with all wellbeing variables, including empowerment, functioning, quality of life, perceived support, recovery, resilience, as well as self-efficacy and self-esteem with effect sizes in the medium to large range. As seen in Table 9, moderator analyses indicated that a lower mean age was associated with a stronger negative relationship between self-efficacy and internalised stigma (p = 0.004).

Table 8. Individual meta-analyses of perceived stigma and wellbeing variables

Perceived stigma	***k* (n)**	**τ^2**	***Q***	**I^2 (%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Functioning	11 (1947)	.019	37.16***	72.63	**-.13**	[-.22, -.03]	-2.49	.013	72	-
Quality of life	10 (1170)	.012	21.63***	59.05	**-.33**	[-.41, -.25]	-7.49	<.0001	503	-
Self-esteem	15 (1316)	.041	52.28	77.07	**-.28**	[-.38, -.16]	-4.70	<.0001	554	-
Experienced stigma	***k* (n)**	**τ^2**	***Q***	**I^2 (%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Functioning	28 (5039)	.019	103.25***	76.71	**-.17**	[-.23, -.11]	-5.57	<.0001	1386	-
Quality of life	17 (2617)	.005	27.73*	42.63	**-.33**	[-.38, -.28]	-12.16	<0.0001	1629	-
Perceived support	7 (1238)	.049	59.20***	88.95	**-.31**	[-.46, -.14]	-3.51	.0004	299	-
Recovery	14 (1959)	.023	56.09***	74.51	**-.34**	[-.43, -.26]	-7.28	<.0001	998	-
Self-esteem	21 (2577)	.006	35.05*	42.49	**-.42**	[-.47, -.38]	-16.17	<.0001	3532	-
Internalised stigma	***k* (n)**	**τ^2**	***Q***	**I^2 (%)**	***r***	**95% CI**	***Z***	***p-value***	**FSN**	**Egger's *(z)***
Empowerment	7 (2099)	.108	137.72***	96.50	-.45	[-.64, -.22]	-3.53	<.0001	1257	-
Functioning	38 (6464)	.033	231.32***	84.42	-.27	[-.33, -.21]	-8.32	<.0001	5828	-
Quality of life	35 (5305)	.060	266.51***	89.13	-.39	[-.46, -.31]	-9.42	<.0001	10114	-
Self-compassion	5 (341)	0.00	0.93	0.00	-.34	[-.46, -.31]	-6.42	<.0001	60	0.11
Self-efficacy	12 (2097)	.032	60.03***	84.06	-.47	[-.55, -.38]	-8.86	<.0001	2066	-
Self-esteem	41 (4988)	.094	324.85***	91.62	-.54	[-.61, -.47]	-11.90	<.0001	25137	-
Perceived support	11 (1806)	.045	100.55***	87.69	-.34	[-.45, -.21]	-5.09	<.0001	851	-
Recovery	22 (3143)	.015	63.62***	66.55	-.46	[-.51, -.41]	-15.23	<.0001	5662	-
Resilience	6 (1428)	.024	19.37**	78.70	-.40	[-.51, -.27]	-5.66	<.0001	384	-

Note: *k* = number of effect sizes included in the meta-analysis. **τ^2 =** statistical estimate of between-study variance. *r* = pooled effect size (significant values ($p \leq .05$) marked in bold). Z = *z*-test for statistical difference of the mean effect size. *Q* = Test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. [1] = 1 study including scale on loneliness reverse scored. [1] = Includes measures of, degree of social contacts, loneliness and sense of belonging. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 9. Summary of significant continuous and categorical moderators of the relationship between wellbeing aspects and personal stigma

Continuous moderators									
Personal stigma aspect	**Correlate**	**Moderator**	***k***	***Q***	***Z***	**R^2**			
Experienced stigma	Recovery	% females	14	6.66*	-2.58	.39			
Internalised stigma	Self-efficacy	Mean age	12	8.48**	2.91	.49			
Categorical moderators									
Personal stigma aspect	**Correlate**	**Moderator**	***Q***	**Post hoc test**	***k* (n)**	***r***	**95% CI**	***Z***	***p-value***
Experienced stigma	Functioning	Country	4.95*	Individualist	13 (1744)	-.10	[-.16, -.03]	-2.95	.003
				Collectivist	15 (3295)	-.23	[-.31, -.15]	-5.35	<.0001
	Recovery	Country	4.32*	Individualist	9 (1380)	-.28	[-.38, -.17]	-5.11	<.0001
				Collectivist	4 (499)	-.45	[-.57, -.32]	-6.09	<.0001

Note: k = number of effect sizes used in the meta-analysis. *Z* = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $^{+}p < .10$

2.4. Discussion

This extensive meta-analysis identified a large number of studies examining the associations between aspects of personal stigma for individuals with experiences of affective and non-affective psychosis by pooling together effect sizes from 216 records. This review is also the first to meta-analytically examine potential moderators of these pooled effect sizes, giving further insight into factors associated with the observed associations of personal stigma in psychosis.

Several demographic variables including age, employment status, economic status, ethnicity and rural residence were associated with aspects of personal stigma. Whilst the small effect sizes observed should be interpreted with caution, the more robust associations between internalised stigma and employment as well as economic status are noteworthy. The relationship between economic status and internalised stigma was also moderated by age, where the association was stronger in samples with higher mean age. As lower socioeconomic status have been linked with poorer ageing-related health and well-being outcomes (Steptoe & Zaninotto, 2020), such findings might reflect how multiple challenges could contribute to increased internalised stigmatisation (Turan et al., 2019). This is also the first study to meta-analytically demonstrate that unemployment can lead to increased levels of internalised stigma for individuals with psychosis. These findings are perhaps not surprising in light of research showing the benefits of employment in people experiencing mental health problems, with positive impacts on both physical and mental wellbeing (Schuring, Robroek, & Burdorf, 2017). Obtaining employment is frequently cited as an important factor for recovery by individuals with psychosis (e.g. see Hampson, Hicks, & Watt, 2018). However, longitudinal studies have shown that internalised stigma can also

function as a barrier to employment (Lysaker, Yanos, Outcalt, & Roe, 2010) indicating a potential vicious cycle between unemployment and internalised stigma. Nevertheless, social stigma and structural discrimination remain important obstacles for people with mental health difficulties affecting both access to and maintaining employment (Brouwers, 2020), highlighting how change in attitudes towards mental illness also need to happen at a policy level. These findings also highlight the intricacies of stigma, and how individuals with psychosis are can be hit by so-called 'multiple' stigmas' (Turan et al., 2019), due to also being more likely to being hit by poverty and unemployment (Boardman, Dogra, & Hindley, 2015).

Several illness related correlates were revealed with negative associations found between both experienced and internalised stigma with age of onset as well as medication adherence. Whilst number of hospitalisations was not associated with perceived and experienced stigma, a positive association was found for internalised stigma, even though this effect size was in the small range. Moderator analyses demonstrated that this association was stronger in samples with more females, indicating that females with more hospitalisations might experience greater levels of internalised stigma. Building on the findings of earlier reviews (Dubreucq et al., 2021; Gerlinger et al., 2013), this study was the first to meta-analytically demonstrate a positive relationship between all aspects of personal stigma and insight, where the magnitude of the effect was stronger in studies of internalised stigma. The positive associations between personal stigma and insight are in line with studies showing the paradoxical effects that insight can have in conditions associated with psychosis, where 'illness' awareness can simultaneously lead to better treatment adherence and functional outcome, whilst also being associated with depression, low self-esteem and

stigma (Lysaker, Roe, & Yanos, 2007). This is in accordance with theoretical work on the internalised stigma process where stereotype awareness is the starting point in the process that enables internalised stigma to unfold (Corrigan & Watson, 2002; Link et al., 1989; Link & Phelan, 2001; Yanos, DeLuca, Roe, & Lysaker, 2020).

Many symptom variables were found to be positively associated with personal stigma, whereas inverse associations were seen for all well-being outcomes, where the magnitude of these associations were higher for studies focussing on internalised stigma. The current study also builds on previous reviews showing that negative symptoms are linked with internalised stigma (Dubreucq et al., 2021) by also demonstrating a positive association between negative symptoms and stigma experiences. However, neither positive nor negative symptoms were associated with perceived stigmatisation, and the six studies providing correlates between mania and self-stigma revealed no association. Even though the lack of association between mania and internalised stigma might reflect less stigma being related to experiencing manic symptoms, it may also be an artefact of elevated mood and confidence often accompanying manic states (Eisner, Johnson, & Carver, 2008).

Regarding the associations between personal stigma and symptoms, several moderator effects were revealed. As with the association between internalised stigma and economic status, samples with a higher mean age had stronger associations between experienced stigma and depression as well as between internalised stigma and general psychopathology. This could indicate that the vulnerability towards stigma in association with specific symptoms might increase with age, and may warrant further research. Moreover, studies whose samples had higher years of

education indicated stronger associations between experienced stigma and depression as well as positive symptoms. It is of note that Firmin et al's (2016) meta-analytic findings indicated that the inverse association between stigma resistance and symptoms was stronger amongst samples with higher education, indicating that more severe symptomatology might hinder the ability to resist stigma for those with higher education. These findings might fit with the current results where positive symptoms and depression were more strongly associated with experiences of stigma in samples with higher educational backgrounds.

Sex was also found to moderate the magnitude of the association between positive symptoms and general psychopathology for both experienced and internalised stigma, where the observed associations were significantly stronger in samples with more males. It is of note that positive symptoms, including delusions and hallucinations, represent hallmark symptoms of schizophrenia. In a review of portrayals of 'schizophrenia' in English language movies, Owen (2012) found that psychotic individuals were often portrayed as violent or unpredictable, with a clear majority (74%) of the characters being men. Even though newspaper portrayals have started to include more positive stories of mental health (Whitley & Wang, 2017), recent studies of media outlets across a range of countries still paint a bleak picture (Bowen et al., 2019; Chen & Lawrie, 2017; Yang & Parrott, 2018). For instance, recent reviews of the British tabloid press have found that depictions of so-called 'schizophrenics' are frequently (mis)used when portraying individuals having committed criminal acts of violence (Bowen et al., 2019; Chen & Lawrie, 2017). Indeed, these findings also link in with the moderator effect revealed between experienced stigma and insight, where the association was stronger among samples

with more males. Hence, a likely factor explaining the observed moderator effects of sex may well be the stigmatising misinformation in the media about psychosis and schizophrenia, that often focuses on males. This further illustrates the real and damaging effects that such societal stigma can have on individuals with psychosis.

Moderator effects of country were also revealed for the associations between experienced and internalised stigma with positive symptoms as well as general psychopathology with the magnitude of the association being significantly stronger for studies conducted in individualistic countries. In light of studies that have indicated that 'mental illness' might be more stigmatised in countries with collectivistic values (Dubreucq et al., 2021; Papadopoulos et al., 2013; Yang & Parrott, 2018), these moderator effects might seem contradictory. However, research on psychotic experiences have demonstrated that people from individualistic countries tend to appraise psychotic symptoms as being more distressing when compared with individuals from collectivistic countries (Wüsten et al., 2018), which may reflect the increasing stigma associated with such symptoms. For instance, reports from voice hearers in different cultural settings have found that those from individualistic countries tend to experience voices as intrusive and scary, often attributing these to being symptoms of 'brain disease'. Such appraisals have been shown to be less common in certain collectivistic countries where voices are less often described as intrusive and are to a lesser extent appraised as being 'pathological' (Luhrmann, Padmavati, Tharoor, & Osei, 2015). However, these findings may only be specific to psychotic symptoms. It is for instance worth highlighting that regarding the association between internalised stigma and functioning, the moderator effect of country was in the opposite direction, where the inverse association was stronger in

studies conducted in collectivist countries. This is in line with research indicating that collectivist cultures, tend to place greater value in a person being able to fulfil their role obligations (Altweck, Marshall, Ferenczi, & Lefringhausen, 2015; Ran et al., 2021), which may result in higher potency to develop internalised stigma when ones functioning is impeded due to mental health difficulties. This is the first study to meta-analytically demonstrate how, on a study level, culture can influence the ways in which the process of stigma unfolds for individuals with an experience of psychosis, thereby providing important avenues for future cross-cultural stigma research. The current findings also build on existing models of stigma in psychosis that highlights how symptoms can act as triggers for developing internalised stigma (Wood et al., 2017) by emphasising how cultural background and gender can play moderating roles in this process.

2.4.1. Emphasising the damaging impact of stigma experiences

Even though the damaging aspects of stigma and discrimination experiences have been widely researched (Dickerson, Sommerville, Origoni, Ringel, & Parente, 2002; Thornicroft et al., 2019; Vass, Sitko, West, & Bentall, 2017), this study was the first study to meta-analytically demonstrate the negative impact of enacted stigma in psychosis through an examination of each aspect of personal stigma. This was particularly evident in the large association observed between experienced stigma and internalised stigma as well as the robust negative associations between experienced stigma and a range of wellbeing outcomes including self-efficacy, self-esteem and recovery. Whilst it was previously highlighted how theoretical accounts of stigma shifted away from an individualistic focus towards emphasising how stigma is the result of socio-political power relations that shapes our cultural image of stigmatising

conditions (Link & Phelan, 2001; Link et al., 2004), the current meta-analysis further highlight the importance of emphasising that internalised stigma, as well as resulting from individuals being aware of their 'stigmatised identity', is further enhanced through continuous unfair societal treatment (e.g. see Thornicroft et al., 2019). These findings lend support to the more recent theoretical account of internalised stigma in psychosis that highlights the importance of stigma experiences in triggering internalised stigma (Wood et al., 2017). Placing greater emphasis on the negative impact of enacted stigma might also help to further highlight importance of tackling personal stigma through wider public health and community interventions in order to change cultural and societal images of psychosis, that not only enables the unfolding of internalised stigma but also facilitates unjust behaviours towards those with a stigmatising identity (Dubreucq et al., 2021; Evans-Lacko, Brohan, Mojtabai, & Thornicroft, 2012). However, whilst there are indications that public attitudes towards mental ill health are amenable to change, both following societal anti-stigma campaigns (e.g. Sara Evans-Lacko, Corker, Williams, Henderson, & Thornicroft, 2014; Hansson, Stjernswärd, & Svensson, 2016; Sampogna et al., 2017; Thornicroft et al., 2016), and following anti-stigma interventions (e.g. Corrigan, Morris, Michaels, Rafacz, & Rüsch, 2012; Morgan, Reavley, Ross, Too, & Jorm, 2018; Xu, Rüsch, Huang, & Kösters, 2017), reports of stigmatising experiences amongst individuals with schizophrenia continue to be high (Thornicroft et al., 2019). Moreover, recent findings regarding the impact of the Time to Change (TTC) (http://www.time-to-change.org.uk/), indicated that being aware of the TTC program did not result lower responses to anticipated discrimination (such as stopping oneself applying for work, or having a close relationship or concealing the illness) amongst mental health services users (Sampogna et al., 2021). Hence, whilst such and other campaigns are key to

changing public discourse on mental ill health, these need to sit alongside more multifaceted efforts to tackle personal stigma in order to further empower mental health consumers. Indeed, particularly relevant for treatments of psychosis and for the current thesis were the findings that internalised stigma was strongly associated with a range of symptoms as well as inversely related to various well-being aspects, including self-esteem, quality of life, as well as recovery, which strongly highlights the importance of psychological interventions to effectively target internalised stigma in order to further support recovery.

2.4.2. Limitations

This study has several limitations. Firstly, a similar issue to that reported by Gerlinger et al (2013) and Livingston and Boyd (2010) is the seeming lack of longitudinal studies with available bivariate data for inclusion in the meta-analysis. Therefore, inferences about causality and directionality are limited. Another issue, common in meta-analytic investigations, is that of 'the file drawer problem' and lack of availability of data leading to risk of publication bias. Even though many researchers contacted kindly provided unpublished bivariate and non-significant data, this issue needs to be considered. To minimize possible inflation of the results, the current study assigned an effect size of zero to non-significant findings where data was not provided. Moreover, whilst all aspects of personal stigma were investigated, this study did not consider the influence of other stigma related factors that can influence the stigmatisation process, including stigma coping and cognitive appraisals of stigma. Several considerations regarding the moderator analyses are also important to highlight. Due to the lack of studies conducted among inpatient samples, moderator analyses could often not be conducted on this variable. Considering the positive association between internalized stigma and number of hospitalizations future studies

should consider an increased focus on the stigma process among inpatient samples. Some issues regarding the interpretations of the moderator analyses also need to be highlighted. Whilst years of education was found to moderate the association between experienced stigma and symptom outcomes it should be noted that due to many studies not reporting on years of education as a continuous variable, there was a large amount of missing data suggesting caution in interpreting these results. Furthermore, whilst dividing countries along the individualist-collectivist dimension is an established tool in cross-cultural psychology research (Krendl & Pescosolido, 2020; Papadopoulos et al., 2013; Yang & Parrott, 2018) it should be noted that differences in ethnicity within studies was not taken into account. However, the lack of reporting on participant ethnicities within studies suggest that dividing studies by cultural setting was a reasonable compromise. Nevertheless, future studies should also consider how cultural differences might moderate the correlates of personal stigma on an individual level, perhaps by individual ethnicity or by directly assessing a person's cultural values. Moreover, whilst a range of moderating factors were examined, some of which may be of cultural and theoretical importance, a limitation was that the current thesis design described in subsequent chapters did not enable an examination of these further.

2.4.3. Concluding remarks

This meta-analysis provides an extensive summary of the pooled effect sizes of a range of correlates of personal stigma in psychosis. This study also uncovered a range of moderators effects, thus building on existing reviews of personal stigma (Dubreucq et al., 2021; Gerlinger et al., 2013) by demonstrating how cultural as well as demographic factors including age, sex and education can influence the ways in which the process of personal stigma unfolds. These findings are not only of theoretical

importance, but can also help inform clinical practice by, for instance, highlighting how in certain demographic groups, symptoms might serve as particularly strong triggers for developing internalized stigma, or by recognizing the role that someone's cultural background can have on the self-stigma process. Future studies should consider these study level moderators further, through investigating their influence at an 'individual' level. This might also help continuing efforts improve interventions to empower service users in order to reduce internalised stigma (Alonso, Guillén, & Munõz, 2019; Yanos, Lucksted, Drapalski, Roe, & Lysaker, 2015). Finally, this meta-analysis further demonstrated the damaging effect of stigma and discrimination experiences happening at cultural, structural and interpersonal levels, highlighting the importance of continued work at reducing mental health stigma in society (Stangl et al., 2019). This is particularly important for conditions involving psychosis, where discrimination and societal stigma continue to prevail.

Chapter 3. Main Study rationale - Improving psychological treatments for psychosis: Introducing Metacognitive Training into standard psychological care

Since the 1950's 'pharmacological revolution', antipsychotic medication remains the first line treatment for positive symptoms (Rae, Duncan, & Krishnadas, 2020; Tandon, 2011). In Scotland figures from 2017/18 showed that a total of 99, 280 patients received antipsychotic agents, and this rate has been gradually increasing with the figures in 2017/18 being 36.4% higher than in 2009/10 (NHS Scotland Information Services Division, 2018). Meta-analyses of antipsychotics tend to report effect sizes in the moderate range in reducing symptoms (Davis, Chen, & Glick, 2003; Huhn et al., 2019; Leucht et al., 2013). A recent, and to date largest, network meta-analysis including 402 studies found over-all beneficial effects of antipsychotics in reducing acute symptoms in comparison to placebo, with mean effect sizes ranging from 0.89 to 0.03 (Huhn et al., 2019). However, medication adherence is often poor, and although reasons for non-adherence vary (Haddad, Brain, & Scott, 2014) problematic side-effects as well as lack of insight often emerge as important contributors (Haddad et al., 2014; Kaar et al., 2019; Moritz et al., 2009). There is therefore a clear need to improve treatments for psychosis further. Unfortunately, when both clinical and social criteria are taken into account, recovery rates for those diagnosed with schizophrenia spectrum disorders tend to be low. A meta-analysis by Jääskeläinen and colleagues of 50 studies with 8994 participants reported a median recovery rate of 13.5%, where a median annual recovery rate of 1.4% led to estimations of a 14% recovery rate across 10 years (Jääskeläinen et al., 2013). These figures in combination with the continuing low quality of life, low functioning and lack of employment for individuals with psychosis, highlights the importance of effective evidence based psychological interventions to further improve outcome (Correll, Rubio, & Kane, 2018). Particularly, as antipsychotic medication does not

address other common issues such as feelings of low self-worth and self-stigma, discussed in the previous chapter, this further highlights the importance of good adjunctive psychosocial treatments to facilitate long term recovery (Correll et al., 2018; Dixon et al., 2010; Kane et al., 2016; Volavka & Vevera, 2018). Evidence based psychological interventions for psychosis are also important considering the issue of treatment resistance, where between one-fifth and one-third of patients fail to show sufficient response to antipsychotic medications; a finding that has remained relatively constant over time (Conley & Buchanan, 1997; National Institute for Health and Care Excellence, 2014; Prien & Cole, 1968). There are therefore clinical as well as economic reasons to improve existing alternative treatment approaches, in order to successfully manage symptoms and increase quality of life for individuals with psychosis. Furthermore, effective psychological treatments not only form important complements to antipsychotic medications, but may also aid in facilitating safe antipsychotic dose reductions strategies for individuals who may benefit from this (Correll et al., 2018; Huhn et al., 2020).

3.1. Cognitive behavioural therapy for psychosis

For the first part of the 20th century, psychoanalytically derived therapies represented the key approaches for treating so called 'neuroses' (Rado, 1939) . However individuals with psychosis, seen as suffering from an organic brain disease, were instead placed in custodial care in mental institutions and often prescribed medications and electroconvulsive therapy (Bürgy, 2008; Mander & Kingdon, 2015). Understandings surrounding the treatment of psychotic symptoms were, in the early part of the 20th century, in large part shaped by the ideas of psychiatrist and philosopher Karl Jaspers, who described delusional beliefs as "ununderstandable"

and therefore not amenable to psychological interventions (Andrade Loch, 2019). Jaspers "ununderstandbility" of psychotic symptoms was, however, challenged by Scottish psychiatrist R. D Laing who, critical of biomedical models, emphasised the importance of seeing psychotic behaviour as *meaningful* ways of expressing psychological distress (Laing, 1960; Mander & Kingdon, 2015). Eventually, the turn of the 20th century saw a change in attitudes, where an increased optimism for using psychological treatments for psychosis started emerging (Morrison, Renton, Dunn, Williams & Bentall, 2004). However, it has been argued that the current DSM-5 definition of delusions as "fixed beliefs that are not amenable to change" (APA, 2013 p. 87) still has remnants of Jaspers definition lingering (Cupitt, 2019). Moreover, as mentioned in Chapter 1, the fact that a mere 23% of individuals with schizophrenia have been offered psychotherapy might still reflect a structural scepticism to the idea that talking therapies are beneficial for individuals diagnosed with schizophrenia and related conditions (Cooke & Kinderman, 2018; Larkin & Simpson, 2015).

The so called First Wave of interventions used to treat psychoses utilised experimental approaches, such as those offered by Skinnerian psychologists, where behavioural modification techniques (e.g. Ayllon & Azrin, 1968; Paul & Lenz, 1977) as well as other family behavioural interventions (Falloon et al., 1985) were used as adjuncts to neuroleptics. The success of such approaches helped bolster further developments of psychological interventions for psychosis (Morrison et al., 2004). Out of these approaches, Beck (1976) developed cognitive behavioural therapy, at the time focussing mainly on emotional disorders. Even though Beck had previously tried psychodynamic approaches to treat patients with chronic psychosis (Beck, 1952), his shifting attention toward cognitive treatments led to a focus on anxiety and depression

(Mander & Kingdon, 2015). However, from the late 1980's onwards, researchers started to more fully develop CBT techniques for psychosis, referred to as the Second Wave of Interventions, where a shift towards reducing distress through a focus on appraisal of experiences within therapy became central (Kingdon & Turkington, 1994; Tarrier, Harwood, Yusopoff, Beckett, & Baker, 1990).

According to Beck's model of emotional disorders, on which CBTp is based, psychological distress and negative feelings are not solely caused by events themselves, but are evoked by individuals' thoughts and perceptions of these events. These negative feelings are in turn often maintained by unhelpful thinking patterns and behavioural coping strategies (Beck, 1964; Ellis, 1962). A key principle of the original cognitive model is Beck's conceptualization of three levels of cognition, namely: core beliefs, dysfunctional assumptions and negative automatic thoughts (Fenn & Byrne, 2013). Negative core beliefs represents deeply held negative schemas about the self (e.g. "I'm useless"), others ("other people cannot be trusted") and the world (e.g. "the world is an unjust place"). In accordance with stress-vulnerability models, these beliefs are often shaped in childhood and influenced by early life experiences (Fenn & Byrne, 2013). Negative core beliefs can in turn lead people to form dysfunctional assumptions including conditional ones (e.g. "If others find out what I am really like then they will reject me") or rules (e.g. "not trying is better than to risk failure"). The final level of cognition are negative automatic thoughts, which are unconscious and often arise by reflex. In depression, these automatic thoughts often revolve around themes of negativity about the self (e.g. "As always, I will fail"), whereas in other conditions such as anxiety these tend to revolve around overrating risk and undervaluation of one's ability to cope (Fenn & Byrne, 2013). Such thoughts

are often triggered when an event or experience either clashes or matches with an individual's underlying assumption, which is likely to activate schemas that in turn lead to automatic thoughts or memories (Morrison et al., 2004). These negative feelings are in turn often maintained by unhelpful thinking patterns and behavioural coping strategies (Beck, 1964; Ellis, 1962). Such thinking patterns and in particular certain behavioural responses may then further reinforce unhelpful assumptions. For instance, avoidance of certain situations due to fear, may unintentionally increase beliefs around danger of a particular event whilst also giving less opportunity for the unhelpful schema to be updated (Mander & Kingdon, 2015). Beck (1995) summarises the key elements of CBT as follows:

- Collaborative with active participation
- A strong therapeutic alliance
- Structures and time limited
- Goal and recovery oriented
- Formulation driven
- Uses a variety of cognitive and behavioural techniques
- Skills are applied and generalised through homework

The cognitive process in CBT is often depicted with the "ABC" acronym, where A is the *activating event* which can refer to any observable experience, B is *a belief* which refers to beliefs and thoughts about the activating event, whereas C is *the consequence,* referring to the emotional as well as behavioural result of the event including its accompanying thoughts and beliefs. The ABC model is often explained to clients in order to help them identify their own thinking pattern and behaviours (Landa, 2017). By equipping individuals with tools to both identify and modify unhelpful cognitive patterns, CBT fundamentally seeks to teach individuals to become

their own ‘therapists’ through an increasing understanding of their own cognitive fallacies and how this affects thinking and behaviour (Mander & Kingdon, 2015). CBT applied to psychosis is based on the assumption that distress occur as a result of individual’s appraisals of their experiences. A central feature of CBTp is the underlying assumption that symptoms, such as delusions, are understandable (as opposed to ‘ununderstandable’ (Jaspers, 1913)) and meaningful ways of making sense of anomalous and distressing experiences (Maher, 1988; Mander & Kingdon, 2015). In particular, psychological distress is seen to occur when interpretations of symptoms appear as frightening and culturally impermissible. This presumption is based on studies finding that it is often the appraisal of symptoms, such as voices, as threatening that is often a stronger predictor of distress than voice severity itself (e.g. Brett et al., 2009; Mander & Kingdon, 2015). This was also reflected in the previous meta-analysis chapter in that studies conducted in Western research contexts, where symptoms such as voices are more likely to be appraised as distressing symptoms of ‘brain disease’, showed stronger associations between positive symptoms and stigma. Moreover, within a CBTp framework, a distinction is also not made between ‘normal’ and ‘abnormal’ experiences, but instead the idea that such experiences exist along a continuum across the population, discussed in chapter one, is a fundamental aspect in *normalising* participants experiences (Mander & Kingdon, 2015). Whilst there exists a great deal of variation in how CBTp is delivered with the inclusion or exclusion of a range of therapeutic techniques (Johns et al., 2020), it generally includes the following phases:

Engagement: This phase is particularly important for establishing therapeutic alliance, that is an essential component of CBTp (Brabban et al., 2017). In this stage, the therapist starts to build rapport with the client. within this stage, several techniques

may be employed in order to facilitate engagement, including normalising symptoms, resolving ambivalence and eliciting information about clients beliefs and experiences in a non-confrontational manner (referred to as "Columbo Style") (Landa, 2017).

Assessment: This stage involves a full and collaborative exploration of the clients symptoms and putting them into their life context, as well as exploring other cognitive components and thinking patterns. Landa (2017) outlines the main goals of the assessment phase as follows: identifying problems, gathering of information to guide formulation and test hypotheses, and monitoring of symptoms.

Formulation: Once a detailed assessment has been made, a formulation is developed. A formulation puts the clients experiences together to help better understand their own core schemas as well as unhelpful thinking patterns in the context of their symptoms (e.g. Landa, 2017; Morrison, 2017).

***Goals*:** An important aspect of the formulation process is considering the clients goals which are set through collaborative agreement with the therapist. Goals, whilst being agreed on at the beginning, are often revisited throughout therapy. The goals set within therapy should generally be positive ones aimed at the future and should be specific and straightforward to ensure they are achievable.

Interventions and skill building: Drawing on the formulation and goal setting, a range of interventions are introduced to address the issues that the client may have identified. Within this phase, a range of change strategies will be introduced, including (but not exclusive to) examining advantages and disadvantages of appraisals and responses to certain events (such as hearing voices, paranoia or anxiety), teaching reasoning skills, behavioural experiments, psychoeducation, exploring self-care aspects such as sleep hygiene, role play and skills practicing (e.g. Landa, 2017; Morrison, 2017).

Relapse prevention/consolidation of skills: Toward the end of the therapy, the final few sessions are usually set to ensure that the client feels equipped to utilise the skills developed in therapy after discharge. This can include collating a summary of the goals, the outcome of the therapy and progress. A summary of useful strategies can also be produced in order to help the client to preventing relapses. Based on client needs, a number of booster sessions are sometimes offered, to further aid consolidation of the skills obtained during therapy (Landa, 2017; Morrison, 2017)

3.1.1. Evidence base for Cognitive Behavioural Therapy for psychosis

Since 2002, CBTp has been recommended by UK clinical guidelines as an adjunct to antipsychotic medication (National Institute for Health and Care Excellence, 2014; NICE, 2009), with similar recommendations seen in the Scottish guidelines (Keks, Hope, & Thomas, 2008). Since the first clinical trial of CBTp was published in 1994 (Garety, Kuipers, Fowler, Chamberlain, & Dunn, 1994), a vast range of studies reporting on the efficacy and effectiveness of CBTp on a variety of outcomes have been published (e.g. Morrison et al., 2018, 2020; Pot-Kolder et al., 2018; Sensky et al., 2000; Turkington et al., 2006; Turkington, Kingdon, & Turner, 2002; Van der Gaag, Valmaggia, & Smit, 2014). This is also reflected in the availability of at least 20 meta-analyses on the topic (e.g. Bighelli et al., 2018; Gould, Mueser, Bolton, Mays, & Goff, 2001; Mehl, Werner, & Lincoln, 2015; Sitko, Bewick, Owens, & Masterson, 2020; Wykes, Steel, Everitt, & Tarrier, 2008). However, in spite of the large number of published studies and meta-analytic reviews, the status of CBTp as an effective adjunctive treatment for psychosis remains debated (e.g. Jauhar, Laws, & McKenna, 2019; McKenna & Kingdon, 2014; Thomas, 2015).

The hope offered by early reviews (Gould et al., 2001; Wykes et al., 2008) have been challenged by more recent meta-analyses of CBTp, partly due to increasing study rigour in more recent studies (Jauhar et al., 2014) but also as a result of varying inclusion criteria and target outcomes (Bighelli, Salanti, et al., 2018). For instance the first meta-analysis of seven trials conducted in 2001, concluded that CBTp reduced positive symptoms with an effect size in the moderate range (ES = 0.65), with large long term effects beyond 6 months (ES = 0.93) (Gould et al., 2001). Slightly more modest, yet promising findings were reported in a large and well known meta-analysis by Wykes and colleagues including 34 CBTp trials (Wykes et al., 2008). They found CBTp to exert significant effects on target symptoms, positive and negative symptoms as well as functioning, social anxiety and mood with effect sizes in the small-medium range (ES's = 0.35 - 0.44). However, whilst trial quality did not moderate the main effect on positive symptoms, secondary outcomes including mood, anxiety and negative symptoms were no longer significant when only methodologically adequate studies were considered (Wykes et al., 2008). A year later, NICE (2009) concluded that CBT for psychosis reduces symptoms in the short and long term, effectively assists recovery, reduces hospitalisation rates and is cost-effective.

However, as alluded to in Chapter 1, the therapeutic optimism of CBTp has been questioned more recently. Jauhar and colleagues highlighted that the meta-analytic results of Wykes et al (2008) were calculated by Glass's method, which can inflate the effect size estimate (Jauhar et al., 2014; Moher, 1998). Their updated meta-analysis including 50 CBTp trials in 2014, calculated using Hedges'*g,* reported more modest findings of a pooled effect of 0.33 for over-all symptoms and 0.25 for positive

symptoms (Jauhar et al., 2014). Blinding of assessors played a significant role for the outcome, with effect sizes moving from the moderate to small range for masked studies (ES's 0.62 vs. 0.15 for over-all symptoms, and 0.57 vs. 0.08 for positive symptoms). The authors therefore concluded that the effects of CBTp were, small, at best, and in a subsequent Maudsley debate, Peter McKenna argued that CBTp had been "oversold" (McKenna & Kingdon, 2014). This scepticism further increased with the publication of a meta-analysis in 2018 by the same research group (Laws et al., 2018). Laws and colleagues reviewed studies examining the effect of CBTp on other outcomes including functioning, distress and quality of life. They included 25 studies assessing functioning at end of therapy, with a pooled effect size in the small range (ES = 0.25). However, whilst they found no significant effect of blinding or whether the study used an active control condition vs. TAU, the 16 studies that provided follow-up data with a medium follow-up time of 12 months revealed a non-significant effect size of 0.10. Whilst the eight studies reporting on data for distress revealed a small to medium effect (ES = 0.37), this became non-significant when publication bias was corrected for (ES = 0.18). Additionally, CBTp had no effect on quality of life at end of treatment (ES = 0.04) in the 9 studies reporting on this, with the effect size being reduced to 0.01 when bias was adjusted for. This further led the authors to question the effect of CBTp on other key outcomes, such as distress and functioning, both having been cited as important targets of CBTp (e.g. Birchwood & Trower, 2006; SIGN, 2013). In a subsequent commentary descriptively titled: *Why cognitive behavioural therapy should stop being offered to people with schizophrenia* published later that year, Keith Laws criticised the outdated evidence base used by NICE as a foundation for their recommendations, and argued that "…their endorsement of CBT is in dire need of reconsideration" (Laws & Gournay, 2018, p. 201). That same year,

the Cochrane Collaboration published an updated review on CBTp and concluded that there was no convincing evidence of the superiority of CBTp over other, often less sophisticated (and thereby less expensive), therapies (Jones et al., 2018), further adding scepticism to the efficacy of CBTp for psychosis (e.g. Jauhar et al., 2019)

3.1.2. CBTp should be improved, not dismissed

There are, however, reasons to question the scepticism towards CBTp, and in particular, claims that CBT should no longer be offered to individuals with psychosis (Laws & Gournay, 2018). Firstly, it is important to highlight that debates regarding declining size estimates of CBT over time is not unique to the treatment of psychosis, but have also occurred for other mental health conditions where CBT is recommended (e.g. see Johnsen & Friborg, 2015 and Ljótsson et al., 2017). This may therefore also reflect that over time as meta-analyses include an increasing pool of larger and more rigorous RCT's, as well as comparisons between CBT and other effective psychological therapies as opposed to TAU or wait-list controls, effect size estimates become more modest (Baardseth et al., 2013; Cuijpers et al., 2021). Importantly, the disbelief in CBTp is far from shared and meta-analytic results, as well as interpretations of these are often notably contradictory (Jauhar et al., 2014; Laws et al., 2018; Turner, Burger, Smit, Valmaggia, & van der Gaag, 2020; Turner et al., 2020). Explanations for this likely include varying meta-analytic target outcomes as well as different criteria for including studies (McKenna, Leucht, Jauhar, Laws, & Bighelli, 2019). In particular one issue with several meta-analyses that have reported limited effects of CBTp (Jauhar et al., 2014; Jones et al., 2018; Laws et al., 2018) is that these reviews have included RCT's utilising varying and often broad CBTp protocols, leading to the combination of heterogenous trials, targeting a variety of

symptoms, which likely undervalues the effects that CBTp can achieve in alleviating specific symptoms (Lincoln & Peters, 2019; Thomas, 2015). For instance, the same year as the Cochrane Collaboration concluded that CBTp was not superior to other psychological interventions (Jones et al., 2018), Bighelli, Salanti, et al., (2018), conducted a network meta-analysis of the effect of CBTp specifically tailored to address positive symptoms. With network meta-analytic methods having the advantage of not being limited to studies where different treatments were directly compared (Kanters et al., 2016), they included a total of 53 RCT's, out of which 40 provided data on CBTp. They found that CBTp significantly reduced positive symptoms both in comparison to TAU (ES = -0.30, k = 18), and inactive control interventions (ES = -0.29, k = 7), as well as supportive therapy (ES = -0.47, k = 2). Moreover, in contrast to earlier reviews that reported limited effects of CBTp on positive symptoms for blinded studies (e.g. Jauhar et al., 2014), they found that when only blinded studies were considered the superiority of CBT remained, both in comparison to TAU and inactive controls (Bighelli, Salanti, et al., 2018). The advantage of CBTp over other therapies was also demonstrated more recently by Turner et al. (2020). They published a meta-analysis of CBTp versus other psychological interventions, utilising individual participant data from 14 studies. By going beyond relying on a single mean effect from each study, this method allows for a more powerful investigation of treatment effects across individuals (Berlin, Santanna, Schmid, Szczech, & Feldman, 2002). They found that CBTp was superior to other psychological interventions in terms of reducing over-all symptoms (PANSS total, PANSS general), whilst no advantage of CBTp was seen for positive as well as negative symptoms. Although their results were based on only 14 studies (due to relying on availability of individual participant data) these studies were

methodologically robust, with all studies included relying on blinded assessments. Hence, varying meta-analytic methodologies, as well as criteria for including studies appears to influence meta-analytic outcomes. Taken together, these findings indicate that, there is an advantage of CBTp over other psychotherapies in reducing over-all symptoms (Turner et al., 2020) but that more tailored, focused approaches are more beneficial when targeting positive symptoms (Bighelli, Salanti, et al., 2018).

Studies have also looked at the effect of CBTp specifically tailored towards delusions or hallucinations. In the same year as Jauhar et al (2014) published their meta-analysis, Van der Gaag et al. (2014) conducted a meta-analytic study investigating this. With more stringent inclusion criteria, only looking at studies examining the effect of formulation based CBTp targeted towards hallucinations and/or delusions, their study included 18 RCT's and revealed effect sizes in the small to moderate range (0.36 for delusions and 0.44 for hallucinations). Study quality impacted on outcomes differentially, in that the effect sizes for hallucinations increased, both when only blinded studies were considered (ES = 0.46) and when only active treatments were used as comparisons (ES = 0.49). The effect size for delusions, however, was reduced for blinded studies (ES = 0.24) and when active control comparisons were considered (ES = 0.33), suggesting that CBTp might be more effective for alleviating hallucinations. An update of this meta-analysis was recently published (Turner, Burger, et al., 2020), which included 20 additional RCT's. The results were similar to their earlier meta-analysis, with effect sizes in the small to moderate range for hallucinations as the primary outcome target, when CBTp was compared to both TAU (ES = 0.41) and active control interventions (ES = 0.42) for studies considered at low risk of bias. For delusions as the primary outcome target,

effects were lower when CBTp was compared to TAU (ES = 0.32) and remained non-significant when compared with control interventions (ES = 0.30) for studies considered at low risk of bias. Hence, in spite of the scepticism of some researchers (e.g. Laws & Gournay, 2018, p. 201) CBTp appears to show efficacy in symptom reduction, albeit with effect sizes in the small to moderate range for delusions whilst being more effective at ameliorating hallucinations (Turner, Reijnders, et al., 2020; Van der Gaag et al., 2014). However, its effectiveness in improving secondary outcomes such as functioning, quality of life and negative symptoms may be less supported (Laws et al., 2018), even though meta-analytic methods of including 'non-specific' CBT protocols may have underestimated these effects.

Nevertheless, even though an effect size in the small-moderate range is far from optimal, rather than reject CBTp, this calls for the importance of improving existing CBTp approaches further. David Kingdon also highlighted a clear discrepancy in scrutiny seen for CBTp compared to that seen for certain antipsychotics, noting that an effect size of 0.3 is similar to that of clozapine compared with other antipsychotics. Yet, clozapine is, in spite of its potentially fatal side-effects, accepted as an effective treatment option (McKenna & Kingdon, 2014). Perhaps such scrutiny placed on psychological therapies reflects an underlying societal scepticism that still remains regarding whether symptoms of psychosis are suitable to being treated with talking therapies (Bürgy, 2008; Ellett & Kingston, 2019). Nevertheless, as CBTp has been shown to exert smaller effects on delusions, it appears that it would benefit on honing in on improving treatments to better target these symptoms (Cupitt, 2019; Sauvé et al., 2020). A meta-analysis by Mehl et al (2015) who investigated the effect of CBTp on delusions illustrated the differential effects of different CBTp

approaches, whilst also suggesting avenues for improvement. When all studies were taken together, CBTp reduced delusions in comparison to TAU, with an effect size in the small range (ES = 0.27). However, these benefits were not maintained in the long term (ES = 0.16), and were not seen when CBTp was compared with active treatments (ES's = 0.16 post treatment and -0.04 at follow-up). Nevertheless, interestingly, they found that CBTp interventions that focussed on cognitive and emotional factors involved in the formation of delusional thinking (e.g. Waller et al., 2015) were significantly more effective than studies using more generic CBTp approaches (mean difference: 0.33), suggesting that focussing on causal mechanisms involved in delusion formation and maintenance may be an important target for improving existing CBTp approaches.

Moreover, in addition to treating positive symptoms, Chapter 2 also demonstrated the centrality of personal stigma to the experience of psychosis, and highlights the importance to target internalised stigma as a part of the recovery process. However, findings from studies that have utilised individualised cognitive-behavioural interventions, mainly targeting self-stigmatising cognitions through cognitive restructuring, have shown limited improvements in internalised stigma (Morrison et al., 2016; Wood, Byrne, Enache, & Morrison, 2018). For instance, in a small pilot study, Morrison et al., (2016) found that up to 12 sessions of a cognitive therapy-based self-stigma intervention did not result in significant self-stigma reductions, even though some improvements were seen on secondary measures of internalised shame, depression, hopelessness and self-rated recovery. More recently, Wood and colleagues compared a CBT based self-stigma intervention to a psychoeducational programme of stigma in an inpatient sample. Findings indicated

that neither of the interventions led to improvements in internalised stigma, even though there were indications that the psychoeducation group faired somewhat better on several secondary outcomes including self-esteem and subjective recovery (Wood et al., 2018). Even though these were both small pilot studies, they appear to suggest room for improvement regarding addressing internalised stigma within CBT. Somewhat mirroring the findings of Wood et al., 2018, a recent review suggested that internalised stigma interventions that had utilised psychoeducation formats appeared to be more promising in regard to reducing internalised stigma (Alonso et al.., 2019) potentially suggesting that CBTp based interventions aiming to reduced stigma might benefit from incorporating more psychoeducational elements. The next section will discuss a new therapeutic approach that specifically focuses on such cognitive mechanisms, whilst also targeting issues of stigma and self-esteem, namely Metacognitive Training (Moritz & Woodward, 2007b).

3.2. Metacognitive training for psychosis

The need to improve current therapeutic approaches, in combination with the continuing issue of poor access to CBTp (Royal College of Psychiatrists, 2012) have given rise a range of alternative therapeutic programmes (e.g. see Ellett & Kingston, 2020). In contrast to traditional CBTp, generally considered content-oriented (Longmore & Worrell, 2007), more recent therapeutic approaches have shifted focus towards targeting the underlying cognitive process involved in the formation psychosis (Cupitt, 2019). One such recently developed and promising approach is Metacognitive training (MCT) introduced by Moritz & Woodward (Moritz & Woodward, 2007b; Moritz, Woodward, & Burlon, 2005). MCT is founded on a large body of research that has demonstrated that metacognitive capacity (the ability to

reflect on, or *think about one's own thinking;* (Dunlosky & Bjork, 2013), can be compromised in psychosis and has been linked to the emergence and maintenance of delusions (Fine, Garnder, Craigie, Gold & Hopping, 2007; Vohs et al., 2014). MCT evolved from concepts used in CBT, cognitive remediation (CR) and psychoeducation (Moritz & Woodward, 2007). Like these approaches, MCT aims to alleviate stressful experiences in psychosis, but does so through a focus on enhancing metacognitive capacity through increasing awareness of cognitive processes and biases often seen in psychosis (Moritz & Woodward, 2007). Specifically, the intervention is founded on a large body of empirical research demonstrating the presence of several cognitive biases in psychosis that are particularly relevant for the formation and maintenance of delusional thinking (Garety & Freeman, 1999; Moritz & Woodward, 2007). In particular, Freeman and colleages (Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001), argue that cognitive operations involved in delusion formation and maintenance can be divided into two main mechanisms, namely obtaining confirmatory evidence such as biases in memory and attribution congruent with delusional content as well as dismissing disconfirmatory evidence (Coryn, Schröter & Hassen, 2009). Garety & Freeman (2001) list a number of cognitive biases as particularly informative with respect to obtaining confirmatory evidence. For example, a jumping to conclusions (JTC) bias that has been commonly observed in psychosis (Dudley, Taylor, Wickham & Hutton, 2015) limits the amount of information gathered potentially leading to mis-interpretations of events (Garety, Hemsley, & Wessely, 1991). Furthermore, attributional distortions may lead to externalization of negative incidents (e.g., Bentall, Kinderman, & Kaney, 1994), whilst theory of mind difficulties may lead to errors in reading the intentions of other people (e.g., Frith, 1994). These biases, in combination

with a tendency to reject disconfirmatory evidence (referred to as a Bias Against Disconfirmatory Evidence; BADE) are thought to be important in the maintenance of delusional thinking and are therefore the main focus of MCT (Moritz and Woodward, 2007; Woodward, Moritz, Cuttler & Whitman, 2006). These cognitive processes will now be discussed in more detail.

3.2.1 Hasty information gathering: The jumping to conclusions bias

The Jumping to Conclusions (JTC) bias is the most researched cognitive bias in psychosis, where findings have consistently demonstrated that individuals with delusions have a tendency to discontinue data gathering prematurely and arrive at firm conclusions on the basis of limited evidence (Dudley & Over, 2003; Garety & Freeman, 1999; McLean, Mattiske, & Balzan, 2017). In line with this hypothesis, biases in perceptions of events are affected by early acceptance of interpretations that are thought to lead to both the formation and maintenance of delusional thinking (Csontos, 2018). For example, a flickering image on the TV might lead to someone to 'jump' to the hasty decision that they are being spied on. The presence of a JTC bias is typically measured using versions of *the beads task* (Huq, Garety, & Hemsley, 1988; Phillips & Edwards, 1966). In this task, that can be presented as a computerised version or using physical beads (Dudley, Taylor, Wickham, & Hutton, 2016; Takeda et al., 2018), the participant is shown a pair of containers each holding a number of beads (typically 100) of two different colours, such as red and green. They are instructed that each container hold these coloured beads in equal but opposing ratios, such that one container might contain 85% green and 15% red beads whereas the other hold 85% red and 15% green beads. After participants have been informed of the proportions of the beads the containers are hidden from view. Next, the computer

selects one bead from one of these containers and 'shows it' to the participant before putting it back. This is repeated (always using the same container) until the participant is ready to decide which of the two containers the beads are drawn from (Garety & Freeman, 1999). The participants are told that beads are drawn at random, even though the sequence of colours is predetermined in accordance to their respective ratios. The most common version of this task is the "draws to decision" (DTD) paradigm whereby the task is terminated once the participant has made a decision about what container the beads are drawn from, where a decision after two or fewer beads is generally taken to indicate the presence of a pronounced JTC bias (Garety & Freeman, 1999). However, variations of the JTC paradigm exists, such as using coloured fish in lakes in place of beads (Moritz & Woodward, 2005; Woodward, Munz, LeClerc, & Lecomte, 2009), or using more difficult colour ratios of 60:40 (e.g. Dudley, John, Young, & Over, 1997).

Studies on the JTC bias have consistently shown that individuals with psychosis tend to make hastier decisions than individuals not experiencing psychosis (McLean et al., 2017; Serrano-Guerrero, Ruiz-Veguilla, Martín-Rodríguez, & Rodríguez-Testal, 2020). However, findings in regard to whether the JTC bias is related to a diagnosis of schizophrenia in general or is characteristic of delusions in particular, irrespective of DSM-diagnosis have been somewhat unequivocal (McLean et al., 2017; Menon, Pomarol-Clotet, McKenna, & McCarthy, 2006). Nevertheless, in conjunction with dimensional depictions of psychosis (Jim Van Os & Reininghaus, 2016) more recent evidence have converged in favour of the latter proposition whereby research on the JTC bias appears to support a cross-diagnostic approach to the emergence of delusions (Reininghaus et al., 2019). For instance, a recent meta-

analysis by McLean, Mattiske, & Balzan (2017) found that the JTC bias was associated with delusions across a range of diagnoses, where currently deluded subjects displayed a higher JTC bias than those with psychosis not currently experiencing delusions, supporting claims that the JTC bias might be particularly pertinent to delusion formation (Dudley, Taylor, Wickham, & Hutton, 2016; McLean et al., 2017). Moreover, in line with continuum approaches to psychosis (Reininghaus et al., 2019), meta-analytic findings have also reported associations between draws to decision and delusion proneness across non-clinical samples further highlighting a role of the JTC bias in delusion formation even at early 'non-clinical' stages (Reininghaus, Rauschenberg, et al., 2019; Ross, McKay, Coltheart, & Langdon, 2015). The small number of longitudinal studies conducted on the JTC bias and subsequent delusion proneness have further supported this notion (e.g. Peters & Garety, 2006; Rauschenberg et al., 2020; Rodriguez et al., 2019). For instance, Rodriguez and colleagues found that in individuals experiencing FEP who had a pronounced JTC bias at baseline were significantly more likely to exhibit poor clinical outcomes four years later (measured as number of inpatient stays, being detained under the Mental Health Act and remission) compared with FEP patients without a pronounced JTC bias at baseline, whilst controlling for socio-demographic variables, IQ and symptoms (Rodriguez et al., 2019). Hence in light of findings robustly linking the JTC bias with delusions proneness and clinical outcome, the JTC bias represents an important therapeutic target within MCT.

3.2.2. Social Cognition: Attributional style and theory of mind

The programme also builds on findings within the field of social cognition and therefore addresses both attributional style and Theory of Mind (ToM) (Moritz &

Woodward, 2007b). In particular, findings have consistently reported biases in attributing information from social contexts in people with psychosis (Kaney & Bentall, 1989; Lincoln et al., 2010). A common finding among the general population is that of a tendency to attribute positive events to oneself whilst negative events tend to be externalised; a healthy mechanism thought to preserve self-esteem (Kinderman, Kaney, Morley, & Bentall, 1992; Zuckerman, 1979). However, individuals with psychosis have been shown to have an exaggerated version of this 'healthy' bias, and in particular, tend to show what has been termed an *external attribution bias* (Garety & Freeman, 1999; Penn, Sanna, & Roberts, 2008). The majority of work on attributional style in psychosis has focussed on paranoid and persecutory delusions, where individuals with acute paranoia have been shown to exert an external-personal bias when explaining causes of negative events, i.e. have a tendency to blame others rather than situations; also referred to as a personalising bias (e.g. Aakre, Seghers, St-Hilaire, & Docherty 2009; Bentall, Corcoran, Howard, Blackwood, & Kinderman 2001; Kinderman & Bentall 1997). Whilst this has been postulated as a mechanism for protecting an increasingly fragile self-esteem, it unfortunately comes at the peril of developing a progressively negative view of others (Penn et al., 2008). To add to the vicious cycle, paranoid states often impedes such attributions from being adjusted in light of new and contradictory information leading to the maintenance of such interpretations (Richard P. Bentall et al., 2001; Penn et al., 2008). Like the JTC bias, studies have indicated that this bias is likely state-dependent, as external and personalising biases have been observed in those who are currently experiencing delusions, whereas patients in remission tend to perform similar to healthy controls (Aakre et al., 2009; Diez-Alegría, Vázquez, Nieto-Moreno, Valiente, & Fuentenebro, 2006). However, research on the specific role of attribution biases in psychosis have

been mixed and remain debated, as studies have also indicated the presence of other attribution patterns in psychosis, such as externalising both negative and positive events (Lincoln et al., 2010) as well as tendencies for increased self-blame (Mehl et al., 2014). It has therefore been suggested that it might not be the attributional style *per se* that that is characteristic to psychosis, but instead a tendency towards making monocausal (one-sided) attributions (Mehl et al., 2014; Moritz, Bentall, Kolbeck, & Roesch-Ely, 2018; Moritz, Köther, Hartmann, & Lincoln, 2015). Interestingly, studies have indicated that a monocausal attributional style is unrelated to the JTC bias across both healthy controls and individuals with psychosis (Moritz et al., 2018, 2010). This highlights the importance of attribution being targeted in addition to other biases, and is therefore addressed as a specific module in MCT (Moritz et al., 2018).

The programme also targets social cognition through addressing ToM, as deficits in this area have been consistently reported in people with psychosis (e.g. (Bonfils et al., 2017; Frith & Corcoran, 1996; Park, 2018; Savla et al., 2013). ToM refers to the ability to infer other people's mental states and intentions, and is therefore reliant on the capacity to view the world from the perspective of others (Frith, 2004). Even though ToM deficits seen in psychosis might represent an artefact of general cognitive difficulties (Fett et al., 2011; Halverson et al., 2019), a recent study indicated that ToM deficits were evident in patients with psychosis after controlling for IQ levels (Park, 2018). As difficulties with ToM can lead to troublesome misinterpretations of others intentions, aberrant ToM mechanisms have been postulated as a relevant factor in delusion formation and maintenance, and might also lead to interpersonal difficulties (Moritz & Woodward, 2007b). For instance, individuals with psychosis may fail to consider the wider social context and instead

place an excessive focus on particular details, such as facial expressions, or gestures which lead to misinterpretations of others intentions (Balzan, Moritz, et al., 2019). Whilst ToM deficits and a JTC bias represent distinct neurocognitive mechanisms (Takeda et al., 2018; Woodward, Mizrahi, Menon, & Christensen, 2009) it is likely that when difficulties in reading others intentions are combined with a hasty decision making style, this might be particularly detrimental for interpersonal relationships and social functioning (Moritz & Woodward, 2007b). However, whilst ToM difficulties are a common feature of psychosis, MCT does not aim to improve social cognitive capacities per se, but instead aims to make individuals aware that false judgements in regard to social situations can lead to misinterpretations and interpersonal difficulties, in order to reduce overconfident false social judgements (Köther et al., 2017).

3.2.3. Bias against disconfirmatory evidence and overconfidence in errors

In addition to biases that might lead to hasty decision making and aberrant interpretations of social situations, another cognitive bias referred to as the a Bias Against Disconfirmatory Evidence (BADE) has been postulated as a mechanism that may underlie the maintenance of delusional beliefs (Buchy, Woodward, & Liotti, 2007; Moritz & Woodward, 2007a). BADE refers to a tendency to reject evidence or information that may disconfirm a specific belief or interpretation of an event (Woodward, Moritz, Cuttler, & Whitman, 2006). It should be noted that most humans have a tendency to cling on to first impressions and to favour information that confirms existing beliefs (Klayman, 1995). Referred to as the confirmation bias (Wason, 1960), this has been studied within social psychology and political studies in particular (e.g. Knobloch-Westerwick, Mothes, Johnson, Westerwick, & Donsbach, 2015; Knobloch-Westerwick, Mothes, & Polavin, 2020; Westerwick, Johnson, &

Knobloch-Westerwick, 2017). However, this tendency has been shown to be particularly salient among individuals with delusions, and is thought to explain why delusions are often firmly maintained in spite of the presence of disconfirming information (Woodward, Moritz, Cuttler, et al., 2006). The presence of a BADE is often measured by a procedure established by Woodward, Moritz, & Chen (2006). In this task, participants are presented with ambiguous scenarios (which can be presented either verbally or with pictures), where more information is gradually provided. Participants are then asked to rate, and subsequently re-rate the plausibility of four different interpretations. Two interpretations initially appear plausible ('lures') but become increasingly implausible as the scenario unfolds, whereas one 'true' interpretation appears less plausible initially, but becomes more plausible as more information emerges. There is also an 'absurd' interpretation that remains implausible through the whole scenario. The strength of this bias is estimated from the ratings of the lure interpretations, where a failure to downgrade the lure ratings in light of new information is indicative of a higher BADE (Woodward, Moritz, & Chen, 2006). As with the JTC bias, a BADE has been shown to be particularly elevated in individuals with current delusions across a range of diagnoses (McLean et al., 2017), and has also been demonstrated correlate positively with subclinical delusion like beliefs in non-clinical populations (Bronstein & Cannon, 2017; Buchy et al., 2007). The concept of BADE represents a related but somewhat narrower construct encompassed within research on belief flexibility, which in addition to BADE also refers to the assessments of flexibility in thinking in regards to delusions (Wessely et al., 1993). The concept of belief flexibility emerged in light of the development of a clinical research tool regarding delusional beliefs, namely the Maudsley Assessment of Delusions Scale (MADS; Wessely et al., 1993). This tool encompasses items relating

to the possibility of being mistaken (PM); ability to identify alternative explanations for ones own beliefs (AE) and changing ones conviction in light of contradictory evidence (RTHC). Hence, whilst BADE refers to a bias that is relevant to the emergence of disconfiratory evidence that, like JTC bias, is measured using a delusion neutral task (Woodward, Moritz, & Chen, 2006), belief flexibility refers to reasoning regarding delusions involving the metacognitive ability to 'disengage' and critically reflect on ones own beliefs (Ward & Garety, 2019). Because failure to integrate new information and update existing beliefs are thought to represent the central mechanism into why delusional beliefs tend to remain 'fixed', the focus of MCT on BADE, and the normalisation of these processes ("to err is human") represents an important aspect of MCT (Balzan et al., 2019).

In addition to rejecting disconfirmatory evidence, metamemory has also been addressed as an important feature that might influence delusional ideation (Moritz & Woodward, 2007b). Whilst poor and vague memory recall has been reported in psychosis (Fioravanti, Bianchi, & Cinti, 2012) and other diagnoses such as major depression (Marvel & Paradiso, 2004), a common feature seen in psychosis is an overconfidence in recalling memories when these are inaccurate, whilst being underconfident in accurate memories (Balzan, 2016). Findings of overconfidence in false memories become increasingly relevant when considering long standing findings that false memories are also more common in psychosis (Moritz, Woodward, Cuttler, Whitman, & Watson, 2004). These mechanisms are thought to have a particularly important role in raising conviction in an individual's delusional beliefs, thereby playing a key role in both the formation and the maintenance of delusions. As with the other cognitive biases, heightened false memories appear to be a state marker

associated with delusions in particular, rather than a trait related psychosis in general. For instance, Bhatt, Laws, & McKenna (2010) found that non-deluded patients with a schizophrenia diagnoses performed similarly to healthy controls on a false memory paradigm, in comparison to those with current delusions that had a significantly higher false recall rate. Therefore, MCT also informs individuals of the fallibility of human memory, where the aim is to facilitate a questioning of vague memories in light of knowing how common false memories are (Balzan et al., 2019). Translated into a real life context, high conviction in false memories, in combination with other biases such as biases in social cognition and hasty decision making all add to the cognitive processes linked to the forming and maintaining delusional thinking, e.g. "I am convinced the person at the bus stop was staring at me – this is evidence I am being persecuted!" (Balzan et al., 2019) As these cognitive models have started developing, researchers have begun to combine theoretical work on these processes. Recently, Moritz et al. (2017) published a two-stage account that merges the JTC bias, BADE and overconfidence in errors. This account postulates that delusional cognitions likely emerge from a lowered decision threshold, leading to premature acceptance of held beliefs in combination with rejecting disconfirmatory evidence, thereby strengthening confidence in said beliefs (Moritz et al., 2017).

Moreover, affective problems, and negative cognitions are also important within psychosis. Indeed, studies have found depressive symptoms to be reported in as many as 90% of those diagnosed with 'non-affective' psychosis (Russo et al., 2014). Therefore, more recent versions of the MCT programme also started including modules assessing depression, which are more closely linked with Beck's model of affective biases in order to also target depressive cognitions (Beck et al., 1979). A

recent addition to MCT were also modules addressing self-esteem and self-stigma (Moritz & Woodward, 2012). As was demonstrated in Chapter 2, there is a strong association between both experienced, perceived and internalised aspects of stigma with positive symptoms, but also depressive cognitions and low self-esteem. Therefore any therapy programme that aims to facilitate long term recovery should also include a focus on these aspects that are all closely linked with, a diagnosis of schizophrenia in general, but also with the specific symptoms that MCT aims to reduce.

3.2.4 Knowledge translation and normalisation

Unlike CBTp that more directly aims to identify and actively modify maladaptive beliefs, MCT therefore targets delusional beliefs through an indirect 'backdoor approach' by a focus on increasing metacognitive capacity through bringing the above mentioned cognitive biases and processes into awareness with the main aim of "sowing the seeds of doubt" (Moritz, Andreou, et al., 2014). One of the core aspects of MCT is therefore knowledge translation, where empirical research on cognitive distortions is conveyed to individuals in an accessible format. The programme integrates psycho-educational information with audio visual exercises, that effectively demonstrates how each bias can work 'in action' and is also a way of maintaining interest and engagement with the training material (Cupitt, 2019). As with CBTp, normalisation also forms an integral part of MCT, whereby it is emphasised that cognitive biases are 'normal' phenomena that everyone are susceptible to, with examples of common urban legends that many people tend to believe in (Cupitt, 2019). This depiction of psychosis as a result of cognitive phenomena and thinking that appears to exist along a continuum is also key, as it reflects more recently

emerging models of psychosis (Van Os & Reininghaus, 2016). After bringing these common biases into participants awareness, MCT also provides participants with alternative thinking styles and tricks to avoid common "cognitive traps". Primarily, what runs through the MCT is a an encouragement to 'take a step back' and to reflect on three fundamental questions:

What is the available evidence? Are there alternative ways of thinking? and *Am I over-reacting?*

Since its first development in in 2003/2004 by Moritz and colleagues (Moritz & Woodward, 2007b), MCT has been updated, where the training is now also available for depression, borderline personality syndromes and obsessive compulsive disorder. The program is available online (https://clinicalneuropsychology.de/metacognitive_training), is free to use, and is currently available in 37 languages. The training for psychosis is available as a group training (MCT), as well as in an individualised format (MTC+), developed more recently (Moritz, Bohn, & Veckenstedt, 2016; Moritz, Veckenstedt, Randjbar, & Vitzthum, 2010). Table 10 outlines the therapy modules in more detail.

Table 10. Metacognitive training modules.

MCT group training Modules*	MCT+ individualised modules
Module 1: Attribution	Unit 1: Therapeutic Relationship & Case History
Module 2: Jumping to conclusions I	Unit 2: Introduction to MCT+
Module 3: Changing beliefs	Unit 3: Case formulation
Module 4: To Empathise I	Unit 4: Attributional styles
Module 5: Memory	Unit 5: Decision making
Module 6: To Empathise II	Unit 6: Changing Beliefs
Module 7: Jumping to conclusions II	Unit 7: Empathising
Module 8: Mood	Unit 8: Memory and Overconfidence
Additional modules:	Unit 9: Depression & thinking
Module I: Self-esteem	Unit 10: Self-esteem
Module II: Dealing with prejudices (stigma)	Unit 11: Living with psychosis and relapse prevention**

*Can be delivered as one or two cycles. ** Covers issues of stigmatisation and dealing with stigma

3.2.5. Evidence base for MCT

The evidence base for MCT, whilst still growing, is promising. Early pilot studies yielded encouraging results, indicating feasibility and safety (Moritz and Woodward, 2007; Aghotor, Pfueller, Moritz, Weisbrod & Roesch-Ely, 2010; Favrod, Marie, Bardy, Pernier & Bonsack, 2011). The program has also received favourable feedback from patients (de Pinho et al., 2020; Erawati, Keliat, Helena, & Hamid, 2014; So et al., 2021; Lam et al., 2015; Moritz, Veckenstedt, Randjbar, Vitzthum, & Woodward, 2011; Moritz, Thoering, et al., 2015; So et al., 2015; Tanoue et al., 2020) and has been deemed more enjoyable and useful when compared to other control conditions

including cognitive remediation (Moritz et al., 2013; Moritz & Woodward, 2007a) and a newspaper discussion group (Aghotor, Pfueller, Moritz, Weisbrod, & Roesch-Ely, 2010). Reflecting this, a meta-analysis found high subjective satisfaction of MCT, with an over-all effect size in the large range (g = -0.84) (Eichner & Berna, 2016). To date, several meta-analytic studies evaluating the effect of MCT on symptom outcomes have also been conducted (Eichner & Berna, 2016; Liu, Tang, Hung, Tsai, & Lin, 2018; Van Oosterhout et al., 2016). Even though early reviews arrived at somewhat conflicting conclusions regarding efficacy on positive symptoms and delusions (Eichner & Berna, 2016; Van Oosterhout et al., 2016), likely pertaining to varying inclusion criteria (Moritz et al., 2016), more recent meta-analyses have confirmed the benefits of MCT on symptomatic outcomes. Liu, Tang, Hung, Tsai, & Lin (2018), meta-analysed 11 studies investigating the effect MCT on delusions where 10 out of the 11 studies were considered high quality that utilised blinded assessments. They found effects in the small-moderate range, both at post-therapy (g = -0.38), and in the longer term over an average period of six months (k = 4, g = 0.35). Moreover, reflecting earlier reviews (Eichner & Berna, 2016), they also found that studies using individualised versions, were significantly more effective in reducing delusions (k = 2, g = -0.90), when compared with studies using group MCT (k = 8, g = -0.19). A more recent meta-analysis also illustrated the beneficial effect of MCT on positive symptoms (Philipp et al., 2019), with an over-all small to moderate effect (k = 19, d = -0.31, p = 0.001). Whilst the study included both randomised (k = 15) and non-randomised (k = 4) studies, sensitivity analyses revealed no significant impact of randomization on outcome of included studies. It is however noteworthy that sub-group analyses revealed that the training program was only significantly superior in studies that compared MCT to cognitive remediation (k = 4, d = 0.39, p = 0.01),

whereas it only bordered significance when compared with TAU (k = 11, d = 0.27, p = 0.09), and was not significantly superior in studies that compared MCT to supportive therapy/psychoeducation (k = 2, d = -0.28, p = 0.31) or newspaper discussion groups (k = 2, d = 0.41, p = 0.17). However, whilst these varying findings might be due to low statistical power (Philipp et al., 2019), a potential factor that was not considered by the authors was whether individualised or group MCT was administered. Upon inspection of studies included in the meta-analysis comparing MCT with cognitive remediation three out of the four studies utilised MCT+ (Andreou et al., 2017; Balzan, Mattiske, Delfabbro, Liu, & Galletly, 2019; Moritz, Veckenstedt, et al., 2011). Hence, in line with the findings of Liu et al (2018) it is likely that their findings could be explained by an increased efficacy of MCT+. In fact, a re-analysis of their data, only including studies conducting individualised versions revealed over-all moderate to strong effects on positive symptoms for randomised and non-randomised studies (k = 6, d = -0.63, p <.0001), as well as when only randomised studies were considered (k = 4, d = 0.64, p <.0001). However, whilst this might be taken to suggest that MCT+ is more effective at alleviating symptoms of psychosis, it is worth considering that a substantially larger number of studies have investigated the group version, and so the evidence base for individualised MCT is still unfolding. In the next sections, results from the group training programme will therefore be summarised first, before moving on to discussing studies investigating the more recently developed individualised MCT+ programme.

3.3.1. Group Metacognitive Training

The group training program has been shown to be effective in reducing psychotic symptoms, where its effect on delusions has been particularly encouraging (Eichner &

Berna, 2016; Liu et al., 2018). More specifically, MCT has been shown to reduce positive symptoms and delusions, both in comparison with TAU (de Pinho et al., 2020; Favrod et al., 2014; Ishikawa et al., 2020; Moritz, Veckenstedt, et al., 2011) and in studies where MCT has been compared with active treatments such as cognitive remediation (Aghotor et al., 2010; Moritz et al., 2013) as well as supportive therapy (Briki et al., 2014). As discussed above, MCT also promotes long term symptomatic change (Liu et al., 2018), where the effects on delusions six month after the intervention has been demonstrated, both in relation to TAU (Favrod et al., 2014; Ho-wai So et al., 2021; Kuokkanen, Lappalainen, Repo-Tiihonen, & Tiihonen, 2014) and cognitive remediation (Moritz et al., 2013). However, whilst one study found that MCT appears to exert some short and long-term benefits on positive and delusional symptom reduction over psychoeducation (Ochoa et al., 2017), another study reported comparable improvements following the two interventions (Ahuir et al., 2018). A large assessor blind RCT reported by Moritz and colleagues also illustrated long term effects of MCT three years after the intervention (Moritz et al., 2014). In this study, Moritz et al. (2013) included a large sample of 150 participants with schizophrenia spectrum diagnoses that were randomized to receive MCT or cognitive remediation training (CogPack®; Marker, 2003). Using an intention-to-treat (ITT) analysis they found that MCT led to significantly greater reductions in positive as well as delusional symptoms. These advantages of MCT over CogPack® were all maintained at the 6-month follow-up (Moritz et al., 2013), and in a subsequent follow-up assessment three years later (Moritz et al., 2014). Moreover, at the 3-year follow-up, they also identified significant improvements in quality of life and self-esteem in the group that had received MCT, indicating that additional 'sleeper' effects can emerge over time. However, it should also be noted that not all studies have unequivocally demonstrated

benefits of MCT on symptomatic outcomes (Pos et al., 2018; Rocha & Queirós, 2013; van Oosterhout et al., 2014). Perhaps the clearest discrepancy in results came from a 4-month follow-up assessor blind RCT conducted by van Oosterhout et al. (2014) who randomised 154 patients with psychosis to MCT (n = 75) or TAU (n = 79). In comparison to TAU, MCT did not lead to any improvements in delusional or paranoid symptoms, nor to any changes in measures of metacognitive beliefs (MCQ-30; Wells & Cartwright-Hatton, 2004), subjective social cognitive problems or cognitive insight at any time point. However, it is of note that van Oosterhout et al. (2014), included subjects with moderate to severe delusions (PSYRATS delusion mean score 13.5) which might not be suitable for a group intervention format. In fact, following the negative findings in their study the recommendations of group MCT were updated, whereby individualised MCT is currently recommended for those with more severe psychotic symptoms (Moritz Werner, Menon, Balzan, & Woodward 2016)

The effect of group MCT on cognitive biases and other meta-cognitive aspects including cognitive and clinical insight have also been increasingly investigated (de Pinho et al., 2020; Ishikawa et al., 2020; Moritz, Veckenstedt, et al., 2011; Moritz et al., 2014, 2013; Ochoa et al., 2017; van Oosterhout et al., 2014). With the exception of one feasibility study on forensic patients (Kuokkanen et al., 2014), findings appear to support the beneficial effect of MCT on clinical insight, with effects sizes reported in the small (Briki et al., 2014) medium (Favrod et al., 2014), and large range (Gawęda, Krężołek, Olbryš, Turska, & Kokoszka, 2015), even though it should be noted that the assessment of insight in the study conducted by Gawęda et al. (2015) was not blinded. Moreover, as MCT aims to increase individuals awareness of their own thinking, several studies have investigated the impact of MCT on cognitive insight (the ability to identify and correct distorted beliefs and cognitions), as assessed by the Beck

Cognitive Insight Scale (BCIS) consisting of two subscales: *self-reflection* and *self-certainty* (Beck, Baruch, Balter, Steer, & Warman, 2004). Several studies of group MCT have reported improvements in cognitive insight, both compared TAU (Lam et al., 2015), as well as psychoeducation (Ochoa et al 2017), where in the latter study, significant effects were maintained six months following the intervention (Ochoa et al., 2017). However, a recent study failed to replicate long term effects of MCT on cognitive insight (de Pinho et al., 2021), and more recent studies have also reported limited effects of MCT on the BCIS post treatment (Ahuir et al., 2018; de Pinho et al., 2021; Simón-Expósito & Felipe-Castaño, 2019; Tanoue et al., 2021) potentially questioning whether symptomatic improvement following MCT is driven by an increase in cognitive insight as captured by the BCIS (Beck et al., 2004).

In regards to more specific cognitive mechanisms targeted by MCT, several studies have found benefits on cognitive biases such as the JTC bias (Aghotor et al., 2010; Gawęda, Krężołek, Olbryś, Turska, & Kokoszka, 2015; Moritz et al., 2014; Ochoa et al., 2017; Rocha & Queirós, 2013), even though findings have been somewhat mixed (Gawęda et al., 2015; Kuokkanen et al., 2014; Pos et al., 2018). For instance, whilst Moritz et al (2013, 2014) reported superior symptomatic improvements in the group receiving MCT compared with CogPack, improvements on the JTC bias (measured by the Fish Task paradigm; Moritz & Woodward, 2005) were comparable across both groups at all follow-up time points. However, in a re-analysis of their 6-month follow-up data (Moritz et al's., 2013) Andreou et al (2015) suggested that the mechanisms behind changes in data gathering differed between both intervention groups, where a decrease in JTC was associated with improved cognitive performance for those receiving CogPack only. On the contrary, the association

between a reduced JTC bias and delusion decline was only evident in the MCT group, speaking for the JTC as an content-specific mechanism of action of MCT leading to reductions in delusions. The effect of MCT on the JTC bias was also demonstrated more recently, in a sample of 122 individuals with first onset psychosis in a 6-month follow-up RCT comparing MCT with psychoeducation (Ochoa et al., 2017), where MCT led to significantly superior improvements in the JTC bias, that was maintained six months after the intervention. Whilst, both groups led to equivalent improvements in positive, symptoms, inspection of the effect size indicated that PANSS positive and general symptom improvement was greater in the MCT group, particularly 6 months after the intervention, suggesting that targeting the JTC bias might lead to more robust symptom improvement over time. However, it should be noted that not all studies have reported changes to DTD following MCT (Gawęda et al., 2015; Kuokkanen et al., 2014; Pos et al., 2018). It also appears that findings regarding the JTC bias can be influenced by the way in which this is measured. In comparison to TAU, Gawęda et al. (2015) found that patients having received MCT showed significant decline in paranoia where both frequency and conviction of paranoid symptoms were reduced along with an increase in clinical insight. However, whilst they found that DTD measured by the Fish Task paradigm (Moritz & Woodward, 2005) did not significantly change after MCT, self-reported JTC bias measured by the Cognitive Biases Questionnaire for Psychosis (CBQp; Peters et al., 2014), declined significantly with a large effect ($d = 0.74$). Whilst it should be highlighted that the measurements were not conducted by a blinded assessor, this might suggest that self-report scales tap into more conscious 'subjective' aspects of decision making that are not captured through performance based 'objective' JTC tasks (e.g. Dudley et al., 1997; Garety et al., 1991; Moritz & Woodward, 2005). The effect of MCT on subjective decision

making was replicated more recently by Ahuir and colleagues, even though this improvement was not superior to that seen in psychoeducation (Ahuir et al., 2018). Ishikawa et al. (2020) also found superior improvements in self-reported JTC bias following 10 sessions of MCT compared with TAU. However, whilst these improvements gradually increased across time points (baseline, mid assessment, post assessment and 1 month follow-up), the differences only became significant 1 month following the intervention, whereas significant symptom improvement (PANSS positive and PANSS delusions) emerged prior to this, potentially raising questions in regards to the specific role of self-reported decision making in driving symptom change. Nevertheless, taken together converging findings appear to suggest that group MCT can be effective in ameliorating hasty decision making, which appears to represent an important mechanism through which MCT ameliorates symptoms.

Even though BADE is an important target in MCT (Moritz & Woodward, 2007b), research on the effect of MCT on this cognitive mechanism remains rather scarce (Buonocore et al., 2015; So et al., 2021; So et al., 2015). The first study to investigate the effect of MCT on BADE found that a combination of cognitive remediation and MCT led to significantly superior improvements in BADE abilities (measured by the BADE paradigm: Woodward, Buchy, Moritz, & Liotti, 2007), when compared with cognitive remediation and a newspaper group as an active control (Buonocore et al., 2015). Nevertheless, they found no association between BADE improvements and positive symptoms scores, as these remained unchanged following cognitive remediation/MCT. However, the authors noted that participants enrolled displayed low symptoms at baseline which could have resulted in floor effects (Buonocore et al., 2015). Moreover, due to lack of follow-up assessments, they could

not explore whether improvements in BADE remained stable and prevented symptomatic worsening in the long run. However, recently, in a six month follow-up single blind RCT, So et al., (2021) tested a four session transdiagnostic MCT programme, specifically targeted at ameliorating belief flexibility (including the modules: Attribution, Changing beliefs, To Empathise and Self-esteem & Mood). Compared with TAU, those with psychosis receiving MCT showed significantly reduced positive symptoms and delusions. However, in contrast to Buonocore et al., (2015) they found no changes on the BADE task paradigm, but instead reported some small increases in delusion specific belief flexibility assessed by MADS (Garety et al., 2005). However, even though changes were maintained 6 months after the intervention, the improvements in belief flexibility were not associated with symptom reduction (So et al., 2021). Hence, even though converging research increasingly suggest that group MCT appears to be effective in reducing delusions, some discrepancies in regard to findings surrounding changes to cognitive mechanisms following MCT remains. Whilst belief flexibility and the JTC bias appears to be important cognitive mechanisms, their specific role in driving symptomatic improvement is yet to be clarified.

3.3.2. Individualised Metacognitive Training

The increased efficacy of individualised MCT reported by meta-analytic studies (Liu et al., 2018), is perhaps not unexpected, as the individualised program allows for a more tailored focus on cognitive biases and, more importantly, how these link in with individual beliefs and symptoms. In particular, individualised variants appear to be promising for delusion reduction, where studies have reported effects in the moderate (Andreou et al., 2017; Moritz, Veckenstedt, et al., 2011) and large range (Balzan,

Mattiske, et al., 2019; Erawati et al., 2014; So et al., 2015). Nevertheless, whilst the benefits MCT+ are promising fewer studies have investigated individualised variants (Liu et al., 2018; Philipp et al., 2019), and so the evidence base is still emerging. Moreover, several studies have utilised different variations of individualised MCT, which somewhat limits comparisons across studies (Erawati et al., 2014; Moritz, Veckenstedt, et al., 2011; So et al., 2015). For instance, one of the earlier assessor-blind RCT's utilising MCT+ tested a combination of group and individualised MCT (Moritz, Veckenstedt, et al., 2011). In comparison to CogPack, those having received MCT/MCT+ showed a significantly steeper decline in PANSS delusion severity, as well as reduced delusional conviction as assessed by the PSYRATS. The MCT/MCT+ group also displayed significantly greater improvements on the JTC task in comparison to CogPack®, suggesting that MCT+ may also ameliorate hasty decision making. However, as the study blended group and individual formats, the specific effect MCT+ was difficult to elucidate. In particular, whilst the findings regarding effectiveness of individually delivered MCT on delusional symptoms have been replicated in later studies (Andreou et al., 2017; Balzan, Mattiske, et al., 2019; Erawati, Keliat, Helena, et al., 2014; So et al., 2015) reports regarding changes in decision making following individualised MCT have been somewhat unequivocal. For instance, So et al. (2015) conducted a single-blind randomised wait-list controlled cross-over trial, testing a brief four-session MCT+ variant (MCTd) focussing on the modules specifically targeting cognitive biases relevant to delusion formation and maintenance (JTC, Changing beliefs and overconfidence in memory). Even though they reported significant reductions in positive symptoms, delusions, as well as delusion conviction with effect sizes in the large range, their findings regarding the JTC bias were less conclusive. Whereas no differences JTC were found between

MCTd and TAU, a significant increase in DTD was evident when both groups were analysed together after having received MCTd, indicating only modest improvements in data gathering. Instead, rather than suggesting that changes in data gathering was driving symptom improvement, they found large improvements in belief flexibility regarding delusional beliefs, assessed by the MADS (Garety et al., 2005), which, in line with delusion improvements, were maintained 4 weeks post intervention. Hence, whilst their shortened programme led to some changes in data gathering, it appears that belief flexibility might be an important mechanism driving symptom change following individualised MCT, somewhat reflecting findings from the group training (Buonocore et al., 2015; So et al., 2021).

To date, two RCT's have investigated the effect of the 11-unit manualised MCT+ programme (Vitzthum, Veckenstedt, & Moritz, 2014), both of which compared MCT+ with cognitive remediation (Andreou et al., 2017; Balzan, Mattiske, et al., 2019). The first study, involving 92 participants with schizophrenia spectrum diagnoses, was conducted in Germany by the developers of Metacognitive Training (Andreou et al., 2017). After 6 weeks of 12 sessions twice weekly, they found that MCT+ led to a significantly greater decline in PSYRATS and PANSS delusional symptoms in relation to CogPack. Moreover, when only including those that had completed at least four treatment sessions of either intervention, the effect of MCT+ on delusions became stronger and also lead to significantly greater improvements in PANSS positive and general symptoms, suggesting that at least 4 sessions of MCT+ is important for optimising symptom change. However, whilst improvements in delusions remained stable 6 months after the intervention, the relative advantage over cognitive remediation was no longer significant. The lack of long term benefits of

MCT+ seen in the study, were rather unexpected, and not in line with other MCT studies (Balzan, Mattiske, et al., 2019; Favrod et al., 2014; So et al., 2021; Moritz, Veckenstedt, et al., 2014; Moritz et al., 2013). However, the authors highlighted that as their randomization process resulted in the MCT+ group having significantly lower delusional symptoms at baseline, and so the lack of improvement seen at follow-up may have reflected selective floor effects in the MCT+ group (Andreou et al., 2017). It is also of note that other MCT studies that demonstrated longer term effects included patients with higher baseline symptom levels (So et al 2015; Balzan et al., 2019). In fact, the second study of MCT+, conducted by Balzan and colleagues in Australia (Balzan, Mattiske, et al., 2019), including 54 participants with moderate delusional severity at baseline reported long-term benefits of MCT+ over cognitive remediation. More specifically, in comparison to cognitive remediation, those receiving four, weekly sessions of 'extended' (2 consecutive 60-min sessions) MCT+ showed significantly greater decline in PANSS/PSYRATS delusional symptoms, PANSS positive and general symptoms as well as improvements in clinical insight, both after the treatment and at 6 months follow-up. However, findings regarding changes in meta-cognitive processes following MCT+ in the two studies were less conclusive. Whilst both Andreou et al. (2017) and Balzan, Mattiske, et al. (2019) reported some improvements in cognitive insight (BCIS; Beck et al., 2004) at post treatment, this was not maintained six months later. Moreover, contrary to expectations, neither of the studies reported any changes to the JTC bias following MCT+, somewhat reflecting the findings of So et al. (2015) who reported modest improvements in data gathering following MCDd. Hence, findings regarding changes in decision making following individualised MCT have been somewhat mixed in comparison to group MCT that appears to have reported more robust JTC alterations (Aghotor et al., 2010;

Gawęda et al., 2015; Moritz, Kerstan, et al., 2011; Moritz et al., 2013; Ochoa et al., 2017; Rocha & Queirós, 2013). Whilst this might be taken to suggest that MCT+ improves delusions through other mechanisms, some points are worth highlighting. Firstly, the samples in Andreau et al (2017) and Balzan et al's (2019) study displayed rather high mean DTD at baseline (mean = 4.02 (2 .8) and median = 4, respectively). Therefore, absence of a significant change in DTD might also have been the result of ceiling effects. This is further supported through the observation that studies reporting significant changes in DTD following MCT have tended to include samples with lower DTD (i.e. higher JTC bias tendency) at baseline (Moritz, Veckenstedt, et al., 2011; So et al., 2015). However another important aspect to consider is the JTC task itself, such as the beads task (and its variants) have been criticised for lacking ecological validity (Westermann, Salzmann, Fuchs, & Lincoln, 2012). Hence, deciding how many hypothetical 'beads' or 'fish' one wants to see before making a hypothetical decision might not represent decision making processes that are of personal relevance to an individual that occur in their everyday lives. It might be that, as MCT+ enables a more in-depth discussion of cognitive biases in a personally relevant manner, it taps into more conscious and personal aspects of decision making in comparison to group variants, that have demonstrated more consistent effects on DTD (Aghotor et al., 2010; Gawęda et al., 2015; Moritz, Kerstan, et al., 2011; Moritz et al., 2013; Ochoa et al., 2017; Rocha & Queirós, 2013). However, potentially contradicting this, a recent study found that an individually delivered, single-session of MCT specifically aimed at reducing the JTC bias (MCT-JTC) led to significant improvements in data gathering assessed by the beads task, but not in self-reported JTC bias assessed by the CBQp (Peters et al., 2014). Nevertheless, even though the individualised format used enabled a discussion on personal beliefs and decision-

making (Turner et al., 2019), the intervention only constituted a 1-hour session. It is therefore likely that more sessions are needed to allow for a more developed reflection on personally relevant decision making. Moreover, the assessment was conducted immediately after the MCT-JTC session, and as the CBQp taps into decision-making in relation to every-day scenarios, it is likely that this takes longer to change, in comparison to more direct 'performance based' decision making as assessed by the beads task. Nevertheless, whilst several studies have investigated the impact of group MCT on the self-reported JTC bias, the effect of the MCT+ programme on subjective decision making currently remains unknown, as does its effect on other self-reported cognitive biases including belief inflexibility and the external attribution bias.

3.3. Research gaps and empirical study rationale

3.3.1. Using MCT+ to improve standard therapy outcome

As illustrated above, there is a clear need to continue to improve current therapies for psychosis further. In particular, as standard CBTp approaches, currently recommended by national guidelines (Keks et al., 2008; National Institute for Health and Care Excellence, 2014), have shown weaker effects on delusional symptoms (Turner, Burger, et al., 2020; Turner, Van Der Gaag, Karyotaki, & Cuijpers, 2014) it is likely that MCT+, that has been particularly promising for targeting delusions would add significant benefits if utilised within standard therapeutic practices. There are several reasons to explore whether MCT+ could present an avenue through which current "gold standard" CBTp approaches could be improved further. Indeed, continuing to develop and improve current psychotherapies is particularly pertinent, both considering the continuing low recovery rates for those individuals with psychosis

(Jääskeläinen et al., 2013) and given that the therapeutic optimism of CBTp is becoming increasingly questioned (Jauhar et al., 2019), even though the intense scrutiny under which CBTp has been put is far from justified (Bighelli, Salanti, et al., 2018; McKenna & Kingdon, 2014; Turner, Reijnders, et al., 2020; Turner, Burger, et al., 2020). Moreover, whilst MCT has been shown to improve delusional symptoms compared with other active treatments (Andreou et al., 2017; Balzan, Mattiske, et al., 2019), whether MCT can add additional benefits over routinely offered "gold standard" CBTp remains unknown. However, whilst it is important to note that the aim of MCT is not to 'compete' with CBTp, it still remains to be explored whether MCT modules could be utilised as a tool to further enhance the effectiveness of standard psychological treatments for psychosis. There are several reasons to expect that MCT+ might improve current therapies further. In light of Mehl et al's (2015) meta-analytic findings indicating that therapies utilising casual interventionist approaches (e.g. Waller et al., 2015) were more effective in targeting delusions, it is likely that the 'backdoor approach' of MCT+ where its focus on the cognitive infrastructure of which delusions are formed and maintained (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001; Moritz & Woodward, 2007b) might particularly benefit standard CBTp approaches, that currently tend to be more effective in alleviating hallucinations (Van der Gaag et al., 2014).

Furthermore, as the meta-analysis in Chapter 2 demonstrated, personal stigma in general and internalised stigma in particular is central to the experience of psychosis (see also Julien Dubreucq et al., 2021), and is related to a range of symptoms, including positive symptoms, general psychopathology, depression, hopelessness and suicidality, whilst being inversely related to a range of well-being

outcomes including self-esteem, quality of life, recovery and functioning (Eliasson et al., 2021). Hence, effective psychological interventions should also routinely include components that cover stigma, and particularly that dispels common societal myths surrounding psychosis. However, whilst there are a range of therapeutic interventions aimed at reducing internalised stigma, some of which have been effective at reducing feelings of stigmatisation (e.g. Alonso et al., 2019; Orkibi, Bar, & Eliakim, 2014) these often come as stand-alone interventions, and are therefore not routinely offered to patients. Moreover, as mentioned above, findings regarding individualised CBTp based interventions to target self-stigma have been less conclusive, with suggestions that psychoeducational approaches to tacking stigma might be more successful (Alonso et al., 2019). Hence, there is also room to improve outcomes regarding feelings of stigmatisation. In this regard, MCT+ might also represent a promising avenue. Whilst the programme itself has a non-stigmatising approach in that it normalises symptoms through highlighting how these experiences can result from 'every day' cognitive biases that we all are prone too, MCT also contains modules that specifically addresses stigmatisation as well as self-esteem (Moritz & Woodward, 2012). Importantly, the stigma modules in MCT are closer to a psychoeducation format, whereby individuals are informed of common societal misconceptions about diagnoses such as 'schizophrenia'. Hence, the focus is on placing the source of the stigma as coming from society, rather than merely focussing on altering individuals self-stigmatising cognitions, which might have the consequence of placing the stigma *within* the individual. This is particularly important given the findings in Chapter 2, that highlighted the damaging impact of actual stigma experiences, which also underscores the importance of theoretically, and thereby therapeutically placing a greater emphasis on the source of internalised stigma as originating from those who

stigmatise in order to also reduce self-blame for internalising such stigmatising views. However, whilst MCT+ has been shown to effectively alleviate delusional symptoms, its effect on reducing internalised stigma has, as of yet not been studied. The current study will therefore also seek to fill this research gap by assessing the impact of the programme on internalised stigma, and whether it leads to internalised stigma reductions over and above routinely offered CBTp.

3.3.2. The importance of identifying key therapy ingredients

Due to the methodological nature of previous MCT+ trials, mainly having employed pre-post RCT designs (Andreou et al., 2017; Balzan, Mattiske, et al., 2019), the process of change throughout MCT+, and how this compares with standard CBTp remains unknown. Whilst large scale RCT's, often evaluating pre-post change represents the optimal method for evaluating the effectiveness of therapies (Hariton & Locascio, 2018), case-series designs that tracks symptoms across baseline, intervention and post-intervention phases can give richer information about when and for whom and intervention works (Borckardt et al., 2008). While several case studies of MCT+ have been reported (Balzan & Galletly, 2015; Vitzthum et al., 2014), no study has utilised a multiple baseline case-series design that tracks change session-by-session change throughout the MCT+ programme. Moreover, utilising a case-series that assesses session-by-session change will also give richer information about the unique mechanism of action of MCT+, that currently remains unknown (Andreou et al., 2017; Balzan, Mattiske, et al., 2019). As MCT entails a stronger focus on specific metacognitive processes, investigating potential differential mechanisms of action between MCT+ and standard CBTp is of interest to further identify important ingredients that are particularly useful in facilitating therapeutic change. Whilst CBTp

and MCT+ utilises similar principles of cognitive restructuring and aim to promote increased meta-cognitive awareness of thought processes, investigating whether a change in specific cognitive biases drives symptom change, can help further maximise current therapeutic treatments. Similar study designs, of comparing varieties of CBT have been utilised previously. For instance, Rapee, Gaston, & Abbott (2009) found that a modified version of CBT designed to target cognitive processes relevant to social phobia, were significantly superior in regards to reducing anxiety as well as diagnostic severity compared with more traditional CBT for social phobia. Several authors have also highlighted that an overreliance on employing RCT designs for therapeutic studies have led to a focus on demonstrating post-treatment efficacy, at the peril of identifying key treatment mechanisms (Deacon, 2013; Thomas, 2015). According to Deacon (2013), the reason that RCT's have been so profoundly endorsed within clinical psychology studies is because the field remains thoroughly influenced by the biomedical model, not only to treating but also methodologically studying treatments, thereby mainly employing "horse race" drug trial 'pre-post RCT' methodologies to therapeutic studies. The fact that such RCT's have been highly valued within clinical psychology, at the cost focussing in isolating treatment mechanisms, might have even inadvertently led to a stalling in continuously improving such treatments (Deacon, 2013). Therefore, in order to improve therapies further, it is also key to understand what ingredients within the therapeutic toolbox, be it within standard CBTp or MCT+ provide the most benefit, and such questions are not answered with traditional pre-post RCT designs (Thomas, 2015).

3.3.3. Service users qualitative experiences of therapy

Whilst several studies have investigated patient feedback on MCT, with meta-analyses reporting high acceptability rates (g = -0.84) (Eichner & Berna, 2016), such studies have utilised a quantitative feedback questionnaire, not specifically asking about perceived mechanisms of action (Moritz & Woodward, 2007a). However, no study has to date investigated patients qualitative 'lived' experiences of having received MCT+. Indeed, given the unequivocal findings regarding the specific mechanism of action of MCT+ it is perhaps time, in true MCT fashion, to 'take a step back' and ask service users about their qualitative experiences of metacognitive training, and what aspects of MCT+ they find useful. Moreover, combining qualitative and quantitative approaches, so called Mixed Methods Research (MMR) (Rauscher & Greenfield, 2009), is advantageous to utilising either method on their own as it allows for a collection of richer and more informative data (Mengshoel, 2012). In particular, qualitative approaches as a complement to quantitative measures, also provide a way of "measuring what matters" to patients; to listen to and value their personal experiences of taking part in the therapy (Regnault, Willgoss, & Barbic, 2018). Hence, the current study will therefore explore participants lived experiences of therapy, as it allows for an increased understanding of the content of the intervention and how it may help facilitate change (Connell, McMahon, Tyson, Watkins, & Eng, 2016). More specifically, the present study will explore how clients receiving MCT+ view their experiences of the therapy, what their subjective experiences of change are and whether these differ from experiences of clients receiving standard psychological therapy (CBTp). As CBTp, currently represents the 'gold standard' therapeutic treatment for psychosis (NICE, 2014), comparing qualitative experiences between the

two approaches is valuable in order to gain richer data to help identify important therapeutic ingredients, and aspects in therapy that patients value.

3.3.4. Exploring the implementation of MCT+ in 'real world' clinical settings

Whilst RCT's are valuable in providing information on the efficacy of a therapy under optimal, i.e. highly controlled settings, exploring the pragmatic effectiveness of using MCT+ within standard psychological services across NHS Lothian, is important in order to examine how new evidence based treatments are best implemented into services. Hence, the present study aimed to explore how clients receiving MCT+ view their experiences of the therapy, what their subjective experiences of change are and whether these differ from experiences of clients receiving standard psychological therapy (CBTp). As CBTp, currently represents the 'gold standard' therapeutic treatment for psychosis (NICE, 2014), comparing qualitative experiences between the two approaches is valuable in order to gain richer data to help identify important therapeutic ingredients that patients value. Moreover, as implementation of new 'therapeutic tools' into services to a high degree depends on perceived benefit and barriers amongst clinicians (Switzer, Harper, & Peck, 2019), the present study also sought to investigate the experiences of clinicians delivering therapy as a part of a case-series study of MCT+, in order to explore feasibility of implementing MCT+ across mental health services.

3.4. Current study

The current study will, through a quasi- randomised case-series investigate whether MCT+ can be used to enhance current psychological treatments (CBTp) further and whether there are different treatment modality specific effects between

CBTp and MCT+ on measures of metacognition throughout therapy. Due to the mixed methods nature of this study, this project will consist of two parts, one where quantitative data will be collected and evaluated, and a second where these findings will be complemented with both service user and clinician feedback. More specifically, the current study 1 will aim to investigate the following research questions:

Primary research questions:

1) Does using MCT+ lead to enhanced delusion reduction when compared with standard psychological treatments (CBTp) currently delivered within psychological services?

2) Is delusion reduction driven by a reduction in self-reported cognitive biases across therapy, and does this mechanism of action differ between standard CBTp and MCT+?

Secondary research questions:

1) Does MCT+ lead to enhanced improvements on performance based measures of metacognition, including the Jumping to Conclusions Bias fish task, The Bias Against Disconfirmatory Evidence (BADE) task and reflective functioning over and above standard CBTp?

2) Does MCT+ lead to enhanced self-stigma reductions, as well as superior improvements in other outcomes including mood, quality of life, psychopathology and functioning over and above CBTp?

Study 2 also aimed to explore, through qualitative interviews with both patients and clinicians the feasibility and perceived benefit of using MCT+ within standard psychological care for psychosis. In particular, the present study aimed to explore how clients receiving MCT+ view their experiences of the therapy, what their subjective experiences of change are and whether these differ from experiences of clients receiving standard psychological therapy (CBTp). As CBTp, currently represents the 'gold standard' therapeutic treatment for psychosis (NICE, 2014), comparing qualitative experiences between the two approaches is valuable in order to gain richer data to help identify important therapeutic ingredients that patients value. Moreover, as implementation of new 'therapeutic tools' into services to a high degree depends on perceived benefit and barriers amongst clinicians (Switzer et al., 2019), the present study also sought to investigate the experiences of clinicians delivering therapy as a part of a case-series study of MCT+, in order to explore feasibility of implementing MCT+

More specifically the Study 2 aimed to investigate the following research questions:

1) What are service users over-all experiences of receiving MCT and CBTp?

2) Does the perceived mechanism of action ("what worked") differ between MCT+ and standard CBTp?

3) What are the perceived benefits and barriers to implementing MCT+ in standard psychological care according to clinicians delivering psychological care for psychosis?

Chapter 4. General Methodology of Empirical Studies

4.1. Study Design

The current study utilised a quasi-randomised case-series design where quantitative data was collected during a baseline, treatment and post-treatment phase. Moreover, in order to gain richer information on experience of therapy, and to answer questions on *what* participants found useful as well as on feasibility of introducing MCT+ into clinical care, qualitative interviews patients and clinicians were conducted once therapy was completed. This design was chosen in order to address the research gaps of previous MCT+ studies that have merely utilised pre-post randomised controlled trial designs discussed in Chapter 3, in order to investigate the process of change for individuals receiving CBTp and MCT+ and to identify treatment modality specific effects on measures of symptoms and cognitive biases collected repeatedly before, across, and after therapy. This design was also chosen for pragmatic reasons, as randomised controlled trial designs with fewer data collection points (usually before and after an intervention), generally relies on larger samples sizes to be adequately powered (ref), and due to the limited time and resources for the current PhD project, setting up a large RCT was not feasible. This study therefore employed an ABA design, where "A" refers to a control phase before treatment onset, "B" refers to the treatment phase and "A" refers to the phase after treatment has finished. Participants in this study were therefore allocated to receive up to 20 sessions of standard CBTp or 20 sessions MCT+. More specifically, participants were assessed on primary outcomes weekly for a four week baseline period before starting treatment, and then on a session-by-session basis during treatment followed by a four week post therapy treatment assessment period as well as 12-weeks after treatment.

4.1.1. Quasi-randomisation procedure

Whilst the original aim was to randomly allocate individuals to receive CBTp or MCT (through block randomization with block sizes of 4), a quasi-randomised design was eventually chosen in order to optimise recruitment and to accommodate service requirements. Therefore, in the instances where clinicians deemed either treatment arm unsuitable for a participant, in particular in instances where a participant may have received psychological therapy treatments previously, they could request the allocation to be adapted to this by discussing it with the project supervisor, Matthias Schwannauer. As data collection from baseline up until week 4 post-therapy occurred in a blinded format, randomisation outcome and treatment allocation was concealed from the researcher collecting data. In the instances where clinicians would alter treatment allocation based on perceived needs of the client, this was to be concealed from the researcher by only informing and discussing treatment allocation change with the project supervisor. In one instance this option of changing treatment arm due to concerns regarding suitability of treatment was applied. Also, 4 participants were non-randomly allocated to the MCT+ arm due to their treating clinician (a psychiatric nurse) not being CBT trained. As the researcher was aware that the clinician could only deliver MCT+, the treatment allocation of these four participants could not be kept blinded (even though during data collection the clinician and participants did not discuss what particular elements within MCT+ had been used and when). Whilst randomly allocating participants to treatment would have been the optimal study design procedure, allowing for this pragmatic flexibility in order to mitigate the recruitment challenges faced, seemed a reasonable compromise in this initial pragmatic pilot trial.

4.2. Ethics

The study received approval from the South East Scotland Research Ethics Committee (REC reference: 17/SS/0011) and NHS Lothian Research and Development office in 2017 (See Appendix 4a & b).

4.3 Setting

The current study was conducted in mental health services across Edinburgh including outpatient community mental health services as well as inpatient and rehabilitation services. Standard practice is for therapy to be delivered in person across NHS Lothian services. However, if this was not possible for an extended period of time (due to the COVID-19), therapy sessions and study assessments were conducted over the phone with the potential of therapy material to be sent to participants via post if needed.

4.4. Recruitment

4.4.1 Clinicians

As it was planned for therapy (CBTp or MCT+) to be delivered by clinicians working in mental health services across NHS Lothian, the first part of the study recruitment process was to engage clinicians. In order to maximise recruitment, both clinical psychologists, clinical psychology trainees as well as CPN's were approached and offered a training session on MCT+ (see details below). Clinicians were then asked to identify individuals either currently on the waitlist to receive CBTp or who were currently on their caseload who were receiving unstructured psychological support who were then invited to take part.

4.4.2 Participants

This study aimed to recruit 20 participants. Individuals with psychosis who were currently either 1) on the waitlist to soon receive CBTp, or 2) currently receiving non-structured psychological support were invited to take part in the current study. Patients who were identified as potentially suitable for the study were given the information sheet (see Appendix 5) from clinicians, and asked if they were ok for a researcher to discuss the study with them in more detail. Participants who agreed to this met with the researcher (either in person or over the phone) to discuss the study and were given the opportunity to ask any questions or discuss any concerns. In this meeting, the information sheet was also discussed in more detail to ensure participants were fully aware of the study aim, what would be expected, from their involvement; confidentiality; complaints procedures as well as how results will be disseminated. The information sheet also highlights that their decision to take part in the study would not affect their routine care, and that participants were free to withdraw from the trial at any time. An opt-in recruitment procedure was used where only participants that express an interest in the study were (with their consent) contacted by the researcher. Patients contact details were not given to the researcher until patients had consented to.

4.4.3 Inclusion/exclusion criteria

In order to maximise recruitment and to keep the study as close to 'real life' clinical settings as possible, inclusion criteria were kept broad. Hence, participants who met the following inclusion criteria were invited to take part:

Inclusion criteria:

- Aged 16 or over

- Competent and willing to provide written, informed consent

- Currently experiencing delusions (A score of ≥3 on PANSS item P1, P5 or P6)

Exclusion criteria:

- Significant developmental disability

- Currently receiving or have received CBTp in the last 6 months

- Significant difficulty with the English language

4.5. Informed consent

If the participant agreed to take part, signed informed consent was obtained (see Appendix 6). When possible, informed consent was be done in person across NHS Lothian facilities. Participants were informed that their eligibility would be reviewed after signing consent, and that they may not be eligible to take part. In accordance with GCP, participants were ensured that not being eligible to take part would not have any negative consequences in terms of their standard care, and that they would still retain their spot on the wait-list to receive standard CBTp (if recruited through that pathway). In line with GCP it is was the researchers responsibility to ensure that participants understood the information sheet before they consented to the trial. This also involved understanding the right to not take part, and have the right to withdraw from the study at any time without any negative consequences. The researcher also monitored capacity throughout the trial, and any concerns were be discussed with the care-team. Participation in the study was confidential in line with NHS Lothian

Policies. However, confidentiality could be breached under duty of care if the participant was deemed to be at risk to self or others. This was explained to the participants prior to entering the study and was also detailed in the participant information sheet.

4.6. Measures

Screening and demographic data. After informed consent has been obtained the demographic data including, age, gender, level of education, diagnosis, details of their current antipsychotic medication as well as information on any previous psychological interventions was gathered. The PANSS (described below) was used to screen for symptoms in accordance with the stated inclusion criteria.

Primary outcome measures (administered at each study session)

Psychotic Symptom Rating Scales (PSYRATS) (Haddock, McCarron, Tarrier, & Faragher, 1999). The PSYRATS is a widely used assessment of different dimensions of delusions and hallucinations, that include distress, loudness, conviction, frequency, disruption to life and preoccupation. Each dimension is then rated on a 0-4 point scale, with higher score indicating greater severity, where the scale is rated on patients symptomatic experiences relating back to the past week. The PSYRATS was chosen as the primary outcome as when positive primary outcome of an intervention, this scale is superior to other commonly used measures, such as the PANSS (Kay, Fiszbein, & Opler, 1987), as the PSYRATS captures more dimensions of symptoms, and might therefore be more sensitive to change thereby minimising the risk of a type 2 error. For these reasons, the PSYRATS is a commonly used tool and have been

utilised in other studies evaluating psychotherapy for positive symptoms (e.g. Aghotor et al., 2010; Favrod et al., 2014; Moritz et al., 2013). The PSYRATS has yielded good to excellent interrater reliability, test-retest reliability internal consistency and validity in both chronic schizophrenia samples as well as first episode psychosis patients (Drake, Haddock, Tarrier, Bentall, & Lewis, 2007; Haddock et al., 1999).

Davos Assessment of Cognitive Biases Scales (DACOBS) (Van der Gaag et al., 2013) was used to assess self-reported cognitive biases across the study. The original scale consists of 42 statements relating to seven (six-item) subscales; 1) Jumping to conclusions bias 2) Belief Inflexibility bias 3) Attention to threat bias 4) External attribution bias 5) Social cognition problems 6) Subjective cognitive problems and 7) Safety behaviours. Cognitive biases (1–4), Cognitive Limitations (5–6), and Safety behaviours (7). On each of the items, respondents are asked to score each statement using a 7- point rating scale, ranging from 1 'totally disagree' to 7 'totally agree'. Whilst the original scale askes participants consider what their thinking has been like in the past two weeks, the time frame was modified to fit with the current study, where participants were asked to consider their thinking in the past week. Moreover, for the current study, as the interests were to assess cognitive biases specifically implicated in psychosis, and those targeted in MCT, data from three subscales were used, namely 1) The Jumping to Conclusions Bias, 2) Belief Inflexibility Bias and 3) External Attribution Bias totalling an 18-item questionnaire that individuals were given at each study assessment point. Whilst other biases might also be relevant to the experience of psychosis, the decision to only include the three subscales was also regarding feasibility and participant burden, as this scale was used at every study assessment

session in order to capture change across therapy. Van der Gaag et al. (2013) found good reliability for the DACOBS (α = .72 for the Jumping to Conclusions Bias Scale, α = .74 for the Belief Inflexibility Bias Scale, and α = .64 for the External Attribution Bias scale). The scale was also found to adequately differentiate between schizophrenia spectrum patients and healthy control subjects (Van der Gaag et al., 2013). Whilst there are several other assessments of self-reported cognitive biases, such as the Cognitive Biases Questionnaire for psychosis CBQp (Peters et al., 2014), that assesses five cognitive biases including 1) the Jumping to Conclusions Bias, 2) Internationalising, 3) Catastrophising, 4) Emotional Reasoning and 5) Dichotomous thinking. However, as this questionnaires relies on vignettes that participants are asked to 'react' to by choosing between several options, this questionnaire would not be suitable for using repeatedly, as reacting to the same scenarios repeatedly would be prone to practice effects. Moreover, therefore, as the DACOBS questionnaire rather asks directly about participants thinking in the past week (e.g. "I make decision's faster than other people" or "other people make my life miserable"), this was more suitable for repeated use.

Secondary Outcome Measures (all administered at Baseline w1 & w 4, post session 8, Post therapy w 1, post therapy w 4 & 12 week post therapy (apart from the PANSS that was not administered post session 8 to minimise participant burden).

Internalized Stigma of Mental Illness Scale (ISMI) Ritsher, Otiligan & Grajales, 2003). This is a 29-item questionnaire that assesses subjective levels of self-stigma. Participants are asked to rate the extent to which they agree with a set of statements on a 4-point likert scale. Items add up to 5 subscales, including: alienation, stereotype

endorsement, discrimination experience, social withdrawal and stigma resistance. Good internal consistency, test-retest reliability and construct validity have been reported (Ritsher et al., 2003). In accordance with previous recommendations (Ritsner et al., 2006; Lysaker et al., 2008), who have found stigma resistance to represent a separate construct to internalised stigma, this study excluded this subscale and used the remaining 24 items to assess internalised stigma. More information about this scale was detailed in the Appendix of Chapter 2.

The Fish Task (Moritz & Woodward, year). The JTC bias was measured by a computerised version of the Beads Task (Huq et al., 1988) whereby instead of a jar of beads, participants are shown a fisherman, who is fishing from two lakes (Lake "A" and lake "B"). Like the beads task, the two lakes that the fisherman is choosing from contain the opposite coloured ratios of fish (e.g. 80:20 green/red) or vice versa. The fisherman's catches are then shown to the participants, in a sequence that are pre-determined according to the ratio of the fish. The participants are told that the fisherman has chosen one lake only to fish from, and that after each catch the fish is thrown back into the lake so that the ratio of fish stays the same throughout the task. The task is constructed so that two versions can be used: a "draws to decision only" paradigm and a "probability and decision" version. The former of these resembles the classical beads paradigm, where after each 'catch', the participant is asked whether they are ready to make a decision as to what lake the fisherman is fishing from or whether they want to see another 'catch'. Once the participants are ready to decide what lake the fisherman is fishing from, the task is terminated and number of fish seen is counted. The second version of the task asks individuals to, after each catch make the following judgements: 1) What is the probability that this fish is caught from lake

A or lake B (0-100%), and 2) Do you have enough information to decide on one particular lake? In this version, all 10 fish are shown, even after the participant has made a simulated decision as to the lake, where participants are asked to rate the probability that the fisherman is fishing from a particular lake based on all fish. For the current study, the "draws to decision only" version was used. The reasons for choosing this task were twofold. The first one was to minimise practice effects, as in the second version the participant gets to see all fish (and thereby it will be "revealed" whether they were likely right in their initial decision), which might then impact on their decision threshold at the next assessment ("I was correct in my guess last time, so I will make my guess based on the first fish this time too"). Secondly, the first task is also simpler to understand and as some participants with psychosis might struggle with cognitive symptoms, and in the interest of keeping burden on participants to a minimum this task seemed the more appropriate choice. In order to further minimise practice effects, the colour of the fish was alternated at each assessment point.

Bias Against Disconfirmatory Evidence (BADE) task (Woodward, et al. 2006). A computerised version of the BADE task will be employed. In this task, participants will be presented a series of with delusion-neutral scenarios. For each scenario they will be asked to rate the plausibility of 4 interpretations each scenario will have a one "true" interpretation two "lure" interpretation and one "absurd" interpretation. After making their ratings, participants will be presented with additional scenario descriptions, which will provide further information, and participants will be allowed to adjust their ratings if necessary. Plausibility ratings will be recorded on a scale of 0 to 10, where participants will be able to move a slider bar along a scale with anchor points along the scale stating "poor", "possible", "good" and "excellent" centred on

the following scale numbers, 0, 3.5, 6.5 and 9.5 respectively. The original task came with 30 scenarios provided by the task developer (Woodward et al., 2006). Calculations of "Evidence integration" is then scored based on the sum of absurd 1, absurd 2, absurd 3, neutral lure 3, emotional lure 3 and (true 3 x -1) (see Sanford et al., 2014). The original task came with 30 scenarios (1-12 emotional, 13-24 neutral, 25-30 distractor). As the task was repeated six times for the current study scenarios were divided up so that eight scenarios were used at each assessment point. To avoid repeating previous scenarios, in recommendation from the task developers 18 scenarios were altered to avoid practice effects. This meant that 48 scenarios were distributed over the six study sessions (3 emotional, 3 neutral and 2 distractors at each assessment point).

Reflective Functioning Questionnaire (RFQ) (Fonagy et al., 2016)**.** Reflective functioning (RF), also called mentalizing, refers to the metacognitive ability to understand ourselves and others and to make inferences about our own and others' mental states, including others feelings, attitudes and desires. Particularly, it is based on research which have indicated that impairments in RF have been linked with a vulnerability towards psychopathology (Katznelson, 2014). Whilst much research on reflective RF have been based on individuals with borderline personality disorder (e.g. (Fonagy & Luyten, 2016; Fonagy et al., 2016; Luyten, Campbell, Allison, & Fonagy, 2020), RF have also been shown to be implicated in psychosis (Braehler & Schwannauer, 2012). More specifically, two broad impairments in RF have been identified, namely *hypometalising* and *hypermentalising.* Hypomentalising refers to the inability to infer the complexity of one's own and other's minds, whereas hypermentalising ('excessive' mentalising), refers to the tendency to generate overly

confident representations of ones' self and others thoughts and intentions, without appropriate evidence to support this, which may lead to inappropriate or faulty interpretations of others thoughts and intentions. 'Genuine' mentalising, however, is characterised by a recognition of the complexity of ones and other's mental states and a humbleness towards feelings of knowing what other's may be thinking or experiencing. The current study used the 8-item self-report RF questionnaire (RFQ) developed by Fonagy et al. (2016) to assess reflective functioning. The RFQ is comprised of two subscales that each contain 6 items and either measures degree of uncertainty of other's mental states (RFQ_U) ('hypomentalising') and the degree of certainty of other's mental states (RFQ_C) ('hypermentalising'). The scale is then re-scored such that high scores on the respective subscales indicate impairment in these respective constructs. More specifically, the RFQ_U subscale focusses on agreement with statements such as "I don't always know why I do what I do" where items are scored on a 7-point likert scale, ranging from 1 "Strongly disagree" to 7 "Strongly agree". For the uncertainty scale, items are recoded to 0, 0, 0, 0, 1, 2, 3. The RFQ_C subscale instead focusses on level of agreement with items items such as "sometimes I do things without really knowing why" where a low agreement is reflective of hypermentalising. This scale is then recoded as 3, 2, 1, 0, 0, 0, 0, so that a high score is indicative of hypermentalising. The internal consistency of the two subscales was satisfactory ($\alpha = 0.77$ for the RFQ_U and $\alpha = 0.65$ for the RFQ_C) and the two factors were shown to be distinct, and discriminated between patients and controls (Fonagy et al., 2016).

The Quality of Life and Satisfaction Questionnaire (Q-LES-Q-18) (Ritsner, Kurs, Gibel, Ratner, & Endicott, 2005)**.** The Q-LES-Q-18 is a brief, 18-item self-

administered questionnaire which was developed based on the original 60-iteml Q-LES-Q (J. Endicott, Nee, Harrison, & Blumenthal, 1993). The Q-LES-Q-18 captures five quality of life domains, including physical health (4 items), subjective feelings (4 items), leisure time activities (3 items), social activities (4 items) and satisfaction with medication (1 item). The scale has been validated in samples with schizophrenia, schizoaffective and mood disorders with (α = 0.82-0.94) (Ritsner et al., 2005).

Calgary Depression Scale for Schizophrenia (CDSS) (Addington, Addington, & Schissel, 1990). The CDSS scale was used to assess symptoms of depression. Measuring depression in schizophrenia and psychosis can represent a challenge in clinical practice and research, as it might be difficult to differentiate between depression and negative symptoms. For instance, the most commonly used scale for measuring depression in this population (the Hamilton Depression Scale (Hamilton, 1960) has been found to correlate with negative symptoms whereas the CDSS is better at discriminating between negative symptoms and depression (e.g. see Addington et al., 1996). The scale, which consists of a structured interview with nine questions and a scoring guide. It has been found to have good to excellent internal consistency (α = 0.82) for patients with schizophrenia (Addington et al., 1996).

The Global Assessment of Functioning (GAF) (Association, 2004)**.** The GAF scale was used to assess level of functioning in participants. The scale is founded on the Global Assessment Scale (Endicott, Spitz, Fleiss, & Cohen, 1976). The GAF scale evaluates global functioning based on a person's "psychological, social and occupational functioning on a hypothetical continuum of mental health-illness" (Startup, Jackson, & Bendix, 2002). Scores range from 1-100 with high scores

indicating high global functioning whereas low scores indicates more severe impairment. The assessor then chooses a score based on a 10-point range based on the seriousness of symptoms and over-all functioning.

Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987). The PANSS is a structured clinical interview that estimates symptom severity for people with schizophrenia and psychosis. The scale consists of 30 items measuring positive (P1-P7), negative (N1-N7) and general (G1-G16) symptom severity. Each of the items is scored on a 1-7 point scale, with higher scores indicating higher symptom severity. The PANSS the most widely used outcome measures for assessment of symptoms in psychosis research. Therefore, inclusion of the scale will allow for a comparison with previous CBTp and MCT studies. Because target symptoms were assessed by the PSYRATS, the general psychopathology subscale scale was of interest for the current study.

4.7. Training & Therapy Supervision.

Before becoming involved with delivering therapy for the study, clinicians received MCT training and were handed the MCT+ manual to familiarise themselves with the material. The training session was held by a member of the MCT-team (Delivered by Dr. Imke Jansen in Edinburgh on 08/09/2017). Clinicians who were interested in joining the study at a later point received a training session held by Emma Eliasson (who participated in the initial training session with Dr. Jansen) with a follow-up up session offered with Dr. Matthias Schwannauer. Only those who were trained CBTp therapists delivered CBTp to participants in the study. Throughout the study, regular supervision sessions were held for clinicians who delivered or were about to start

delivering therapy for the study. Because the study did not have resources to record MCT+/CBTp therapy sessions for study fidelity purposes, therapists filled in a survey after each session (see Appendix 7) briefly outlining what had been done in the session.

4.8. Interventions

4.8.1. CBTp

'Standard' Cognitive Behavioural Therapy for psychosis was delivered by qualified clinical psychologists. Similar to a previous study of CBTp (Morrison, Pyle, et al., 2018). Whilst other CBTp qualified clinicians (e.g. CPN's with specialist training in CBTp) were invited to take part in the study, those who successfully recruited participants on to the trial were qualified clinical psychologists. Before study commencement, a meeting was set up with the clinical psychologists who had agreed to take part, asking about what current CBTp models and change strategies they tended to use in their standard practice. Clinicians tended to use formulations and similar to those described in Morrison's (2001) CBTp model where change strategies were based on those described in Morrison (2017). Whilst CBTp comes with a less structured manual, when compared with MCT+, with more flexibility usually 'allowed' within the model, clinicians were encouraged to not utilise too many change strategies and techniques that deviated from the CBTp model (e.g. compassion focussed therapy / 3 drive systems formulations, mindfulness, ACT, reliving trauma, imagery rescripting, motivational interviewing).

4.8.2. MCT+

MCT+ was delivered in accordance with the most recently published manual at the study commencement (https://clinical-neuropsychology.de/metacognitive-therapy-

plus-individualized-mct-for-psychosis/). For an outline of the modules included please refer to Chapter 3. For the current study, the modules were modified so that the word "schizophrenia" was replaced with "psychosis".

4.9. Data Analysis

Data for the current study was analysed in two phases.

Study 1.

First, for the case series data, symptoms and cognitive outcome measures were plotted and graphically represented in order to visually assess change across the therapy phases. Graphs were plotted using R (R Development Core Team, 2011) and Microsoft Excel . For descriptive measures, number of individuals achieving clinically significant change in delusion reduction was also recorded. Moreover, to compare magnitude of change, the effect size was calculated for outcomes in the study. The effect size was based on the average score at baseline and average score at post therapy points. As recommended by Rosenthal (1991), the effect size was calculated based on the paired samples t-test of change at pre and post intervention phases which was divided by the standard deviation of the baseline average. This method of calculating effect size has been used in previous small N case series (Freeman et al., 2016). Because at the time of write up, data from three participants had not been collected at the 12-week FU point, effect size calculations included only data from the 4-week points that were averaged and which were compared with data collected at the baseline phase.

Following this Multilevel Modelling (MLM) was used to statistically assess change in primary and secondary outcome measures, across therapy and post therapy

phases, whilst controlling for the baseline assessments. MLM as a statistical tool has increasingly been used to complement analyses of small N case series data (Becraft, Borrero, Sun, & McKenzie, 2020). The method is considered an appropriate statistical analysis for case series if the aim of the study is to assess change over time and across cases. MLM has several advantages. For instance, it can manage missing data well, and us a useful statistical tool when data is collected at varying time points (A. Field, J., & Field, 2012). Furthermore, MLM does not assume that observations for individuals across time points are independent, which is a strength in the approach when data analysed is collected from the same participants repeatedly and is therefore likely to be correlated (Baek et al., 2014). For the current study, MLM analysis was conducted in R (R Development Core Team, 2011) with the use of the nlme package (Pinheiro & Bates, 2011).

Study 2.

Data from the second study was analysed using thematic analysis. Semi-structured interviews were recorded using a digital recorder, and the interviews were then transcribed verbatim for analysis. Thematic analysis is commonly used in qualitative data research (Braun & Clarke, 2006), and has been utilised by previous studies evaluating participants experiences of psychotherapy (e.g. Byrne & Morrison, 2014; Swanson et al., 2021). Recorded interviews were transcribed verbatim, and data from the transcripts were coded and subsequently grouped and into subthemes that were organised into several overarching themes. Because the research questions centred around participants and clinicians experiences of therapy, around specific feedback on useful versus least useful aspects of the therapy, as well as subjective mechanisms of action ("what worked"), the current thematic analysis is best described

as deductive, or theoretically driven (Braun & Clarke, 2006). The process of data analysis was informed by and followed Braun and Clarke's (2006) six phases of analysis:

Phase 1: Familiarisation with the data through transcription and repeated reading through transcripts to actively search for meanings and patterns.

Phase 2: Generating initial codes from the data.

Phase 3: Sorting codes into potential themes, generating a collection of overarching themes and subthemes.

Phase 4: Reviewing of themes to get an idea of what the different themes are and how they fit together.

Phase 5: Defining and naming themes and subthemes

Phase 6: Reporting of themes

4.10. Procedure

Participants who were interested in the study met with the PhD researcher, where the study information was discussed in more detail and where they were given the opportunity to ask questions about the study. Participants who were interested in taking part following this meeting, met with the researcher for a where subjects provided written informed consent before Screening/Baseline measures were collected. Baseline data were collected at 4 weekly occasions before therapy commenced. Following this, participants stated therapy. Whilst number of therapy sessions varied depending on patient need, participants were allowed to receive up to 20 therapy sessions as part of the study. The assessment schedule below outlines the data collection procedure for the study. It was aimed for the therapy to be delivered

weekly, however this did not always occur due to patient or clinician needs. However, in order to reflect 'real life' clinical settings such flexibility was allowed for.

Table 11. Outline of assessment points schedule

Assessment points	PSYRATS /DACOBS	ISMI / JTC TASK / BADE / RFQ / Q-LES-Q / CBSS / GAF /PANSS*
Baseline 1	X	X
Baseline 2	X	
Baseline 3	X	
Baseline 4	X	X
Post session 1-7	X	
Post session 8	X	X
Post session 9-20	X	
Post therapy 1	X	X
Post therapy 2	X	
Post therapy 3	X	
Post therapy 4	X	X
Post therapy week 12	X	X

*The PANSS was not administered post session 8

Chapter 5. Empirical study 1 - A case-series exploring the benefit of using Metacognitive Training within standard psychological therapy practices

5.1 Introduction

This chapter will outline empirical Study 1, where the main goal was to conduct a quasi-randomised case-series, in order to evaluate whether MCT+ could be utilised to enhance standard CBTp, and whether there are modality specific treatment effects on measures of metacognition throughout therapy.

5.1.1. Brief literature review and study rationale

The importance of effective therapeutic treatments in conjunction with antipsychotic medication is recognised by NICE, where Cognitive Behavioural Therapy for psychosis (CBTp) has been recommended as an adjunctive treatment since 2002 (NICE, 2014, 2009, 2002). However, CBT for psychosis is a relatively recent development, with the term "Cognitive Behavioural Therapy for psychosis" first emerging in the 1990's (Thomas, 2015). Therefore, the way in which it is being applied, studied and evaluated is continuously developing (Cupitt, 2019). Likely mirroring 'gold standard' trials on the effectiveness of antipsychotic medication, many studies of CBTp have utilised RCT pre-post designs usually, often including broad CBTp protocols with general measures such as the PANSS as the main outcome (Thomas, 2015). This has not only led to an underestimation of the effectiveness of CBTp, as highlighted in Chapter 3 (Bighelli, Salanti, et al., 2018), but has also come at the peril of limited understanding what components within the therapeutic toolbox that is CBTp, are useful (Mehl et al., 2018). Identifying essential mechanisms within therapy that are particularly pertinent to facilitating change is, however, important in order to continuously improve currently offered therapies for psychosis. Furthermore, whilst antipsychotic treatments can be effective in alleviating acute symptoms (Huhn

et al., 2019) such ‘first line’ treatment need to sit alongside effective therapeutic interventions that not only help individuals cope with their symptoms, but that also goes beyond this and help individuals cope with societal and internalised stigma and feelings of low self-worth, also commonly seen in psychosis and which might further impede recovery (Eliasson et al., 2021).

Indeed, recent years have seen some interesting developments within CBT approaches for psychosis, where interventions that focus on targeting maintenance factors in psychosis (e.g. see Cupitt, 2019), have reported greater efficacy on target symptoms (Lincoln & Peters, 2019; Mehl et al., 2015). Such ‘casual-interventionist’ approaches have focussed on a variety of maintenance factors, such as targeting worry in persecutory delusions (Freeman et al., 2015), addressing insomnia as a causal factor in delusions (Myers, Startup, & Freeman, 2011), or addressing the role of trauma in targeting symptoms of psychosis (e.g. Folk et al., 2019). For instance, Freeman and colleagues found that compared to TAU, a 6-session CBT intervention specifically targeting worry for individuals with persecutory delusions was found to reduce symptoms of paranoia and persecutory beliefs post therapy and at 24 weeks follow-up, where change in such beliefs were mediated by reductions in worry (Freeman et al., 2015). Moreover, Sitko et al. (2020) found that CBTp interventions for delusions have significantly improved with time, likely reflecting recent trends in CBTp with an increased focus on maintenance factors (Mehl et al., 2015; Sitko et al., 2020).

However, there remains little understanding of what the important cognitive mechanisms of CBTp are (Mehl, Schlier, & Lincoln, 2018; Schlier, Ludwig, Wiesjahn, Jung, & Lincoln, 2020). As mentioned in the previous chapter, and as will

be reported in the qualitative study reported in Chapter 6, important aspects in therapy that patients value have often included a strong therapeutic alliance, that is facilitated through engagement, normalisation of experiences and a non-stigmatising empathic understanding from the therapist (Kilbride et al., 2013; Messari & Hallam, 2003; Pipkin, Hogg, et al., 2021; Wood et al., 2015). However, whilst clients have highlighted that CBTp have helped them through the use of cognitive techniques, including reappraising symptoms of symptoms, gathering and evaluating evidence (Byrne & Morrison, 2014), there is limited evidence to suggest that CBTp reduces delusions through reducing cognitive biases or negative self-schemas – both underlying the model of delusion formation on which CBTp is based (Mehl et al., 2018; Morrison & Barratt, 2010). For instance, in a re-analysis of data from a trial of CBTp for psychosis (Lincoln et al., 2012), Mehl et al (2018) found that whilst CBTp significantly improved delusions as well as one measure of self-schema (implicit self-esteem), it did not lead to changes in the jumping to conclusions bias (assessed by the beads task; (Huq et al., 1988) external and personalising attribution biases (assessed by the Internal, Personal and Situational Attributions Questionnaire; IPSAQ (Kinderman & Bentall, 1997), as well as theory of mind (assessed by the movie task of social situations (Mehl, Rief, Mink, Lüllmann, & Lincoln, 2010)). Moreover, neither of the proposed mechanisms mediated the effect of the intervention on delusions, potentially indicating that a more targeted focus on cognitive biases is needed for such cognitive mechanisms, implicated in the maintenance of delusions (Garety & Freeman, 2013) to change (Mehl et al., 2018).

One such therapeutic approach with a specific focus cognitive biases involved in the aetiology of delusional thinking Metacognitive training (MCT) (Moritz &

Woodward, 2007b). Like CBTp, MCT aims to alleviate stressful experiences in psychosis, but does so by more intensely focussing on enhancing metacognitive capacity through increasing awareness of cognitive processes and biases often seen in psychosis (Moritz & Woodward, 2007). Moreover, as outlined in Chapter 3, MCT differs from CBTp in that it adopts a so called 'backdoor approach' where the primary focus is not necessarily specific symptoms, but rather an exploration of cogitative phenomena that we all are prone to (Moritz, 2013). Through such illustrations, the programme aims to "sow the seeds of doubt" in a non-confrontational manner (Moritz, Andreou, et al., 2014). Knowledge translation is also a key element underlying MCT – where the programme aims to effectively convey knowledge on how biases might impact our thinking (Garety & Freeman, 1999) to patients who may be struggling to make sense of their experiences. The programme therefore integrates psycho-educational information with audio visual exercises that effectively demonstrates, in a normalising and entertaining manner, how such phenomena can work 'in action' as a way of maintaining interest and engagement with the training material (Cupitt, 2019). Another strength in the programme is also its inclusion of modules addressing other issues commonly seen in psychosis including affective symptoms as well as self-stigma and self-esteem potentially further hindering recovery.

However, as outlined in more detail Chapter 3, whilst the evidence base for individually delivered MCT is growing, particularly regarding its effect on delusions (Andreou et al., 2017; Balzan, Mattiske et al., 2019; Erawati et al., 2014; Moritz, Veckenstedt et al., 2011; So et al., 2015), the unique mechanism of action of MCT+ currently remains unknown, and recent studies have called into question whether the programme exerts its effects through ameliorating the JTC bias (Andreou et al., 2017;

Balzan et al., 2019), with similar conflicting findings seen for belief flexibility (So et al., 2015; So et al., 2021), whereas no study has to date assessed the impact of individually delivered MCT on attribution biases. Indeed, the need to establish the key mechanisms through which MCT exerts its effects have been identified as an important research target to enable further improvement and refinement of current therapy elements (Moritz et al., 2019). Moreover, in order to assess whether currently offered "gold standard" therapies for psychosis might benefit from the implementation of so called 3rd wave 'process-oriented' approaches, studies need to be conducted to assess whether such interventions can offer additional improvements in symptoms as well as key target mechanisms over and above that seen in standard CBTp.

5.1.2 Study Aim

The current study will, through a quasi- randomised case-series investigate whether MCT+ can be used to enhance CBTp as currently offered across NHS Lothian and whether there are treatment modality specific effects on measures of metacognition throughout therapy. More specifically, the current study aimed to investigate the following research questions:

Primary research questions:

1) Does using MCT+ lead to enhanced delusion reduction when compared with standard psychological treatments (CBTp) currently delivered within psychological services?
2) Is delusion reduction driven by a reduction in self-reported cognitive biases across therapy, and does this mechanism of action differ between standard CBTp and MCT+?

Secondary research questions:

1) Does MCT+ lead to enhanced improvements on performance based measures of metacognition, including the Jumping to Conclusions Bias fish task, The Bias Against Disconfirmatory Evidence (BADE) task and reflective functioning over and above standard CBTp?

2) Does MCT+ lead to enhanced self-stigma reductions, as well as superior improvements in other outcomes including mood, quality of life, psychopathology and functioning over and above CBTp?

5.2. Method of investigation

The following section will briefly outline the methodology used in the current study, however for a more detailed description, please refer to Chapter 4.

5.2.1. Design

This study employed a quasi-randomised case series design, which systematically measures change in outcomes of interest across baseline, treatment and post treatment phases. In case-series studies, rather than relying on pre-and post-measures as an indication of session by session changes in outcomes; inferences about treatment effectiveness are drawn by observing changes in variables of interest across baseline (A), treatment (B) and post treatment phases (A). Participants in this study were therefore allocated to receive up to 20 sessions of standard CBTp or 20 sessions MCT+. Participants were assessed on primary outcomes weekly for a four week

baseline period before starting treatment, and then on a session-by-session basis during treatment followed by a four week post therapy treatment assessment period as well as 12-weeks after treatment. For a detailed schedule of assessments please refer to Table 10 in Chapter 4.

5.2.2. Participants

This study aimed to recruit 20 participants with psychosis waiting to receive standard CBTp, or individuals already receiving non-structured psychological support. Inclusion criteria were:

-Were aged 16 or over

-Competent and willing to provide written, informed consent

-Currently experiencing delusions (A score of ≥3 on PANSS item P1, P5 or P6)

Exclusion criteria were:

-Significant developmental disability

-Currently receiving or have received CBTp in the last 6 months

-Significant difficulty with the English language

5.2.3. Setting

The study was conducted in mental health services across Lothian including outpatient community mental health services as well as inpatient and rehabilitation services. Standard practice is for therapy to be delivered in person across NHS Lothian services. However, if this is not possible for an extended period of time (due to COVID-19), therapy sessions were conducted over the phone with the potential of therapy material to be sent to participants via post if needed.

5.2.4. Measures

Primary outcomes were assessed by the **PSYRATS** (Haddock, McCarron, Tarrier and Faragher, 1999), used to assess delusions, and the **DACOBS** (van der Gaag et al., 2013) used to collect data on self-reported cognitive biases across therapy, including the external attribution bias, the belief inflexibility bias and the jumping to conclusions bias.

Secondary metacognitive outcome measures were collected through the **JTC Fish task** (Moritz & Woodward, 2007), where draws to decision (DTD) was used asses changes in decision making. The **BADE task** (Woodward, et al. 2006) was used to assess changes in the bias against disconfirmatory evidence, whereas the **RFQ-8** (Fonagy et al., 2016) was used to assess reflective functioning. Internalised stigma was assessed through the **ISMI-24 (**Ritsher, Otiligan & Grajales, 2003) and functioning was assessed using the **GAF** (APA, 1987). Quality of life and mood were assessed using the **Q-LES-Q-18** (Ritsner, Kurs, Gibel, Ratner & Endicott, 2005), and the **CDSS** (Addington, Addington, & Schissel, 1990) respectively. Finally, the **PANSS** (Kay et al., 1987) was used to assess general psychopathology, where changes in the PANSS general psychopathology subscale was of interest to the current study.

5.2.5 Data Analysis

Data was analysed using graphical representations of change across therapy, as well as through the examination of effect size change from on study outcomes, by comparing average baseline scores with average post therapy scores. In order to assess

meaningful change, which is particularly relevant when new treatment types might be implemented into services, the current study also assessed clinically significant change which was defined as a 25% reduction in participants PSYRATS delusions scores. This definition has been used in previous clinical trials (Durham et al., 2003) and pilot case-series (Hutton, Morrison, Wardle, & Wells, 2014). In order to further assess change across therapy and to more reliably examine potential change mechanisms MLM was used, due to its statistical advantages in analysing 'nested' small N data, with an increasing number of researchers using MLM to analyse case series (e.g. Becraft et al., 2020).

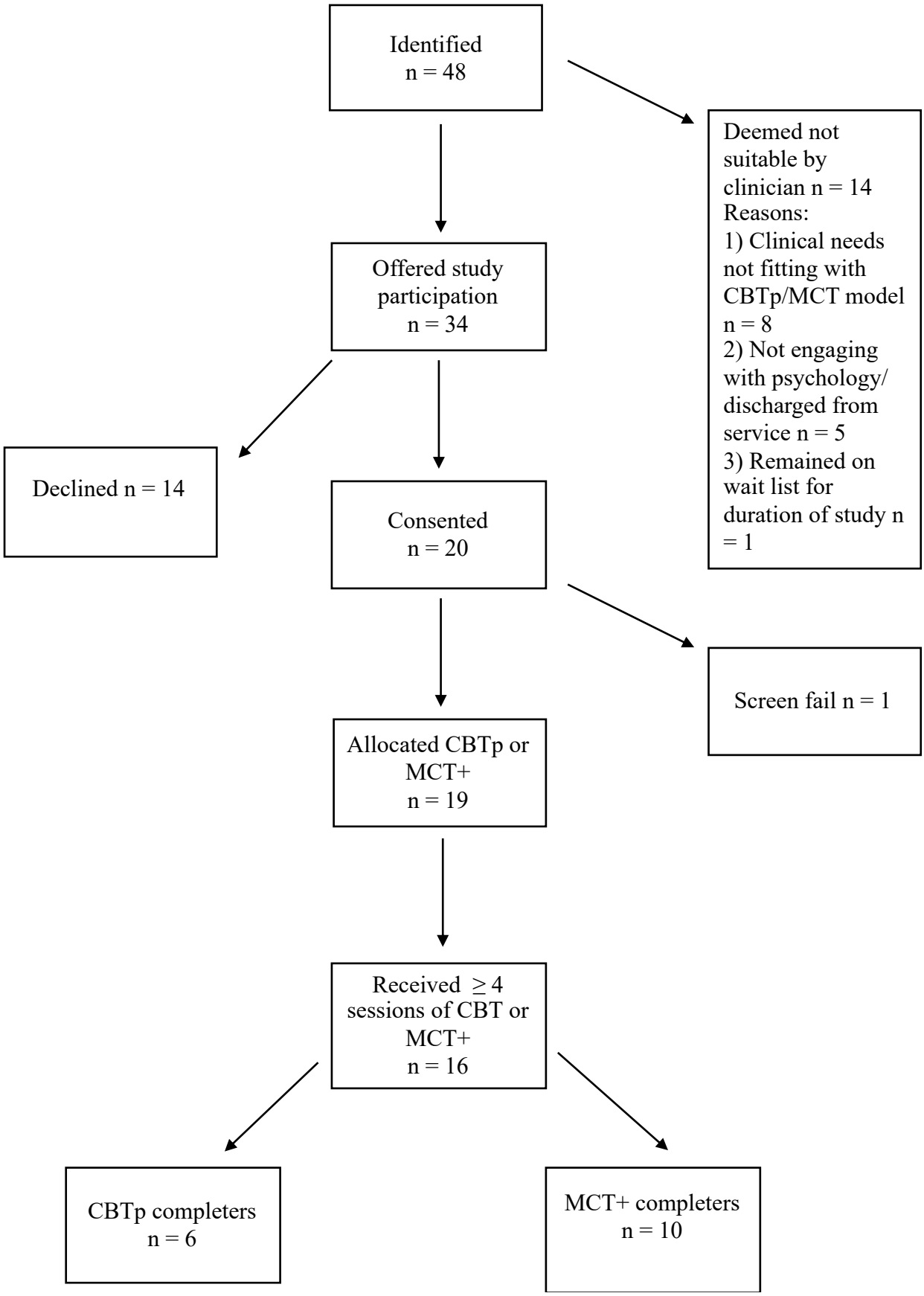
5.3. Results

5.3.1 Recruitment and referrals

29 clinicians engaged with the study an agreed to work towards identifying and suitable patients, leading to a total of 43 individuals being considered for participation. Figure 2 outlines the consort diagram of study referrals. Participants were referred from outpatients Community Mental Health Services n = 16 (n = 10 consented), Child and Adolescent Mental Health Services n = 5 (n = 3 consented), Rehabilitation services n = 10 (n = 4 consented) and acute in-patient services n = 3 (n = 3 consented). As depicted, 58% of those offered study participation agreed to take part. With one participant failing screening due to not having any positive symptoms, 19 participants took part in the study. The dropout rate was 26.31%; three participants withdrew from the study prior to starting therapy (p. 4, 10 & 16) and a further two participants (p. 2 & p. 15) actively withdrew from the study during therapy. One participant withdrew due to being quite unwell at the time and another participants decided to end therapy

prematurely due to not feeling that conducing sessions over the phone (due to the COVID-19 lockdown) worked. However, as both participants had received more than 4 sessions of therapy, and one agreed to complete post therapy measures before ending therapy and trial participation (p. 15), these were included in the main analysis. The 16 individuals included in the study received between 4 and 19 sessions of therapy (M = 13.0, SD = 5.64). Due to the quasi-randomised nature of the study, where only CBTp therapists could deliver CBTp, seven participants were offered CBTp, whereas 12 were offered MCT+. However, due to three participants withdrawing before treatment had started, six participants completed ≥ 4 sessions of CBTp and 10 participants completed ≥ 4 sessions of MCT+.

Figure 2. Consort diagram of referrals and recruitment



5.3.2. Participant characteristics

Fifteen out of the 19 participants taking part were male (78%). The mean age of the sample was 35.0 (SD = 10.93) and mean years of education was 14.47 (SD = 1.90). Most participants had completed high school (n = 17) with 5 participants having completed college degrees or equivalent. Most participants were unemployed at the time of the study (n = 17), with those not unemployed being students (n = 2). Seven participants were inpatients and twelve were outpatients, although during the study two participants who had been recruited from acute inpatient services were discharged. All participants were at the time of the study taking at least one antipsychotic medication, with 7 (36.8%) receiving a combination of two antipsychotic agents. Mean duration of living with psychosis ranged from 8 months to 27 years (M = 10.75, SD = 8.13), with mean age of onset being 25.06 years (SD = 7.97). Table 12 shows demographic and clinical characteristics of those allocated to receive CBTp and MCT+ respectively, as well as mean baseline scores of primary outcome measures in each group. In terms of cognitive bias scores at baseline, based on norm scores from the scale developers (Van der Gaag et al., 2013), participants in both conditions were classed as scoring “above average” on the Jumping to Conclusions and External Attribution bias scales. Those in the MCT+ group also scored “above average” on the Belief Inflexibility Bias scale, whereas the CBTp group’s mean fell in the “average” range.

Table 12. Baseline demographic and clinical characteristics of the full sample

Demographic & Clinical characteristics, Mean (SD)	**CBTp n = 7** **M (SD)**	**MCT+ n = 12** **M (SD)**	**Test of difference**
Age	29.85 (10.95)	38.0 (10.17)	*t*(17) = 1.64
Males/Females (n)	6/1	9/3	
Years of Education	14.71 (2.1)	14.33 (1.87)	*t*(17) = 0.41
Age of onset	22.0 (5.83)	26.58 (8.67)	t(17) = 1.24
Years of Psychosis	9.5 (5.75)	11.37 (9.27)	t(17) = 0.48
Outpatients/Inpatients (n)	5/2	7/5	
Previous hospitalisations	4.71 (4.23)	5.0 (7.80)	t(17) = 0.09
Primary outcome measures at baseline[1]			
PSYRATS Delusions	16.43 (3.81)	16.49 (4.79)	*t*(17) = 0.03
DACOBS Jumping to Conclusions Bias	27.32 (3.54)	28.02 (5.30)	*t*(17) = 0.31
DACOBS External Attribution Bias	24.46 (3.66)	25.38 (5.86)	*t*(17) = 0.37
DACOBS Belief Inflexibility Bias	19.71 (3.99)	23.25 (3.68)	*t*(17) = 1.96

[1] = Baseline scores aggregated across baseline assessment points. *p < 0.05. ** p < 0.001. *** p < 0.001

5.3.3. Change in delusions across therapy phases

As seen in Figure 3, there was a decline in delusions across therapy phases across both treatment modalities. The graphs appeared to indicate more stable decline amongst those receiving CBTp, whereas those in the MCT+ condition there was a steeper decline early on in therapy (between sessions 1 and 8), delusion reduction across both phases appeared comparable.

Table 13 depicts percentage of change in delusions from the baseline to therapy & post-therapy phases, as well as from baseline to the 12-week follow up assessment for each participant. As depicted, two out of six participants in the CBTp condition achieved a clinically significant reduction in delusions during therapy (p. 11 & p. 13) which was maintained at post-therapy and 12-week follow-up assessment points. This reduction was particularly salient for p. 13, who's symptoms had reduced by 78.7% at the 12-week follow-up assessment. Moreover, p. 1 had also achieved a clinically significant reduction in delusions from baseline to post therapy. However, this was not maintained at the 12-week follow-up assessment point. For those receiving MCT+, two participants (p. 8 & p. 17) had achieved a clinically significant reduction in delusions during the therapy phase, whereas four out of 10 participants had achieved a clinically significant reduction in symptoms at post-therapy, indicating comparable levels to those receiving CBTp. However, as depicted only one participant in the MCT+ group (p.12) had a clinically significant reduction at the 12-week follow-up period, even though it should be noted follow-up data from several participants receiving had not been collected at the time of write up. As seen in Table 14, when the effect size change (Cohen's *d*) was calculated, there was a large reduction in delusions across both treatment modalities.

Figure 3. Graphical depiction of delusion scores across baseline, therapy and post therapy phases.

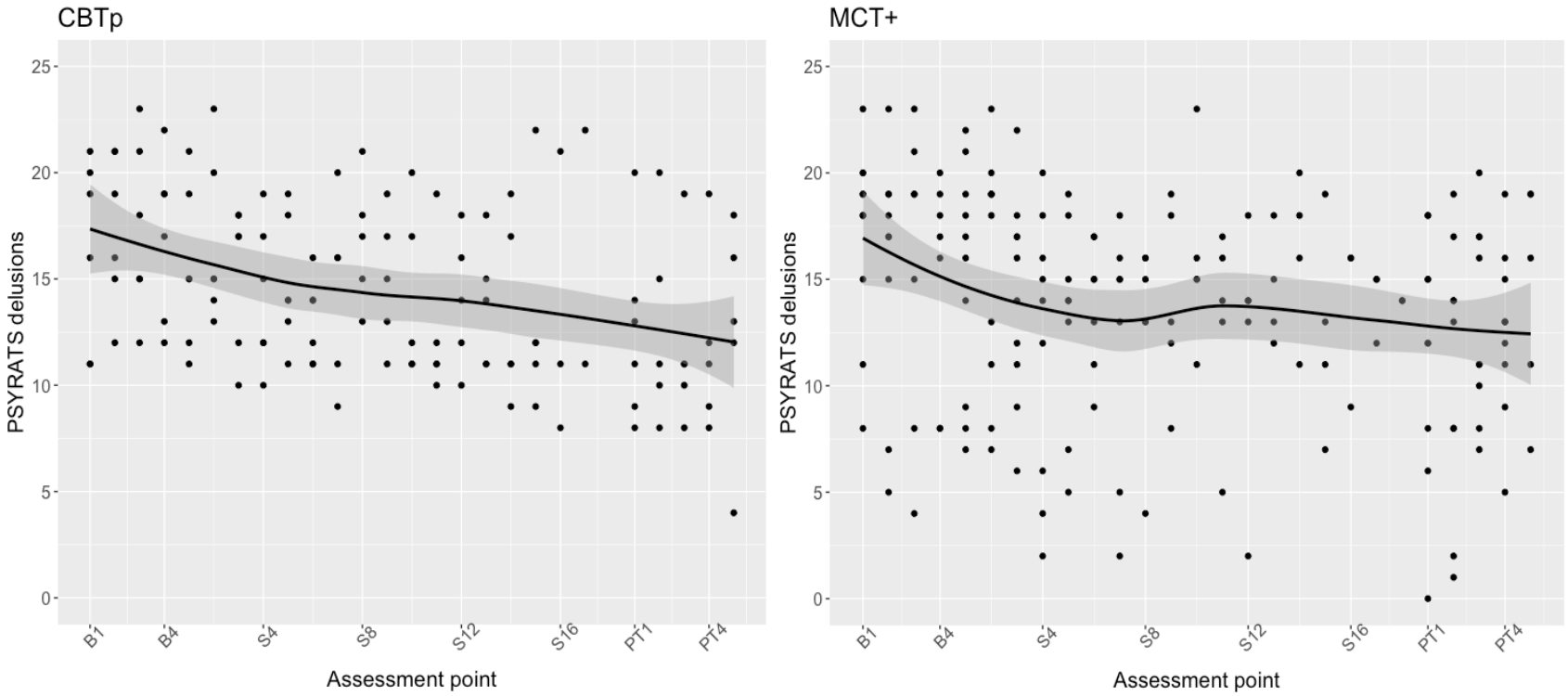


Table 13. Percentage change from baseline across therapy phases.

CBTp	**Baseline – treatment**	**Baseline – post therapy**	**Baseline – 12-week FU**
p. 1	- 10 %	**- 32.8 %**	+ 10 %
p. 3	+ 3 %	- 2 %	+ 2 %
p. 5	-10.5 %	- 9.3 %	-16.3 %
p. 11	**- 27.88 %**	**- 40.2 %**	**- 36.58 %**
p. 13	**- 26.0 %**	**- 57.3 %**	**- 78.7%**
p. 15	- 12.2 %	- 20.0%	-
MCT+	**Baseline – treatment**	**Baseline – post therapy**	**Baseline – 12-week FU**
p. 2	- 12.1 %	+ 2.9 %	-
p. 6	- 20.0%	+ 13.3 %	+ 26.68%
p. 7	- 17.8 %	**- 30.56% %**	+5.56 %
p. 8	**- 40.0 %**	**- 41.68 %**	-11.1 %
p. 9	- 15.7 %	- 23. 9 %	-
p. 12	- 12.8 %	- 23.07% %	**- 43.6 %**
p. 14	+ 1.9%	-17.64%	-17.64%
p. 17	**- 28.42%**	**- 57.9%**	**
p. 18	- 22.9%	**- 29.3%**	**
p. 19	- 5.44%	- 20.8%	**

Notes: ** = Data not collected at time of write up. Change of 25% or above presented on bold.

Table 14. Effect size change for delusions across baseline and post therapy.

	Delusions Baseline mean (SD)	Delusions Post-therapy mean (SD)	Effect size (d)
CBTp	17.00 (3.83)	12.17 (3.94)	- 1.21
MCT+	16.55 (5.28)	12.28 (4.53)	- 1.09
Total	16.72 (4.66)	12.28 (4.18)	- 1.12

Statistical modelling of delusion change

In order to investigate statistical change in delusions across treatment, the next step in the analysis was to use MLM to explore whether onset of therapy was statistically associated with change in delusions, and whether this change differed across the two treatment modalities. In order to do this, five models were tested, with the results depicted in Table 15.

The unconditional means model (Model 1) indicated that the intercept was significant, b = 14.0 (12.31, 15.70), $t(301) = 16.24$, p = <0.0001. The intercept also varied across individuals: sd = 3.35 (2.32, 4.83). The ICC was 0.50, indicating that multilevel modelling was appropriate, as approximately 50% of variance in symptoms was attributable to differences between participants. Model 2 tested symptom change across sessions and post-treatment assessment points (baseline assessments coded as 0), indicating a significant reduction in delusions across therapy: b = – 0.18 (-0.23, -0.14), $t(300)$, -8.08, p = < 0.0001. Model 2 was a significant improvement over Model 1, $\chi^2(1) = 59.26$, $p < 0.0001$. Model 3 also indicated that the slopes varied across individuals sd = 0.16 (0.10, 0.25), and provided further model improvement χ^2 (2) = 35.97, $p < 0.0001$, indicating that change across therapy treatment varied between individuals. Model 4 considered within-subject variance. A significant correlation parameter (Phi = 0.22 (0.08, 0.35), indicated that there was significant within-subject

variance, and taking the autoregressive structure of the data into account resulted in further model improvement (χ^2 (1) = 11.03, p = 0009. The next step was to test whether change in delusions differed across the two treatment modalities. The effect of treatment modality in Model 5, was not significant b = – 0.50 (– 4.30, 3.30), t(14), – 0.28, p = .78, and as seen in Table 4, worsened model fit. Similarly, the interaction between treatment modality across sessions was not significant b = – 0.07 (– 0.21, 0.06), t(299), – 1.09, p = .28, and did not improve model fit over Model 3 (χ^2 (1) = 1.05, p = .31. Hence, whilst symptoms declined significantly across therapy this change did not differ between the two treatment conditions.

Table 15. MLM output of change in delusions across therapy.

	Model 1 Intercept	**Model 2** Treatment RI	**Model 3** Treatment RS	**Model 4** within-subject variance	**Model 5** Condition	**Model 6** Condition *Sessions
Intercept	14.0 (0.86)***	15.61 (0.90)***	15.52 (1.01)***	15.52 (1.02)***	16.33 (3.06)***	15.79 (1.05)***
Treatment		– 0.18 (0.02)***	– 0.17 (0.05)**	– 0.17 (0.05)**	– 0.17 (0.05)**	– 0.04 (0.13)
Condition					– 0.50 (1.78)	
Condition *time						– 0.07 (0.07)
AIC	1715.02	1657.76	1625.79	1616.75	1618.68	1617.70
-2LL	1709.01	1649.76	1613.79	1602.75	1602.68	1602.70

Notes: ***p< .0001. **p <.01. *p <.05.

5.3.4. Change in self-reported biases across therapy

In order to answer the second research question, change in cognitive biases across therapy was investigated, in order to assess whether there were modality specific changes in such biases, as these are particularly targeted by MCT+. A similar model structure to that seen for delusions was tested, but with the respective cognitive biases as outcome variables. Table 16 outlines average baseline and post therapy scores as well as effect size change for each cognitive bias.

Table 16. Effect size change for the each cognitive bias across baseline and post therapy phases.

	EA baseline mean	EA post-therapy mean	Effect size (*d*)
CBTp	24.38 (3.99)	25.79 (5.95)	0.37
MCT+	25.03 (5.79)	20.99 (3.46)	- 1.02
Total	24.78 (5.05)	22.79 (4.97)	- 0.43
	BI baseline mean	BI post-therapy mean	Effect size (*d*)
CBTp	19.17 (4.07)	18.21 (3.03)	- 0.25
MCT+	23.73 (3.86)	20.47 (5.63)	- 0.78
Total	22.02 (4.43)	19.62 (4.84)	- 0.59
	JTC Baseline mean	JTC post therapy mean	Effect size (*d*)
CBTp	26.54 (3.15)	24.83(4.98)	-0.64
MCT+	27.33 (5.53)	25.17 (5.00)	- 0.36
Total	27.04 (4.67)	25.04 (4.83)	- 0.40

Notes: EA = External attribution bias, BI = Belief inflexibility bias, JTC = Jumping to conclusions bias.

External Attribution Bias

Figure 4 illustrates change in the external attribution (EA) bias for the two treatment modalities. As illustrated, the EA appeared to decline amongst those receiving MCT+ only, particularly around sessions 4-8 whereas it remained fairly stable amongst those receiving CBTp. Next, a multilevel model, with the EA bias as the outcome variable was tested, in order to statistically investigate whether therapy onset was associated with change in this bias, and whether this differed between the two treatment modalities, as indicated in Fig. 4. Results are depicted in Table 17.

The unconditional means model (Model 1) indicated that the intercept was significant, b = 23.69 (21.61, 25.77), $t(300)$ = 22.44, p = <0.0001. The intercept also varied across individuals: sd = 4.13 (2.89, 5.92). The ICC was 0.59, indicating sufficient variance and that multilevel modelling was appropriate, as approximately 59% of variance in symptoms was attributable to differences between participants. Model 2 tested change across therapy sessions, indicating that there was significant change across therapy, b = – 0.08 (– 0.12, – 0,03)), $t(299)$ = – 3.10 , p = 0.002, and Model 2 was a significant improvement to model fit χ^2 (1) = 9.51, p = .002. Slopes varied significantly across participants sd = 0.14 (0.09, 0.24), and allowing slopes to vary in Model 3, improved model fit χ^2 (1) = 20.57, p = < .0001.

Figure 4. Graphical depiction of EA scores across baseline, therapy and post therapy phases.

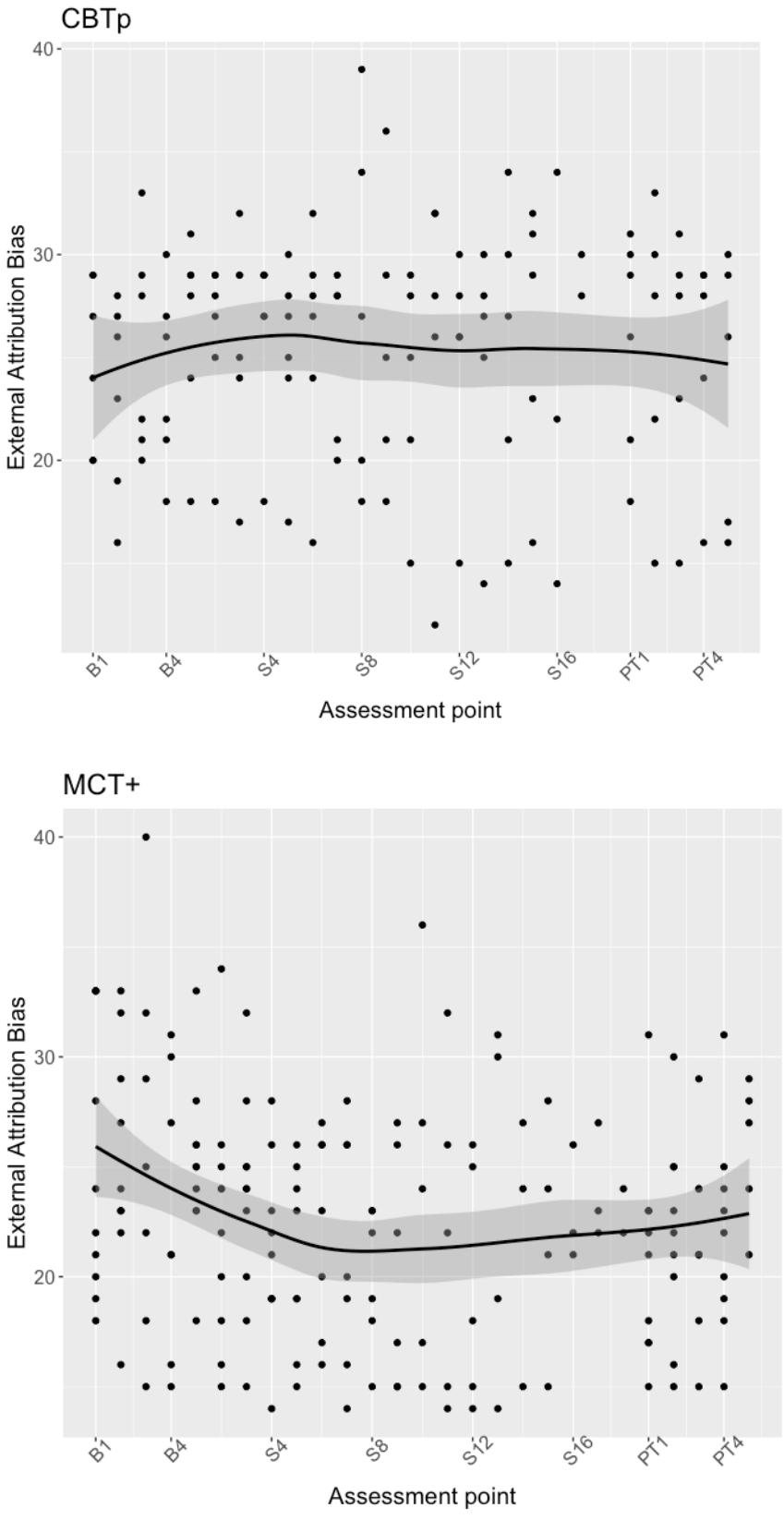


Table 17. MLM output of change in the EA bias across therapy.

	Model 1 Intercept	**Model 2** Time RI	**Model 3** Time RS	**Model 4** within-subject variance	**Model 5** Condition	**Model 6** Condition *time
Intercept	23.69 (1.06)***	24.38 (1.09)***	24.39 (1.03)***	24.44 (1.05)***	28.72 (3.50)***	24.46 (1.05)***
Treatment		– 0.08 (0.03)**	-0.08 (0.04)	- 0.08 (0.04)	-0.08 (0.05)	0.22 (0.13)
Condition					-2.64 (2.06)	
Condition *time						-0.19 (0.08)*
AIC	1732.91	1725.40	1708.83	1699.91	1700.58	1697.20
-2LL	1726.91	1717.40	1696.83	1685.91	1684.58	1681.20

Notes: ***p< .0001. **p <.01. *p <.05.

Next, within-participant variance was considered. A significant correlation parameter (Phi = 0.21 (0.08, 0.32)), indicated that adjacent time points were correlated within participants. Taking the autoregressive error structure into account in Model 4, further improved Model fit χ^2 (1) = 19.91, p = < .001. Whilst the fixed effect of treatment modality in Model 5 was not significant (*b* = – 2.64 (– 7.05, 1.76)), *t*(14) = –1.28 , *p* = 0.22, and did not improve Model fit as seen in table 5. However, the interaction term in Model 6, was significant *b* = – 0.19 (– 0.34, –0.03), *t*(298) = – 2.32, *p* = .02, and significantly improved model fit over the previously best model (Model 4) χ^2 (1) = 4.71, p = 0.03. Whilst the effect of sessions did not remain significant in Model 6, the significant interaction term between condition and sessions indicated that there was differential change in the EA bias across the two treatment modalities. Post hoc analyses therefore proceeded to explore change in the EA bias for both treatment modalities separately, summarised in Table 18 below.

Table 18. Post hoc test of change in the EA bias across both conditions.

CBTp	**Model 1** Intercept	**Model** Treatment RI	**Model 3** Treatment RS	**Model 4** Within-subjects variance
Intercept	25.67 (1.82)***	25.45 (1.86)***	25.42 (1.41)***	25.42 (1.41)***
Treatment		0.03 (0.04)	0.03 (0.06)	0.04 (0.07)
AIC	713.68	715.15	705.26	705.14
-2LL	707.68	707.15	693.26	691.14
MCT+	**Model 1** Intercept	**Model** Treatment RI	**Model 3** Treatment RS	**Model 4** Within-subjects variance
Intercept	22.49 (1.14)***	23.81 (1.23)***	23.74 (1.40)***	23.83 (1.43)***
Treatment		-0.15 (0.03)***	–0.14 (0.05)**	– 0.14 (0.05)*
AIC	1016.07	1000.22	998.19	990.85
-2LL	1010.07	992.22	986.19	976.85

Notes: ***p< .0001. **p <.01. *p <.05.

As seen in Table 18, and reflecting graphical depictions of change in the EA bias in both conditions, there was no significant change across therapy and post therapy phases for those receiving CBTp b = 0.03, $t(129)$ = 0.73, p = .47. In the CBTp group, within-participant variance was not significant (Phi = 0.14 (–0.05, 0.32), and adding an autoregressive covariance structure in Model 4, did not lead to a significant model improvement.

For the MCT+ group a significant reduction in the EA bias across treatment was observed, b = -0.14, $t(169)$, –2.74, p = 0.007, with a marginal model improvement seen when slopes were allowed to vary between participants sd = 0.113 (0.05, 0.25), χ^2 (1) = 6.03, p = 0.05. In the MCT+ group, there was significant within-subjects variance (Phi

= 0.26 (0.08, 0.43)), and taking the autoregressive structure of the data into account in Model 4, further improved model fit (χ^2 (1) = 9.33, p = 0.002) and reductions in the EA bias across treatment remained significant *b* = -0.14, *t*(169) = –2.58, *p* = 0.01.

5.3.5. External attribution and change in delusions

The next step in the analysis proceeded to explore whether change in the EA bias in the MCT+ group was associated with change in delusions across therapy. Results are depicted in Table 19 below.

Table 19. MLM output including the EA bias as a predictor of change in delusions in the MCT+ group.

	Model 1 Intercept	**Model 2** Treatment RI	**Model 3** Treatment RS	**Model 4** Within-subject variance	**Model 4** EA	**Model 5** EA *sessions
Intercept	13.78*** (1.24)	15.17*** (1.28)	15.08*** (1.43)	15.09*** (1.42)	9.80*** (2.08)	12.81*** (2.53)
Treatment		– 0.16** (0.03)	– 0.15** (0.05)	– 0.14** (0.05)	– 0.12* (0.05)	– 0.46** (0.17)
EA					0.22** (0.07)	0.10 (0.09)
EA *sessions						0.01* (0.007)
AIC	1000.31	979.03	975.83	972.76	956.33	954.61
-2LL	994.30	971.03	963.83	958.76	940.33	935.99

Notes: ***p< .0001. **p <.01. *p <.05

As seen in Table 19, the unconditional means model (Model 1) indicated that the intercept was significant, *b* = 13.78 (11.34, 16.21), *t*(171) = 11.15, *p* = <0.0001, and varied across individuals *sd* = 3.79 (2.39, 6.025), ICC = 0.55. Model 2 tested indicated that there was a significant change in delusions across therapy sessions, indicating that delusions reduced across therapy *b* = – 0.16 (– 0.21, – 0.09), *t*(170) = – 4.97, *p* < .0001.

and Model 2 was a significant improvement to model fit χ^2 (1) = 23.27, p < .0001. Slopes varied significantly across participants *sd* = 0.14 (0.09, 0.24), and allowing slopes to vary in Model 3, improved model fit χ^2 (1) = 20.57, p = < .0001. Slopes varied across participants *sd* = 0.12 (0.06, 0.25), and the random slopes model (Model 3), further improved model fit χ^2 (2) = 7.20, p = .03. A significant phi parameter indicated that scores at adjacent time points were correlated (Phi = 0.20 (0.02, 0.37), and adding an autoregressive covariance structure in Model 4, improved model fit further χ^2 (1) = 5.09, p = .02. From this model, the EA bias was added as a predictor of delusion change in Model 5. As depicted, the EA bias predicted change in delusions, b = 0.22 (0.09, 0.36), t(167) = 3.25, p = 0.001, and Model 5 was a significant improvement over Model 4: χ^2 (1) = 18.43, p < .0001. Model 6, further indicated that the interaction term was significant b = 0.01 (0.001, 0.03), t(166) = 2.11, p = 0.04, and significantly improved model fit further χ^2 (1) = 4.34, p < .04.

To control for directionality of the effect, in order to assess whether change in delusions may have predicted changes in the EA bias across sessions, additional MLM analyses were conducted where delusions were added to the model of change in the external attributions bias across therapy. As seen in Table 20, adding delusions to the effect of session change on the EA bias was significant b = 0.24 (0.09, 0.40), t(167) = 3.14, p = 0.002, and improved model fit χ^2 (1) = 14.81, p < .0001. However, adding the interaction term was not significant b = - 0.00 (-0.02, 0.01), t(166) = -0.06, p = 0.95, and as seen by the increased AIC value in Table 20, worsened model fit. This suggested that change in delusions across sessions did not predict change in EA.

Table 20. Test of reverse interaction effect for the EA bias in the MCT+ sample.

MCT+	**Model 4** Within-subjects variance	**Model 1** Delusions	**Model** Delusions* sessions
Intercept	23.83 (1.43)***	20.14 (1.76)***	20.08 (2.07)***
Treatment	– 0.14 (0.05)*	-0.10 (0.05)*	-0.10 (0.12)
Delusions		0.24 (0.08)**	0.25 (0.11)**
Delusions* sessions			-0.00 (0.01)
AIC	990.85	978.04	980.02
-2LL	976.85	962.04	962.02

Notes: ***p< .0001. **p <.01. *p <.05

Belief Inflexibility Bias

Figure 5 illustrates change in the belief inflexibility (BI) bias, which indicated modest reduction across both treatment modalities. As depicted in Table 21, The unconditional means model (Model 1) indicated that the intercept was significant, *b* = 20.36 (18.25, 22.46), *t*(300) = 19.04, p = <0.0001, and varying significantly across individuals: *sd* = 4.20 (2.94, 6.02). Model 2 tested change across treatment and post-treatment assessment points indicating a significant change in the BI bias across therapy *b* = – 0.10 (-0.15, -0.06), *t*(299) = -4.54, p = .002, with Model 2 being a significant improvement over Model 1, $\chi^2(1) = 20.01$, p < 0.001. Model 3 also indicated that slopes varied across individuals s*d* = 0.16 (0.10, 0.25), and provided further model improvement χ^2 (2) = 35.24, p < 0.0001. The within-subjects correlation parameter was not significant (Phi = 0.11 (– 0.03, 0.24), suggesting that scores at adjacent time points were not related. Reflecting this, adding an autoregressive covariance structure only

produced a small model improvement. Adding treatment modality in Model 5, approached significance, b = 4.01 (– 0.29, 8.31), $t(14) = 1.99$, $p = .07$, and lead to a small improvement in model fit $\chi^2(1) = 3.18$, $p = 0.07$. The interaction term in Model 6, was not significant b = – 0.08 (– 0.24, 0.09), $t(298) = –0.88$, $p = .38$, but led to a small, non-significant model improvement $\chi^2(1) = 3.18$, $p = 0.07$. Moreover, in this model, the effect of treatment condition became significant.

Because there was an indication towards a difference in effect of treatment condition, and because the graph indicated that BI appeared to decrease more in the MCT+ group, post hoc analyses were done where change in BI were tested for each treatment modality separately. Results are depicted in Table 22. As seen, there was no significant change in self-reported BI across the sessions for the CBTp group. For the MCT+ group a significant reduction in the BI bias across treatment was observed, b = -0.17, $t(169)$, –5.37, $p = < .0001$ with a significant model improvement seen when slopes were allowed to vary between participants sd = 0.17 (0.10, 0.30), $\chi^2(1) = 19.55$, p = 0.0001. Reflecting the non-significant correlation parameter (Phi = 0.14 (– 0.03, 0.30)), taking the autoregressive structure of the data into account in Model 4, did not significantly improve model fit $\chi^2(1) = 2.61$, p = 0.11.

Figure 5.Graphical depiction of Belief Inflexibility Bias scores across baseline, therapy and post therapy phases.

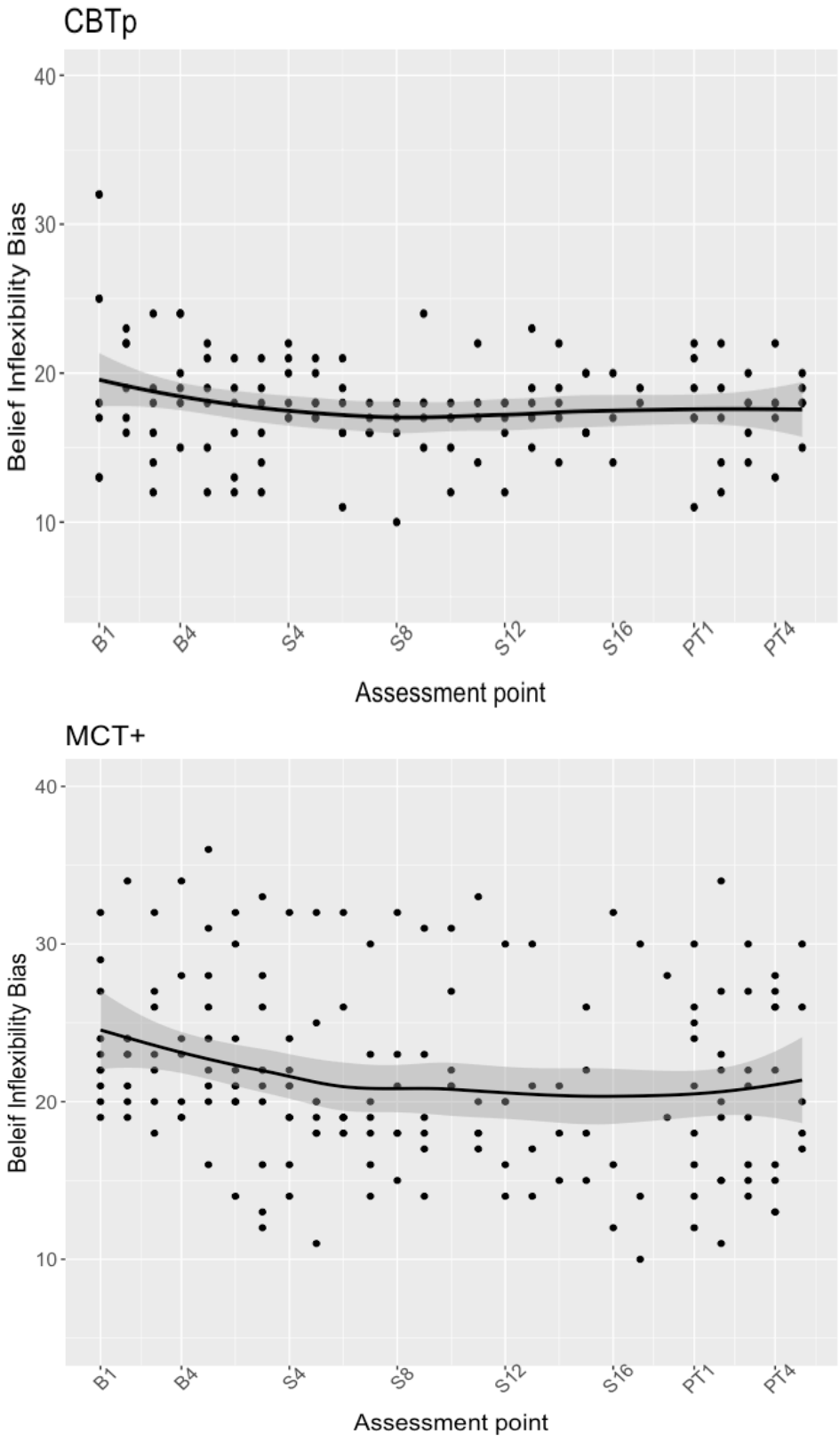


Table 21. Change in BI bias including the whole sample.

	Model 1 Intercept	**Model 2** Treatment RI	**Model 3** Treatment RS	**Model 4** Within-subjects variance	**Model 5** Condition	**Model 6** Condition *sessions
Intercept	20.35***	21.25***	21.22***	21.22***	14.68***	13.32**
	(1.07)	(1.09)	(1.18)	(1.18)	(3.42)	(3.55)
Treatment		– 0.10***	– 0.10*	– 0.10*	-0.10	0.11
		(0.03)	(0.05)	(0.05)	(0.05)	(0.15)
Condition					-4.02	4.68*
					(2.01)	(2.10)
Condition *sessions						-0.13
						(0.09)
AIC	1675.43	1657.42	1626.18	1625.64	1624.46	1624.46
-2LL	1669.43	1649.42	1614.18	1611.64	1608.46	1606.47

Notes: ***p< .0001. **p <.01. *p <.05

Table 22. Post hoc test of change in the BI bias across both conditions.

CBTp	**Model 1** Intercept	**Model** Treatment RI	**Model 3** Treatment RS	**Model 4** Within-subjects variance
Intercept	18.06 (1.82)***	18.17*** (0.96)	18.19*** (1.11)	18.19*** (1.11)
Treatment		– 0.01 (0.03)	– 0.02 (0.05)	– 0.02 (0.05)
AIC	670.84	672.68	671.34	673.25
-2LL	664.84	664.68	659.34	659.25
MCT+	**Model 1** Intercept	**Model** Treatment RI	**Model 3** Treatment RS	**Model 4** Within-subjects variance
Intercept	21.73*** (1.45)	23.20*** (1.52)	23.07*** (1.49)	23.06*** (1.50)
Treatment		– 0.17*** (0.03)	– 0.15* (0.06)	– 0.15* (0.06)
AIC	994.29	969.43	953.88	953.27
-2LL	988.29	961.43	941.88	939.27

Notes: ***p< .0001. **p <.01. *p <.05

5.3.6. Belief inflexibility and change in delusions

Because BI changed significantly amongst those in the MCT+ treatment, the next step in the analysis proceeded to explore whether this was associated with change in delusions. Results are presented in Table 23.

Table 23. Summary of models adding BI to the effect on delusions in the MCT+ sample.

	Model 4 Within-Subject variance	**Model 5** BI	**Model 6** BI*sessions
Intercept	15.09*** (1.42)	10.81*** (2.11)	13.04*** (2.66)
Treatment	– 0.14** (0.05)	– 0.12* (0.04)	-0.36* (0.16)
BI		0.19* (0.08)	0.09 (0.10)
BI*sessions			0.01 (0.007)
AIC	972.76	960.37	960.10
-2LL	958.76	944.37	942.10

Notes: ***p< .0001. **p <.01. *p <.05

As illustrated above, when the BI bias was added to the model of delusion change (Model 5), model fit significantly improved, χ^2 (1) = 14.39, p < .0001, and BI was associated with over-all delusion change b = 0.19 (0.04, 0.33), t(167), 2.46, p = 0.01. However, adding the interaction term in Model 6 was not significant, b = 0.01 (– 0.003, 0.02), t(166), 1.50, p = 0.14, and did not significantly improve model fit χ^2 (1) = 2.27, p = 0.13. Hence, whilst reduction in BI was associated with over-all delusion reduction, change in BI across sessions did not predict change in delusions.

As changes in the BI bias across sessions did not predict changes in delusions, additional analyses were completed to assess the directionality of these effects; I.e. whether change in delusions across sessions predicted changes in BI across sessions. Table 24 depicts this, where change in delusions was added to the final model of change in the BI across treatment for the MCT+ group. Adding delusions to the effect of session change was significant b = 0.15 (0.02, 0.29), $t(167) = 2.23$, $p = 0.03$, and improved model fit $\chi^2(1) = 9.55$, $p = 0.002$. However, adding the interaction term was not significant b = - 0.00 (-0.02, 0.01), $t(166) = -0.13$, $p = 0.90$, and as seen by the increased AIC value in Table 24, worsened model fit. This suggested that change in delusions across sessions did not predict change in BI.

Table 24. Summary of models adding delusions to the observed change in the BI bias in the MCT+ group.

MCT+	**Model 4** Within-Subject variance	**Model 5** Delusions	**Model 6** Delusions*sessions
Intercept	23.06 (1.50)***	20.70 (1.79)***	20.57 (2.05)
Treatment	– 0.15 (0.06)*	– 0.12 * (0.06)	– 0.11 (0.12)
Delusions		0.16 (0.07)*	0.17 (0.10)
Delusions *sessions			– 0.00 (0.01)
AIC	953.27	945.72	947.70
-2LL	939.27	929.72	929.70

Notes: ***p< .0001. **p <.01. *p <.05

The jumping to conclusions bias

Figure 6 illustrates change in the jumping to conclusions (JTC) bias for the two treatment modalities, which indicated reduction across both treatment modalities. Results from MLM using the JTC bias as the outcome is depicted in Table 25. The unconditional means model (Model 1) indicated that the intercept was significant, b = 25.96 (24.12, 27.80), $t(300) = 27.74$, p = <0.0001, and varying significantly across individuals: sd = 3.63 (2.52, 5.22), ICC = 0.48. Model 2 tested change from baseline, across treatment and post-treatment assessment points indicating a significant change b = – 0.14 (-0.19, -0.09), $t(299) = -5.23$ p = < .0001, with Model 2 being a significant improvement over Model 1, $\chi^2(1) = 26.29$, p < 0.0001. Model 3 also indicated that slopes varied across individuals sd = 0.22 (0.14, 0.35), and provided further model improvement $\chi^2(2) = 49.37$, p < 0.0001. However, in this model, the effect of treatment only approached significance, b = – 0.12 (– 0.24, 0.007), $t(299) = – 1.85$, p = 0.06. Model 4 considered within-subject variance. A non-significant parameter of the within-participant correlation structure (Phi = 0.11 (– 0.02, 0.23), indicated that scores at adjacent time points were not correlated, and adding an autoregressive correlation structure in Model 4 only slightly improved model fit $\chi^2(1) = 2.66$, p = 0.10. Adding the effect of treatment modality in Model 4 was not significant: b = 0.81 (– 3.18, 4.80), $t(14) = 0.43$, p = 0.67), and worsened model fit. Similarly, the interaction term in Model 5 was not significant b = – 0.01 (– 0.24, 0.22), $t(298) = –$ 0.09, p = 0.93, suggesting that change in the JTC bias did not differ between the two treatment modalities.

Figure 6. Graphical depiction of the JTC bias scores across baseline, therapy and post therapy phases.

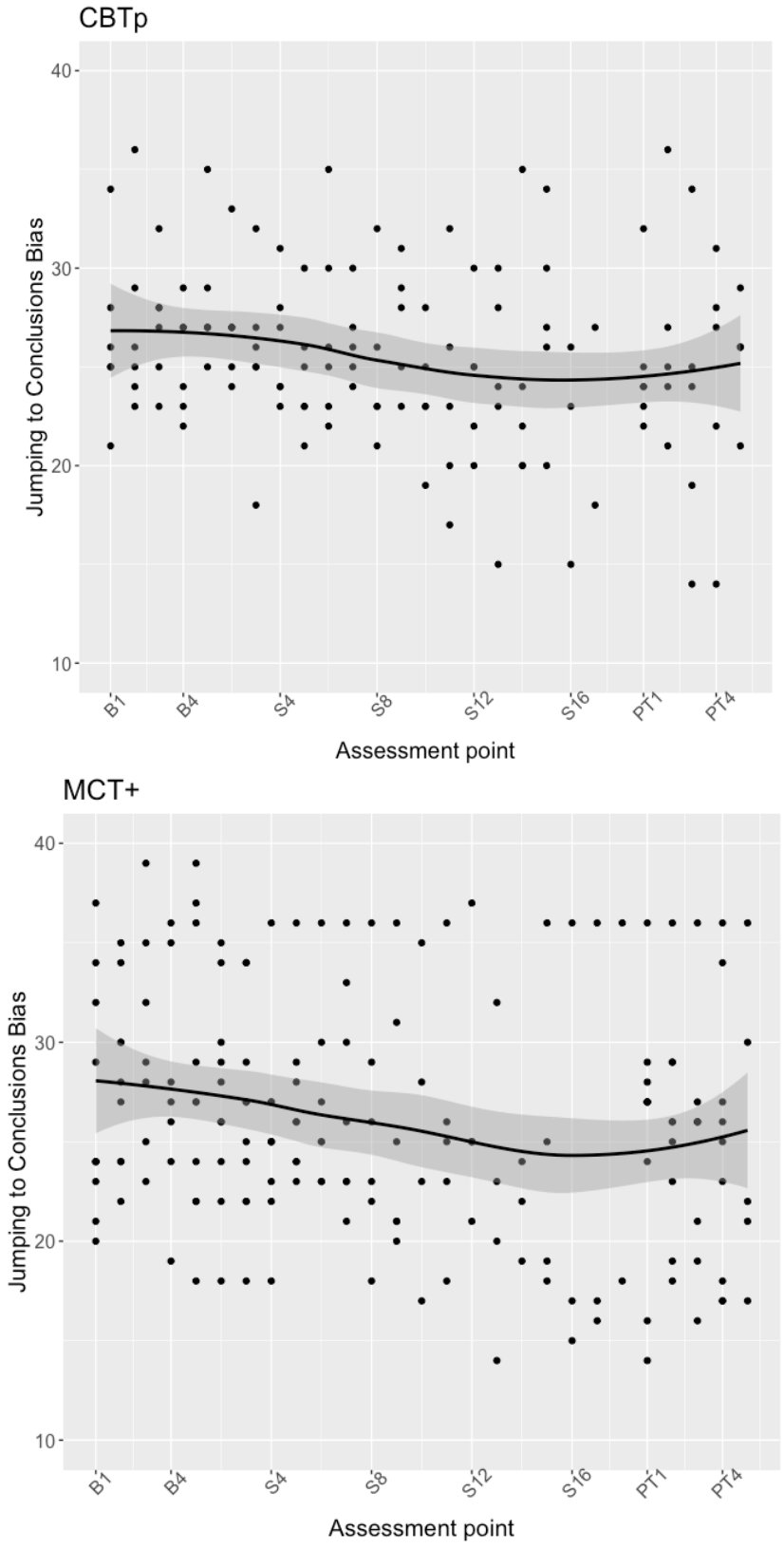


Table 25. Change in the JTC bias for the full sample.

	Model 1 Intercept	**Model 2** Treatment RI	**Model 3** Treatment RS	**Model 4** Within-subject variance	**Model 4** Modality	**Model 5** Modality *sessions
Intercept	25.96*** (0.94)	27.20*** (0.97)	27.14*** (0.98)	27.13*** (0.98)	25.82*** (3.19)	27.14*** (0.99)
Treatment		– 0.14*** (0.03)	-0.12 (0.06)	– 0.12 (0.06)	-0.12 (0.06)	-0.11 (0.20)
Modality					0.81 (1.87)	
Modality *sessions						-0.004 (0.12)
AIC	1784.78	1760.49	1715.12	1714.46	1716.27	1717.12
-2LL	1778.78	1752.49	1703.12	1700.46	1700.27	1703.12

Notes: ***p< .0001. **p <.01. *p <.05

Table 26. Summary of models adding the JTC bias to change in delusions for the full sample.

	Model 4 Within-Subject Variance	**Model 5** JTC	**Model 56** JTC*sessions
Intercept	15.52 (1.02)***	12.05*** (1.65)	10.57*** (2.24)
Treatment	– 0.17 (0.05)**	-0.16** (0.05)	-0.30 (0.13)
JTC		0.13** (0.05)	0.05 (0.07)
JTC *sessions			0.006 (0.006)
AIC	1616.75	1602.79	1612.39
-2LL	1602.75	1586.79	1596.39

Notes: ***p< .0001. **p <.01. *p <.05

5.3.7. Jumping to conclusions and change in delusions

The next analysis proceeded to test the association between change in delusions and change in the jumping to conclusions bias across the full sample. Results are depicted in Table 26. As seen, the JTC bias was significantly associated with change in delusions across both treatment modalities b = 0.13 (0.03, 0.22), t(297), 2.67, p = 0.008, with a significantly improved model fit χ^2 (1) = 15.96 p < .0001 . However, the interaction between change in the JTC bias across sessions was not significant b = 0.006 (-0.02, 0.005), t(296) = -0.98, p = 0.33 and did not provide an improvement in model fit. This fits in with the findings above, that treatment sessions did not significantly predict change in the JTC bias, as the change in the JCT bias across sessions appeared to vary between individuals, making the effect of treatment sessions non-significant. Moreover, visually scanning change in delusions across the two samples appeared to suggest that symptom change preceded change in the JTC bias. Therefore a reverse interaction model was tested, where delusions was added to the model of change in the JTC bias, in the full sample. Results are depicted in Table 28. As seen, adding delusions to the model of change was significant b = 0.18 (0.05, 0.21), t(297), 2.74 p = 0.007, and significantly improved model fit χ^2 (1) = 12.18 p = .0004. However, the interaction effect was not significant b = – 0.006 (0.02, 0.008), t(296), – 0.83 p = 0.41, and as indicated by an increase in the AIC value, worsened model fit. It was noteworthy that the best model describing change in the JTC bias was Model 5 in Table 28, with delusions added, where the effect of treatment on the JTC bias became non-significant. This suggested that the JCT bias was more closely associated with delusions, rather than treatment.

Table 27. Summary of models adding delusions to the effect on the JTC bias for the full sample.

Full sample	**Model 4** Within-Subject Variance	**Model 5** Delusions	**Model 6** Delusions*sessions
Intercept	27.13***	24.36	23.56
	(0.98)	(1.41)***	(1.71)***
Treatment	– 0.12	– 0.09	– 0.002
	(0.06)	(0.06)	(0.12)
Delusions		0.18	0.23
		(0.07)**	(0.09)*
Delusions *sessions			– 0.006
			(0.007)
AIC	1714.46	1704.28	1705.60
-2LL	1700.46	1688.28	1687.60

Notes: ***p< .0001. **p <.01. *p <.05

5.3.8. Change in performance based metacognitive measures & reflective functioning

The following secondary research question explored whether therapy lead to changes in more implicit measures of metacognition including the JTC task (Moritz & Woodward, 2007), the BADE task (Woodward et al., 2007), and the RFQ (Fonagy et al., 2016), and whether changes differed across the two treatment modalities. Table 28 depicts mean baseline and post therapy scores and effect size change of metacognitive tasks and reflective functioning, whereas results from MLM are presented in Table 29. Figure 7-9 illustrates graphically, change across treatment for each outcome.

Table 28. Mean baseline and post therapy scores and effect size change of metacognitive tasks and reflective functioning.

	DTD Baseline	DTD Post therapy	Effect size (d)
CBTp	2.20 (1.15)	3.40 (1.47)	1.10
MCT+	2.21 (0.70)	3.14 (1.31)	0.75
Tot	2.21 (0.86)	3.25 (1.32)	0.92
	BADE Baseline	BADE Post therapy	Effect size (d)
CBTp	11.12 (6.67)	11.35 (10.03)	0.05
MCT+	7.23 (8.23)	5.35 (8.99)	-0.32
Tot	8.84 (7.56)	7.85 (9.50)	- 0.18
	RFQ-U Baseline	RFQ-U Post therapy	Effect size (d)
CBTp	0.68 (0.56)	0.96 (0.63)	0.35
MCT+	0.81 (0.77)	0.92 (0.70)	0.15
Tot	0.76 (0.69)	0.93 (0.65)	0.24
	RFQ-C Baseline	RFQ-C Post therapy	Effect size (d)
CBTp	0.93 (0.89)	0.67 (0.52)	- 0.45
MCT+	0.84 (0.74)	0.44 (0.46)	- 0.59
Tot	0.88 (0.77)	0.53 (0.48)	- 0.55

Draws to Decision

The unconditional means model (Model 1) indicated that the intercept was significant, b = 2.81 (2.35, 3.27), $t(55)$ = 12.13, p = <0.0001, with the intercept varying significantly across individuals: sd = 0.78 (0.49, 1.25), ICC = 0.41. Adding the effect sessions in Model 2, was significant b = 0.05 (0.03, 0.07), $t(54)$ = 4.63 p < .0001, and improved model fit $\chi^2(1)$ = 18.19, p <.0001. Slopes varied significantly sd = 0.05 (0.03, 0.08), and allowing slopes to vary (Model 3) significantly improved model fit $\chi^2(2)$ = 12.69, p = .002. Model 4 considered within-subject variance. A non-significant parameter of the correlation structure (Phi = 0.35 (-0.27, 0.77), indicated that scores at adjacent time points were not correlated for participants, and adding an autoregressive correlation structure in Model 4 worsened model fit, as indicated with an increasing AIC. As seen in Table 29, adding treatment condition in Model 5 was not significant b = 0.03 (-0.89, 0.96), $t(14)$ = 0.08, p = .94, and worsened model fit. Similarly, the interaction between change across treatment sessions and treatment arm was not significant b = -0.01 (-0.06, 0.03), $t(53)$ = -0.52, p = .61, suggesting that change in DTD's was similar in MCT+ and CBTp across treatment.

Table 29. MLM output for secondary metacognitive outcomes.

DTD (Fish task)	**Model 1** Unconditional means	**Model 2** Sessions RI	**Model 3** Sessions RS	**Model 4** Within-subject variance	**Model 4** Modality	**Model 5** Modality *Sessions
Intercept	2.81 (0.23)***	2.31 (0.26)***	2.33 (0.22)***	2.33 (0.22)***	2.28 (0.75)**	2.20 (0.76)**
Sessions		0.05 (0.01)***	0.05 (0.02)**	0.05 (0.02)**	0.04 (0.02)**	0.07 (0.03)*
Condition					0.03 (0.44)	0.20 (0.48)
Condition*Sessions						- 0.08 (0.09)
AIC / -2LL	221.65	205.46 / 197.46	196.77 / 184.77	197.13 / 183.13	198.76 / 184.76	199.90 / 183.90
BADE task						
Intercept	8.03 (1.96)***	9.04 (2.30)**	9.06 (2.07)**	9.06 (2.08)**	18.87 (6.12)**	18.39 (6.81)**
Sessions		– 0.32 (0.37)	– 0.35 (0.39)	– 0.35 (0.39)	– 0.33 (0.39)	– 0.08 (1.29)
Condition					– 6.07 (3.71)	– 5.75 (4.06)
Modality*Sessions						– 0.16 (0.79)
AIC / -2LL	474.70 / 468.70	475.91 / 467.91	478.97 / 466.97	480.99 / 466.99	478.43 / 464.43	480.39 / 464.39
RFQ - C						
Intercept	0.71 (0.14)***	0.86 (0.16)***	0.86 (0.18)***	0.86 (0.16)**	1.18 (0.52)*	1.11 (0.63)
Sessions		– 0.10 (0.04)*	– 0.09 (0.04)*	– 0.09 (0.04)*	– 0.07 (0.03)*	– 0.06 (0.11)
Condition					– 0.13 (0.30)	– 0.09 (0.37)
Condition*Sessions						– 0.01 (0.06)
AIC / -2LL	151.40 / 145.40	147.44 / 139.43	149.85 / 137.85	148.77 / 138.77	149.80 / 139.79	151.76 / 139.76
RFQ - U						
Intercept	0.82 (0.13)***	0.66 (0.18)**	0.65 (0.19)**	0.66 (0.19)**	0.55 (0.49)	0.84 (0.67)
Sessions		0.05 (0.04)	0.05 (0.04)	0.05 (0.04)	0.05 (0.04)	– 0.03 (0.15)
Condition					0.06 (0.28)	–0.12 (0.40)
Condition*Sessions						0.05 (0.09)
AIC / -2LL	152.85 / 146.85	153.14 / 145.14	155.23 / 143.23	157.08 / 143.08	157.18 / 143.18	158.78 / 142.78

Notes: *** $p < 0.0001$, ** $p < 0.001$, * $p < 0.5$, † $p < 0.1$

Bias Against Disconfirmatory Evidence

The unconditional means model (Model 1) indicated that the intercept was significant, *b* = 8.03 (4.12, 11.94), *t*(55) = 4.09, p = <0.0001, with the intercept varying significantly across individuals: *sd* = 7.34 (5.00, 10.78), ICC = 0.68. However, as seen in table X, the effect of treatment was not significant in any of the models (Model 2: *p* = .38, Model 3, *p* = .38, Model 4: *p* = 0.37). Moreover, adding the effect of treatment condition further worsened model fit, suggesting that there was no difference in change between the two treatment modalities.

Reflective Functioning – Uncertainty

The unconditional means model (Model 1) indicated that the intercept was significant, *b* = 8.03 (4.12, 11.94), *t*(55) = 4.09, p = <0.0001, with the intercept varying significantly across individuals: *sd* = 7.34 (5.00, 10.78), ICC = 0.68. However, as seen in Table 29, the effect of treatment was not significant in any of the models (Model 2: *p* = .38, Model 3, *p* = .38, Model 4: *p* = 0.37). Moreover, adding the effect of treatment condition further worsened model fit, suggesting that there was no difference in change between the two treatment modalities.

Reflective Functioning – Self Certainty

The unconditional means model (Model 1) indicated that the intercept was significant, *b* = 0.71 (0.43, 0.79), *t*(63) = 4.94, p = <0.0001, with the intercept varying significantly across individuals: *sd* = 0.52 (0.35, 0.79), ICC = 0.52. Adding the effect of treatment sessions in Model 2, was significant *b* = - 0.10 (-0.17, -0.02), t(62) = -2.47, *p* = 0.02, and improved model fit $\chi^2(1) = 5.96$, p = 0.02. Slopes varied across

participants, *sd* = 0.08 (0.01, 0.44), however, allowing slopes to vary (Model 3) worsened model fit as seen by the increased AIC value, suggesting that the a fixed slopes model best described the data. Model 4 considered within-subject variance. A non-significant parameter of the correlation structure (Phi = - 0.12 (-0.20, 0.44), indicated that scores at adjacent time points were not correlated for participants, and adding an autoregressive correlation structure in Model 4 did not improve model fit. Moreover, the effect of treatment modality in Model 5, was not significant *b* = -0.13 (-0.76, 0.51), *t*(14) = -0.43, p = .68 and worsened model fit. Similarly, the interaction between change across treatment sessions and treatment arm was not significant *b* = -0.01 (-0.15, 0.12), *t*(61) = - 0.20, *p* = .85, suggesting that change in RFQ_C was similar in MCT+ and CBTp.

Complementary analyses

In order to investigate whether change in the RFQ_C and DTD were associated with change in delusions across therapy, complementary analyses were done adding RFQ_C and DTD to the model of delusion change across the full sample. Moreover, similar to the analyses above, reverse interactions were also tested to see whether change in delusions across sessions predicted change the above measures. As the RFQ and the DTD paradigm were only administered five time points were conducted for these time points only.

RFQ_C

When the RFQ_C was added as a predictor of change in delusions, the effect was not significant *b* = 0.61 (-0.73, 1.95), *t*(61) = -0.90, p = .37, and led to a worsening in model fit with an increasing AIC. Similarly, the interaction between change in RFQ_C across time was not a significant predictor of delusion change *b* =

0.5 (-0.33, 1.35), $t(60) = -1.18$, p = .24. Because graphical representation of the RFQ appeared to suggest that change in RFQ_C took place later in therapy, a reverse analysis with delusions as a predictor of change in RFQ_C was conducted. However, when delusions was added as a predictor of change in RFQ_C, it was not significant *b* = -0.005 (-0.04, 0.03), $t(61) = -0.30$, p = .70, and led to a worsening in model fit with an increasing AIC. Similarly, the interaction between change in delusions across time was not a significant predictor *b* = 0.01 (-0.006, 0.03), $t(60) = -1.21$, p = .23, suggesting that change in delusions did not predict change in reflective functioning across therapy.

Draws to Decision

When the DTD was added as a predictor of change in delusions, the effect was not significant *b* = -0.66 (-1.60, 0.28), $t(53) = -1.38$, p = .17. However, the addition of DTD did significantly improve model fit $\chi^2(1) = 39.40$, p = < .0001. However, the interaction term was not significant, *b* = - 0.31 (-0.84, 0.21), $t(52) = -1.16$, p = .25, and led to a worsening in model fit with an increasing AIC, suggesting that changes in DTD across sessions did not predict changes in delusions. In order to test the reverse relationship, i.e. if change in delusions predicted change in DTD a reverse model was tested, where delusions was added as a predictor of change in DTD across sessions. When delusions were added as a predictor of change to DTD, it was not significant *b* = -0.002 (-0.06, 0.05), $t(53) = -0.07$, p = .94, and led to a worsening in model fit. Similarly, the interaction between change in delusions across time was not a significant predictor *b* = 0.02 (-0.06, 0.02), $t(52) = -0.94$, p = .35, suggesting that change in delusions did not predict change in DTD across therapy.

Figure 7. Graphical depictions of change in DTD across treatment.

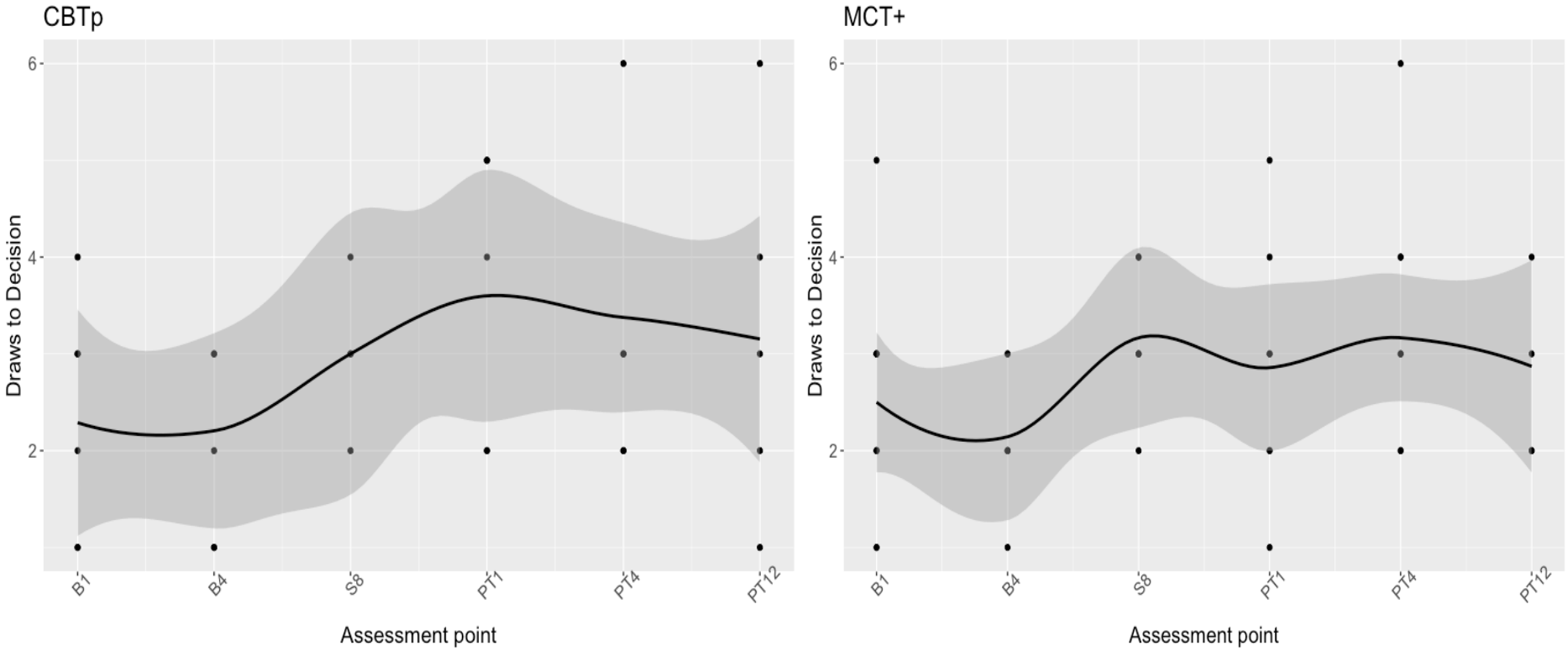


Figure 8. Graphical depictions of change in BADE across treatment.

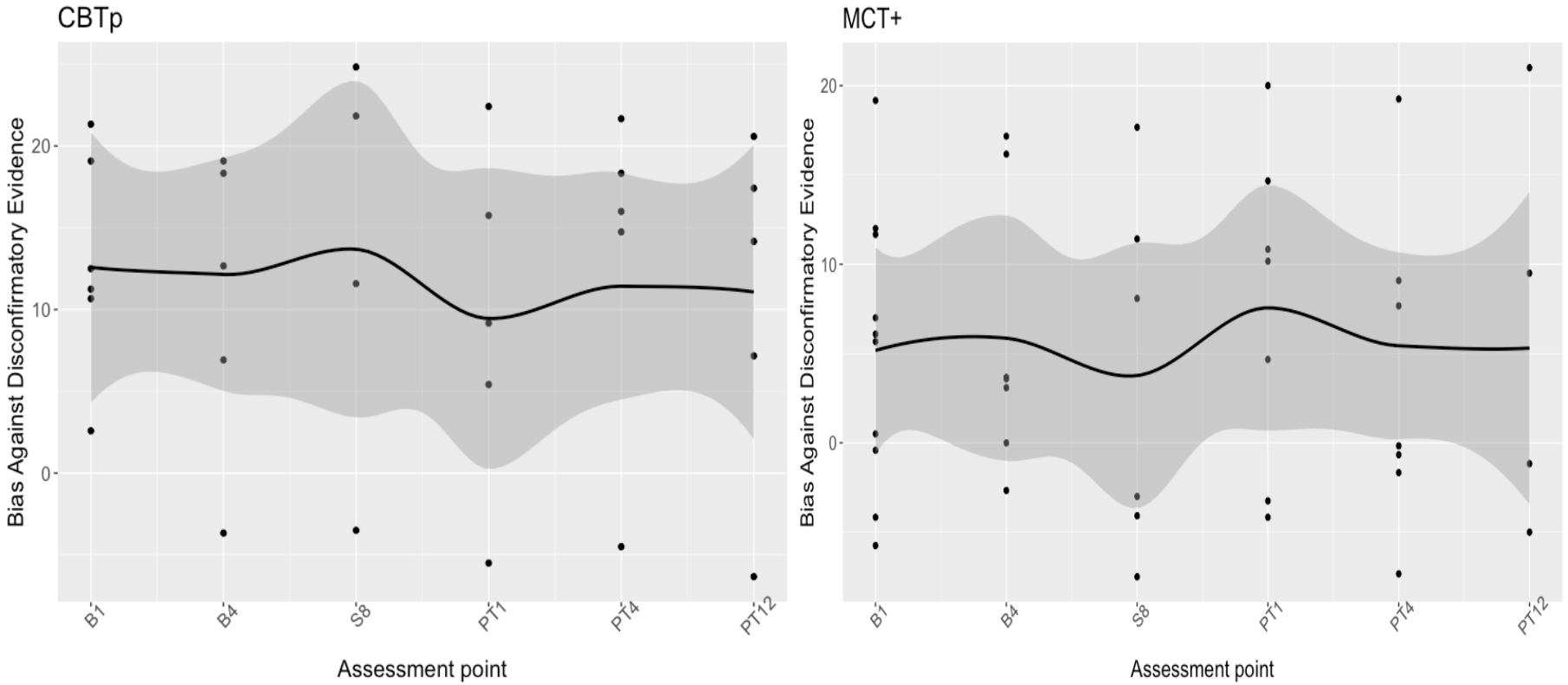


Figure 9. Graphical depictions of change in RFQ Self-Certainty across treatment.

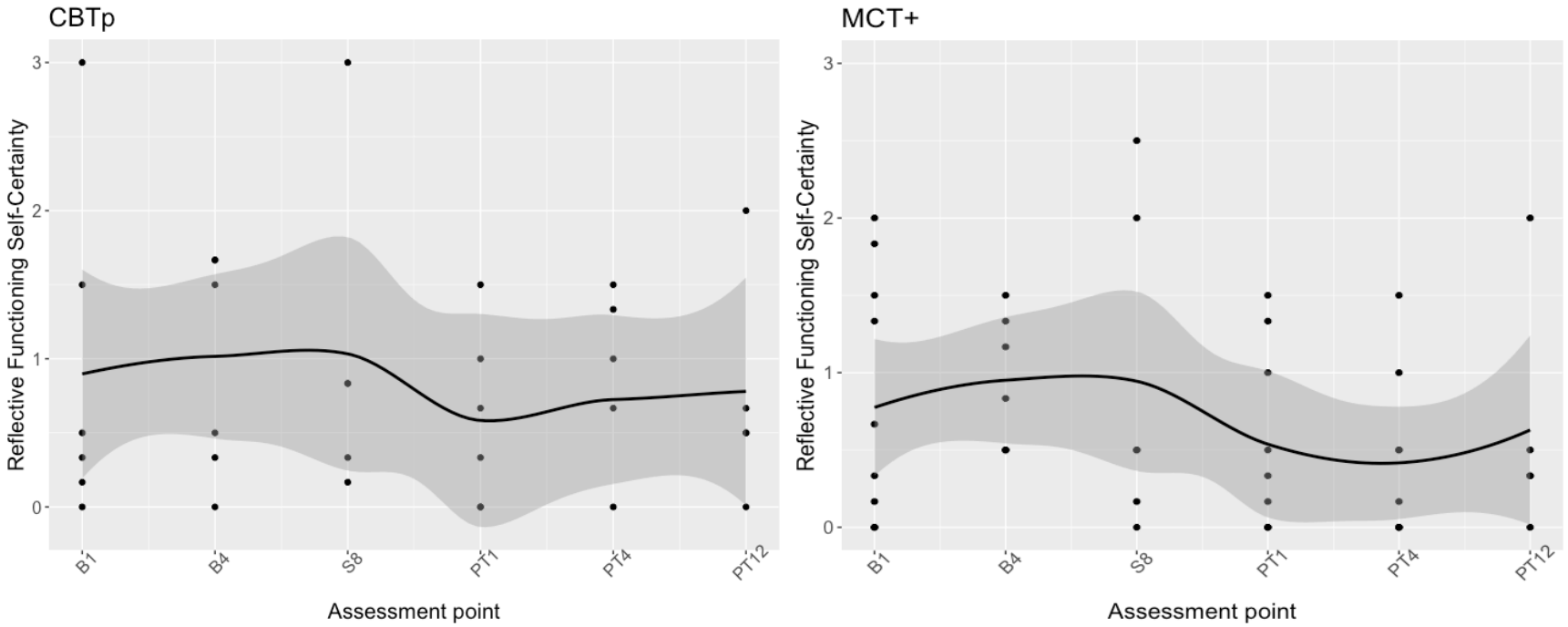
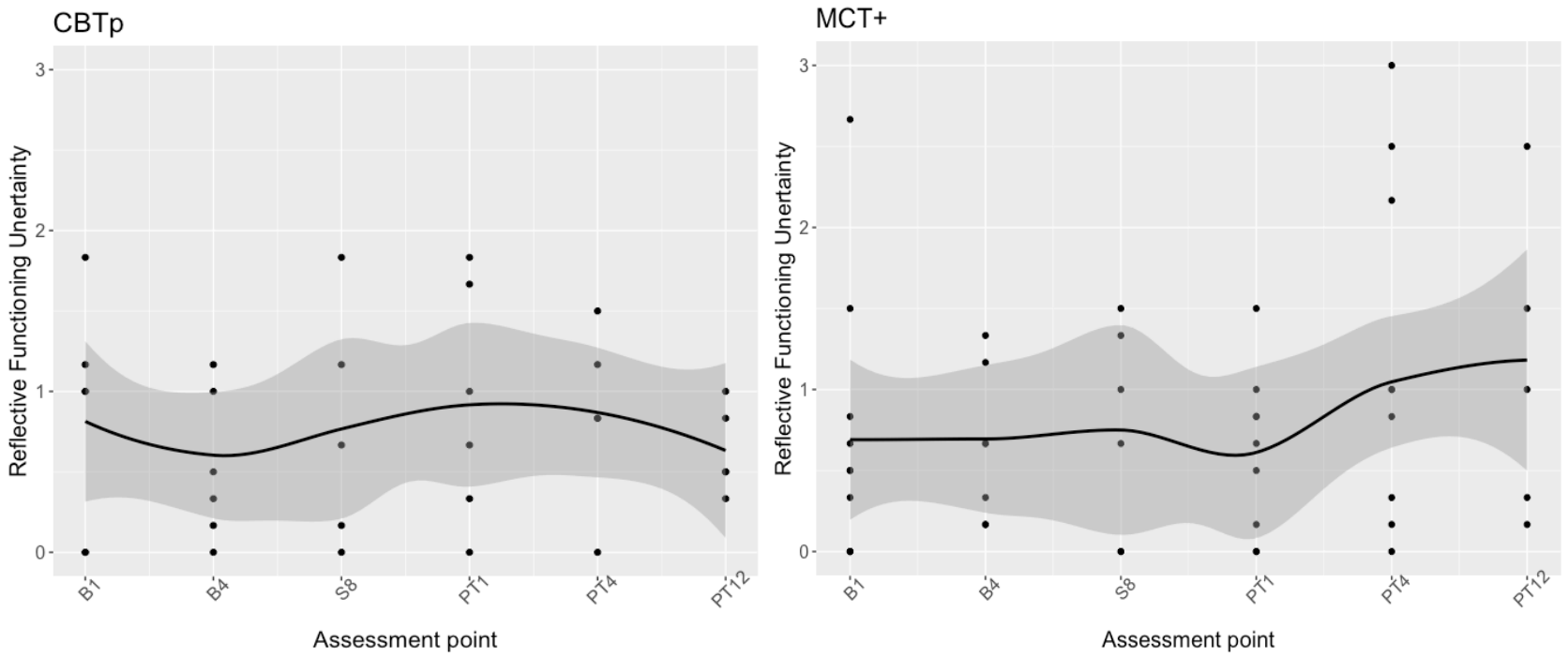


Figure 10. Graphical depictions of change in RFQ Uncertainty across treatment.



5.3.9. Stigma, functioning, quality of life, mood and psychopathology

The next secondary research question was to examine whether MCT+ lead superior reductions in internalised stigma, as well as further improvement in functioning, quality of life, mood and general psychopathology. Table 30 depicts mean baseline and post therapy scores and effect size change of these outcomes, whereas results from MLM are presented in Table 31.

Table 30. Mean baseline and post therapy scores and effect size change of metacognitive tasks and reflective functioning.

	Stigma Baseline	Stigma Post therapy	Effect Size (d)
CBTp	2.08 (0.49)	2.05 (0.67)	- 0.13
MCT+	2.26 (0.51)	2.16 (0.59)	- 0.27
Tot	2.19 (0.49)	2.12 (0.60)	- 0.22
	Depression Baseline	Depression Post therapy	Effect Size (d)
CBTp	3.58 (2.33)	3.75 (3.28)	0.08
MCT+	6.33 (5.17)	4.79 (3.28)	0.24
Tot	5.23 (4.38)	4.37 (3.20)	0.17
	Functioning Baseline	Functioning Post therapy	Effect Size (d)
CBTp	40.42 (8.74)	47.00 (9.01)	1.49
MCT+	42.61 (12.26)	48.78 (11.49)	0.76
Tot	41.73 (10.70)	48.07 (10.26)	0.95
	QoL Baseline	QoL Post therapy	Effect size (d)
CBTp	3.47 (0.87)	3.47 (0.41)	0.00
MCT+	3.05 (0.57)	3.14 (0.49)	0.14
Tot	3.22 (0.71)	3.27 (0.65)	0.11
	Psychopathology Baseline	Psychopathology Post therapy	Effect size (d)
CBTp	36.17 (5.97)	31.58 (5.15)	- 0.85
MCT+	39.11 (9.02)	34.67 (6.26)	- 0.88
Tot	37.93 (7.84)	33.43 (5.86)	- 0.90

Internalised stigma

The unconditional means model (Model 1) indicated that the intercept was significant, b = 2.15 (1.89, 2.41), $t(63)$ = 16.53, p = <0.0001, with the intercept varying significantly across individuals: sd = 0.50 (0.35, 0.72), ICC = 0.76. Adding sessions in Model 2, was significant b = -0.04 (-0.08, -0.004), $t(62)$ = -2.23 p = .03,

and improved model fit $\chi^2(1) = 4.88$, p = .03. Slopes varied significantly across participants, *sd* = 0.08 (0.04, 0.14), and allowing slopes to vary in Model 3 significantly improved model fit $\chi^2(2) = 7.85$, p = .02. Moreover, in Model 3, change across sessions was only marginally significant *b* = – 0.04 (– 0.10, 0.006), *t*(62) = – 1.72, *p* = 0.09. Next, within-subject variance was considered. A non-significant correlation parameter (Phi = 0.14 (- 0.35, 0.58)), indicated that adjacent time points were not correlated within participants, and taking an autoregressive error structure into account in Model 4, worsened model fit. Moreover, adding treatment condition in Model 5, and an interaction term in Model 6 was not significant and did not improve model fit. Hence, in the best fitting model describing (Model 3), change in internalised stigma across treatment was only magically significant. Moreover, as depicted in Figure 11, internalised stigma scores appeared to increase across therapy (assessed post session 8), and only started to decrease after therapy completion.

It is of note that the goal was to investigate whether the stigma module in MCT led to decreased levels of internalised stigma. However, it was noted based on clinician feedback, that not everyone in the MCT+ condition had completed the stigma module (n = 7 had completed the module). Therefore, rather than merely controlling for treatment condition (MCT+ or CBTp), an additional analysis was done controlling for those who had completed the self-stigma module (dummy coded as 1), and those who had not (dummy coded as 0). However, adding whether the stigma module was received or not to the model was not significant *b* = 0.14 (-0.40, 0.68), *t*(14) = 0.54 *p* = 0.60, and did not improve model fit (AIC = 79.47, -2LL = 55.47). Similarly, the interaction term was not significant *b* = -0.05 (- 0.14, 0.05), *t*(14) = -0.90 *p* = 0.37, and further worsened model fit (AIC = 70.66, -2LL = 54.66). Hence, contrary to

expectations, the addition of the stigma module in the MCT+ programme, was not associated with additional reductions in internalised stigma as assessed by the ISMI.

Depression

The unconditional means model (Model 1) indicated that the intercept was significant, b = 4.84 (3.56, 6.13), $t(63)$ = 7.49, p = <0.0001, with the intercept varying significantly across individuals: sd = 2.18 (1.32, 2.60), ICC = 0.35. However, as seen in Table 31, the effect of treatment was not significant in any of the models (Model 2: p = .82, Model 3, p = .96, Model 4: p = 0.96). Moreover, adding the effect of treatment condition further worsened model fit, suggesting that there was no difference in change between the two treatment modalities. This is also reflected in Figure 12.

Functioning

For functioning, the unconditional means model (Model 1) indicated that the intercept was significant, b = 43.80 (38.56, 49.05), $t(63)$ = 16.59, p = <0.0001, with the intercept varying significantly across individuals: sd = 10.33 (7.21, 14.89), ICC = 0.87. Adding sessions to the model was significant b = 0.99 (0.50, 1.46), $t(62)$ = 4.03, p <.0001. Slopes also varied across participants sd = 0.14 (0.06, 0.29), however a random slopes model was not a significant model improvement to a fixed effects model $\chi^2(2)$ = 3.59, p = .17. Next, within-subject variance was considered. A significant correlation parameter (Phi = 0.46 (0.01, 0.76), indicated that adjacent time points were correlated within participants, and Model 4, taking the autoregressive structure of the data into account further improved model fit $\chi^2(1)$ = 4.70, p = .03. However, neither the effect of treatment condition (Model 5) b = 3.26 (-2.09, 14.39),

t(14) = 0.62, p = 0.55, nor the interaction term (Model 6), *b* = -0.93 (-2.09, 0.22, *t*(61) = - 1.58, p = 0.12, were significant and as seen in Table 31, did not provide further model improvement, suggesting that change in functioning did not differ between CBTp and MCT+. Figure 13 graphically illustrates change in functioning across treatment.

Quality of Life

The unconditional means model (Model 1) indicated that the intercept was significant, *b* = 3.19 (2.89, 3.49), *t*(63) = 21.06, p = <0.0001, with the intercept varying significantly across individuals: *sd* = 0.56 (0.38, 0.83), ICC = 0.57. However, as seen in Table 31, the effect of treatment was not significant in any of the models (Model 2: *p* = .97, Model 3, *p* = .97, Model 4: *p* = 0.98). Moreover, adding the effect of treatment condition further worsened model fit, suggesting that there was no difference in change between the two treatment modalities.

General Psychopathology

For general psychopathology, the unconditional means model (Model 1) indicated that the intercept was significant, *b* = 35.64 (32.91, 38.37), *t*(52) = 26.00, *p* = <0.0001, with the intercept varying significantly across individuals: *sd* = 4.95 (3.24, 7.56), ICC = 0.54. Adding treatment sessions to the model was significant *b* = - 0.94 (-1.63, - 0.25), *t*(51) = - 2.70, *p* = 0.009. Slopes also varied across participants *sd* = 1.43 (0.77, 2.66), and allowing slopes to vary improved model fit $\chi^2(2) = 5.94$, p = .05. Next, within-subject variance was considered. A significant correlation parameter (Phi = 0.60 (0.02, 0.88), indicated that adjacent time points were correlated within participants, and Model 4, taking the autoregressive structure of the data into account

further improved model fit $\chi^2(1) = 4.34$, p = .04. However, neither the effect of treatment condition (Model 5) *b* = 1.86 (- 4.10, 7.83), *t*(14) = 0.65, p = 0.52, nor the interaction term (Model 6), *b* = 0.03 (- 1.83, 1.89), *t*(50) = 0.03, p = 0.98, were significant and as seen in Table 31, did not provide further model improvement, suggesting that improvements in general psychopathology did not differ between CBTp and MCT+.

Table 31. MLM output of change in stigma, functioning, quality of life, mood and psychopathology.

Self-Stigma	**Model 1** Unconditional means	**Model 2** Sessions RI	**Model 3** Sessions RS	**Model 4** Within-subject variance	**Model 5** Condition	**Model 6** Condition *Sessions
Intercept	2.15 (0.13)***	2.29 (0.15)***	2.29 (0.14)***	2.29 (0.14)***	1.99 (0.44)***	2.06 (0.49)**
Sessions		– 0.04 (0.02)*	– 0.04 (0.03)†	– 0.05 (0.03)†	– 0.04 (0.03)†	– 0.07 (0.09)
Condition					0.18 (0.26)	0.14 (0.29)
Condition*Sessions						0.02 (0.05)
AIC / - 2LL	74.49 / 68.49	71.61 / 63.61	67.76 / 55.76	69.39 / 55.39	69.27 / 55.28	71.16 / 55.16
Depression						
Intercept	4.84 (0.065)***	4.90 (0.94)***	5.04 (1.41)**	4.87 (1.43)***	2.71 (2.42)	4.87 (1.43)**
Sessions		– 0.02 (0.20)	– 0.08 (0.36)	– 0.02 (0.35)	– 0.01 (0.35)	– 0.42 (0.60)
Condition					1.33 (1.21)	
Condition*Sessions						0.25 (0.30)
AIC / -2LL	422.31 / 416.31	424.30 / 416.30	407.75 / 395.75	405.73 / 391.73	406.51 / 390.51	407.04 / 391.04
Functioning						
Intercept	43.80 (2.64)***	40.55 (2.77)***	40.65 (2.60)***	40.53 (2.62)***	35.36 (8.95)**	40.75 (2.58)***
Sessions		0.98 (0.24)***	0.96 (0.31)**	0.93 (0.32)**	0.95 (0.31)**	2.44 (0.98)*
Condition					3.26 (5.29)	
Condition*Sessions						– 0.93 (0.59)
AIC / -2LL	504.07 / 498.07	491.27 / 483.27	491.76 / 479.67	488.97 / 474.97	493.37 / 479.37	491.49 / 477.49
Quality of Life						
Intercept	3.19 (0.15)***	3.19 (0.17)***	3.20 (0.16)***	3.16 (0.17)***	3.89 (0.49)***	3.89 (0.19)***
Sessions		0.0002 (0.005)	- 0.00 (0.01)	0.00 (0.01)	- 0.00 (0.01)	0.02 (0.01)
Condition					- 0.43 (0.29)	
Condition*Sessions						- 0.08(0.05)
AIC / -2LL	146.84 / 140.84	148.83 / 140.83	151.04 / 138.04	148.01 / 134.01	150.92 / 136.92	149.94 / 135.94
General Psychopathology						
Intercept	35.64 (1.37)***	37.13 (1.53)***	37.18 (1.76)***	37.74 (1.76)***	34.71 (4.93)***	34.81 (6.17)***
Sessions		- 0.94 (0.35)**	- 1.01 (0.48)*	- 1.04 (0.46)*	- 1.02 (0.47)*	- 1.07 (1.59)
Condition					1.86 (2.84)	1.79 (3.65)
Condition*Sessions						0.03 (0.95)
AIC / -2LL	433.26 / 427.26	428.39 / 420.39	426.44 / 414.44	424.09 / 410.09	425.65 / 409.65	427.65 / 409.65

Notes: *** $p < 0.0001$, ** $p < 0.001$, * $p < 0.5$

Figure 11. Graphical depiction of change in self-stigma across treatment.

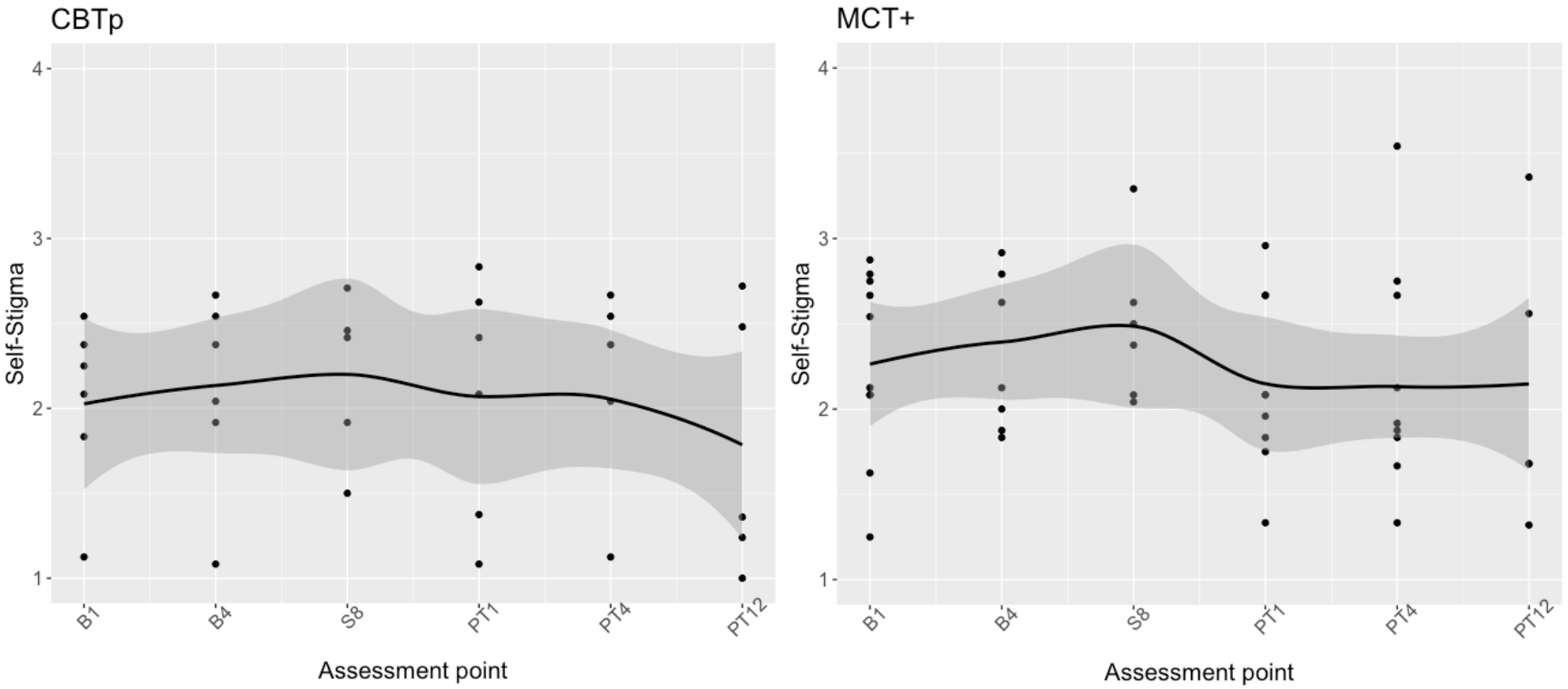


Figure 12. Graphical depiction of change in depression across treatment.

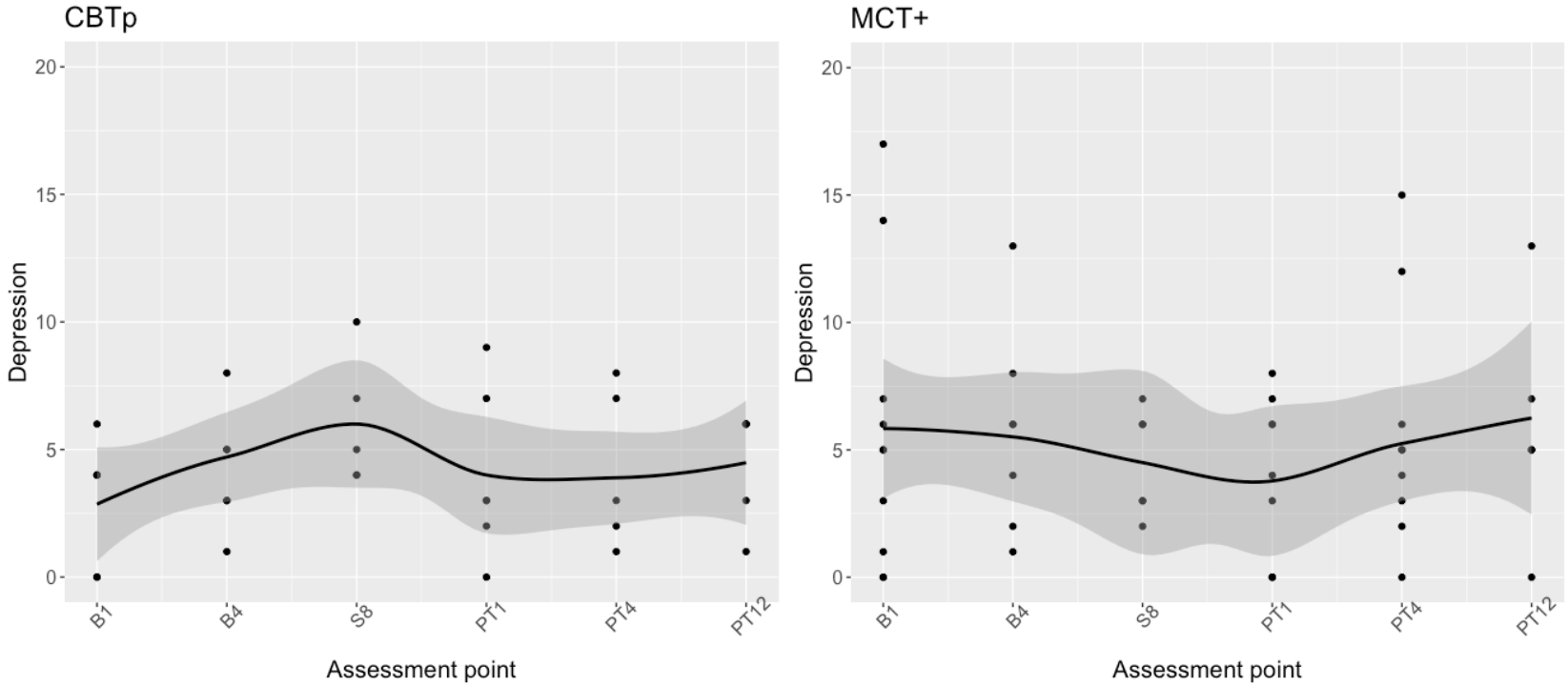


Figure 13. Graphical depiction of functioning across treatment.

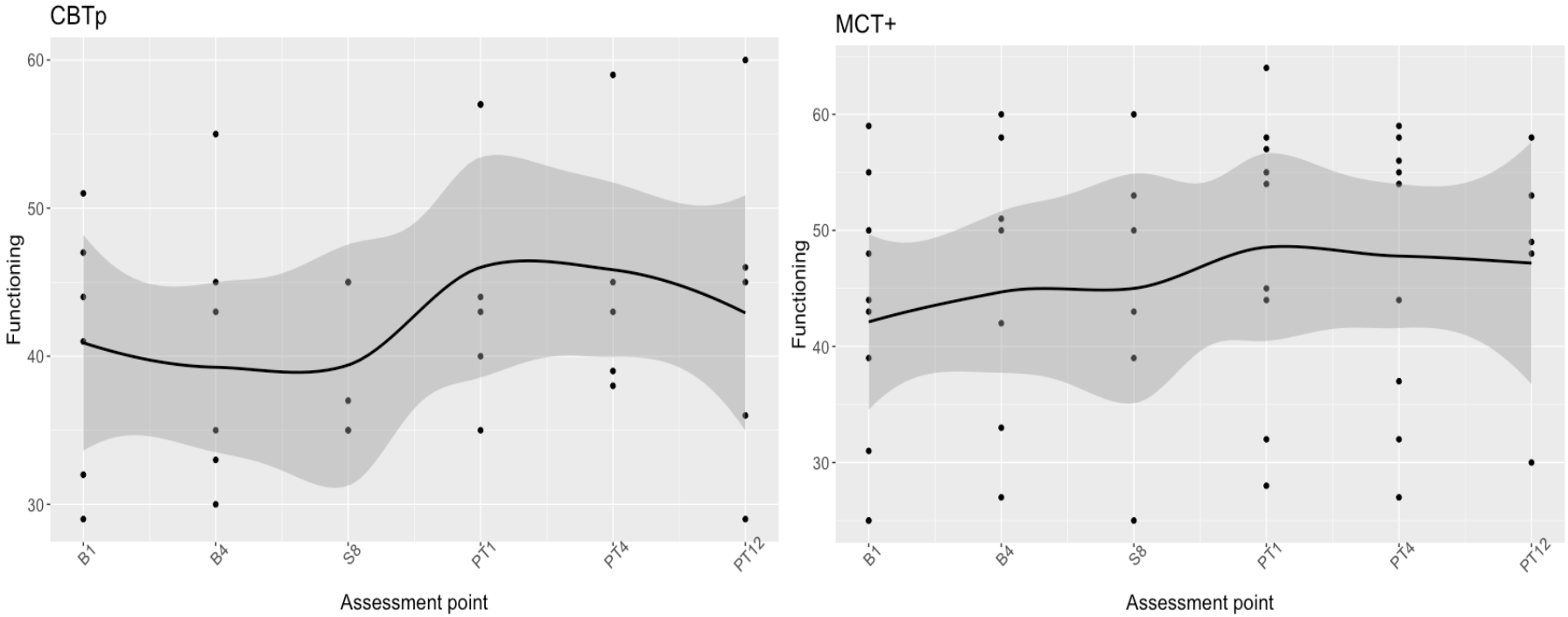


Figure 14. Graphical depiction of change in quality of life across treatment.

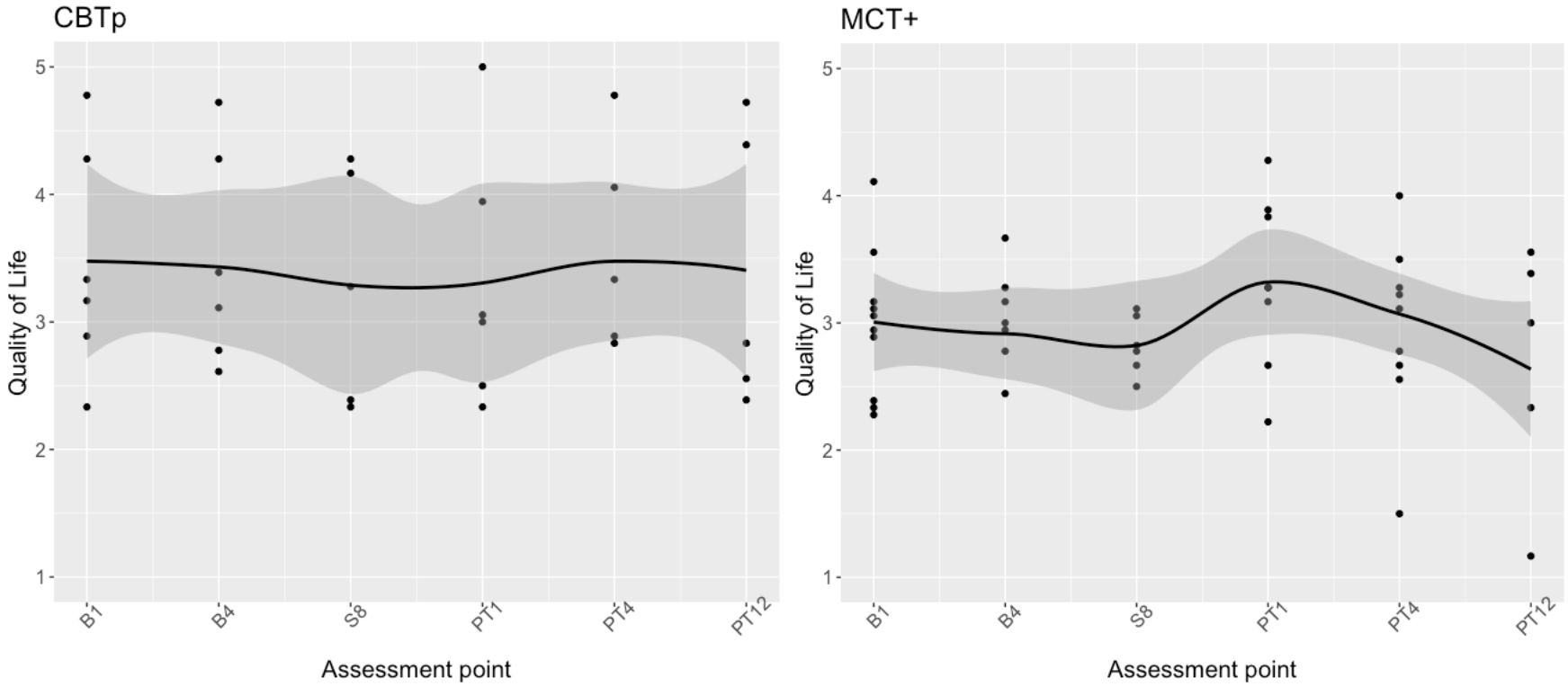


Figure 15. Graphical depiction of change in psychopathology across treatment.

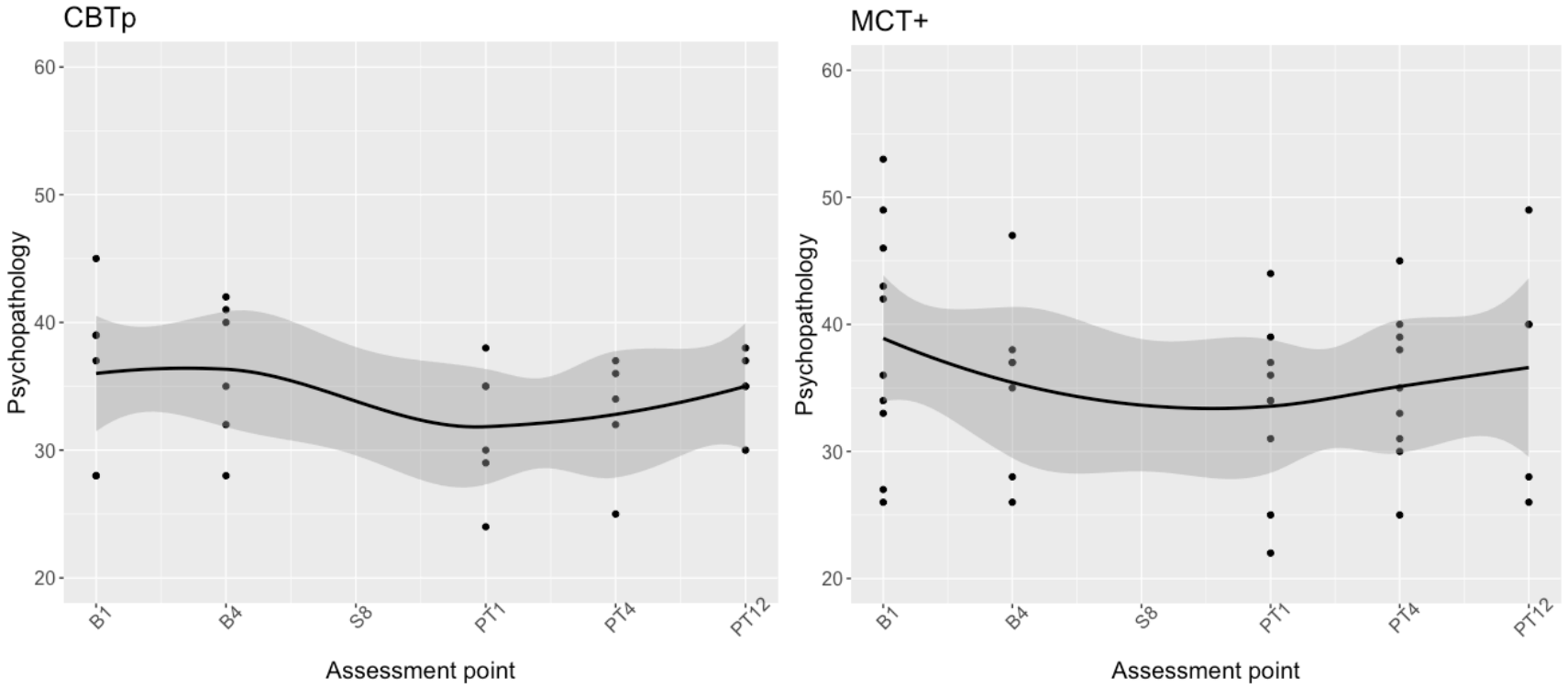


Table 32. Summary of results

Primary research questions	**Results summary**
1. Does MCT+ lead to enhanced delusion reduction when compared with standard CBTp?	MCT+ did not lead to enhanced delusion reduction over and above CBTp. Instead, CBTp and MCT+ significantly reduced delusions at an equal rate across treatment and post-treatment phases.
2. Is delusion reduction driven by a reduction in self-reported cognitive biases (EA, BI, JTC), across therapy, and does this mechanism of action differ between standard CBTp and MCT+?	Change in the EA bias predicted change in delusions for those receiving MCT+ only, indicating some difference in mechanism of action between CBTp and MCT+.
Secondary research questions	**Results summary**
3. Does MCT+ lead to enhanced improvements on performance based measures of metacognition, including the JTC bias fish task, The Bias Against Disconfirmatory Evidence (BADE) task and reflective functioning over and above standard CBTp?	Compared with CBTp, MCT+ did not lead to enhanced improvement on performance based measures of metacognition. Instead, both groups showed comparable and significant improvements on the JTC bias task, whereas no significant change was seen on the BADE task. Both groups showed some improvement in reflective functioning (self-certainty).
4. Does MCT+ lead to enhanced self-stigma reductions, as well as superior improvements in other outcomes including mood, quality of life, psychopathology and functioning over and above CBTp?	Compared with CBTp, MCT+ did not lead to enhanced improvements in any of the measures. Instead, both groups showed comparable improvements in functioning and general psychopathology. No improvement was seen regarding self-stigma, mood and quality of life.

Notes: CBTp = Cognitive Behavioural Therapy for Psychosis, MCT+ = Individualised Metacognitive Training, EA = External Attribution, BI = Belief Inflexibility, JTC = Jumping to Conclusions, MLM = Multilevel modelling.

5.4 Discussion

The aim of the current study was to conduct a case-series to explore whether MCT+ might be used to enhance currently recommended CBTp for psychosis in order to improve therapy outcome. The study also aimed explore treatment modality specific effects on cognitive biases across therapy through the use of MLM. This was also the first study to directly assess the effects of MCT+ in relation to currently offered "gold standard" psychological treatment for psychosis. More specifically, the goal of the study was to investigate whether a more intensive focus on metacognitive mechanisms, as seen in MCT+ enhanced improvements above standard CBTp, and consequently whether MCT might be utilised within standard psychological care practices in order to enhance treatments for psychosis. Comparing newly developed interventions to current 'gold standard' treatments is important in order to continuously develop psychotherapeutic treatments (e.g. Callesen et al., 2020). The findings in relation to each of the research questions will now be discussed in further detail below.

5.4.1 Change in delusions across therapy

The first research question examined whether MCT+ was more effective at targeting delusions when compared standard CBTp. Based on studies indicating efficacy of MCT+ in reducing delusions (Eichner & Berna, 2016; Liu et al., 2018), in combination with meta-analyses who have indicated that standard CBTp tends to be more effective at targeting hallucinations with more modest effects on delusions Turner, Burger, et al., 2020; Van der Gaag et al., 2014), it was hypothesised that MCT+ would lead to delusion improvements over and above CBTp. However,

contrary to expectations results indicated comparable delusion reductions across both groups; both as indicated from group level graphical representations of change across therapy, indications of clinically significant change, effect size estimates, as well as through MLM analysis. However, whilst change in delusions across both conditions followed a linear trend, visual examination appeared to suggest a somewhat steeper decline in symptoms between sessions 4-8 for those receiving MCT+. This might reflect the fact that by session 8, all individuals receiving MCT+ had covered at least one of the core modules addressing key cognitive biases (attribution, decision-making or changing beliefs) that are thought to be particularly relevant to delusions (Garety et al., 2005; Moritz & Woodward, 2007b).

Whilst everyone in the CBTp group had experienced some symptom reduction at the post therapy phase (range: - 2% to – 57.3%), three individuals (50%) had achieved clinically reduction in delusions at post therapy when aggregated scores were compared with scores at baseline. For two individuals (p. 11 & p. 13) this was maintained at their 12-week follow up assessment. Improvement was particularly prevalent in one individual (p. 13) where a 78.7% symptom reduction was seen at the 12-week follow up assessment. Within the MCT+ group, eight individuals showed symptom reduction at the post therapy phase (-17.64 % to - 57.9 %), out of which four (40%) had achieved clinically significant change. It was also noted that two individuals in the MCT+ group experienced an increase in symptoms at their post therapy phase. However, one of these individuals (p. 2) decided to stop therapy after 9 sessions due to being unwell, and as will become evident in the next chapter, fed back that he did not like to question his beliefs. The second individual experiencing an increase in symptoms (p. 6) had only received four sessions of MCT as part of her

acute inpatient stay, potentially indicating that more sessions are necessary to facilitate change. It is also of note that out of the five individuals who were available at the 12-week follow up appointment, only one participant (p. 12) had achieved a clinically significant change with a 43.6 % reduction in symptoms. These findings are somewhat contradictive to previous studies indicating that MCT/MCT+ might be particularly beneficial for facilitating long term change (Balzan, Mattiske, et al., 2019; Moritz, Veckenstedt, et al., 2014). However, it should be noted that at the time of write up, three participants in the MCT+ group had not yet provided 12-week follow up data due to entering the study later, and hence these preliminarily results should be interpreted with caution. Effect size estimates of change between pre-therapy and the 4-week post therapy phase were also encouraging, indicating large reductions in delusions across for both treatment modalities. These findings are in line with previous studies having demonstrated that individualised MCT can lead to large symptom reductions (Balzan, Mattiske, et al., 2019; Erawati et al., 2014; So et al., 2015), and build on these by suggesting that MCT+ can achieve large symptom reductions when utilised within routine clinical care.

Even though MCT+ did not enhance delusion reduction beyond CBTp, the fact that the MCT+ programme had statistically a comparable effectiveness to CBTp is, encouraging. As has been mentioned previously, one issue with CBTp is the continuing low number of individuals gaining access to it (Larkin & Simpson, 2015; Waller et al., 2018). However, as MCT+ comes as a "treatment package" with pre-prepared modules, training as well as preparation time is considerably lower and does not require prior CBTp training. Hence, given the relative efficacy of MCT+ in alleviating delusions, such treatment programmes could effectively be implemented in

mental health care settings where structured psychological interventions are not routinely offered (Hayward et al., 2020). It was also encouraging that MCT+ was effective in targeting delusions, even though baseline PSYRATS delusions symptoms were, in the current study approaching the moderate to severe end. Hence, as opposed to the group programme where limited improvements on delusions have been reported when these have been moderate to severe (van Oosterhout et al., 2014), MCT+ appears to be suitable for individuals a higher symptom complexity. This likely pertains to its individualised format whereby sessions can, to a greater extent, be tailored towards individual needs. Out of the two previous studies having utilised the same 11-unit MCT+ manual, both finding significant effects on delusions (Andreou et al., 2017; Balzan, Mattiske, et al., 2019), only one study included patients with moderate to severe delusions (Balzan, Mattiske, et al., 2019). Hence, the current study further adds to the evidence base indicating that MCT+ is an effective treatment when utilised within routine clinical practice, even when symptoms are the moderate to severe.

5.4.2 Change in self-reported cognitive biases

The second primary aim of the current study was to assess whether the amplified focus on cognitive biases in within MCT+ would lead enhanced reductions in self-reported cognitive biases throughout therapy, and whether this change would predict changes in delusions as hypothesised by the MCT model (Moritz & Woodward, 2007b). This was also the first study to investigate change in self-reported biases, including the external attribution bias, the jumping to conclusions bias and the belief inflexibility bias, across therapy for both CBTp and MCT+.

External Attribution Bias

Graphical representation of change, as well as statistical analyses using MLM indicated that there were treatment modality specific changes across sessions, where the external attribution bias was reduced for those who received MCT+, whilst remaining stable across treatment in those receiving CBTp. Moreover, MLM also found that adding the external attribution bias to the model of delusion reductions within the MCT+ group was significant, where the interaction between change in the external attribution bias across sessions significantly predicted change in delusions. This suggests that changes in attribution may be an important change mechanism that is specific to MCT+, that in the current study differed from more generic CBTp. Moreover, the lack of an effect when the reverse model was tested, i.e. whether change in delusions predicted change in the external attribution bias across treatment sessions, added statistical robustness that changes in delusions followed improvements in the external ettributions bias through therapy. However, changes in attribution following individualised MCT has, to the best of our knowledge, not been studied previously, and so these findings are in their infancy and would benefit from replication through the use of a larger sample size. These findings also contrasts somewhat to a previous study that found that group MCT led to modest reductions in the personalising bias only, but not to changes in the external attributions bias (Ochoa et al., 2017). This might suggest that the effect on the external attribution bias is specific to the MCT+ programme. However, it is also important to note that Ochoa et al (2017), used the Personal and Situational Attributions Questionnaire (IPSAQ; Kinderman & Bentall, 1996) to assess attributions. This questionnaire differs from the

DACOBS (Van der Gaag et al., 2013), used in the current study (where individuals are asked to indicate how they have been feeling regarding their own thinking/experiences in the past week) in that in the IPSAQ, individuals are asked to indicate what they believe to be the major cause to different hypothetical scenarios (e.g. "A friend betrayed the trust you had in her – *what caused your friend to betray your trust?* a) something about you? b) something about the other person or people? or c) Something about the situation (circumstance or chance)). Whist the IPSAQ was not suitable for use for the current study (due to the repeated nature of the assessments) it may also be that type of questionnaire used could have explained the discrepancy seen in the results. Nevertheless, the fact that reductions in the external attributions bias across sessions significantly predicted reductions in delusions is interesting, helps shed further light on *what* works within the MCT model - something that has been identified as an important research target by the developers (Moritz et al., 2019; Schneider et al., 2018), not only as it might shed light on important mechanisms through which MCT+ exerts its effect, but also for informing the development of shorter more targeted treatment programmes. Hence, findings from the current study suggests that focussing on attribution might be an important therapeutic tool that should be incorporated when delusions are targeted. Nevertheless, whilst paranoid and persecutory delusions have been consistently linked with monocausal attributions in general, and an external attribution bias in particular (Richard P. Bentall et al., 2001; Penn et al., 2008), it is of note that most studies that have investigated shortened versions of individualised MCT have excluded this module (Balzan et al., 2014; So et al., 2015; Turner et al., 2019). The current study, suggests that in order to maximise the benefit of MCT+, future studies aiming to investigate more targeted versions of

the programme should include a metacognitive focus on attribution particularly for patients who may be struggling with paranoia.

The Belief Inflexibility Bias

The current study also found differences between MCT+ and CBTp in regard to changes in self-reported Belief Inflexibility. Both as indicated graphically, and through MLM, where it was found that MCT+ improved self-reported belief inflexibility throughout therapy, whereas this did not change in the CBTp group. These findings support that more intensively focussing on cognitive biases within therapy can lead to reductions in belief inflexibility that may not be seen in more generic CBTp . These results are also reflective of previous findings having reported significant improvements in belief flexibility following individualised MCT (So et al., 2015). For instance, So and colleagues found significant improvements following a brief four session MCT programme (MCTd) on belief flexibility regarding delusional beliefs as assessed by the MADS (Garety et al., 2005), which was found to predict improvements in delusions (So et al., 2015). Because failure to integrate new information and update existing beliefs are thought to represent the central mechanism into why delusional beliefs tend to remain 'fixed', the focus of MCT on belief flexibility, and the normalisation of these processes ("to err is human") represents an important aspect of MCT (Balzan et al., 2019). The current study adds to these findings by showing that MCT+ improves self-reported belief flexibility, that might be an important mechanism within MCT+. However, whilst the belief inflexibility bias was associated with over-all change in delusions, the absence of a significant interaction effect across sessions indicated that changes in belief inflexibility across therapy did not predict changes in delusions. Moreover, whilst model fit improved when adding the belief inflexibility bias as a predictor of delusion change in the

MCT+ group, the best model fit was seen for the external attribution bias discussed above potentially suggesting that changes in attribution is more likely a key mechanisms of change in MCT+. Moreover, as will be discussed below, whilst self-reported belief inflexibility decreased throughout therapy for those receiving MCT+, no changes were seen on the BADE task, that assesses 'performance based' belief flexibility. Hence, these findings should be interpreted with caution, as it may be that self-reported belief inflexibility may have been subject to demand characteristics through the way the questions on this subscale are worded (e.g. "I avoid considering information that will disconfirm my beliefs"). Indeed, lack of insight into ones metacognitive style, has been acknowledge as a factor that may lead to biased responses on self-report measures (Moritz et al., 2016).

The Jumping to Conclusions Bias

In contrast to changes in the external attribution bias and belief inflexibility, that appeared to be specific to MCT+, MLM analyses indicated that there was a reduction in the self-reported JTC bias across both treatment modalities. Therefore the potential of the JTC bias predicting change in delusions across sessions was assessed across the sample as a whole. However, even though a hasty decision making style was associated with over-all delusion change, reductions in the bias across sessions did not predict reductions in delusions. Moreover, investigation of the graphical representation of change in the JTC bias appeared to indicate that reductions in delusions preceded reductions in the JTC bias, that was more prevalent towards the end of therapy and post therapy phases. Hence these findings suggested that, rather than predicting changes in delusions, the JTC bias changed later in therapy. Moreover, in a reverse analysis, when delusions was added to the model of changes to JTC bias,

there was a substantial improvement in model fit, whereby it appeared that delusions rather than treatment sessions predicted changes in the JTC bias, further raising questions regarding the JTC bias being a mechanism of action within MCT. These findings reflect those reported by So et al. (2015), who found modest changes in the JTC bias following a brief four session course of individually delivered MCT. Moreover, as in the current study, these changes appeared to occur more slowly and did not predict changes in delusions. In fact, similar findings from the group MCT have also been reported more recently. Ishikawa et al. (2020) found superior improvements in self-reported JTC bias following 10 sessions of MCT compared with TAU. However, whilst these improvements gradually increased across time points (baseline, mid assessment, post assessment and 1 month follow-up), the differences only became significant 1 month following the intervention, whereas significant positive symptom improvement emerged prior to this. Hence, taken together, these and the current findings raises some questions in regards to the specific role of decision-making and symptom improvement, suggesting that rather than driving symptom change, such improvements may itself be an outcome of delusion improvement.

5.4.3. Change in performance based metacognition assessments and reflective functioning

The first secondary research question aimed to assess whether MCT+ led to superior improvements on other measures of metacognition including the commonly used JTC and BADE tasks, that might tap into other more 'performance based' aspects of metacognition, as well as superior improvements in reflective functioning.

Bias Against Disconfirmatory Evidence

Contrary to expectations, there was no change in the bias against disconfirmatory evidence bias as assessed by the BADE task paradigm (Woodward et al., 2007) in any of the treatment conditions. These findings were somewhat surprising, given studies that have reported reductions in BADE following group MCT (Buonocore et al., 2015). However, it should be noted that, as outlined in more detail in Chapter 3, research on changes in this bias following MCT has been rather scarce, and findings have been somewhat inconclusive (Buonocore et al., 2015; So et al., 2021; So et al., 2015). For instance, Buonocore et al (2015), found that a combination of group MCT and Cognitive remediation led to significant BADE improvements compared with an active control (cognitive remediation + a newspaper group). However, this was not associated with improvement in symptoms, even though the authors noted that participants enrolled displayed low symptoms at baseline which could have resulted in floor effects (Buonocore et al., 2015). Recently, in a six month follow-up single blind RCT, So et al., (2021) tested a four session transdiagnostic MCT programme, specifically targeted at ameliorating belief flexibility (including the modules: Attribution, Changing beliefs, To Empathise and Self-esteem & Mood). Compared with TAU, those with psychosis receiving MCT showed significantly reduced positive symptoms and delusions. However, in contrast to Buonocore et al., (2015) they found no changes on the BADE task paradigm, but instead reported some small increases in delusion specific belief flexibility assessed by MADS (Garety et al., 2005). However, even though changes were maintained 6 months after the intervention, the improvements in belief flexibility as assessed by the

MADS were not associated with symptom reduction (So et al., 2021). These findings are similar to those reported in this study, that found some changes in self-reported belief flexibility, whilst no improvement was seen on the BADE paradigm. Hence, it may be that MCT taps into more conscious aspects of belief flexibility that are captured by self-report measures but not more objective 'performance based' aspects of belief flexibility, as captured by the BADE task (Woodward et al., 2007).

Draws to Decision (Fish task)

As seen in the graphical representation of change across therapy, as well as through MLM analysis, there was a significant increase in DTD for participants receiving MCT+. However, contrary to expectations, similar improvements were also seen for the CBTp group. Nevertheless, this coincides with the findings regarding changes in self-reported the JTC bias in the current study, that was also seen across both treatment modalities. The finding that CBTp led to improvements in the JTC bias as assessed by a 'draws to decision' paradigm was rather unexpected considering that a previous study that have found no effects of CBTp on the JTC task (Mehl et al., 2018), which led to suggestions decision making might need to be targeted more intensively (as seen in MCT) in order to change (Mehl et al., 2018). Regarding changes seen in participants receiving MCT+, the current findings are in conjunction with previous studies having shown improvements in decision making as assessed by JTC tasks (Huq et al., 1988; Moritz & Woodward, 2005) following MCT (e.g. Aghotor et al., 2010; Gawęda, Krężołek, Olbryš, Turska, & Kokoszka, 2015; Moritz et al., 2014; Ochoa et al., 2017; Rocha & Queirós, 2013). However, whether improvements in the JTC bias is specific to MCT has been questioned by previous studies. For instance, Ahuir et al (2018) found comparable improvements in the JTC

bias in individuals receiving MCT and psychoeducation, whereas some studies have reported symptom improvement following MCT in even in the absence of changes seen in the JTC bias (e.g. (Andreou et al., 2017; Balzan, Mattiske, et al., 2019; Gawęda et al., 2015; Kuokkanen et al., 2014; Pos et al., 2018). Moreover, the current findings are in contrast to the two previous studies who utilised the same 11-unit MCT+, manual, both of whom reported no significant changes in the JTC bias as assessed by the Fish Task paradigm (Andreou et al., 2017; Balzan, Mattiske, et al., 2019). However, as was noted previously, the samples in Andreau et al (2017) and Balzan et al's (2019) study displayed rather high mean DTD at baseline (mean = 4.02 (2 .8) and median = 4, respectively). Therefore, absence of a significant change in DTD might also have been the result of ceiling effects. The baseline JTC bias scores were lower in the current study (mean: 2.3), which may explain the discrepancy in findings. This is further supported through the observation that studies reporting significant changes in DTD following individual MCT have tended to include samples with lower DTD (i.e. higher JTC bias tendency) at baseline (Moritz, Veckenstedt, et al., 2011; So et al., 2015). Nevertheless, taken together with previous studies, the current study suggests that changes in decision making following therapy may not be specific to MCT, and that does not represent a mechanism of action through which delusion reduction occurs.

Reflective Functioning – Self-certainty

The current study also found significant improvement in reflective functioning as assessed by the RF scale (Fonagy et al., 2016). Even though these were limited to the self-certainty subscale. Whilst much research on reflective RF have been based on individuals with borderline personality disorder (e.g. (Fonagy & Luyten, 2016;

Fonagy et al., 2016; Luyten et al., 2020), RF have also been shown to be implicated in psychosis (Braehler & Schwannauer, 2012). As was mentioned previously, two broad impairments in RF have been identified, namely *hypometalising* and *hypermentalising.* Hypomentalising refers to the inability to infer the complexity of one's own and other's minds, whereas hypermentalising ('excessive' mentalising), refers to the tendency to generate overly confident representations of ones' self and others thoughts and intentions, without appropriate evidence to support this, which may lead to inappropriate or faulty interpretations of others thoughts and intentions (Fonagy et al., 2016). The fact that the current study found an improvement in 'excessive' mentalising in the current subjects, was however encouraging and indicative that both CBTp and MCT+ can improve this aspect of RF. Hypermentalising has been linked to social anxiety and paranoia, and as well as difficulties in ToM abilities (Russell, Reynaud, Herba, Morris, & Corcoran, 2006). However, it should be noted that in the current study, improvements in reflective functioning did not predict improvements in symptoms, and neither did the reverse (i.e. symptom improvement predicting RF improvement). These findings contrast somewhat with those of a recent case-series assessing MCT adapted for negative symptoms where improvements in reflective functioning was identified as a mechanism that was associated with improvements in negative symptoms over time (Swanson et al., 2021). However, it may be that improvements in reflective functioning represents a mechanism of action that is specifically pertinent for negative symptoms, rather than delusions (Gumley et al., 2104; Swanson et al., 2021). The finding that improvements in 'hypermentalising' was improved following treatment reflects previous studies indicating improvements in cognitive insight as assessed by the Beck Cognitive Insight Scale (BCIS) consisting of two subscales: *self-reflection*

and *self-certainty* (Beck, Baruch, Balter, Steer, & Warman, 2004). Several studies of group MCT have reported improvements in cognitive insight, both compared TAU (Lam et al., 2015), as well as psychoeducation (Ochoa et al 2017), where in the latter study, significant effects were maintained six months following the intervention (Ochoa et al., 2017). However, a recent study failed to replicate long term effects of MCT on cognitive insight (de Pinho et al., 2021), and more recent studies have also reported limited effects of MCT on the BCIS post treatment (Ahuir et al., 2018; de Pinho et al., 2021; Simón-Expósito & Felipe-Castaño, 2019; Tanoue et al., 2021) potentially questioning whether symptomatic improvement following MCT is driven by an increase in cognitive insight as captured by the BCIS (Beck et al., 2004). Similarly, Balzan et al (2019) found significant improvements in the *self-certainty* subscale of the BCIS (Beck et al., 2004) following MCT+, however this was not maintained at 6 months after the intervention, even though improvement in symptoms were. These and the current findings is reflective of research indicating that self-certainty did not predict symptom severity in a 4 year longitudinal study of individuals with first episode psychosis, but instead appeared to be related to the JTC bias (O'Connor et al., 2017).

5.4.4. Stigma, functioning, quality of life, mood and psychopathology

The final secondary research question assessed whether MCT+ would lead to enhanced reductions in in self-stigma as well as superior improvements in other well-being outcomes including quality of life, mood, functioning, and general psychopathology when compared with CBTp.

Internalised stigma

In light of Chapter 2 indicating strong associations between stigma and symptoms of psychosis as well as a range of well-being outcomes, the current study sought to address whether MCT+ that includes modules specifically targeting self-stigma and self-esteem would lead to reductions in self-stigma over and above standard CBTp. However, contrary to expectations, findings from MLM indicated only modest reductions in internalised stigma at post therapy with small effects seen when baseline was compared with post therapy, with no difference between those receiving CBTp and MCT+. Moreover, it was noteworthy that when internalised stigma was assessed post session 8, graphical depictions indicated that levels had increased in both groups, before decreasing at the post-therapy follow-up appointments. These findings were rather unexpected, particularly given that both CBTp and MCT+ take a non-stigmatising, normalising approach to discussing experiences of psychosis. Whilst internalised stigma was addressed for participants in the MCT+ condition, this module was only introduced towards the end of therapy together with a relapse prevention plan, which at first glance may be thought to explain the reduction in stigma at post therapy in the MCT+ group. However, similar reductions were also seem amongst those receiving CBTp. Furthermore, no difference in change was found when additional analyses was conducted controlling for those who had received the internalised stigma module within the MCT+ group (n = 7). However, it is also important to consider that the final follow-up assessment was completed 12 weeks after the intervention. With the stigma module being introduced towards the end of the treatment period, it is perhaps not likely that internalised stigma, itself the result of early socialisation processes and a lifetime of being surrounded by a

culture that stigmatises mental ill health (Corrigan & Watson, 2007; Link & Phelan, 2001), to change after a period of only 12 weeks. These findings should also be considered in light of potential change in other mechanisms targeted in therapy including insight, which may have served to increase stigma awareness. Change in these mechanisms may therefore explain the unexpected finding that internalised stigma increased throughout therapy, particularly as heightened awareness of symptoms is likely to occur during earlier stages of therapy. Indeed, this fits in with the finding of the meta-analysis in Chapter 2, that internalised stigma was positively associated with insight (Eliasson et al., 2021). These findings however, highlight the importance of addressing internalised stigma as part of therapy, ideally early on in a therapy course in order to equip individuals for the potentially increasing stigma burden that might come with a heightened awareness of once's symptoms as a result of therapy. Moreover, whilst this study argued that stigma needs to be addressed as part of routine therapy, and hypothesised that MCT+ would lead to self-stigma reductions, the relative 'dose' of this within MCT+ is rather low. Within the MCT+ manual, stigma is part of the final module where it is combined with a relapse prevention plan naturally leaning itself towards being introduced towards the end of therapy (which was the case for the individuals in the current study who received this module). Hence, it may be that in order to more effectively change self-stigmatising cognitions, a higher self-stigma 'treatment dose' is needed. For instance, whilst a systematic review on interventions on internalised stigma found that interventions that followed a psychoeducation format (which is the format the self-stigma module in MCT+ is closer to) appeared to be more effective in reducing stigma (Alonso et al., 2019), these interventions tended to last longer. For example, Ivezi et al. (2017) found significant self-stigma reductions following a psychoeducation programme consisting of 12 group

based sessions for individuals diagnosed with schizophrenia compared with a waitlist group. Similarly, Cuhadar and Cam (2014) reported significant self-stigma reductions for individuals diagnosed with bipolar disorder following seven psychoeducational group sessions targeting stigma. However, whilst dosing may play an important part, it should also be noted that shorter group sessions targeting stigma have been shown to be effective; Michaels et al. (2014) reported significant reductions in stereotype agreement amongst individuals diagnosed with a mental illness following one 3-hour psychoeducation group session compared with an active control. However, whilst it is important to note that the latter study was not specific to psychosis, such findings may suggest that interventions targeting internalised stigma are better when they occur in a group format. For instance, as with the current study indicating limited reductions in internalised stigma, Morrison et al (2016) compared 12 individuals sessions to treatment as usual for individuals with psychosis. Whilst they found significant reductions in internalised shame, no difference between the groups was seen in regard to internalised stigma. Such findings fit with previous meta-analytic work indicating that higher contact with the public may lessen internalised stigma amongst those with mental illness (Corrigan et al., 2012). However, as group based interventions may not suit everyone, future developments of MCT+ modules should consider incorporating more self-stigma related material in a format suited to be introduced earlier on in the course of therapy.

Depression, quality of life, functioning & psychopathology

Contrary to expectations, neither CBTp nor MCT+ led to reductions in depressive symptoms nor in improvements in quality of life. However, even though the overarching aim with therapy (or any treatment) might be general quality of life

improvements and mood improvements, these did not represent specific treatment targets within the therapy. These findings are in line with previous studies indicating limiting effect of CBTp on quality of life (e.g. Laws et al., 2018). However, as quality of life is a broad concept, often encompassing several domains (such as social, physical, economic, employment, life satisfaction (e.g. Herrman et al., 2002; Ritsner et al., 2005)), this may be more difficult to target within therapy. Nevertheless, improving quality of life if often cited as an important treatment target among service users (Brabban et al., 2017). However, as quality of life has been shown to be closely linked to recovery (Ertekin Pinar & Sabanciogullari, 2020), it may be that changes in quality of life take longer to occur. It was also encouraging that both treatments were associated with improved functioning as assessed by the GAF, as well as with improvement on the PANSS general psychopathology scale. A recent 3-year longitudinal study using structural equation modelling, indicated that reductions in positive symptoms were associated with improved quality of life, via improved social functioning (van Rooijen et al., 2019). Furthermore, a longitudinal MCT study by Moritz et al (2014), conducted a 3-year follow up assessment following group MCT compared with Cognitive remediation. They found so called 'sleeper' effects where improved quality of life and self-esteem had emerged for those receiving MCT, neither of which had emerged at post-therapy (Moritz et al., 2013). However, due to the nature of the current study design, it was not possible to investigate more longer term changes following treatment.

5.5. Strengths and limitations of the current study

The current study was the first to directly assess MCT+ in relation to routinely offered CBTp, in order to assess whether and what elements of MCT may be particularly

beneficial to incorporate into routine clinical practice to improve therapies for psychosis further. The current case series utilised MLM which is a statistical technique that has been increasingly employed within small-N studies, which can provide insights beyond the collection of descriptive statistics, effect size estimates and visually analysing graphical representations of data. MLM also has the advantage of taking the into auto-regressive nature of data collected at repeated time points into account, and is also advantageous in regard to data analysis when time points may vary, and missing data may exist (Field et al., 2012). That MLM goes 'above and beyond' classical case-series analyses was demonstrated in the current study, where it was possible to statistically demonstrate modality specific mechanisms of action, where session-by-session changes in the external attribution bias was associated with improvements in delusions for those receiving MCT+. Moreover, the pragmatic case series design facilitated testing of MCT+ within routine clinical practice, as the study was conducted across a range of settings including acute inpatient settings, rehabilitation units as well as in outpatient community settings where MCT+ was delivered by both clinical psychologists as well as psychiatric nurses. Moreover, as inclusion criteria remained broad, this also meant the patient sample was representative of 'real world' settings, where patients reported a range of difficulties including affective symptoms, cognitive difficulties, negative symptoms as well as substance abuse.

The current study has several limitations that are important to consider. Firstly, is the the flip side of the strengths mentioned above, specifically regarding the pragmatic nature of the current study. As the study was conducted across a range of settings, this did not allow for a specific investigation into how MCT+ might work

within each of these. For instance, since the commencement of the current study, metacognitive training specifically adapted for acute inpatients settings have been introduced and is currently under evaluation (MCT-acute, https://clinical-neuropsychology.de/metacognitive-training-for-the-acute-psychiatric-setting/). Hence, future studies may benefit from a more in-depth investigation of how implementation of new treatments may work in different settings. Furthermore, as inclusion criteria remained broad, some patients were not stable on their medication when entering the study, which, whilst reflecting 'real world' practice settings, could have influenced the results. Moreover, it is important to highlight that the the mechanisms of action investigated by the current study were limited to cognitive factors specifically thoguht to be implicated in delusion formaiton, and speficially targeted by MCT+. Hence other non-cognitive mechanisms of action, some of which might be more relevant to CBTp including coping (Schlier et al., 2020) or therapeutic alliance (Wood et al., 2015) were not tested. Moreover, MLM analyses often indicated significant slope variation between individuals in regard to changes across therapy, indicating that there were significant individual differences in resonse to treatment which the current study did not consider. A final, but important limitation pertains to the small sample size within the current study, meaning that these findings should be interpreted with caution (Hackshaw, 2008). However, the limitatins of using a small N-design were partially managed through the repeated measured of the promary outcomes, as well as through the use if MLM, which enabled a statistical investigation of potential mechanisms of action in spite of the small sample size. Moreover, the number of participants included in the current case series was also comparable to that of previous studies (Freeman et al., 2016; Shadish & Sullivan, 2011; Swanson et al., 2021).

5.6. Conclusion and recommendations for future research

The current study was the first study demonstrate that the effects of MCT+ were comparable to those seen in CBTp. This was particularly encouraging considering that several patients in the current study who received MCT+ did so from non-CBT trained clinicians. These findings might have implications for the dissemination of MCT+ within clinical settings where standard psychotherapy is not routinely offered, and future larger studies should further examine the potential benefit of using MCT within such settings. Moreover, the current study found that MCT+ exerted its effect on delsuions partially throguh the mechanism of changing attributions, which was not seen for those receiving CBTp. This might also give insights into how standard CBTp can be improved, and future studies should investigate the benefit of adding specific modules targeting attribution biases within routine CBTp.

Chapter 6: Empirical study 2 - Using Metacognitive Training Within Standard Psychological. Exploring Feasibility and Utility Through Qualitative Feedback From Service Users and Clinicians

6.1 Introduction

This chapter will outline empirical Study 2, where the aim was to explore, through qualitative interviews with both patients and clinicians the feasibility and perceived benefit of utilising MCT+ within standard psychological treatment practices across NHS Lothian. The goal of this study was also to build on the quantitative findings reported in Chapter 5, though more in-depth explorations of services users own narratives, of what aspects of therapy participants found beneficial ("what worked"), in order to identify important therapy ingredients that clients value, and how these might differ between CBTp and MCT+.

6.1.1 Brief literature and study rationale

As has been highlighted previously, continuous improvement of currently offered "gold-standard" therapeutic treatments for psychosis is of important, and forms the over-arching aim of the current thesis. This is particularly critical, not only considering the continuing low recovery rates for individuals with psychosis (Jääskeläinen et al., 2013), but also when considering other barriers to recovery not targeted by anti-psychotic medication including as feelings of stigma and low self-worth (Dubreucq et al., 2021; Eliasson et al., 2021). This highlights the importance of delivering evidence based treatments that are not only effective, but that patients and service users also value. Indeed, the notion that CBTp can be effective for individuals with psychosis is, within a historical context, a fairly recent development (Bachmann, Resch, & Mundt, 2003), with CBTp based treatment manuals specific to psychosis first emerging in the 1990's (Fowler, Garety, & Kuipers, 1995; Kingdon & Turkington, 1994; Wetzler, 1997). In 2002, NICE endorsed CBTp as an effective treatment for psychosis, which let to its inclusion in treatment guidelines (NICE,

2002). As has been discussed previously, CBTp based treatments are therefore still developing, and recent years have seen a shifting focus within therapies for psychosis towards more 'causal-interventionist' approaches focussing on factors implicated in the formation and maintenance of symptoms (Cupitt, 2019). Such 'third-wave' approaches differ from more generic CBTp in their focus on the *process* rather than the *content* of someone's experiences (Cupitt, 2019). One such newly developed intervention is MCT (Moritz & Woodward, 2007a). More detailed information about MCT has been outlined elsewhere (Chapters, 3 & 4). However, as the name suggest, the focus within MCT is not necessarily on symptoms directly, but rather the metacognitive processes implicated in the formation of distressing beliefs and experiences.

As mentioned in Chapter 3, on the back of studies reporting that MCT+ is particularly effective at targeting delusions (Liu et al., 2018), the current project aimed to investigate whether MCT+ might represent an avenue that might help enhance current psychological treatments within NHS Lothian. The previous study, presented in Chapter 5, demonstrated that whilst reductions in delusions across sessions were comparable between CBTp and MCT+, modality specific effects were seen on cognitive biases, where those receiving MCT+ showed greater reductions in the belief inflexibility and external attribution biases. However, whilst quantitative studies can be informative and help build on the current evidence base regarding specific treatment mechanisms, complementing such findings with qualitative feedback from both service users and clinicians can help to further enrich such information. Moreover, mixed-method research has also been recommended when gaining

information on how new treatments are best translated and implemented into clinical practice (Pearson et al., 2020).

6.1.2. The importance of service user feedback

Service user feedback through qualitatively exploring experiences and perceived benefits and drawbacks of therapy is recognised as an essential part of the evidence base for therapeutic interventions (Berry & Hayward, 2011; Thornicroft, Rose, Huxley, Dale, & Wykes, 2002). Ultimately, service users are the main experts of *what* works for them, and qualitative feedback can therefore also be a useful tool where important therapy 'ingredients' are identified (Brabban et al., 2017). The first study that attempted to summarise and arrive at a consensus as to the key components of CBTp was conducted by Morrison and Barratt in 2010. In this Delphi study, they asked therapists about their opinions regarding key ingredients of CBTp (Morrison & Barratt, 2010). Main factors identified as important related to the benefit of assessment and formulation, cognitive formulation, engagement, goal setting, between session tasks as well as attending to emotional needs. However, even though CBTp has been around since the 1990's, for long, service user voices regarding their experience of CBTp have remained somewhat absent (Morrison & Barratt, 2010; Wood et al., 2015). Nevertheless, to date, several studies examining service users experience of CBTp have been conducted (Dunn, Morrison, & Bentall, 2002; McGowan, Lavender, & Garety, 2005; Pain, Chadwick, & Abba, 2008; Pipkin, Armitage, Knight, & Hogg, 2021; Pipkin, Hogg, et al., 2021; Wood et al., 2015). In a systematic review including six studies evaluating qualitative feedback of CBTp, Wood and colleagues identified three superordinate themes, including the therapeutic alliance; facilitating change and challenges of applying CBTp (Wood et al., 2015).

Indeed, that service users value and place great importance on the therapeutic alliance has not only been supported by qualitative research studies (Kilbride et al., 2013; Wood et al., 2015), but have also been reported in quantitative research (Bourke, Barker, & Fornells-Ambrojo, 2021). Therapeutic alliance has also been identified as a key predictor for successful therapy outcome and recovery (Shattock, Berry, Degnan, & Edge, 2018), with a recent meta-analysis finding indicating that therapeutic alliance was associated with therapy engagement and reduced psychotic symptoms, as well as lower risk of subsequent hospitalisations and improved cognitive outcome (Bourke et al., 2021). Whilst therapeutic alliance may itself represent a factor that may help facilitate positive change in therapy (Kilbride et al., 2013), other factors reported as facilitating change, by service users have included the benefit of evidence gathering, reappraisal of symptoms, assessment, development of a shared formulation and normalisation – all essential components of CBTp (Wood et al., 2015). For instance, improved understanding of ones' experiences of psychosis and re-appraisal of symptoms has frequently been cited as an important part in the process in therapy, where linking past experiences to current life events through shared formulation, as well as being able to discuss experiences in a normalising context, often being cited as important factors facilitating this (Brabban et al., 2017; Wood et al., 2015). Hence, service user feedback can be extremely valuable in terms of gaining richer information on what service users find important within therapy, what challenges may emerge, and what therapy aspects service users feel promote change (Brabban et al., 2017).

As mentioned in Chapter 3, whilst several studies have investigated patient feedback on MCT, with meta-analyses reporting high acceptability rates (g = -0.84) (Eichner & Berna, 2016), such studies have utilised a quantitative feedback

questionnaire, not specifically asking about perceived mechanisms of action within MCT (Moritz & Woodward, 2007a). And whilst exploring patients *lived* experiences of therapy is beneficial as it allows for an increased understanding of the content of the intervention and how it may help facilitate change (Connell et al., 2016), no study has to date investigated patients lived experiences of MCT+. Therefore, to gain richer information on the feasibility and acceptability of implementing MCT+ within standard practices, is time to 'step back' and listen service users about their experiences of metacognitive training, and how this differs from the experiences of those in receipt of standard CBTp.

6.1.3. Clinician feedback informing implementation

Whilst MCT has been shown to improve delusional symptoms compared with other active treatments (Andreou et al., 2017; Balzan, Mattiske, et al., 2019), whether MCT can add additional benefits over routinely offered "gold standard" CBTp remains unknown. Although it is important to note that the aim of MCT is not to 'compete' with CBTp it still remains to be explored whether MCT can be utilised as a tool to help further enhance the effectiveness of standard psychological treatments for psychosis. This is also important to ensure that new evidence based treatments are implemented into services in order to facilitate continuous improvements of current treatment approaches (Pearson et al., 2020). In particular, as MCT+ entails a stronger focus on specific meta-cognitive processes, with an easy to use 'recipe style' manual aimed to facilitate its delivery, not only investigating services users, but also clinicians experiences of using MCT+ will also give richer information on the feasibility of implementing MCT+ within therapeutic practices.

6.2. Study aim

The aim of the current study is to explore, through qualitative interviews with both patients and clinicians the feasibility and perceived benefit of using MCT+ within standard psychological care for psychosis. In particular, the present study aimed to explore how clients receiving MCT+ view their experiences of the therapy, what their subjective experiences of change are and whether these differ from experiences of clients receiving standard psychological therapy (CBTp). As CBTp, currently represents the 'gold standard' therapeutic treatment for psychosis (NICE, 2014), comparing qualitative experiences between the two approaches is valuable in order to gain richer data to help identify important therapeutic ingredients that patients value. Moreover, as implementation of new 'therapeutic tools' into services to a high degree depends on perceived benefit and barriers amongst clinicians (Switzer et al., 2019), the present study also sought to investigate the experiences of clinicians delivering therapy as a part of a case-series study of MCT+, in order to explore feasibility of implementing MCT+ across services in NHS Lothian. More specifically the current study aimed to investigate the following research questions:

- What are service users over-all experiences of receiving MCT and CBTp?
- Does the perceived mechanism of action ("what worked") differ between MCT+ and standard CBTp?
- What are the perceived benefits and barriers to implementing MCT+ in standard psychological care according to clinicians delivering psychological therapies?

6.3. Methods

All participants who had received between 4 and 20 sessions of standard CBTp (Guided by the model of Morrison et al., (2001), Morrisson et al., (2003) and Kingdon & Turkington (2005)) or MCT+ (Utilising the 11-unit MCT+ manual and material; Moritz et al., 2016) as part of a quasi-randomised case-series conducted between March 2017 and June 2021 across both in and out-patient services across NHS Lothian, were invited to take part in a feedback interview. More details about the quantitative design and measures collected have been reported elsewhere (Chapter 4 & 6).

Participants were invited irrespective of whether they had decided to drop out of therapy or not. As only recording experiences from study completers may lead to a bias in receiving positive responses (Bryce, Warren, Ponsford, Rossell, & Lee, 2018), it was considered important to also invite those who actively withdrew from therapy to give feedback. Indeed, feedback from participants who have withdrawn from therapy was identified as missing from the literature (Wood et al., 2015). Semi-structured interviews were used in order to ensure reliability and comparability of the information gathered (Edwards & Holland, 2013). For service users, the interview schedule included a topic guide (see Appendix 10) that asked open-ended questions regarding 1) General experience of therapy, 2) Experiences of change after the therapy, 3) Subjective experiences of mechanisms of change, 4) Useful and not useful aspects of the therapy + suggestions for improvement. For participants who actively dropped out of therapy, reasons for dropout were also asked about. After having delivered either CBTp or MCT+ as part of the study, clinicians were also invited to take part in a feedback interview about their experiences of delivering therapy according to a topic guide (see Appendix 11) that asked open ended questions

regarding: 1) General experience of delivering the therapy 2) Material and timing of delivery 3) Perceived benefit of client after therapy 4) Suggestions for improvements 5) Feasibility of delivering therapy within the context of a clinical trial. Whilst some clinicians had only delivered CBTp for the study, as they had familiarised themselves with the MCT material as part of the study they were also asked if they had any feedback on it, or saw any potential benefits/limits to start using it within their service.

6.3.1. Ethical considerations.

Interviews were only audio-recorded for participants who actively consented to this. Participants were informed that the recordings would be kept in a locked filing cabinet within NHS facilities, and once anonymously transcribed would be permanently deleted.

6.3.2. Recruitment and setting

The current study recruited participants as part of a case-series comparing CBTp and MCT+. Participants who had taken part in the study were invited to take part in a feedback interview, at their 4-week follow was conducted in mental health services across NHS Lothian including outpatient community mental health services as well as inpatient and rehabilitation services. Participants with psychosis on the waitlist to receive standard CBTp, or already working with clinicians (Clinical Psychologists or CPN's) but not yet receiving therapy were invited to take part in the current study. Participants who were 16 years or older, currently experiencing delusions (minimum of 3 on PANSS P1 or P5), who were willing and able to give informed consent were invited to take part. Inclusion criteria were broad in order to keep the study naturalistic

to real word clinical settings (Gamerman, Cai, & Elsäßer, 2019). For more information on study recruitment and setting please refer to Chapter 4.

6.3.1. Analysis

Thematic analysis was used to analyse the data generated from the feedback interviews, as this method was deemed most appropriate for identifying detailed information regarding patterns or themes relating to participants experiences of the therapy (Braun & Clarke, 2006). Recorded interviews were transcribed verbatim, and data from the transcripts were coded and subsequently grouped and into subthemes that were organised into several overarching themes. Because the research questions centred around participants and clinicians experiences of therapy, around specific feedback on useful versus least useful aspects of the therapy, as well as subjective mechanisms of action ("what worked"), the current thematic analysis is best described as deductive, or theoretically driven (Braun & Clarke, 2006). In addition to themes being developed, labelled and reviewed by the primary researcher, further verification and quality check of themes and subthemes was sought by discussing these with a second researcher (Dr. Linda Swanson), who had previous experience of using thematic analysis (e.g. Swanson et al., 2021). The process of data analysis was informed by and followed Braun and Clarke's (2006) six phases of analysis:

Phase 1: Familiarisation with the data through transcription and repeated reading through transcripts to actively search for meanings and patterns.

Phase 2: Generating initial codes from the data.

Phase 3: Sorting codes into potential themes, generating a collection of overarching themes and subthemes.

Phase 4: Reviewing of themes to get an idea of what the different themes are and how they fit together.

Phase 5: Defining and naming themes and subthemes

Phase 6: Reporting of theme

6.4. Results and discussion

"I see therapy as building a new cognitive house … you need to carefully start with the very foundations and slowly, brick by brick, build your way up" (p. 13)

6.4.1 Participants

A total of 16 individuals completed at least one sessions of therapy and were therefore invited to take part in the feedback interview. For more details on participant characteristics and for main study consort diagram, please refer to Chapter 5. Out of the 16 participants completing therapy, 15 agreed to give feedback (CBTp $n = 6$, MCT+ $n = 9$). Two of these had actively withdrawn from therapy during the study (p. 2, MCT+ and p.15, CBTp), and therefore, reasons for withdrawal were also explored. All participants interviewed had received between 4 and 20 sessions of therapy (mean: 13.17, SD: 5.97). For two participants (p. 9 & p. 15), the interview was not recorded, but answers were instead written down by the researcher. The reason for this was feeling comfortable being recorded (p. 9), and withdrawing from the study during the COVID-19 lockdown where the interview was conducted over the phone (p. 15). The qualitative exit interviews ranged from 3 minutes and 17 seconds to 34 minutes and 18 seconds (M = 13 minutes and 26 seconds). There was no significant differences in average interview length between those who received CBTp (M = 14 minutes and 6 seconds) and those having received MCT+ (M = 12 minutes and 46 seconds), $t(14) = 0.239$, $p = 0.816$.

Participant experiences

Based on the participant responses, 10 subthemes were identified and grouped into three overarching themes; namely Acceptability, Changes after the intervention and Key therapy ingredients ("what worked").

Theme I: Acceptability

Therapy as a positive experience

Reflecting earlier studies of both CBTp and MCT+ (e.g. Eichner & Berna, 2016) most participants across both conditions reported that taking part in therapy was an over-all positive experience (CBTp, n = 5, MCT+, n = 8). When asked about the general experience of therapy most participants mentioned beneficial aspects that surrounded the therapeutic relationship, where therapy provided them with a safe space to talk and reflect.

"*It was ok, yeah, chance to … eh talk about different things that was going on in my life and that, and … yeah it was ok."* (p.3 CBTp).

"*Brilliant. That I could talk easy to her, that it was easy to chat and communicate. It relaxed me … eh I got a lot of my mind"* (p. 6 MCT+)

"*Ehm yeah, it's good … and talk to X, she could help me discuss my situation*" (p.15 CBTp).

However, a positive aspects that was mentioned amongst several participants in the MCT+ condition was also surrounding the psychoeducational aspects, likely reflecting

that MCT+ tends to come with more in-session psychoeducational material, also highlighting a demand from those experiencing psychosis to learn more about how this might be impacted by, and impact on, their thinking processes.

"*Yeah it was mostly good, found it useful to learn about my thinking, and the examples and that ... overall useful yeah"* (p. 9 MCT+).

"It gave ... it showed me that ... I mean you can generalise my illness, but I thought it was specific ... t-to me but now I know that it's more generalised to what I thought. It was quite eye-opening to be honest" (p. 12, MCT+).

"Ehhhm ... yeah some of it I found quite interesting ... ehm that I could see what she was trying to show me ... yeah so if I start thinking it, it could be the brain trick ... ehhh ... you know eh stuff with yourself as well, your own thinking" (p. 7, MCT+)

Therapy as hard work

An important aspect of therapy was, also amongst several participants recognising that the process of therapy involved hard work. Whilst this was not considered a negative aspect of therapy, it was something that was recognised, particularly by participants in the MCT+ condition and was mainly related to the challenges around confronting their thinking style, and how changing their way of thinking took practice. This might be an important aspect to remind participants of, that altering one's thinking style takes practice.

"*I found it challenging ehh … ehh. it made me confront some things that just made me address some things that I hadn't been addressing … like my paranoid thoughts"* (p. 12, MCT+)

"Sometimes, like you hear something outside and sort of get convinced they are spying outside, then try to like pause and think … what is the alternative explanation. But it was difficult sometimes I don't always manage ... it definitely takes practice." (p. 9, MCT+)

" *… you know in the beginning of the program I didn't think it was that good, I was like 'oh what's this!' you know… aye took a bit of time to niggle it eh …., You know, and then … I thought, right ok, cause X had been at me ... I mean not in a bad way, but you know like just to, to start using them, and start doing them and practicing an, and ... and to take it on, so for me to take her advice … it ehh took eh, took some time eh … so that's not X's fault you know like … like that, that was me. You know, eh trying to change ma way of thinking, it's, it's quite difficult"* (p. 7, MCT+)

Whilst the same theme around the challenges was not seen in the CBTp group, potentially pertaining to its lesser structure and lesser focus on altering thinking styles, one person receiving CBTp also described the useful but challenging aspects surrounding bringing up traumatic memories in therapy:

"I have to down, dig deep on, ehm on my past and find out why I'm … eh turned into who I am kind of thing. A lot of it's to do with my father …, Yeah but I, I have to do it.

It's hard, but it has to be done … in the end I will come out with more knowledge than when I came in" (p. 5, CBTp).

Whilst only one person in the CBTp group remarked on the therapy process as 'challenging' at times, challenges of therapy has been identified as a theme in previous studies of service user experiences of CBTp . Previous studies of patients experiences of CBTp have found that the challenges of therapy is a common theme (Brabban et al., 2017; Kilbride et al., 2013). For instance, similar to the description above, Byrne & Morrison (2013) interviewed eight individuals who had received CBTp found that, whilst recognizing the importance and benefit of 'opening up' in therapy, participants described this as challenging in terms of bringing up difficult and emotionally painful experiences.

Negative therapy feedback

Two participants (CBTp n = 1, MCT+ n = 1) did not describe their therapy experience as being positive or beneficial. For one participant this appeared to be related to a general unwillingness to talk about his mental health, where he also did not agree that he had any mental health difficulties that needed addressing:

"*Dunno didn't really like it … not my kind of thing … don't like talking about mental health…,Cause they diagnosed me with schizophrenia … cause, and I don't wanna talk about, cause I don't agree with it … I've never been delusional in my life so I don't know how they can tell me I'm schizophrenic … eh or delusional"* (p. 1, CBTp)

The other person who withdrew from MCT+ after nine sessions described his therapy experience as being overshadowed by his mental state, and where he reflected on not feeling like being questioned:

"*I didn't take it in, like … just wasn't well, just wasn't up for it and didn't like being questioned"* (p. 2, MCT+)

It is also of note that this person mainly experienced grandiose delusions, which may also indicate that MCT+ is less suited to targeting grandiose beliefs. This is in line with previous research indicating that grandiose delusions are associated with a lack of motivation to receive treatment within emergency psychiatric care settings (Mulder, Koopmans, & Hengeveld, 2005) However, grandiose delusions have been rather neglected in psychosis research, with many targeted therapies often focussing on treating paranoia (Garety et al., 2021; Moritz et al., 2018; Pot-Kolder et al., 2018; Waller et al., 2015). A recent qualitative study on individuals with grandiose delusions suggested that whilst reasoning biases may be implicated, other factors including symptoms of mania, fantasy elaboration, explaining anomalous experiences and immersive behaviour were also important. Furthermore, the main mechanism appeared to be a sense of meaning, purpose and belonging gained from grandiose beliefs (Isham et al., 2021). Hence, such beliefs might be less suitable to the current MCT model.

The other person who actively withdrew from therapy (p. 15, CBTp) did not give any negative feedback about the therapy itself, but rather described it not working out over the phone, as she had started therapy during lockdown (due to COVID-19).

Whilst describing MCT+ as being an over-all positive experience, two participants also remarked on aspects where they thought the MCT material could be improved. One participant found some of the MCT+ material condescending, highlighting the importance of preparing and tailoring the session materials to suit the specific client.

"Aye, some bits were like … this is quite condescending … like the one with naming emotions. Like I'm a kid or something, so I didn't like that. Like some of the examples with like cartoons and that were a bit like … yeah some of it was a bit just condescending eh" (p. 9, MCT+)

Another participant also highlighted that he felt that, whilst he liked the stigma material, he would have liked more of that as it did not feel enough

"*Ehh. aye yes, also liked the stigma stuff, I've spoken to X before about that … I think with the stigma module there should be more on that like yeah, like more focus on stigma … because everybody talks about mental health these days, but like there is still a lot of stigma … like I don't know if it's me attaching it to myself or … yeah just the wider society"* (p. 12, MCT+)

Length of sessions

Most participants agreed that the appropriate timing of the sessions were between 30 minutes to an hour. However, it particularly appeared that those receiving MCT+, which tends to come with more structured in-session material, preferred

sessions that were, shorter around 30-40 minutes. This might pertain to the psychoeducational structure of MCT+

"Around 40-45 minutes, yeah it depended on me … I get brain ache … is how I describe it and also X can tell when I've had enough … I mean it would depend, sometimes less … variable also depending on the subject" (p. 12, MCT+)

"They lasted around 30 minutes, sometimes a bit longer … and they were good and we got peace and quiet in the quiet room to chat" (p. 6, MCT+)

"I think no more than half an hour … otherwise it's too much" (p. 2, MCT+)

"Ehhm … I think they lasted 40 minutes or so, or up to an hour sometimes. And ehm … ocassionally, ehm I was a bit fatigued but I stuck with it. Ehmm… so I think 40-45 minutes would be an ideal target for me for building sessions, yeah" (p. 18, MCT+)

Whilst preferred timing might vary, and depend on a person's mental state and cognitive abilities, this also reflected the feedback given from clinicians (outlined below) regarding MCT+, in that for most patients, most notably in rehab settings where cognitive difficulties might be an issue, where shorter sessions (around 30 minutes) with less material might be more appropriate. This is somewhat in contrast to earlier studies of MCT+ where sessions have tended to last longer (Andreou et al., 2017; Balzan, Mattiske, et al., 2019). It is particularly noteworthy that in the study of Balzan and colleagues, participants completed 2-hourly MCT blocks (broken down into two consecutive 60-minute sessions). Whilst being more effective and ensuring

more material is being delivered across a shorter treatment period, the current study suggests that when delivered within standard psychological practices, planning for shorter MCT+ sessions is more feasible.

Theme II: *Changes after therapy:*

Regarding change after therapy, all participants who had described their therapy experience as useful (n = 14) were also able to identify some positive changes being brought on by therapy, mostly relating to therapy reducing their distress as well as benefits on behaviour. Reflected in the transcripts were also how those in the MCT+ condition tended to describe how their change (e.g. reduction in distress) appeared to be more specifically related to changes to their thinking style, where they described being able to "step back" and re-evaluate situations, which reflects the main mechanism through which MCT aims to drive changes (Moritz et al., 2007; Moritz et al 2016).

Distress

Several participants agreed that the therapy had helped reduce their everyday distress levels, even though the reasons for this tended to vary. Three participants in the MCT+ specifically described how challenging their thinking in various social situations had helped them with distress, whereas some participants (in both CBTp and MCT+) also mentioned feeling less distress after the sessions themselves, mainly due to being able to talk to someone.

"*… X is doin' her best to, eh give me coping mechanisms, ehh to break things down and to give me coping mechanisms… eh I found, I found that it helped sometimes, and sometimes it doesn't…, Eh, me/them/circumstances ehm… eh, when I was in social*

situations … ehm that I found that it eh, that I wasn't getting as stressed, yeah ehh in the house it was a wee bit different and that ehh, it, it wasn't working the same" (p. 7, MCT+)

"I can sometimes in paranoid situations take a step back now and … but not all the times .. which is better than before and if I can't do at the time… I will go back to it later and evaluate… like I'll reflect on it.. so I'm actually identifying paranoid thoughts better than I was … which is.. so more self-aware of it… also, then less distress after… like rather than ruminate on someone spying on me when I was walking the dog ... instead to question it and think it might not be the facts" (p. 12. MCT+)

"Ehm…. I'd say over-all less distress, yes. It's helped me to be less involved in what is going in around me...sort of thing….and that there's no threat ehm or danger" (p. 18, MCT+)

"Oh yeah, since, ehm like comparing now to the beginning ... yeah ehm its, yeah its far less distress … and well there's still some anxiety or agitation or … but then it's difficult to know if that's the lack of entertainment or … you know so… I'm hoping that it is, and I'm just going to put the 'cognitive house' together exactly how it should be and then from there grow out …" (p. 13, CBTp)

"Yeah I think so, talking about ma worries and that was nice, ma teeth an that, but yeah stuff like that" (p. 3, CBTp).

"My stress went down … it … it's a hard thing to explain but like after the sessions was like a burden had lifted off ye, eh ye shoulders" (p. 6, MCT+)

Behavioural changes

Several participants also mentioned behavioural changes following the intervention. These were mainly centered around socialising more and also being more open and reaching out to people for support, also reflecting the non-stigmatising aspect of therapy as important.

"A dunno, I've been able to air my feelings'n that … talk about things eh, rather than just going round and round in my own head, you know? You know talk about them with someone else, get a difference in perspective, eh. Not feel embarrassed and stuff. Maybe talk to more people around me" (p. 3, CBTp).

"Have I told you I got back in touch with my sister? I keep forgetting who I told … yeah which is a change" (p. 5, CBTp)

"I don't know how to describe it eh, ehmm … yeah so doing things, I am trying to get out more … trying to socialise more ehhh … aye well actually also cleaning the house, you know tidying things away" (p. 7, MCT+)

"Oh … and I'm going to be joining a dragons and dungeons group that play all over the country ehh with people who don't have mental health problems as far as I'm aware … and I wouldn't have done that before" (p. 18, MCT+)

One MCT+ participant, reflecting the target of MCT, also mentioned speaking with other people as a way of getting a second opinion about his paranoid beliefs, which helped him question his own interpretations of situations.

"And as I said, having somebody to bounce the ideas off apart from X (CPN) *or my Doctor is a good thing… and I do it with ma pal and with ma mum and my sister now … that's different, that's changed…, You know like 'what makes you so special' which is what people keep telling me. And they are right when you think about it*" (p. 12, MCT+).

Two participants also reported reductions in safety behaviours, one person who had received MCT+ and one person who had received CBTp. However, a difference between the two descriptions was that for the person receiving CBTp, this was a behavioural change that he had been recommended to do by his therapist, whereas for the person in the MCT+ condition, this was not something he himself had not been directly encouraged to do in therapy particularly reflecting the "backdoor approach of MCT+. This highlights how the non-confrontational approach of MCT (e.g. Moritz et al., 2007) might be particularly beneficial.

"Not wearing my earphones all the time… I… I used to have them on, used to have the radio on all the time, I'll have them on for walking down the street, but not when I'm in the house. X (Therapist) encouraged to have them off as much as I can…but I mean ..there were times in the morning when I could take them out and talk to people, if I go to the pharmacy, but I've got them like that (pointed to earphones hanging around the neck) *and I can talk fine ehm… still got social skills (laughter)"* (p. 5, CBTp)

"Actually I no longer feel the need to bring my gloves and my pepper spray… and my mum's not here either ... I can go here on my own now. I take the spray out at night still when I'm walking the dog, but that's just precaution really…, The CBT man I worked with he tried for ages to get me to stop using those safety things and I never… so … this therapy has been different in that way… more challenging than CBT.. and I made me confront more issues… like the thinking structure " (p. 12, MCT+)

Another aspect of behaviours that participants reported changing from therapy was regarding self-care. However, this was mainly mentioned by participants in the CBTp condition, potentially reflecting the broader, perhaps more flexible, approach that CBTp 'allows' for.

"Ehm no changes at first, but then I started to see changes… materialise yeah ... I just started to notice Dr. X said, she spoke to me and she said "You're just going to have to see me cause the drugs aren't for you anymore". So I started thinking that way … cause Dr X spoke of it … and then X said "if there was speed on the table and you'd be offered it would you take it?" and I said "yes"… and I said to Dr. X, I said "that scares me" and that thinking of the future and wanting to be in the community again… but will I take the drugs again … but she says that no I will be more robust and strong to be able to say no to it … that was she was thinking anyway … yeah that's a positive change" (p. 11, CBTp)

"*Yeah since the therapy stopped now, I'm a different person … mainly because I'm also not drinking now…, I've found my way to avoid alcohol's just by … not wanting it anymore, so it's different.*" (p. 5, CBTp)

"Ehm, no, more like keeping up ma support appointments and that and getting on with things and that yeah, keep active" (p. 3, CBTp)

"Also over-all … trying to take care of myself, started going to the gym … although with COVID of course (laughter)… but also eating better and trying to stop smoking as well, so yeah, more motivation now for sure" (p. 13, CBTp)

Theme III: Key therapy components ("what worked")

When asked about what aspects of therapy participants found useful and particularly beneficial in terms of bringing about change, four subthemes emerged; two of which were prevalent across both groups, namely the therapeutic alliance and the importance of the personal story, and two that differed between CBTp and MCT+, namely increased metacognitive awareness and reappraising of symptoms.

Therapeutic alliance

Prevalent across both condition was the therapeutic alliance, where most participants described this as the most important aspect of therapy. This finding regarding the importance of the therapeutic alliance, have been consistently reported in other studies of patients qualitative experiences of receiving psychotherapies (e.g. de Jong, Hasson-Ohayon, van Donkersgoed, Aleman, & Pijnenborg, 2020; Swanson et al., 2021), and quantitative research have shown that therapeutic alliance also predicts

successful therapy outcome (Falkenström, Granström, & Holmqvist, 2013; Krupnick et al., 1996). The most important benefit that the therapeutic alliance provided, was that participants described how it provided them with a safe space to 'vent', where they were listened to and believed whilst also not feeling judged – potentially also pertaining to the stigma around expressing certain beliefs.

"*Just good to create my own version of events, and be listened to you know … because sometimes the doctors don't believe me …, Well usually just having a chat about my week and what had been going on in my head and that … so I suppose just talking about what was on my mind really"* (p. 3, CBTp)

"Eh, so X seems so trustworthy, I mean you really need someone that you like, asking you the questions…otherwise you don't dig deep…, Just so important that they listen to you, and believe you … and yeah so important that you have to trust the person. I don't just talk about myself to anybody" (p. 5, CBTp).

"*Ehh having someone to talk to … yeah yeah I would say the that's the best thing eh… just having someone to speak to .... supportive, someone that listens"* (p. 7, MCT+).

"*The talking … and … yeah the talking … getting things off ma chest, just letting it all out"* (p. 6, MCT+)

"*And X (CPN) is great as well, he's great. All CPN's I've had have just been amazing and I always get on really well with them … yeah, that's so important, otherwise it just would not work as well*" (p. 19 MCT+)

The importance of the personal story

The participants also highlighted how a helpful aspect of therapy, closely linked with therapeutic alliance, was getting to tell the therapist their own personal story (formulation), which mainly related to the importance of working through past experiences as a way of learning about oneself, but also that one's personal story was listened to and taken into account throughout therapy. Indeed, formulation is recognised as a central aspect of CBTp for psychosis (Morrison & Barratt, 2010; Morrison et al., 2004), as it is a way of providing meaning to individuals, by recognising the importance of their personal histories in shaping their mental health experiences (Johnstone, 2018). Lucy Johnstone (2018) also highlights the importance of the formulation as helping individuals to make sense of their experience as a way of *restoring meaning*; something that is often lost when individuals are left with diagnoses (such as schizophrenia) which can have the consequence of turning them into "patients with illnesses" rather than humans with difficult experiences (Johnstone, 2018).

"*I think we made a document as well…, but we made a document to show my own version of the story, so that was quite helpful"* (p. 3, CBTp)

"Ehm … well X writing the things I told her down … and how it connected. I was a student, didn't finish the course and … a lot of it has to do with … my father…,Well in the end, yes, in the end I will come out with more knowledge about myself" (p. 5 CBTp)

"*Just being able to kind of work through my past experiences better I think, that definitely helped, just ehm just to kind of work out my past more I think that really helped yeah … you know, kind of, you know work out who I am kind of thing"* (p. 8, MCT+)

"*I think just in general when talking to X about it, like I often felt I could … ehm what's the word, eh, relate to it, to the material and the questions they asked … also like linking it to ma past and that … quite good to get that out of my system…"* (p. 19, MCT+)

However, even though MCT+ has material devoted to making a formulation, this is shorter and less thorough than what is seen in CBTp (e.g. Morrison et al., 2004), which might be a potential drawback of MCT+. This was particularly reflected in one patient having received MCT+ (p. 7) who described how she would have preferred working through her personal situation more, and how what she had learned throughout the programme related to her past and current experiences. Hence, in order to optimise the use of MCT+, allowing for a longer and more thorough formulation, more similar to CBTp might be useful.

"*…like I wanted to get, eh, down to the problems and then also when she was, you know taking all my history and … I, I don't feel like we covered everything to be honest …, Aye, yeah I do wish that it had covered some things ehhh … more than what I did, not to go over them and over them … but ehh …. things that connected with things that I would have liked to get out … things in the past eh, and like eh, things in my everyday life. I don't feel that, ehh, things that are happening to me now, like how*

I think … and eh and how often do I do certain things n'that, I don't think I went into enough detail about that eh … like how this goes along, hand in hand with other things… And more about my personal history and that or how its connected" (p. 7, MCT+)

Increased metacognitive awareness

In accordance with the proposed mechanism of action of MCT regarding changing cognitive biases (Moritz et al., 2007; Moritz et al., 2016), a theme that was prevalent in the transcripts was how an increased awareness of one's own thought processes had been a helpful aspect of therapy. This was primarily discussed in relation to paranoid persecutory beliefs , where those who had received MCT+, described how reductions in distress due to paranoia appeared to be related to changes in proposed mechanisms of action of MCT. This particularly related to 'stopping and thinking', considering alternatives and re-evaluating situations. Even though it should be highlighted that four participants having received MCT+ did not highlight that changes relating to their thinking style as important (p. 2, 6, 8 & 17) aspects of MCT+. However, one participant that did not describe changes in their thinking only had 4 sessions of MCT+, potentially reflecting earlier studies showing that MCT+ appears to exert more benefits in individuals having received at least 4 or more sessions (Andreou et al., 2017).

"When I went places like Morrison's I'm just like, 'me/them/circumstances'… But I mean I don't say 'me/them/circumstances' anymore, I mean I did at the beginning, but I don't now, I basically just say "right, that's just me being paranoid, it could be about anything' and ehm, yeah that's what I do, yeah, it could be about anything!"…,

But that's basically what it is eh, my mind's basically now telling me 'right, relax, they could be talking about anybody'... you know, like, and it's helping. And it's my base ... you know." (p. 7, MCT+)

"*It .... like ... ehm changed how I think, encouraged me to like stop and try to think of alternatives ... like when I heard someone outside my room, like the window, I ... tried to consider alternatives, like 'ok [p.9] this might not be about you'... someone just passing by maybe, you know and that was quite helpful at times, eh"* (p. 9, MCT+)

"... I would evaluate things more than I would have been before. Before I'd just been reacting ... like sometimes I'd just react quickly, and like that might still happen but now I will always evaluate it after ... you know, think of alternatives even if I react quickly, now the difference is I'd go back ... think about the situation later on and try to challenge it..., And also just over-all re-evaluating things ... like thinking of alternatives. Like you asking also about my conviction level, I noticed that going down." (p. 12, MCT+).

"I try to smile at people to make them feel less of a threat, I do it now all the time... aye. Also, I always try and remember the facts ... that ... ehm not allowing how I'm feeling, to influence ma ehm ... decision making and ma interpretation of the facts beyond how it immediately make me feel, almost like taking a step back ... I still do that, and ehm aye getting quite good at it." (p. 18, MCT+)

Interestingly, the several participants mentioned that the attribution module particularly stood out as being useful. Whilst earlier studies have tended to focus on the impact of MCT+ on the Jumping to Conclusions bias (Andreou et al., 2017; Balzan, Mattiske, et al., 2019; So et al., 2015), the present study suggests that changes in attribution style might be an important subjective mechanism of action of MCT. This is also important considering that several studies that have used shorter versions of MCT by isolating specific modules (e.g. So et al., 2015; Balzan et al 2014) have tended to exclude this module. Future studies aiming to investigate shorter versions of MCT+ should consider the importance of including the attribution module, as it might be particularly pertinent for patients with paranoia. These findings also reflect and complement the findings described in Chapter 5, where changes in the external attribution style predicted changes in delusions for those receiving MCT+.

"*Aye, yeah you know what it started off when X gave me the sheet of me/them/circumstances ehhhh I wasn't so convinced with the brain trick to be honest … ehm but the me/them/circumstance that kind of kick started eh…. You know it kind of kick started something"* (p. 7, MCT+)

"Yeah I think it was around attribution that felt quite relevant, and to not jump to conclusions… like not always think it's about you, like, I think I sometimes do that, so that was quite useful. If someone's laughing it might not be about me." (p. 9, MCT+)

"Eh, so yeah it gave me more knowledge and information that I could use against my illness … the attribution one was the most challenging one … but also stuck with me, like the ideas…, Yeah like, the ideas, that was the most challenging for me … but I try

like in situations. Like the other day, people were out in the street as, and a woman was filming on her phone and … like, the thought just came and I reacted and immediately I was like, 'ah she's filming me … an- and she's gonna tell X I was out'… that was the immediate thought, but then later on … managed to take a step back. Also when I said to my mum 'she was filming me' she said 'yeah of course she filmed, people lining the streets!'… she said 'she'll have just been filming it for Facebook or something', and that helped a lot …, Yeah, like that was the most useful one that I can put my finger on" (p.12, MCT+)

"*Attribution was often times useful…. ehm is it self, is it situation, is it other? Aye and today, the … ehm there was a group of lads and a woman over…what direction would it be in…sort of that direction, down towards the GP surgery…and eh, they were, they were loud, they were aggressive weirdly…normally that would cause me some difficulties … ehm but I just thought to myself "well I don't know what it's about it's obviously nothing to do with me … I've never seen them before."* (p. 18 MCT+)

Several participants also highlighted that the illustrative materials included in MCT+ was helpful in terms of illustrating the importance of sufficient information gathering before making decisions and interpretations of events:

"I also liked the pictures gradually emerging … like not to judge people and not to jump to conclusions, a person could be anyone, eh, a doctor, a patient … I am trying not to judge people now." (p. 9, MCT+)

"*Ehm, there was some useful stuff in there … I found that the … ehm the pictures that can be perceived in different ways … I thought that was, ehm quite good."* (p. 17, MCT+)

"*The pictures were especially helpful … yeah they taught me that I wasn't seeing the big picture a lot of the time, and to be patient until you do see the big picture … and ehm I've especially been using that in the last few weeks as well."* (p. 18 MCT+)

"*Aye I found it to be good yeah … it was quite a few things that, ehm it's made me think like… like when there was the … I cannot remember what it was like, there were a few questions… and like, pictures. And it made me realise like, don't judge too quickly… like there's certain things like … start to evaluate facts rather than just making a quick decision*." (p. 19, MCT+)

One participant who had received CBTp also described how an awareness of how he was thinking about things had helped him, even though this was less specific to the cognitive processes targeted by MCT+. However interestingly, this aspect he described was also influenced by repeatedly doing the questionnaires about cognitive biases as part of the study that was done at each session (DACOBS; Van der Gaag et al., 2013).

"*Yeah … so… cause it's just new ideas and adding the weight to the new ideas….because at a very base level it still feels like lying to myself, but you just have to give that more weight by rationalising….that's the change" …, It was, for me it was the questions, the repeated questions… but the fact that they were the same meant*

that I could, you know if I'd just gone in and done them without thinking about them ….which I probably did the first couple of times, but then because they stayed the same and because it became …a … a kind of more set memory, then the switch when it happened, I was like, answering these the way I would like to think I would do things, rather than what was actually going on… and that switch for me was really the defining moment in the therapy" (p. 13, CBTp)

Reappraising symptoms

A sub-theme that was particularly reflected in the transcripts of three participants having received CBTp, was also how reappraising their experiences, specifically regarding hallucinations had helped reduce the associated distress. This mirrors studies showing how CBTp might be more effective at targeting hallucinations (Van der Gaag et al., 2014). For two participants this related to re-appraising these experiences as being symptom of psychosis rather than being 'real', which in turn made them less powerful and less distressing.

"Ehh X told me that there is a scientific explanation to virgin Mary eh … It's just my brain chemicals an' that … and why would she be there … It's been helpful to learn about my illness … but I need to learn more eh, need to get it embedded more in my brain. After that she didn't bother me as much, like how can she be there … and the scientific explanation … neurochemicals and that … and then she is not bothering me the way she used to. But I need to study, eh like the neurochemicals, I don't know how it works." (p. 11, CBTp)

"*… yeah I think ehm I think it's just brought into focus that ehm part of my reality is symptomatic so … it's made me almost refocus on the things that aren't symptomatic….and really work on those bits from the ground up…, with the cognitive house, yeah, because the house had … ehm the house I had before was half imaginary … so you couldn't get to the second floor because the stairs were imaginary (laughter) so there was this whole, whole aspect of life that I was… that I was, not missing out on because it was extraneous what I focussed on too much*" (p. 13, CBTp).

Another participant mentioned how, after her clinician had reassured her that hearing voices is ok (normalisation), it helped her to not appraise these as distressing and allowed her to focus on the nice things they said instead of the bad voices:

"*Eh … like my voices and that it's ok and that they can sometimes also say nice things. And I try and not to listen to the bad things…, Also X said that it's not bad to hear voices and that the nice ones … can be ok"* (p. 15, CBTp)

6.4.2 Clinicians

A total of seven clinicians having delivered either CBTp or MCT+ as part of the study took part in the feedback interview. The number of patients each participant had seen as part of the study varied from four to one, some of which delivered only MCT+ (n = 3), some of which had only delivered CBTp (n = 3) and one who had delivered both interventions as part of the study. Six clinicians were Clinical Psychologists working in outpatient CMHT's (n = 4), acute inpatient services (n = 1) or psychiatric rehabilitation services (n = 1), whereas one clinician delivering MCT+ worked as a

Community Psychiatric Nurse (CPN). Interviews ranged between 26 minutes and 55 seconds and 60 minutes and 5 seconds (Mean: 37 minutes and 27 seconds).

Clinician experiences

Based on the clinician responses, six subthemes were identified and grouped into two overarching themes; namely Perceived benefits of using MCT+ in standard psychological care and Perceived limits and recommendations for implementation.

Theme I: Perceived benefits of using MCT+

All clinicians interviewed highlighted potential benefits of introducing MCT+ into standard therapeutic care across NHS Lothian. Whilst most clinicians agreed that MCT over-all provided an additional useful set of therapeutic tools that could be utilised in clinical practice (several clinicians (n = 4) also mentioned already having continued using MCT+ with other clients beyond the study), the perceived benefit of incorporating metacognitive training into clinical practice centred around three subthemes, namely: practicality, effective knowledge translation, and the benefits of encouraging reflection on meta-cognitive processes.

Practicality

Most clinicians highlighted that a major advantage of MCT+ is its highly manualised 'recipe- style' format in facilitating its implementation into services. This particularly pertained to the fact that the in-session materials and worksheets are already in place, thus minimising preparation time. Indeed, having easily accessible materials to hand, is also important to ensure effective translation of research (e.g. on in the importance of cognitive biases) into practices (e.g. Scott et al., 2012), especially

when clinician time is scarce. The benefits of the potential of delivering the MCT+ units as stand-alone sessions was also highlighted as a beneficial practical aspect.

"*Very useful intervention, very pragmatic. Easy to use as it is all prepared for you…, I guess with the standard CBT you can kind of tailor it a bit more …but that is both a challenge as well as something that can make it easier… for instance that means you need to prepare it a bit more before each session. Due to lack of time, that can sometimes mean that you don't come to the session with handouts and things. I would definitely be less likely to bring handouts to the sessions on CBT*" (C.1).

"Delivering the therapy was actually quite straight forward… and I think that also owes a lot to the fact that there was paper copies, but that we could also do it on the screen on the computer, that was very beneficial… and so yes, that was well set out. It was easy to deliver, ehm there was nothing complicated …, I think that the material is very relevant, and it was very relevant to the subjects that it was trying to address, so much so that there were parts of it that, that you could be pulling out and use as stand-alone treatments for certain patients" (C.3)

"*Yeah for me some of the visual material and videos really allowed us sort of ehm have access to some of the materials that we would … ehm maybe not tend to find so easily.. so yeah that was really useful and could be used also as an addition to more standard CBT for psychosis…. and some of the MCT worksheets as well were quite useful… so some of the summary around the sort of experiments ehm and the … ehm the sort of convictions and pro's and cons with certain beliefs*" (C.4)

One clinician who's patient on the study (p. 15) was allocated to CBTp also commented that the structured manual of MCT+ with prepared session material would, have been helpful for her as a recently qualified CBTp therapist. This also highlights that the implementation of MCT+ might be useful for newly trained therapists, who may benefit from using more structured session materials. This is particularly pertinent in light of findings citing lack of confidence in using CBTp models as a potential barrier to CBTp implementation among clinicians (e.g. Hartigan & Ranger, 2014; Switzer et al., 2019).

"*…and as I said… ehm I'm new to doing CBTp so I suppose I… I think actually if there would have been more structure a little more … structured CBTp… like 'these are the sessions'... a bit more similar to the MCT ones, I think that would have been … sort of having looked through the MCT materials it just looked really nicely kind of laid out and you know all the different options looked great ehm…"* (C.5).

Effective knowledge translation

Clinicians also highlighted the benefits of MCT+ as an tool to effectively convey relevant research on cognitive processes and its role in psychosis in an highly accessible format to patients through effective visual and video illustrations, as well as in-session exercises, and useful worksheets. This reflects the perceived benefits of one of the core aspect of MCT; that of effectively conveying empirical research to patients by integrating psycho-educational information with audio visual exercises that also demonstrates how each of the cognitive biases work 'in action' (Balzan, Moritz, et al., 2019)

"*I think also though that when people participate in it, they do manage to understand what you're trying to put across and MCT is very good for that, it's very deliverable in what it does."* (C. 3)

"*... and there were bits of it that my client really seemed to find ehm, helpful and accessible. Yeah I mean, generally I did find it ... like the use of the video clips and visual illustrations and just the different ways of delivering the message ehm... was, was good, and ehm I think the patient found it quite ehm easy to understand and... yeah easily digested..... and so that stuck with her, sort of in a way that other resources might not have."* (C.4)

"It's also kind of nice when you have something that is scientific and evidence based as well and kind of summarising the research and also making that accessible for patents, and also giving them quite useful strategies of how to manage them" (C.1)

Benefit of encouraging reflection on meta-cognitive processes

The benefit of MCT+ with its main focus being on meta-cognitive processes was also reflected in the transcripts of clinicians, both as an over-all benefit, but also in the context of having seen how this appeared to be well received by patients. The benefit of this focus in naturally leaning itself to effectively normalising symptoms in an accessible way, through highlighting the underlying cognitive processes was also emphasised. Finally, echoing he transcripts of patients, the attribution unit was also mentioned by all clinicians having delivered MCT+ as a unit that was very well received.

"I mean I think the material is very appropriate over-all, I mean you see a lot of people with, for instance, hasty decision-making styles, jumping to conclusions… and I really like the attribution style, I think that's very applicable as well … I also quite like the normalisation point of it, like this is something that we all do … rather than being "ill"… I think that we normally tend to see depression and anxiety more as outcomes of unhelpful thinking patterns … whereas we often see psychosis mainly as the result of an "illness" so I guess what it's trying to highlight is that psychosis is just like any other mental problem and like other mental health problems is also the result of cognitive processes" (C.1)

"*I think it was more the fact that he was examining… taking more time to examine things, and he was taking more time to examine his own attributional skills. There were some examples there that stood out, so some of the more illustrative ones, like the pack of cards for example and that really convinced him of an awful lot … you know it's dead simple… but it convinced him…, I've also tried with a few people now and they have given me very positive feedback on it. Mainly they're astonished that what they're thinking is being construed as something that is fairly natural.. and that there's nothing unusual about what they are thinking … there is nothing unusual about the unusual."* (C.3)

"But the, the information like, the things to do with attribution she really held on to and remembered and I think in a way … and was able to sort of label what we were talking about quite easy" (C.4)

Interestingly, one clinician who had a study participant with paranoia who was randomised to CBTp also mentioned having used the attributional MCT+ material with him after his study participation, further highlighting that the 'back-door' approach of MCT (Moritz et al., 2007) might be particularly relevant to individuals with persecutory and paranoid delusions, especially when clients are not open to challenging these directly.

"…we spoke a wee bit about the MCT attributional model itself …, his attributional style was … I sort of felt that it naturally lent itself to MCT, so I felt like there could have been some, so yeah I certainly felt so, in terms of the use of certainly MCT could have been … you know, a useful one to sort of… driven from the formulation .. using it as one of the measures, or tools to work with ehm some of his difficulties…, yeah towards the end it just sort of made sense to talk a wee bit more within those lines on a more metacognitive level cause I felt like we were feeling a bit sort of restricted in terms sort of where he was at in terms of … the cognitive and the behavioural experiments and the cognitive challenges itself so even trying to notice these processes of … how he, ehm how he makes sense of and how he attributes things .. it just felt like the discussion just naturally lend itself more towards an MCT model" (C.6)

The benefit of an awareness of metacognitive processes in promoting change was also highlighted by one clinician delivering CBTp, who's patient on the study appeared to have benefitted from the therapy and from the study questionnaires on cognitive biases (p. 13).

"Ehm I think he was just able to "step back" and ehm challenge the way he was looking at things ehm and ... question his beliefs a little bit more. And not to jump to conclusions and find other explanations for something that might be happening. And kind of speaking also of kind of "keeping one foot in the real world. I think it was a matter of taking a step back really and ehm, challenge things a bit more" (C.7)

Theme II: Perceived limits and recommendations for implementation

Less flexibility

Reflected in the transcripts were also several limits to MCT+ some of them somewhat mirroring the perceived benefits. For instance, whilst the structure and focus of the programme was often mentioned as a benefit, it was also highlighted that this, at times, left less room to discuss other personal issues, which may have impacted on the therapeutic alliance. This led several clinicians to suggest that MCT+ might be optimally used within psychological practices as more of a blended format with CBTp ("best of both") to allow for more flexibility. Particularly, clinicians mentioned that a longer more substantial formulation phase often used in CBTp might be beneficial in combination with elements of MCT+. This is particularly pertinent considering the importance of both the therapeutic alliance and the centrality of the personal story highlighted in previous studies (refs), as well as by the participants in the current study.

"I think for MCT, maybe allowing a slightly longer assessment phase would be useful, also for the therapeutic alliance in a way, and I think that almost would make it easier to also get patients to become more open to ... and maybe willing to look at their own

thinking styles in a way… , One thing with MCT is that in the manual it says to avoid talking about personal things in the session and keep the focus on cognitive processes, but … yeah I think at times within therapy this is not possible …, there almost needs to be a space to allow for that scope too… I think somethings with MCT … or I remember at times I would have had to pause it a little bit to give them space to talk about personal things or feelings, even if they were not relevant to the module… but relevant to them. I think in CBT you are a bit more allowed to 'go off track' a bit more" (C.1)

"So I remember doing one of the assessment ehm worksheet that I used… ehm it was quite challenging for the participant because he thought that I was ehm, that I was trying to discredit his beliefs … and he didn't really like that…., And I think regarding the initial formulation bit not working out… I think, you know what it is I think it's the client group … this is the sort of chronic end of schizophrenia, psychosis .. but people also with negative symptoms … and I think that one of the things I've learned over the years as I've been working with this population is that the… you can have the most sophisticated most evidence based training in the world … but unless you can get people to engage… it's all kind of for nothing" (C.2)

"…I supposed that it was the times you know when it felt closer to this delivering a course and delivering some educational modules and getting the balance between doing that and away from delivering a sort of individual formula formulation based approach…, I, ehm there were just sort of times when I was aware that I wondered if it would have been… if it was possible to have done something more blended that would have been absolutely ideal. I felt that if I could have been doing, sort of more,

sort of typical CBT for psychosis but also really drawing on these materials ehm, at the, at the time then that might have felt from my point of view, the best of both worlds" (C.4)

The complex centrality of trauma

As trauma is often implicated in psychosis (Hardy, 2017; C. Morgan et al., 2019), several clinicians also mentioned that participants with complex trauma histories felt less suitable to MCT+. Several clinicians held that in order to maximise the delivery of MCT for someone with a trauma history, acknowledging the centrality of trauma in the material, as an option to discuss that with patients would be useful. However, the complexity of trauma, and the risk of re-traumatisation being a barrier to engagement was also highlighted as a general barrier to developing a therapeutic relationship.

"Also, I guess more of a trauma focus, because I guess sometimes that was missing a little bit… because that's a huge part of … of many psychosis cases … I mean often trauma is such an important factor in the psychosis… traumatic experiences early in the life or along the way… or whether the psychosis itself is traumatic.. and then substance abuse together with that … so yeah there definitely could be more of a trauma awareness and perhaps in the same psychoeducation format, also how trauma can impact on experiences too." (C.1)

"Yeah, I mean I think you can sort of put it [trauma] in anyway because ehm you know the vast majority of this client group, if not all of the ones I can think of, have had some kind of traumatic experience … or other or even just being in hospital and

being unwell for so many years is in itself a trauma as well so ehm … so yeah I think it's … and not even just for this population, we want things to be as efficient as possible of course we do … but if that then leads to people disengaging because it's too overwhelming or triggering for them then we're not getting it right for people…" (C.2)

Hence, whilst it may not be the place for MCT+ to cover all complexities that trauma can bring nor to 'replace' trauma focussed interventions for psychosis (e.g. (Gianfrancesco et al., 2019), some psychoeducational material relating to this and other common issues such as drug and alcohol abuse, when delivered in an individualised format may be useful. Moreover, a psychoeducational aspect around trauma and psychosis may further help normalise individuals' psychotic experiences, and place them in a context that 'makes sense' to participants who's experiences of psychosis strongly interlink with their past trauma.

Timing of sessions – less is more

Echoing the transcripts of the participants having received MCT+ several clinicians responded that their experience with using MCT+ (and also standard CBTp in some instances) was that patients tended to lose their focus after around 30 minutes. Moreover, clinicians with experience of delivering MCT+ to individuals with chronic psychosis in rehabilitation inpatient facilities, highlighted that some of the session material at times felt too complex. Whilst the MCT+ material can be used flexibly and be adapted to suit the specific person, in order to facilitate its delivery to more patients across NHS Lothian, including those in the more severe end of the spectrum who may

also struggle with cognitive difficulties (whilst minimising clinician preparation time), creating a simplified (MCT 'light') version may be useful.

"Probably around half an hour… maybe 45 minutes… but yeah, I think you noticed that after about 30 minutes some patients started losing the focus, whereas others could go on for longer." (C.1)

"Yeah so for the vast majority of them 30 minutes is plenty …, the vast majority of my patient group also have cognitive deficits and a lot of them will have had really disrupted education … a lot of them can actually feel that ehm they're not confident even with their reading … and ehm so going back to using the MCT material I got to be sensitive about that because some peoples reading or writing might be quite basic, so having lots of paperwork, whether that's from a data point of view or from an intervention point of view can be a barrier as well" (C.2)

"*I found people find it hard to focus for any more than about 20 minutes and after that you really are on borrowed time … yeah I do think that half an hour maximum ... and because also, they do actually also take quite a bit of time, ehm and again some of the more lengthy sections you don't really go by the clock, but you rather wait until you get at a suitable break, and think 'right we'll stop it there'"* (C.3)

Experiences of delivering psychological treatment within a trial context

As the current study was conducted as a part of standard practice the experiences of clinicians regarding potential benefits and barriers of delivering the therapy in the context of the trial was also explored. Most clinicians agreed that being a part of the study had been a positive experience, where perceived benefits tended to centre around getting to know and use MTC+ (both through training and clinical supervision) as well as seeing a benefit of the research process for some patients who enjoyed taking part. However, a barrier that common across all settings was the difficulty of recruitment. Whilst a substantially high number of patients approached agreed to participate, one issue surrounded the identification of suitable patients on waitlists, with most reasons for non-suitability being that standard CBTp or MCT+ would not be appropriate therapeutic models due to issues such as trauma needing to be addressed. This was particularly highlighted as a barrier within rehab services where patients are more likely to have complex trauma histories and drug abuse, as well as cognitive difficulties. However, more accessible research within these facilities was also highlighted as important, as one clinician working in rehab services highlighted: "*We are at the kind of frontier of what works and what doesn't and we're still trying things out*" (C.2). Therefore, considerations around making research more accessible to this patient group were also suggested, including using less burdensome assessments, or implementing research that can be conducted by their care team.

6.5. General discussion

This was the first study to qualitatively explore how individuals with psychosis experienced receiving MCT+ and whether this differed from the experiences of those receiving standard psychological therapy (CBTp), currently representing the 'gold

standard' therapeutic treatment for psychosis (NICE, 2014). In addition, as the present study was embedded within standard clinical practice, the experiences of clinicians delivering MCT+ and CBTp were explored in order to gain valuable feedback on benefits and barriers of implementing MCT+ into routine clinical practice.

Mirroring previous studies of patient feedback (Brabban et al., 2017; Schizophrenia Commission, 2012), most participants across both conditions described their experience of therapy as positive and generally beneficial. Moreover, several aspects, particularly pertaining to mechanisms of action, differed between CBTp and MCT+. Particularly, focussing on cognitive processes was perceived as helpful by patients who received MCT+ - highlighting the perceived usefulness of this, which may be particularly useful to those experiencing paranoia. Specifically, participants having received more than four sessions of MCT+ highlighted how, in accordance with the proposed mechanism of action of MCT (Moritz et al., 2007; Moritz et al., 2016), the training programme had helped them through an encouragement to 'stop and think' and to consider alternative explanations in their everyday lives. Indeed, the benefit of MCT+ in that it encourages individuals to start reflecting on their own thinking was also echoed by clinicians, and hence may represent a useful addition to standard practices, particularly when delusions and paranoia are the main target of treatment (e.g. Garety et al., 2021). Interestingly, echoing the findings of Chapter 5, a particularly useful therapy unit, according to both patients and clinicians was that focussing on attributional styles. Paranoid and persecutory delusions have been consistently linked with monocausal attributions in general, and an external attribution bias in particular (Bentall et al., 2001; Penn et al., 2008), it is of note that most studies that have investigated shortened versions of individualised MCT have excluded this module (Balzan et al., 2014; So et al., 2015;Turner et al., 2019). However, in order to

maximise the benefit of MCT+, future studies aiming to investigate more targeted versions of the programme should include the attribution unit, particularly for patients who may be struggling with paranoia. On the other hand, as reflected in the transcripts of individuals having received CBTp, a 'front door' approach whereby participants are more directly encouraged to re-appraise symptoms might be more beneficial for those who are struggling with stressful hallucinations (Van der Gaag et al., 2014).
Whilst individuals described how MCT+ had helped them 'take a step back' and consider alternatives, it is noteworthy that previous studies of MCT+ did not find any changes to the JTC bias as measured by a variant of the beads task paradigm (Andreou et al., 2017; Balzan, Mattiske, et al., 2019). However, the beads task (and its variants) have been criticised for lacking ecological validity (Westermann et al., 2012). In other words, deciding how many 'beads' or 'fish' one wants to see before making a hypothetical decision might not represent decision making processes that are of personal relevance and occur in an individual's everyday life. It might be that, as MCT+ allows for a discussion of cognitive biases in a more personally relevant manner (compared with the group version), it taps into more conscious and personal aspects of decision making.

The current study also found that there appears to be a general demand to more effectively translate current research about cognitive biases implicated in psychosis into clinical practice; both amongst patients who appeared to appreciate the psychoeducational elements of MCT+, and amongst clinicians who particularly appreciated the accessible format through which MCT+ is delivered. The fact that MCT+ also felt accessible for clinicals to use, in the form of prepared modules and in-session material will also further facilitate the ease at which such materials can be

implemented into services, further minimising the gap between research and clinical practice (Pearson et al., 2020). Indeed, effective knowledge translation into services is key to ensure that new evidence based therapeutic tools are applied in order to continuously improve existing therapeutic 'toolkits' (Goldner et al., 2011). However, whilst MCT is a useful resource, in order to maximise psychological treatments for psychosis, the next step is to make sure that its accessible format is made even more accessible. This is particularly pertinent to ensure that its benefits also reaches individuals on the more severe end of psychosis such as those with long-term inpatient stays that might also be struggling with cognitive difficulties and as well as negative symptoms. This may be facilitated through the use of less, and more simplified in-session material. The clinicians also highlighted some drawbacks of MCT+, particularly pertaining to its rather rigid focus on cognitive mechanisms, that, whilst useful for targeting cognitive biases, allowed for less scope to bring in individuals' personal life stories. This further points to the importance of using the strengths of both more traditional CBTp and newer MCT approaches. For instance, allowing for a longer and more detailed formulation and assessment phase, to allow space for 'the personal story' to be developed, which might also benefit the therapeutic relationship (both key ingredients mentioned by patients across both treatment groups) whilst also introducing relevant MCT materials to also target the underlying cognitive infrastructure, might represent a 'best of both' approach.

6.6. Limitations

The current study has several limitations that are important to highlight. Firstly, qualitative interviews were conducted at the study sessions that occurred 4 weeks after therapy completion. Even though participants were given the questions once therapy

was completed and asked to consider these, it is likely that some participants had forgotten several aspects of therapy. On the other hand, asking participants about their experiences 4 weeks after the intervention was completed also allowed for a more in-depth exploration of how participants might have begun using the 'therapeutic tools' in their everyday lives. However, in order to further evaluate the subjective process of change throughout therapy, future studies should consider Longitudinal Qualitative Research Designs, to further explore how change subjectively unfolds throughout therapy (Calman, Brunton, & Molassiotis, 2013). Moreover, even though several participants gave rich accounts of how the therapy had changed their way of thinking, it is also important to consider that some patients might not have had the vocabulary or cognitive skills to express how the therapy influenced their cognition. Finally, this study was a pragmatic trial conducted across both outpatient and inpatient settings. Whilst that was useful in terms getting an over-arching view of how implementing MCT+ may work in different settings, a more in-depth investigation into the challenges and benefits of implementing MCT+ in each of these clinical settings might have been useful. In particular, clinicians working with more chronic patients highlighted a gap between evidence based "gold standard" psychotherapies and how these are best implemented, where it appears that research has not quite established itself in rehabilitation services. This might reflect remnants of historical notions that psychotherapy is not appropriate for psychosis, and particularly less so for more severe cases (Bürgy, 2008). Hence, a more in-depth investigation into *what* works in these clinical settings should be considered in future studies.

6.7. Conclusion

In summary, taking these aspects into account, the current study suggests that MCT+ is a useful resource that, in combination with a more standard CBTp model, can be feasibly implemented and effectively utilised in order to maximise psychological treatments for psychosis. Moreover, the rich quotes of participants with paranoid experiences having benefitted from targeting their underlying thinking structure, further highlights that depictions of delusions as 'fixed false beliefs' (APA, 2013), both echoing Jaspers 'ununderstandability' (Jaspers, 1913) and remnants of a historical scepticism that these are not amenable to psychotherapeutic change (Bürgy, 2008), is in need of a reconceptualization. It is likely that the looming paradigm shift in our understanding of psychosis will help change the academic and medical discourse (Guloksuz & Van Os, 2018). However, the view that "*there is nothing unusual about the unusual*" (C.3) also needs to be effectively conveyed to patients who might be struggling to understand their experiences, and for this MCT is a promising avenue.

Chapter 7: General discussion, conclusion and future recommendations

7.1 Introduction

The overarching aim of current thesis was to investigate the potential of MCT+ to further improve currently offered CBTp based treatment for psychosis. This thesis might be best described as consisting of two parts. The first part highlighted the centrality of stigma to the experience of psychosis through an extensive meta-analysis on the correlates and moderators of personal stigma in psychosis, which in itself indicated further rationale for the importance of effectively targeting stigma within psychological therapies.

The second and main part, consisting of an empirical project, was written up as two studies. In study 1, the main goal was to conduct a quasi-randomised case-series, in order to evaluate whether MCT+ could be utilised to enhance standard CBTp, and whether there were modality specific treatment effects on measures of metacognition throughout therapy. Due to MCT+ also targeting stigma, depression and self-esteem, the study also sought to explore whether this would lead to enhanced improvements in measures of internalised stigma, as well as other well-being outcomes including quality of life and mood. Study 2 aimed to complement the findings of study 1 by conducting qualitative feedback from patients and clinicians, in order to gain richer information on key therapy ingredients that patients value within MCT+ and standard therapy, as well as to explore the perceived benefit and barriers to implementing MCT+ within standard practice. Whilst the findings from each of these parts have been discussed within their respective chapters this final chapter will provide a brief, overarching discussion of these findings as a whole.

7.2. Using MCT+ to improve treatments for psychosis

Due to its modular structure, and ease of administration, the finding that MCT+ performed similarly to standard CBTp was encouraging for several reasons. Firstly, the finding that MCT+ ameliorated delusions at an equal effectiveness to CBTp presents preliminary evidence that MCT+ can be an effective resource that can be utilised within services that, due to lack of resources, may not otherwise offer psychological therapies. Indeed, the need to increase access to CBTp based therapies for psychosis has been recognised as an important research target, having led to various initiatives, including the Improving Access to Psychological Therapies for People with Severe Mental Illness initiative (IAPT-SMI). This initiative focuses on increasing access to CBTp within existing services through improved availability of trained staff, service restructuring as well as outcome monitoring (Johns et al., 2019). However, whilst the Department of Health's Five year Forward View for Mental health (NHS Mental Health Plan 2019/20-2023-24) have undertaken a commitment to increase access to mental health services, benefits from such changes are likely to take time and therefore need to sit alongside strategies that further facilitates the implementation of effective psychological treatments (Hayward et al., 2020). Recognising these challenges have led to other research initiatives aiming to deliver more targeted CBTp based interventions by a more cost-effective workforce such as assistant psychologists (Hayward et al., 2020). Similarly, findings from the current study indicated that modules from MCT+ is a valuable resource tool that could be utilised by non-CBT trained clinicians in order to further improve care for psychosis. In the current study, qualitative feedback indicated that most clinicians highlighted that a major advantage of MCT+ was its highly manualised 'recipe style' format, with

pre-prepared session material including power point slides, videos and printouts. However, whilst this may be particularly beneficial to a workforce with no prior CBT training, it was noteworthy that CBTp trained clinicians also perceived the practicality of MCT+ modules as beneficial to their services, due to lack of time to prepare CBTp sessions often being an issue. It was also highlighted that elements of MCT+ may be useful for newly trained CBTp therapists, who may benefit from more structured in-session material. This is also pertinent for effective implementation of psychological therapies for psychosis, where a lack of confidence in using CBTp models has been identified as a potential barrier to CBTp delivery among clinicians (e.g. Hartigan & Ranger, 2014; Switzer et al., 2019).

Regarding scalability and dosage, the modular flexibility of MCT enables the delivery of stand-alone treatment modules (e.g. So et al., 2021; So et al., 2015; Turner et al., 2019), and the current study suggests that this could be utilised both within psychiatric nursing settings as well as part of more standard CBTp, in order to target mechanisms that may be relevant to a client at a specific point in time. However, within community psychiatric nursing care where CBTp is not routinely offered, MCT+ may be particularly beneficial due to its potential to be incorporated into clients regular appointments as part of a more comprehensive treatment programme. Due to the longer term contact that often occur between service users and CPN support, sessions are not time limited to the extent that CBTp sessions with a clinical psychologist may be (e.g. Landa, 2017; Morrison, 2017). This also entails that relevant modules can be repeated based on clients' needs, which may be particularly beneficial for individuals with longer term psychosis who are also struggling with cognitive and memory difficulties (Bora, Yücel, & Pantelis, 2010).

It has been suggested that modularised, targeted interventions may be particularly suitable for implementation within community mental health care settings, where these can be delivered by a wider workforce (e.g. Gumport, Yu & Harvey, 2020; Harvey et al., 2021). Due to its ease of administration, MCT may therefore be particularly suitable for implementation within these care settings, as its delivery does not require lengthy and thereby costly CBT training (de Pinho et al., 2021; Hayward et al., 2020). Setting this up within long term community care settings may therefore be a feasible way of enabling wider access to an effective psychological intervention for individuals with psychosis. The efficacy of MCT when delivered by non-CBT trained staff has been supported recently, both when delivered by mental health nurses (de Phino et al., 2020) and General Practitioners (GP's) (Chen et al., 2021). As outlined in Chapter 4, in addition to clinicians spending sufficient time familiarising themselves with the MCT+ manual, MCT training consisted of one training session (with the option of a follow-up session based on clinician preference) in conjunction with regular supervision sessions offered before and during therapy delivery. Whilst this appeared to be sufficient to enable clinicians to effectively administer MCT+, it should be noted that a clear majority had received formal CBT training, with only one clinician not being CBT trained. Therefore, the relatively short amount of training required for the current study is likely not indicative of implementation needs within settings where clinicians have not had prior CBT training. For instance, in Chen et al's (2021) study, where efficacy of MCT delivered by GP's with no prior CBT training was demonstrated, GP's had received a four stage training programme that lasted across 1 month prior to MCT delivery. It is also important to note that whilst interest amongst CPN's in terms of receiving initial MCT training was high, with around 20 CPN's attending one introductory training session, only two CPN's (one of which had prior CBT training)

ended up referring patents to the current study. Whilst previous studies have demonstrated that training non-CBT trained mental health staff to deliver evidence based therapies is feasible and beneficial for both clinicians and service users (e.g. Eisen et al., 2022; Garety et al., 2018), possible barriers to implementation have been cited, including lack of time and competing demands (Garety et al., 2018). It is therefore recommended for future studies to evaluate both training and supervision needs, as well as attitudinal and practical barriers to using MCT within community psychiatric nursing settings, in order to ensure effective implementation within these mental health services.

7.3. Shedding light on important change mechanisms

"Attribution is the solution to the

confusion about the delusion!" (p. 18)

Due to the unclear findings regarding the specific mechanisms of change for individually delivered MCT+, the current study sought to investigate change in self-reported cognitive biases across therapy, and whether this differed from standard CBTp. The quantitative part of this project was through the use of MLM, able to shed light on a cognitive mechanism that has not yet been studied for individually delivered MCT, namely the external attribution bias. Even though more traditional CBTp approaches also encourages individuals to re-appraise events (Landa, 2017; Morrison, 2017), findings from the current study indicated that improvements in this bias was specific to MCT+. This likely pertains to the targeted focus on attribution as well as other cognitive biases within the MCT+ programme (Moritz & Woodward, 2007b). Interestingly, MLM analyses also indicated that the interaction of a reduction in the

external attribution bias across treatment sessions significantly predicted improvements in delusions – a causal link that was further strengthened through the absence of a reverse interaction effect. This suggests that the material within MCT+ that targets attributional style may be particularly valuable. However, it is important to highlight that the current study design did not incorporate a module specific analysis, and so it was not possible to say whether it was the attribution module *per se* that led to the treatment modality specific changes. Nevertheless, findings from the qualitative study supported this notion, and therefore complemented the quantitative findings. Indeed, particularly prevalent from the transcripts were rich descriptions of the use of the attribution material for participants who experienced paranoia and persecution, where they found utilising the key messages from the attribution model 'in action' helpful. It was also interesting that the attribution module was mentioned as particularly useful, not only amongst patents but also amongst clinicians. Resting on the back of previous research having consistently linked paranoia and persecutory delusions to an external-personal bias (e.g. Aakre, Seghers, St-Hilaire, & Docherty 2009; Bentall, Corcoran, Howard, Blackwood, & Kinderman 2001; Kinderman & Bentall 1997), the current study provides support that targeting this mechanism may be particularly beneficial to facilitate therapeutic change.

However, findings regarding changes in other metacognitive mechanisms were less conclusive. Whilst both groups improved on measures of decision making, this was not found to be related to progress in treatment, but rather to delusions in general, which is reflective of research on delusions and the JTC bias (McLean et al., 2017). Furthermore, whilst MCT+ led to reductions in self-reported belief inflexibility, none of the groups showed changes on the performance based BADE task paradigm

(Woodward et al., 2007). However, the fact that a similar discrepancy in findings between self-reported belief flexibility and the BADE task has been reported recently, (So et al 2021), this may indicate that MCT alters more 'conscious' aspects of belief flexibility. Further supporting this idea were findings from the qualitative accounts given by participants in the MCT+ condition, where descriptions of changes in cognitive processes including decision making ('stop and think') and belief flexibility ('look for the facts') were described as useful element in MCT+. This might call into question, the validity of the measures intending on capturing such change (Moritz & Woodward, 2005; Woodward et al., 2007), both in the current project, and in previous studies where findings regarding these cognitive mechanisms have been contradictive (Buonocore et al., 2015; So et al., 2021; So et al., 2015). This also highlights the benefit of utilising both qualitative and quantitative designs, in order to capture richer and thereby more meaningful data regarding useful change mechanisms (Shorten & Smith, 2017).

The findings of the current project therefore suggests that, in addition to potentially being an effective resource that could be implemented across mental health settings where CBTp is not routinely offered, MCT+ may also be a useful resource when utilised within more standard CBTp practices. Such combination may be effective in getting the 'best of both', where the increased flexibility and more detailed focus on formulation seen in CBTp (that was prioritised by the patients in the current study) is combined with a more structured focus on metacognitive mechanisms. Indeed, there is increasing support for the efficacy of incorporating a focus on cognitive biases within CBTp (Garety et al., 2021; Waller et al., 2015). For instance, a recent assessor blind randomised study of a CBTp based intervention (SlowMo)

targeting reasoning biases (belief flexibility and JCT) through the use of digital technology in combination with individual therapy sessions also enabling for the development of an individualised formulation was published by Garety and colleagues (Garety et al., 2021). Findings indicated general improvements in assessments of paranoia and persecution following treatment, even though the primary outcome which was paranoia as assessed by the Green et al Paranoid Thoughts Scales; (GPTS Green et al., 2008) 12 weeks following the intervention was not significant. Interestingly, in contrast to studies on MCT, assessments of belief flexibility (as assessed by the possibility of being mistaken on the MADS) and worry were found to mediate improvements in paranoia. Such findings further indicate that combining therapeutic approaches can be beneficial, and require further study, in order to hone in on what elements can help maximise CBTp (Garety et al., 2021). To improve treatment outcomes further, the current study suggests that future studies should incorporate a stronger focus on attribution biases within a more standard CBTp model.

7.4. Stigma and psychosis

Conditions such as psychosis, and particularly diagnoses such as 'schizophrenia' continue to be burdened by societal stigma and discrimination (Thornicroft et al., 2019). Whilst societal stigma relating 'mental illness' has been studied extensively (Dickerson, Sommerville, Origoni, Ringel, & Parente, 2002; Thornicroft et al., 2019; Vass, Sitko, West, & Bentall, 2017), the meta-analysis conducted as part of the current project, was done to highlight the need to target stigma within therapy, both in regards to the negative outcomes associated with internalised stigma, but also as a way of mitigating the damaging impact that enacted stigma has for individuals with psychosis (Eliasson et al., 2021). However, whilst the meta-analytic findings suggested that

stigma was central to the experience of psychosis, it appears that the tools to tackle this within MCT+ were not 'central' enough to lead internalised stigma improvements. As discussed in Chapter 5, the increased internalised stigma levels seen after session 8, were rather surprising, and do indicate that more active stigma work may need to be done in order to change self-stigmatising cognitions. This is also supported by previous research that have specifically targeted internalised stigma, where multiple assessment points have been used, indicating that self-stigma reductions have been gradual over time (e.g. (Fung, Tsang, & Cheung, 2011; Orkibi et al., 2014). In fact, that MCT did not incorporate a strong enough stigma focus may also have been reflected in the absence of participants within the MCT+ group spontaneously mentioning the stigma module as being useful. In fact, the one participant who remarked on the stigma material, specifically fed back saying he would have preferred there to be a greater focus on this. This further highlights that future MCT+ modules should consider incorporating more stigma related materials that is suitable to be introduced earlier on in the therapy course.

However, these findings also need to be interpreted in light of the complex influences that may impact on a person's feelings of stigma, where more attention needs to be paid to tackling actual discrimination. The findings from Chapter 2, where strong associations between internalised stigma and actual discrimination experiences were reported, particularly highlighted this. Even though current models of internalised stigma formation successfully moved away from Goffman's individualist definition of stigma through a stronger emphasis on social and political power relations (Link & Phelan, 2001; Link et al., 2004), the focus of many well-cited models of internalised stigma still places emphasis on the *individual* awareness, or

perception of stigma, as a starting point for the internalisation of such beliefs (Link & Phelan, 2001; Corrigan & Watson, 2007; Corrigan et al., 2019). Hence, actual discrimination, have become somewhat 'forgotten', leading to an unintentional focus on stigma as merely existing within the individual. Whilst more recent models of internalised stigma in psychosis have started taking stigma experiences into account (Wood et al., 2017), this study is therefore also call for a greater conceptual shift in how mental health stigma in general, and stigma relating to psychosis in particular is discussed. In other words, greater attention needs to be paid on the actual source of the stigma and the damaging effect that discrimination experiences happening at cultural, structural and interpersonal levels have, as this is key to highlighting that continued work at reducing mental health discrimination in society is pertinent (Stangl, et al., 2019).

7.5. Critical considerations regarding the current project

Whilst study specific strengths and limitations were discussed in previous chapters, some general considerations of the project as a whole are important to highlight. Whilst the initial aim of the study was to conduct a randomised case-series delivered only by clinical psychologists and with blinded assessments, this design plan proved unfeasible due to challenges of recruiting. This was likely explained by the fact that, in order to be considered for the study as per the original design, participants needed to be on waitlists to receive CBTp. Therefore, in order to maximise recruitment, altering the design to also include CPN's who were trained to deliver MCT+ was a reasonable compromise. Moreover, even though the fact that it was not possible to keep all participants and assessments blinded represents a clear weakness of the study, it is not standard practice for case-series utilise randomised blinded designs (Mathes &

Pieper, 2017). Furthermore, the inclusion of CPNs led to the incidental discovery that interest in regard to obtaining MCT+ training amongst CPN's were high, which in itself opened up the idea that the implementation of MCT+ in such settings should be studied further, in order to build on the current project.

7.6. Conclusion & recommendations for further study

Rather than being "oversold" (McKenna & Kingdon, 2014) the current study showed that CBTp and more targeted process-based CBTp based interventions such as MCT+ are affective at alleviating symptoms of psychosis. MCT+ may therefore not only represent a useful avenue through which more individuals with psychosis can get access to an effective psychological treatment, but may also be an avenue through which standard CBTp can be improved further and where patient choice in regard to treatments is increased. However, the current study was small and findings should be regarded as preliminary. Future studies are therefore important to address these findings further. Specifically, future studies should look to address the following issues: 1) Whether MCT+ can, on a larger scale, be feasibly and effectively used within routine psychiatric nursing settings where routine CBTp is not offered, 2) Whether modules from MCT+ (particularly focussing on attribution) can be used within a more standard CBTp model to further improve treatment outcome; 3) How MCT+ is best implemented in rehabilitation settings where patients might be struggling with cognitive deficits and 4) How MCT+ can be maximised further through strengthening its non-stigmatising focus with the incorporation of more stigma-related material.

As a final note and echoing what was reflected on in Chapter 1, it is important to keep in mind that whilst improving treatments for psychosis is crucial in order to offer individuals effective psychotherapeutic tools to cope with distressing experiences, one also needs to acknowledge that such conditions are not only located, but also *created* within a socio-political context (Kinderman, 2019). Hence, highlighting that more also needs to be done socially and structurally in order to prevent mental distress from arising in the first place is essential and having a system that more strongly emphasises this connection is therefore key, in order to place greater pressure on policy makers. In light of emerging research supporting more dimensional approaches to mental distress, as well as increasing calls to further acknowledge the importance of a person's social circumstances, where access to talking therapies needs to be ensured in order to allow people to better make this connection, a re-conceptualization of our view of psychosis is likely to emerge. However, whether, or perhaps when this will amount to a 'paradigm shift' in the way we conceptualise, treat and prevent mental distress remains to be seen.

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Appendix 1.

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Review

Unpacking stigma: Meta-analyses of correlates and moderators of personal stigma in psychosis

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ABSTRACT

Personal stigma entails perceived, experienced and internalised stigmatisation. Mental Health stigma has been widely researched across a range of countries and a meta-analysis of their associations and moderators in psychosis is timely. Meta-analyses were conducted examining the correlates and moderators of personal stigma in terms of: (1) demographic variables (2) illness related variables (3) symptoms/negative outcomes, and (4) aspects of wellbeing. Associations were obtained from a total of 216 records. Several demographic factors including age, economic status, employment, and rural residence had small associations with aspects of personal stigma (r's = 0.12 to −0.13). Personal stigma aspects were inversely related to medication adherence (r's = −0.20, −0.21), and positively associated with insight and number of hospitalisations (r's = 0.09–0.19). Most symptoms were positively associated with personal stigma (r's = 0.10–0.43), whereas inverse relations with wellbeing variables were identified (r's = −0.13 to −0.54). Moderator effects emerged including that of cultural setting and sex, age and education level, highlighting the role of cultural and demographic factors in shaping personal stigma aspects in psychosis. The present study also highlights the importance of recognizing the negative effect of actual stigma and discrimination experiences; particularly its detrimental impact on self-image and its complex role in shaping the internalisation of societal stigma.

The multiple ways in which stigma can affect individuals has been widely studied within the social and psychological sciences (e.g. Au et al., 2019; Goffman, 1963; Hilbert et al., 1985; Link et al., 2004; Livingston and Boyd, 2010). Yet, ongoing research on mental health stigma remains critical (Author, 2001; Thornicroft et al., 2019). Despite several efforts at eliminating mental health stigma, such as the 'Time to Change' campaign in the UK (Henderson and Thornicroft, 2013; Taylor Nelson Sofres British Market Research Bureau, 2015) individuals with 'mental illness' are often faced with many negative stereotypes such as being seen as weak, lazy, lacking in empathy, or even dangerous (Abdullah and Brown, 2020; Chen and Lawrie, 2017; Kao et al., 2016; Link et al., 2004; Thornicroft and Kassam, 2008). This not only results in structural discrimination, such as lack of access to employment, housing or health care (Thornicroft et al., 2016), but can also cause individuals to feel 'devalued' (Corrigan et al., 2016). In particular, public views regarding individuals with psychosis, including schizophrenia-spectrum diagnoses, continue to be characterised by stigmatising misconceptions (Abdullah and Brown, 2020; Bowen et al., 2019; Wood et al., 2014). To paint an even bleaker picture, a recent report from the United States indicates that beliefs that persons with schizophrenia are dangerous may have even increased from 1996 to 2018 (Pescosolido et al., 2019). It is deeply concerning that stigmatising misinformation about 'psychotic individuals' still penetrates our culture. Whether it is everyday news reports or entertainment movies, people with psychosis (often described as *schizophrenics* in media reports) are often depicted as 'crazy', dangerous, unemphatic and impulsive (Bowen et al., 2019; Owen, 2012; Yang and Parrott, 2018).

1. From 'spoiled identities' to internalised stigma: theoretical developments

Goffman was among the earliest to critically examine the negative

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consequences of stigma, defining it as an "attribute that is deeply discrediting" (Goffman, 1963, p. 3) He suggested that stigma in regards to an attribute, could be likened to a negative 'sign' that separates a person from what society deems normal, leading to what he termed 'a spoiled identity' (Kassanoff, 2017; LeBel, 2008) Reflecting a timely shift in moving stigma definitions towards being part of a person's socially constructed identity, Link and Phelan emphasised the stigmatisation process as occurring "when elements of labelling, stereotyping, separation, status loss and discrimination co-occur in a power situation that allows the components of stigma to unfold" (Link and Phelan, 2001 p. 367). Their modifying labelling account holds that shared cultural beliefs regarding mental illness are absorbed by individuals as part of their socialisation. Consequently, when individuals become diagnosed with a mental illness, such beliefs become personally relevant. As rejection and devaluation from others become expected, certain coping mechanisms, including social withdrawal or secrecy, might be employed to avoid stigma (Link et al., 1989). As research on psychiatric stigmatisation increased, so has focusing on mental health stigma from the perspective of the stigmatised (Corrigan and Watson, 2002; Faure and Escresa, 2011; Gerlinger et al., 2013). This led to the term personal stigma where a distinction is made between *perceived, experienced* and *internalised stigma* (Brohan et al., 2010). The concept of perceived stigma rests on the foundations of Link and Phelan's work on perceived devaluation (Corrigan et al., 2006; Link, 1987). Perceived stigma (also called stereotype awareness) therefore reflects an individual's perception of the attitudes of people in society towards their mental health condition. Linked to perceived negative attitudes towards oneself, is being exposed to actual stigma and discrimination experiences. A review on perceived stigma among individuals with psychosis have shown that about 65% of participants anticipate stigma and around 56% reported discrimination and stigma experiences (Gerlinger et al., 2013). However, large scale multinational reports have indicated that as many as 90% of those with schizophrenia report having been discriminated against (Thornicroft et al., 2009). Internalised, or self-stigma, is the process by which the individual internalises negative societal views about their condition (Corrigan and Watson, 2002; Ritsher et al., 2003). In coining the concept of self-stigma, Corrigan and Watson (2002) separated Link and Phelan's description of perceived stigma from internalised stigma, with the latter reflecting a deeper aspect of stigma where the individual agrees with negative stereotypes about the 'mentally ill' and take these on to reflect their self-image (Corrigan et al., 2006; Corrigan and Watson, 2002). Consequently, in their stigma model, self-stigma is conceptualised as a progressive phenomenon where perceived societal stigma is the starting point from which a process of *agreeing* with negative stereotype about one's condition and *applying* these stereotypes to oneself leads to an *altered self-image* (Corrigan et al., 2011; Corrigan and Watson, 2002; Watson et al., 2007). It has however been recognised that perceived stigma does not unequivocally result in internalised stigma. Instead, reactions to societal stigma can differ - some may react with indifference, whereas for others stigmatising experiences may lead to feelings of anger and empowerment (Corrigan and Rao, 2012; Corrigan and Watson, 2002; Watson and River, 2006).

A model of internalised stigma for psychosis was recently proposed by Wood et al. (2017). Drawing on earlier accounts of stigma (Link and Phelan, 2001) this integrative account identifies cognitive, behavioral and emotional processes that contribute to the development and maintenance of internalised stigma. As with previous conceptualisations of stigma (Corrigan and Watson, 2002; Link and Phelan, 2001) this model places the focus on society and the cultural context as the origin of stigma. Within such a cultural context, internalised negative stereotypes develop from an awareness of stigma *and* an identification with a stigmatised group. In connection with a set of *stigma triggers*, this ultimately leads to a range of self-stigmatising cognitions about the self as well as self-stigmatising emotions and behaviours. Primary external stigma triggers are actual stigma and discrimination experiences, as commonly seen in psychosis (e.g. see Thornicroft et al., 2019), including everything from verbal or physical abuse, social rejection or being patronised and judged (Wood et al., 2017). However, the model also holds that internalisation of stigma can occur in the absence of stigma experiences, where internal triggers, such as auditory hallucinations, or intrusive thoughts related to stigma can also play an important role in the internalised stigma development (Wood et al., 2017).

1.1. Previous stigma reviews and study rationale

In light of the expanding research on stigma and its impact on the individual, several systematic reviews and meta-analyses have been conducted (Dubreucq et al., 2021; Ellison et al., 2013; Firmin et al., 2016; Gerlinger et al., 2013; Hawke, Parikh, & Michalak, 2013; Livingston and Boyd, 2010). Livingston and Boyd (2010) were the first to meta-analytically synthesise research findings of internalised stigma in DSM-Axis I diagnoses, where they demonstrated that stigma was inversely associated with a range of well-being outcomes, and linked to symptom severity as well as poor treatment adherence. However, whilst their aim was to focus on internalised stigma, their meta-analytic review also pooled correlates of studies that did not directly measure internalised stigma, including the Consumer Experiences of Stigma Questionnaire (CESQ) (Wahl, 1999) which measures stigma and discrimination experiences and Links Devaluation-Discrimination Scale (PDD) (Link, 1987) which focuses on perceived stigmatisation (Livingston and Boyd, 2010). Three years later, Gerlinger et al. (2013) published a systematic review, addressing the correlates of personal stigma in schizophrenia spectrum disorders where they investigated the correlates of perceived/experienced stigma as well as internalised stigmatisation. Like Livingston and Boyd (2010), they found that studies on the associations between personal stigma aspects and wellbeing variables mostly reported inverse relations. Whereas positive symptoms and general psychopathology were positively associated with both perceived/experienced and internalised stigma, mixed findings were reported regarding depression, as were studies on negative symptoms and demographic variables. Recently, a large and comprehensive systematic review of the frequency, correlates and consequences of internalised stigma in serious mental illnesses ($k = 272$) was published by Dubreucq et al. (2021), with the additional goal to compare internalised stigma levels across different geographical locations. Reflecting earlier reviews (Gerlinger et al., 2013; Livingston and Boyd, 2010), results regarding sociodemographic correlates were mixed, whereas internalised stigma was negatively associated with well-being outcomes including functioning, quality of life, self-esteem and self-efficacy and where positive associations were observed between internalised stigma and most symptom related outcomes, insight into illness as well as experienced and perceived stigma. Elevated internalised stigma were reported in 31.3% of the samples, with higher internalised stigma levels generally being observed in non-Western regions, including South Asia, South East Asia, Africa and the Middle East. This pattern was particularly evident in South and South East Asia, where, in relation to studies conducted in Europe, elevated internalised stigma levels were observed in SMI, schizophrenia, bipolar and MDD samples. Such regional differences are likely explained by higher public stigma pertaining to mental illness, particularly in Eastern countries, where values of collectivism are high and shame about not meeting ones social and functional role obligations might lead to increased levels of internalised stigmatisation (Dubreucq et al., 2021; Papadopoulos et al., 2013; Ran et al., 2021; Yang and Parrott, 2018). However, as their review focussed on internalised stigma, the correlates of perceived and experienced stigmatisation were not addressed. Moreover, as neither Gerlinger et al. (2013) nor Dubreucq et al. (2021) conducted meta-analytic investigations of the correlates identified, the pooled statistical associations of these personal stigma aspects in psychosis remain unknown. Conducting a meta-analysis that statistically synthesises effect sizes from studies (Metcalfe and Rosenthal, 1994) also come with the potential to investigate study level moderators that can give further insight into variables that may

influence the magnitude of the correlates of personal stigma (Borenstein et al., 2009a). Firmin et al. (2016) identified several demographic moderators in a meta-analysis of the associations between stigma resistance and psychosocial outcomes. Among these, they found that education level and age moderated the associations between stigma resistance and a range of outcomes including symptoms, self-stigma and quality of life. Similar moderator effects were identified for ethnicity, in that a higher percentage of white participants in studies were associated with stronger associations between stigma resistance and mood symptoms, quality of life and hope. Whilst their study might give insight into potential moderators of the outcomes of personal stigma in psychosis, it is of note that stigma resistance is conceptualised as a construct that is distinct to perceived, experienced and self-stigma, and so should be examined separately (Firmin et al., 2016; Sibitz et al., 2011). Hence, a meta-analytic investigation of personal stigma correlates, their statistical magnitude and their respective moderators is timely and will help build on existing reviews (Dubreucq et al., 2021; Firmin et al., 2016; Gerlinger et al., 2013) in order to further inform therapeutic and theoretical work on stigma.

1.2. Proposed moderators

1.2.1. Cultural setting

Whilst it has been demonstrated that cultural factors appears to influence levels of internalised stigmatisation that individuals with mental health conditions report (Dubreucq et al., 2021), the specific ways in which culture can influence the magnitude of the correlates and outcomes of personal stigma in psychosis remain unknown. A robust and widely used framework for conceptualizing cultural characteristics is through Hofstede's (1980) individualism-collectivism paradigm (Papadopoulos et al., 2013). Many non-Western cultures, in particular South/East Asian societies, tend to be characterised by collectivistic values where the concept of the self is influenced by social roles and relations to others, leading to what has been termed an interdependent self-image (Markus and Kitayama, 1991). This has been contrasted to many Western cultures, such as the United States and the United Kingdom that are characterised by individualistic values where ones' self-image is often constructed independently from others, with individuality and uniqueness often being emphasised, referred to as an independent self-image (Markus and Kitayama, 1991; Rodriguez Mosquera, 2015). Previous research has documented potential links between individualism-collectivism and mental health stigma, where some collectivistic countries have been associated with more stigmatising attitudes towards 'mental illness' (Papadopoulos et al., 2013; Yang and Parrott, 2018). It is therefore of interest to investigate the extent to which cultural context plays a role in how mental health stigma correlates unfold. Statistically investigating the way in which culture might moderate the outcomes of personal stigma, will also build on Dubreucq et al.'s (2021) findings, who reported higher level internalised stigma in collectivistic cultural regions. The present meta-analysis will therefore explore whether cultural setting moderates the outcomes of personal stigma in conditions associated with psychosis.

1.2.2. Demographic variables

The way in which demographic variables influence personal stigma aspects in psychosis has yet not been studied meta-analytically. In light of the findings of Firmin et al. (2016), who identified several demographic moderators of the associations of stigma resistance and several psychosocial outcomes, the present study will build on these findings and explore whether similar demographic factors impacts on the outcomes of personal stigma. Hence, building on such findings (Firmin et al., 2016), in addition to exploring the effect of culture, the current study will explore whether demographic variables including age, sex and mean education moderates the outcomes of personal stigma in psychosis.

1.2.3. Patient status

Studies have also indicated that additional challenges associated with psychotic episodes such as long term hospital stays can lead to additional stigma burdens (Loch, 2014). It would therefore be important investigate whether patient status moderates the associations of personal stigma, particularly as this might help inform therapeutic interventions in hospital settings. To date, research on the effect of hospitalisation on the outcomes of stigma have been somewhat unequivocal. For instance, Segalovic, Doron, Behrbalk, Kurs and Romem (2013) found that self-stigma was associated with lower self-esteem and capacity to create intimacy in outpatients with psychosis, whereas these associations were not seen among inpatients. However, other studies of inpatients with psychosis have reported associations between personal stigma and self-esteem, loneliness and depression (e.g. Chrostek, Grygiel, Anczewska, Wciórka & Świtał, 2016). This potential moderating factor will therefore be explored in the current study to clarify whether patient status influences the associations between personal stigma and its potential correlates in conditions associated with psychosis.

1.3. Study aim

(1) The first aim of the present study is to statistically synthesise research findings on the associations of perceived, experienced and internalised stigma and the following:

- Demographic variables
- Illness related variables
- Psychiatric symptoms and negative outcomes
- Wellbeing aspects

(2) The second aim of this meta-analytic study is to gain further insight into potential factors associated with the observed effect sizes. These exploratory moderators are:

- Country study conducted in (classified as collectivist or individualist)
- Patient status (inpatients or outpatients)
- Demographic variables including sex, mean years of education and age

2. Methods

2.1. Study selection

Relevant peer reviewed journal articles were searched for in the following databases: *PsychInfo, Medline, Embase and Web of Science.* In addition, a manual search of reference lists was conducted in relevant literature reviews and meta-analyses in order to identify additional studies that met inclusion. Databases were searched using the following search terms: (schizo* or psychosis* or bipolar or "non-affective psychosis" or "affective psychosis") AND (stigma or "self-stigma" or "personal stigma" or "internalised stigma" or "internalised stigma" or "stereotype awareness" or "experienced stigma" or "perceived stigma" or "anticipated stigma") AND (correlate or impact or outcome or cause or consequence or "randomized controlled trial" or "randomised controlled trial" or RCT or "cohort study" or "population study" or "treatment study"). The final date of the search was up until and including the 25th February 2021. Due to the centrality of the experience of psychosis, articles were included if samples were described as having either; affective or non-affective psychosis, first episode psychosis (FEP), schizophrenia spectrum diagnoses, depression or bipolar disorder with psychotic features. Moreover, because symptoms of psychosis are a common feature in bipolar disorder (e.g. Smith, Johns, & Mitchell, 2017; Van Bergen et al., 2019), with some studies reporting psychotic symptoms in acute mood episodes at comparable rates to that seen in schizophrenia (Pini et al., 2004), studies of samples with bipolar disorder were included.

In summary, studies that fulfilled the following inclusion criteria were included in the meta-analysis:

1) Peer reviewed article written in English.
2) Reporting on any aspect of personal stigma (self, perceived or experienced stigma) using an established instrument.
3) Majority (>70%) of the sample with affective or non- affective psychosis (as described above). Or correlates reported separately for this group.
4) Reported bivariate cross-sectional correlates between self, perceived or experienced stigma and a demographic, clinical or psychosocial variable (or bivariate correlate available from authors if not reported in article).
5) At least five other studies reporting bivariate data on the same correlate.

2.2. Data extraction

For studies included, data on the following variables were entered into a spreadsheet: Authors and year, sample size, percentage of females, mean age, mean length of illness, years of education, patient status (in or outpatients), aspects of personal stigma reported on, stigma measure used and location of study. A subsample of 20% of included and excluded studies were independently reviewed by a second author (LM) to ensure decision-rule consistency. In the instances where a study reported on multiple effect sizes for the same correlate and a single total score was not given (e.g. by using two separate measures on depression, or only reporting on several subscales of quality of life aspects) the results were averaged into one effect size, in order to avoid including multiple effect sizes from one study as this violates the assumption of independent effect sizes and leads to an inflated weight being given to a single study (Quintana and Minami, 2006; Rosenthal, 2011). When studies reported on both subscales and total scores of stigma scales, the total score was used if this most closely related to the stigma construct measured. However, in the instances where subscales represented the stigma construct measured, scores from relevant subscales were used. When only stigma subscale scores were reported, the subscales most related to the stigma construct measured were averaged into one score. Articles reporting results from the same data sets these were included if they provided effect size estimates for different correlates. On the occasions where the same correlates, based on the same or overlapping sample were reported in different articles, estimates from the largest sample or from the most comprehensive article were used (Borenstein et al., 2009b). If a study provided both continuous and categorical data, effect sizes from continuous data were included as this is statistically advantageous for meta-analyses on correlates (Borenstein et al., 2009b). When articles did not provide non-significant associations, this was requested from the authors. In the instances where this was not provided, an affect size of zero was assigned as a conservative estimate. This approach has been applied in other meta-analyses (e.g. Molloy et al., 2014; Trickey et al., 2012) and is advantageous to omitting non-significant results as this leads to biased conflation of the effect size estimate (Durlak and Lipsey, 1991; Rosenthal, 2011).

2.3. Meta-analytic method

Meta-analyses were conducted using the metafor package in R version 3.6.1 (R Development Core Team, R, 2011). Pearson's coefficient was chosen as the effect size metric as this is commonly used when estimating the association between variables, and is also easy to compute from other outputs such as chi-square, t and F, d-values and OR's (Borenstein et al., 2009b). Hence, studies that reported other effect size metrics were converted to pearson's *r* when appropriate (Borenstein et al., 2009b). When studies reported Spearman's correlations, these were converted to Pearson's *r* using the formula: $r = 2\sin(r_s \times \pi/6)$, as outlined by Rupinski and Dunlap (1996). Similarly, in the rare instances where Mann-Whitney U was reported this was converted to Cohen's d throught the Psychometrica website (Lenhard & Lenhard, 2016), and subsequently converted to r (Borenstein et al., 2009a, 2009b). The decision to convert other effect size metrics was chosen in order to avoid potential systemic loss of information (Borenstein et al., 2009b). A random-effects meta-analysis was used, where the assumption is that the true effects differ between sample groups in different studies and differences in effect sizes are not only attributed to random error within studies (Borenstein et al., 2009a; Field, 2001). To ensure sufficient statistical power a minimum of five studies investigating a correlate was set (Jackson and Turner, 2017). For each aspect of personal stigma (perceived, experienced, internalised) separate meta-analyses were conducted for their respective correlates. Publication bias was estimated using Egger's regression intercept (Stuck et al., 1998). In accordance with recommendations (Sterne and Egger, 2006), Egger's regression test was only applied when six or more effect sizes were included in a meta-analysis and studies were homogenous, a restriction that has been applied in other meta-analyses (e.g. Heeke et al., 2017). The robustness of significant results were also calculated with the Fail-safe N using the Rosenthal approach (Rosenthal, 1979). Fail-safe N refers to the number of non-significant studies needed to yield a non-significant meta-analytic result, where a higher fail-safe N is reflects more robust meta-analytic findings (Borenstein et al., 2009b).

2.4. Moderator analyses

Heterogeneity between studies was assessed with the Q-statistic, where significant results ($p < 0.05$) were seen as indicators of between study heterogeneity (Sagie and Koslowsky, 1993). The I^2 index builds on the Q-statistic to inform on the extent of heterogeneity present (Higgins and Thompson, 2002), where I^2 values <25% indicates low heterogeneity, 25–50% indicated medium heterogeneity, 50–75% high heterogeneity and >75% indicating extreme heterogeneity (Huedo-Medina et al., 2006). Where the Q-statistic was significant and I^2 values above 25% were observed, moderator tests were carried out. Continuous moderators (percentage of females, mean age and mean years of education) were tested with random effects meta-regression using the moment method. For a continuous moderator to be investigated, a minimum of six studies included in the meta-analysis was set (Fu et al., 2011). In order to test for the potential categorical moderators each study was coded according to patient status (outpatients or inpatients) and country study was conducted in (individualistic or collectivistic). Studies that used a mixture of characteristics, such as a mixture of in and outpatients were sorted according to the category that the majority of the sample (>70%) belonged to. For studies where this could not be determined due to not being available or if less than 70% belonged to either category, these were excluded from the moderator analysis. For categorical moderators to be investigated, a minimum of four studies included in each subgroup was set to ensure statistical power (Fu et al., 2011). All moderators were exploratory.

3. Results

3.1. Over-all study characteristics

Fig. 1 outlines a PRISMA flow diagram of the study retrieval process (Moher et al., 2009). In total, 216 records based on 180 studies, with a total of 28,982 participants (40.2% females) fulfilled the above inclusion criteria. The mean age of the whole sample was 39.89 (SD = 6.29), mean years of education 12.34 (SD = 1.46) and mean duration of illness was 13.15 years (SD = 5.03). A summary of study characteristics for each aspect of personal stigma is provided in Table 1. Appendix A gives a full list of all studies of studies included and Appendix B Table B1outlines information about the personal stigma scales included.

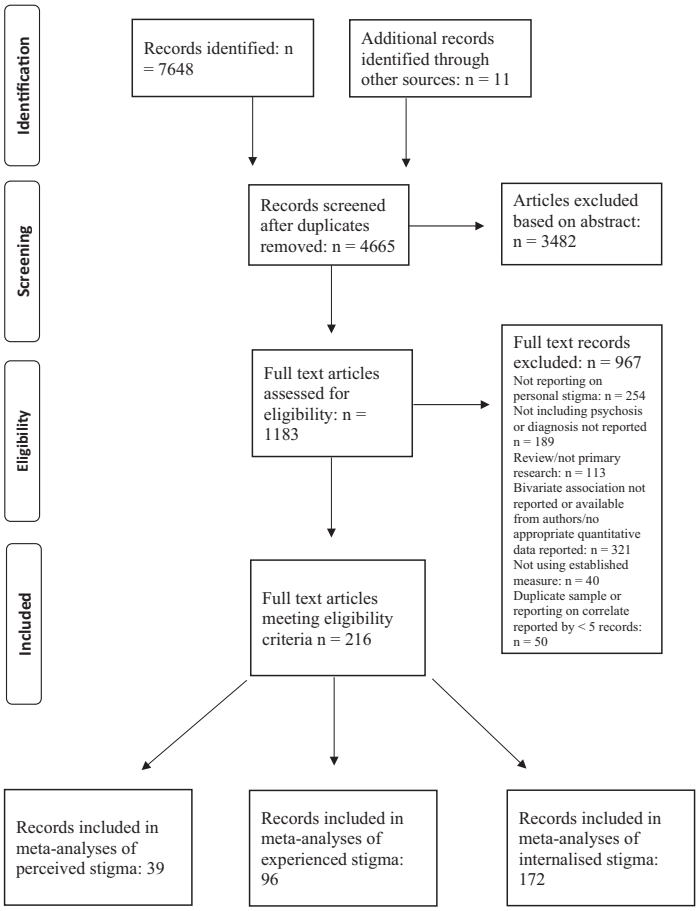

Fig. 1. PRISMA flow diagram of study retrieval process.

3.2. Demographic correlates of personal stigma

Table 2 provides a summary of the results of individual meta-analyses on demographic correlates of each personal stigma aspect.

3.2.1. Perceived stigma

Meta-analytic findings yielded one significant correlate; age was positively associated with perceived stigma even though the small effect size should be noted.

3.2.2. Experienced stigma

Two small but significant correlates were revealed, namely employment status, where employment was associated with less stigma experiences and ethnicity, where white ethnicity was associated with marginally higher levels of experienced stigma.

3.2.3. Internalised stigma

Meta-analytic findings revealed four small but significant demographic associations of internalised stigma. Rural residence was associated with higher internalised stigma whereas being married, employment and higher economic status were all associated with lower levels of internalised stigma. As Table 3 depicts, age moderated the relationship between economic status and internalised stigma (p = 0.044) where the association was stronger in samples with a higher mean age.

3.3. Illness related variables

Table 4 provides a summary of the results of individual meta-analyses on illness related correlates for each personal stigma aspect.

3.3.1. Perceived stigma

Meta-analyses indicated a small but significant association between perceived stigma and insight.

3.3.2. Experienced stigma

Meta-analyses indicated small inverse associations between experienced stigma and medication adherence as well as age of onset, whereas a small positive association with insight was revealed. As seen in Table 5, age of onset was moderated by mean age (p = 0.018), and country (p = 0.015), where studies conducted in individualist countries had a significantly stronger association between experienced stigma and age of onset. Insight was moderated by % females (p = 0.035), indicating stronger associations between experienced stigma and insight in samples with more males.

3.3.3. Internalised stigma

Meta-analyses of internalised stigma and clinical and treatment related variables found that number of hospitalisations and insight were positively associated with internalised stigma with effect sizes in the small range, whereas age of onset and medication adherence were inversely related to internalised stigma, all with small effect sizes. As seen in Table 5, the association between number of hospitalisations and internalised stigma was moderated by percentage of females included in the study (p = 0.008), where the association was stronger in samples with more females.

3.4. Symptoms and negative outcomes

Table 6 provides a summary of the results of individual meta-analyses on the correlates of symptoms and negative outcomes

Table 1
Characteristics of records included.

Perceived stigma $n = 39$	Experienced stigma $n = 96$	Internalised stigma $n = 172$
Total sample: 5199 Age: M = 37.93, SD = 6.84 % Females: 39.0 Education, years: M = 12.70, SD = 1.05 Years of illness. M = 12.88 SD = 4.97	Total Sample: 13685 Age: M = 39.79, SD = 6.49 % Females: 38.4 Education, years: M = 12.31 SD = 1.32 Years of illness: M = 12.68, SD = 5.12	Sample size: 21567 Age: M = 40.22, SD = 6.27 % Females: 40.2 Education, years: M = 12.31, SD = 1.44 Years of illness: 13.14, SD = 4.89

Study Characteristics	*n*	Study Characteristics	*n*	Study Characteristics	*n*
Publication date:		*Publication date:*		*Publication date:*	
Pre 2010	10	Pre 2010	12	Pre 2010	11
2010 or later	29	2010 or later	84	2010 or later	161
Sample size:		*Sample size:*		*Sample size:*	
1-100	15	1-100	45	1-100	77
101-250	19	101-250	37	101-250	75
251-500	2	251-500	10	251-500	14
500-1000	2	500-1000	3	500-1000	4
1000+	1	1000+	1	1000+	2
Region of study:		*Region of study*[*]*:*		*Region of study:*	
Europe	20	Europe	28	Europe	55
North America	10	North America	22	North America	38
South America	0	South America	3	South America	1
Africa	1	Africa	4	Africa	6
Australia	1	Australia	0	Australia	2
Asia	6	Asia	26	Asia	52
Middle East	1	Middle East	12	Middle East	18
Cultural context[**]*:*		*Cultural context*[**]*:*		*Cultural context*[**]*:*	
Individualistic	28	Individualistic	48	Individualistic	89
Collectivistic	10	Collectivistic	44	Collectivistic	76
Patient status:		*Patient status:*		*Patient status:*	
Outpatients	30	Outpatients	77	Outpatients	139
Inpatients	3	Inpatients	10	Inpatients	16
Mixed/not stated	6	Mixed/not stated	9	Mixed/not stated	17

Countries classified as individualistic and collectivistic based on Hofstede's conceptualisation (https://www.hofstede-insights.com/country-comparison).

[*] = One study (Thornicroft et al., 2009) excluded from count due to being based on data from 27 countries.

[**] Not all records included in count due to not being suitable for classification into individualistic or collectivistic countries due to 1) study conducted across several countries and data not reported separately. 2) Study was conducted in Israel, which is classified as a country with a mixture of individualist and collectivist values. Samples where a classification of culture into collectivistic or individualistic could not be given were excluded from moderator analysis.

including correlations between the different personal stigma aspects.

3.4.1. Perceived stigma

Meta-analyses indicated that perceived stigma was positively associated with depression and general psychopathology, with effect sizes in the small range. Moderate to large effects were observed between perceived stigma and experienced as well as internalised stigma. No associations between perceived stigma and positive as well as negative symptoms were observed.

3.4.2. Experienced stigma

Meta-analyses of experienced stigma and symptoms revealed positive associations with depression, hopelessness, general psychopathology as well as positive and negative symptoms, with effect sizes in the small to medium range. A large association was observed between experienced and internalised stigma. As Table 7 depicts, mean age emerged as a significant moderator for the association between experienced stigma and depression ($p = 0.027$), where magnitude of the effect size increased with a higher mean age. Education also moderated the association between experienced stigma and depression ($p \leq 0.0001$) as well as positive symptoms ($p = 0.036$) where the associations increased with higher education. The association between positive symptoms and experienced stigma was also moderated by percentage females included ($p = 0.005$), where the association was stronger in samples with fewer females. Finally, country significantly moderated the relationship between experienced stigma and general psychopathology ($p = 0.005$) and positive symptoms ($p \leq 0.0001$) where post hoc analyses indicated that the associations were significantly stronger in studies conducted in individualistic countries (Table 7) .

3.4.3. Internalised stigma

Apart from mania, all negative outcomes including depression, hopelessness, general psychopathology, negative symptoms, positive symptoms as well as suicidality/self-harm were positively associated with internalised stigma with effect sizes in the small to medium range. As depicted in Table 7, several moderators were identified for the association between internalised stigma and symptoms. More specifically, age moderated the association between general psychopathology and internalised stigma ($p = 0.050$) where the magnitude of the effect size increased with a higher mean age. However, regarding age as a moderator, the opposite effects were seen for suicidality/self-harm, in that stronger associations were observed in samples with a lower mean age ($p = 0.020$). Percentage females ($p = 0.025$) moderated the relationship between internalised stigma and positive symptoms with a stronger association observed in samples with fewer females. Moreover, as with experienced stigma, country significantly moderated the association between general psychopathology ($p = 0.014$) and positive symptoms ($p = 0.009$) where the association appeared stronger in studies conducted in individualistic countries. Finally, the association between internalised stigma and negative symptoms was moderated by patient status ($p = 0.009$), where the association was stronger among inpatients. However, the small number of studies conducted with inpatient samples ($k = 4$) should be noted.

3.5. Wellbeing variables

The results of individual meta-analyses investigating the relationship between personal stigma and wellbeing outcomes are presented in Table 8, whereas significant moderators are shown in Table 9.

3.5.1. Perceived stigma

Meta-analyses showed that functioning, quality of life and self-esteem was negatively associated with perceived stigma with effect sizes in the small to medium range. No significant moderators were observed.

3.5.2. Experienced stigma

Meta-analyses revealed negative associations between experienced stigma and functioning, quality of life and self-esteem, perceived support and recovery, mostly with effect sizes in the medium range. As seen in Table 9, country moderated the association between experienced stigma and functioning ($p = 0.026$) where the association was stronger in studies conducted in collectivistic countries. Whilst recovery was moderated by percentage of females included ($p = 0.010$) and country ($p = 0.038$), this might have been driven by one study that was coded as $r = 0$ (Lysaker et al., 2008) due to unavailability of NS data. When this study was removed, moderator effects only reached trend levels ($p = 0.092$ and 0.063 respectively).

3.5.3. Internalised stigma

Meta-analyses indicated that internalised stigma was negatively associated with all wellbeing variables, including empowerment, functioning, quality of life, perceived support, recovery, resilience, as well as self-efficacy and self-esteem with effect sizes in the medium to large range. As seen in Table 9, moderator analyses indicated that a lower mean age was associated with a stronger negative relationship between self-efficacy and internalised stigma ($p = 0.004$).

Table 2
Demographic correlates of personal stigma.

Perceived stigma	*k* (*n*)	τ^2	*Q*	I^2(%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Age	9 (2038)	0.002	11.38	23.58	0.07	[0.01, 0.12]	2.32	0.020	15	-0.19
Education	7 (1670)	0.014	20.62**	71.17	0.08	[-0.03 0.19]	1.50	0.135	–	–
Sex	11 (2428)	0.007	23.61**	57.03	-0.07	[-0.14, 0.00]	-1.90	0.058	–	–
Experienced stigma										
Age	31 (5653)	0.004	50.58	43.75	-0.03	[-0.6, 0.01]	-1.33	0.185	–	–
Economic status	9 (1955)	0.015	37.07***	73.64	-0.04	[-0.14, 0.05]	-0.86	0.388	–	–
Education	27 (5257)	0.012	72.70***	69.20	0.002	[-0.05, 0.06]	0.09	0.928	–	–
Employment status	15 (3668)	0.005	29.18*	51.43	-0.07	[-0.12, 0.02]	-2.52	0.012	54	–
Ethnicity	7 (1455)	0.000	5.29	0.00	0.06	[0.00 0.11]	2.12	0.034	6	0.73
Marital status	12 (2637)	0.000	10.33	0.00	0.00	[-0.04, 0.04]	0.17	0.836	–	–
Sex	32 (5597)	0.000	44.97	2.37	-0.004	[-0.03, 0.02]	-0.27	0.784	–	–
Residence	7 (1872)	0.001	13.21*	57.65	0.02	[-0.06, 0.09]	0.46	0.646	–	–
Internalised stigma										
Age	45 (7113)	0.008	89.66***	53.71	-0.02	[-0.05, 0.02]	-0.94	0.350	–	–
Economic status	15 (3380)	0.016	68.12***	77.18	-0.10	[-0.17, -0.03]	-2.60	0.009	115	–
Education	34 (6339)	0.009	77.92***	60.93	-0.04	[-0.08, 0.00]	-1.78	0.075	–	–
Employment status	22 (5105)	0.007	61.31***	61.53	-0.13	[-0.18, -0.09]	-5.39	<0.0001	591	–
Ethnicity	6 (1096)	0.000	2.42	0.00	0.06	[-0.00 -0.12]	1.90	0.058	–	–
Marital status	16 (3368)	0.008	38.41**	61.08	-0.06	[-0.12, -0.00]	-2.07	0.039	52	–
Sex	48 (8934)	0.002	63.26	24.44	-0.01	[-0.04, 0.01]	-0.99	0.324	–	–
Residence	6 (1684)	0.007	13.17*	64.46	0.12	[0.03, 0.20]	2.57	0.010	35	–

Note: *k* = number of effect sizes used in the meta-analysis. *r* = estimated effect size. *Z* = *z*-test for statistical difference of the mean effect size. *Q* = Test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. Sex = males. Employment status = not being unemployed (compared with unemployed). Ethnicity = whites (compared with BAME. Note: articles that did not specify comparison groups (e.g. comparing African Americans vs. "other") were not included). Marital status = married (compared with single/divorced/widowed. Note: articles that included divorced/widowed/previously married into the 'married' category were not included). Residence = rural (compared with urban) $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 3
Summary of significant moderators of the relationship between demographic variables and personal stigma.** and ***

Continuous moderators						
Stigma aspect	Correlate	Moderator	*k*	*Q*	*Z*	R^2
Internalised stigma	Economic status	Mean age	14	4.08*	-2.02	0.34

Note: *k* = number of effect sizes used in the meta-analysis. *Z* = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

4. Discussion

This extensive meta-analysis identified a large number of studies examining the associations between aspects of personal stigma for individuals with experiences of affective and non-affective psychosis by pooling together effect sizes from 216 records. This review is also the first to meta-analytically examine potential moderators of these pooled effect sizes, giving further insight into factors associated with the observed associations of personal stigma in psychosis.

Several demographic variables including age, employment status, economic status, ethnicity and rural residence were associated with aspects of personal stigma. Whilst the small effect sizes observed should be interpreted with caution, the more robust associations between internalised stigma and employment as well as economic status are noteworthy. The relationship between economic status and internalised stigma was also moderated by age, where the association was stronger in samples with higher mean age. As lower socioeconomic status have been linked with poorer aging-related health and well-being outcomes (Steptoe and Zaninotto, 2020), such findings might reflect how multiple challenges could contribute to increased internalised stigmatisation (Turan et al., 2019). This is also the first study to meta-analytically demonstrate that unemployment can lead to increased levels of internalised stigma for individuals with psychosis. These findings are perhaps not surprising in light of research showing the benefits of employment in people experiencing mental health problems, with positive impacts on both physical and mental wellbeing (Schuring et al., 2017). Obtaining employment is frequently cited as an important factor for recovery by individuals with psychosis (e.g. see Hampson et al., 2018). However, longitudinal studies have shown that internalised stigma can also function as a barrier to employment (Yanos, Lysaker, and Roe, 2010) indicating a potential vicious cycle between unemployment and internalised stigma. Nevertheless, social stigma and structural discrimination remain important obstacles for people with mental health difficulties affecting both access to and maintaining employment (Brouwers, 2020), highlighting how change in attitudes towards mental illness also need to happen at a policy level.

Several illness related correlates were revealed with negative associations found between both experienced and internalised stigma with age of onset as well as medication adherence. Whilst number of hospitalisations was not associated with perceived and experienced stigma, a positive association was found for internalised stigma, even though this effect size was in the small range. Moderator analyses demonstrated that this association was stronger in samples with more females, indicating that females with more hospitalisations might experience greater levels of internalised stigma. Building on the findings of earlier reviews (Dubreucq et al., 2021; Gerlinger et al., 2013), this study was the first to meta-analytically demonstrate a positive relationship between all aspects of personal stigma and insight, where the magnitude of the effect was stronger in studies of internalised stigma. The positive associations between personal stigma and insight are in line with studies showing the paradoxical effects that insight can have in conditions associated with psychosis, where 'illness' awareness can simultaneously lead to better treatment adherence and functional outcome, whilst also being associated with depression, low self-esteem and stigma (Yanos, Roe, and Lysaker, 2010). This is in accordance with theoretical work on the

Table 4
Individual meta-analyses personal stigma with illness related variables.

Perceived stigma	*k* (*n*)	τ^2	*Q*	I^2(%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Illness duration	7 (897)	0.018	18.44**	68.82	0.06	[-0.06, 0.18]	0.99	0.321	–	–
Insight	6 (692)	0.000	3.67	0.00	0.13	[0.05, 0.20]	3.30	0.001	20	1.00
No of hospitalisations	6 (699)	0.000	4.24	0.05	-0.02	[-0.09, 0.06]	-0.40	0.684	–	–

Experienced stigma	*k* (*n*)	τ^2	*Q*	I^2(%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Age of onset	13 (2359)	0.021	49.47***	77.43	-0.13	[-0.22, -0.03]	-2.67	0.008	104	–
Illness duration	17 (3544)	0.012	53.62***	70.36	0.07	[-0.00, 0.13]	1.95	0.051	–	–
Insight	14 (1352)	0.004	17.57	26.66	0.09	[0.02, 0.15]	2.58	0.010	33	-0.14
Medication adherence	7 (988)	0.004	8.45	32.27	-0.21	[-0.29, -0.13]	-4.98	<0.0001	95	-0.82
No of hospitalisations	7 (893)	0.025	27.66***	74.58	0.10	[-0.04, 0.23]	1.45	0.148	–	–

Internalised stigma	*k* (*n*)	τ^2	*Q*	I^2(%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Age of onset	19 (4325)	0.000	17.86	0.16	-0.06	[-0.08, -0.03]	-3.68	0.0002	76	-0.82
Illness duration	28 (4765)	0.006	52.22**	47.52	0.04	[-0.00, 0.09]	2.08	0.038	49	–
Insight	24 (3356)	0.029	150.09***	78.90	0.19	[0.11, 0.26]	4.62	<0.0001	772	–
Medication adherence	15(1810)	0.000	12.94	0.00	-0.20†	[-0.27, -0.18]	-9.48	<0.0001	514	-2.52*
No of hospitalisations	17 (2212)	0.006	28.61*	44.52	0.10	[0.04, 0.16]	3.36	0.0008	107	–

Note: *k* = number of effect sizes used in the meta-analysis. *r* = pooled effect size. *Z* = *z*-test for statistical difference of the mean effect size. *Q* = Test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. Note: Age at first hospitalisation included in age of onset correlate. Studies that reported duration of treatment were included in illness duration correlate.

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
† ES corrected for publication bias.

Table 5
Summary of continuous moderators of the relationship between illness related related variables and personal stigma.

Continuous moderators						
Stigma aspect	Correlate	Moderator	*k*	*Q*	*Z*	R^2
Experienced stigma	Age of onset	Mean age	13	5.60*	-2.37	0.36
	Insight	% females	14	4.44*	-2.11	0.50
Internalised stigma	No of hospitalisations	% females	17	7.05*****	2.65	0.55

Categorical moderatos									
Personal stigma aspect	Correlate	Moderator	*Q*	Post hoc test	*k* (*n*)	*r*	95% CI	*Z*	*p-value*
Experienced stigma	Age of onset	Country	5.95*	Individualist	7 (765)	-0.22	[-0.31, -0.12]	-4.29	<0.0001
				Collectivist	6 (1594)	-0.03	[-0.14, -0.09]	-0.51	0.613

Note: *k* = number of effect sizes used in the meta-analysis. Z = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator.

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

internalised stigma process where stereotype awareness is the starting point in the process that enables internalised stigma to unfold (Corrigan and Watson, 2002; Link et al., 1989; Link and Phelan, 2001; Yanos et al., 2020).

Many symptom variables were found to be positively associated with personal stigma, whereas inverse associations were seen for all well-being outcomes, where the magnitude of these associations were higher for studies focussing on internalised stigma. The current study also builds on previous reviews showing that negative symptoms are linked with internalised stigma (Dubreucq et al., 2021) by also demonstrating a positive association between negative symptoms and stigma experiences. However, neither positive nor negative symptoms were associated with perceived stigmatisation, and the six studies providing correlates between mania and self-stigma revealed no association. Even though the lack of association between mania and internalised stigma might reflect less stigma being related to experiencing manic symptoms, it may also be an artefact of elevated mood and confidence often accompanying manic states (Eisner et al., 2008).

Regarding the associations between personal stigma and symptoms, several moderator effects were revealed. As with the association between internalised stigma and economic status, samples with a higher mean age had stronger associations between experienced stigma and depression as well as between internalised stigma and general psychopathology. This could indicate that the vulnerability towards stigma in association with specific symptoms might increase with age, and may warrant further research. Moreover, studies whose samples had higher years of education indicated stronger associations between experienced stigma and depression as well as positive symptoms. It is of note that Firmin et al.'s (2016) meta-analytic findings indicated that the inverse association between stigma resistance and symptoms was stronger among samples with higher education, indicating that more severe symptomatology might hinder the ability to resist stigma for those with higher education. These findings might fit with the current results where positive symptoms and depression were more strongly associated with experiences of stigma in samples with higher educational backgrounds.

Sex was also found to moderate the magnitude of the association

Table 6
Individual meta-analyses of personal stigma aspects with symptoms/negative outcomes.

Perceived stigma	*k* (*n*)	τ^2	*Q*	I^2 (%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Experienced stigma	5 (434)	0.001	4.19	1.09	0.51	[0.43, 0.58]	10.86	<0.0001	216	-1.56
Internalised stigma	9 (2180)	0.041	81.42***	87.90	0.37	[0.24, 0.49]	5.24	<0.0001	985	–
Depression	19 (2115)	0.019	56.95***	67.47	0.20	[0.12, 0.27]	5.09	<0.0001	529	–
General psychopathology	11 (1645)	0.005	15.41	37.29	0.10	[0.03, 0.17]	2.79	0.005	43	0.018
Negative symptoms	7 (1570)	0.005	10.40	43.50	0.03	[-0.06, 0.11]	0.54	0.540	–	–
Positive symptoms	8 (1715)	0.006	14.18*	48.40	0.03	[-0.05, 0.11]	0.66	0.507	–	–

Experienced stigma	*k* (*n*)	τ^2	*Q*	I^2 (%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Internalised stigma	24 (3665)	0.040	177.73***	85.18	0.58	[0.52, 0.64]	14.63	<0.0001	11,893	–
Depression	28 (4431)	0.025	141.96***	78.84	0.29	[0.23, 0.35]	8.47	<0.0001	3374	–
Hopelessness	9 (914)	0.006	12.78	35.47	0.30	[0.26, 0.40]	8.13	<0.0001	336	1.09
General psychopathology	30 (4511)	0.015	104.43***	68.20	0.21	[0.16, 0.27]	7.60	<0.0001	1801	–
Negative symptoms	21 (3195)	0.015	70.85***	69.59	0.10	[0.03, 0.16]	2.87	0.004	147	–
Positive symptoms	26 (4504)	0.024	187.73***	79.52	. 20	[0.13, 0.27]	5.57	<0.0001	1292	–

Internalised stigma	*k* (*n*)	τ^2	*Q*	I^2 (%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Anxiety	10 (844)	0.003	10.81	18.36	0.38	[0.31, 0.44]	9.96	<0.0001	421	-1.09
Depression	47 (7306)	0.037	281.05***	84.60	0.41	[0.36, 0.46]	13.84	<0.0001	20,560	–
Hopelessness	19 (2279)	0.016	49.86***	64.65	0.43	[0.37, 0.49]	12.58	<0.0001	3129	–
General psychopathology	41 (6800)	0.032	235.55***	83.58	0.29	[0.23, 0.34]	9.23	<0.0001	6897	–
Mania	6 (810)	0.009	10.81	51.00	0.05	[-0.06, 0.16]	0.95	0.341	–	–
Negative symptoms	36 (5333)	0.012	85.02***	60.16	0.18	[0.13, 0.23]	7.42	<0.0001	1779	–
Positive symptoms	38 (6613)	0.025	304.59***	80.27	0.18	[0.12, 0.23]	5.88	<0.0001	2328	–
Self-harm/suicidality	7 (843)	0.121	96.29***	92.92	0.40	[0.14, 0.60]	3.00	0.003	395	–

Note: *k* = number of effect sizes used in the meta-analysis. r = estimated effect size. Z = *z*-test for statistical difference of the mean effect size. *Q* = Test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. Anxiety included measures of social anxiety. Hopelessness correlate included measures hopelessness and hope, reverse scored. Psychopathology $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 7
Summary of significant continuous and categorical moderators of the relationship between symptoms and personal stigma.

Continuous moderators

Personal stigma aspect	Correlate	Moderator	*k*	*Q*	*Z*	R^2
Experienced stigma	Depression	Mean age	28	4.89*	2.21	0.16
		Education	11	29.96***	5.47	0.87
	Positive symptoms	% females	26	7.77**	-2.79	0.29
		Education	12	4.40*	2.10	0.31
Internalised stigma	Psychopathology	Mean age	41	3.83*	1.96	0.10
	Positive symptoms	% females	37	5.03*	-2.24	0.16
	Self-harm/suicidality	Mean age	7	5.46*	-2.34	0.48

Categorical moderatos

Personal stigma aspect	Correlate	Moderator	*Q*	Post hoc test	*k* (*n*)	*r*	95% CI	*Z*	*p-value*
Experienced stigma	Positive Symptoms	Country	15.20***	Individualist	16 (2254)	0.28	[0.21, 0.34]	7.88	<0.0001
				Collectivist	9 (2161)	0.06	[-0.04, 0.15]	1.14	0.254
	Psychopathology	Country	8.03**	Individualist	18 (2065)	0.26	[0.22, 0.30]	12.06	<0.0001
				Collectivist	12 (2446)	0.14	[0.05, 0.22]	3.01	0.003
Internalised stigma	Neg. symptoms	Patient stat.	6.93**	Outpatients	27 (4266)	0.16	[0.12, 0.21]	6.50	<0.0001
				Inpatients	4 (316)	0.35	[0.24, 0.44]	6.31	<0.0001
	Psychopathology	Country	6.04*	Individualist	19 (2334)	0.36	[0.29, 0.42]	9.75	<0.0001
				Collectivist	22 (4217)	0.22	[0.14, 0.31]	5.00	<0.0001
	Pos. Symptoms	Country	6.91**	Individualist	21 (3561)	0.24	[0.16, 0.32]	5.68	<0.0001
				Collectivist	17 (3052)	0.10	[0.03, 0.16]	2.90	0.004

Note: *k* = number of effect sizes used in the meta-analysis. *Z* = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator.
* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

between positive symptoms and general psychopathology with both experienced and internalised stigma, where the observed associations were significantly stronger in samples with more males. It is of note that positive symptoms, including delusions and hallucinations, represent hallmark symptoms of schizophrenia. In a review of portrayals of 'schizophrenia' in English language movies, Owen (2012) found that psychotic individuals were often portrayed as violent or unpredictable, with a clear majority (74%) of the characters being men. Even though newspaper portrayals have started to include more positive stories of mental health (Whitley and Wang, 2017), recent studies of media outlets across a range of countries still paint a bleak picture (Bowen et al., 2019; Chen and Lawrie, 2017; Yang and Parrott, 2018). For instance, recent reviews of the British tabloid press have found that depictions of so-called 'schizophrenics' are frequently (mis)used when portraying

Table 8
Individual meta-analyses of perceived stigma and wellbeing variables.

Perceived stigma	*k* (*n*)	τ^2	*Q*	I^2 (%)	*r*	95% CI	*Z*	*p-value*	FSN	Egger's (*z*)
Functioning	11 (1947)	0.019	37.16***	72.63	-0.13	[-0.22, -0.03]	-2.49	0.013	72	–
Quality of life	10 (1170)	0.012	21.63***	59.05	-0.33	[-0.41, -0.25]	-7.49	<0.0001	503	–
Self-esteem	15 (1316)	0.041	52.28	77.07	-0.28	[-0.38, -0.16]	-4.70	<0.0001	554	–
Experienced stigma										
Functioning	28 (5039)	0.019	103.25***	76.71	-0.17	[-0.23, -0.11]	-5.57	<0.0001	1386	–
Quality of life	17 (2617)	0.005	27.73*	42.63	-0.33	[-0.38, -0.28]	-12.16	<0.0001	1629	–
Perceived support	7 (1238)	0.049	59.20***	88.95	-0.31	[-0.46, -0.14]	-3.51	0.0004	299	–
Recovery	14 (1959)	0.023	56.09***	74.51	-0.34	[-0.43, -0.26]	-7.28	<0.0001	998	–
Self-esteem	21 (2577)	0.006	35.05*	42.49	-0.42	[-0.47, -0.38]	-16.17	<0.0001	3532	–
Internalised stigma										
Empowerment	7 (2099)	0.108	137.72***	96.50	-0.45	[-0.64, -0.22]	-3.53	<0.0001	1257	–
Functioning	38 (6464)	0.033	231.32***	84.42	-0.27	[-0.33, -0.21]	-8.32	<0.0001	5828	–
Quality of life	35 (5305)	0.060	266.51***	89.13	-0.39	[-0.46, -0.31]	-9.42	<0.0001	10,114	–
Self-compassion	5 (341)	0.00	0.93	0.00	-0.34	[-0.46, -0.31]	-6.42	<0.0001	60	0.11
Self-efficacy	12 (2097)	0.032	60.03***	84.06	-0.47	[-0.55, -0.38]	-8.86	<0.0001	2066	–
Self-esteem	41 (4988)	0.094	324.85***	91.62	-0.54	[-0.61, -0.47]	-11.90	<0.0001	25,137	–
Perceived support	11 (1806)	0.045	100.55***	87.69	-0.34	[-0.45, -0.21]	-5.09	<0.0001	851	–
Recovery	22 (3143)	0.015	63.62***	66.55	-0.46	[-0.51, -0.41]	-15.23	<0.0001	5662	–
Resilience	6 (1428)	0.024	19.37**	78.70	-0.40	[-0.51, -0.27]	-5.66	<0.0001	384	–

Note: *k* = number of effect sizes included in the meta-analysis. *r* = estimated effect size. Z = *z*-test for statistical difference of the mean effect size.
Q = Test of heterogeneity, where a significant *Q* statistic indicates between study variability. I^2 shows the percentage of between study variability. [1] = 1 study including scale on loneliness reverse scored. [1] = Includes measures of, degree of social contacts, loneliness and sense of belonging.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 9
Summary of significant continuous and categorical moderators of the relationship between wellbeing aspects and personal stigma.

Continuous moderators						
Personal stigma aspect	Correlate	Moderator	*k*	*Q*	*Z*	R^2
Experienced stigma	Recovery	% females	14	6.66*	-2.58	0.39
Internalised stigma	Self-efficacy	Mean age	12	8.48*****	2.91	0.49

Categorical moderatos									
Personal stigma aspect	Correlate	Moderator	*Q*	Post hoc test	*k* (*n*)	*r*	95% CI	*Z*	*p-value*
Experienced stigma	Functioning	Country	4.95*	Individualist	13 (1744)	-0.10	[-0.16, -0.03]	-2.95	0.003
				Collectivist	15 (3295)	-0.23	[-0.31, -0.15]	-5.35	<0.0001
	Recovery	Country	4.32*	Individualist	9 (1380)	-0.28	[-0.38, -0.17]	-5.11	<0.0001
				Collectivist	4 (499)	-0.45	[-0.57, -0.32]	-6.09	<0.0001

Note: *k* = number of effect sizes used in the meta-analysis. Z = *Z*- test for statistical difference of the mean effect sizes. *Q* = Test of heterogeneity of moderators. R^2 = amount of heterogeneity accounted for by moderator.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

individuals having committed criminal acts of violence (Bowen et al., 2019; Chen and Lawrie, 2017). Indeed, these findings also link in with the moderator effect revealed between experienced stigma and insight, where the association was stronger among samples with more males. Hence, a likely factor explaining the observed moderator effects of sex may well be the stigmatising misinformation in the media about psychosis and schizophrenia, that often focuses on males. This further illustrates the real and damaging effects that such societal stigma can have on individuals with psychosis.

Moderator effects of country were also revealed for the associations between experienced and internalised stigma with positive symptoms as well as general psychopathology with the magnitude of the association being significantly stronger for studies conducted in individualistic countries. In light of studies that have indicated that 'mental illness' is more stigmatised in countries with collectivistic values (Dubreucq et al., 2021; Papadopoulos et al., 2013; Yang and Parrott, 2018), these moderator effects might seem contradictory. However, research on psychotic experiences have demonstrated that people from individualistic countries tend to appraise psychotic symptoms as being more distressing when compared with individuals from collectivistic countries (Wüsten et al., 2018), which may reflect the increasing stigma associated with such symptoms. For instance, reports from voice hearers in different cultural settings have found that those from individualistic countries tend to experience voices as intrusive and scary, often attributing these to being symptoms of 'brain disease'. Such appraisals have been shown to be less common in certain collectivistic countries where voices are less often described as intrusive and are to a lesser extent appraised as being 'pathological' (Luhrmann et al., 2015). However, these findings may only be specific to psychotic symptoms. It is for instance worth highlighting that regarding the association between

internalised stigma and functioning, the moderator effect of country was in the opposite direction, where the inverse association was stronger in studies conducted in collectivist countries. This is in line with research indicating that collectivist cultures, tend to place greater value in a person being able to fulfil their role obligations (Altweck et al., 2015; Ran et al., 2021), which may result in higher potency to develop internalised stigma when ones functioning is impeded due to mental health difficulties. This is the first study to meta-analytically demonstrate how, on a study level, culture can influence the ways in which the process of stigma unfolds for individuals with an experience of psychosis, thereby providing important avenues for future cross-cultural stigma research. The current findings also build on existing models of stigma in psychosis that highlights how symptoms can act as triggers for developing internalised stigma (Wood et al., 2017) by emphasising how cultural background and sex can play moderating roles in this process.

4.1. Emphasising the damaging impact of stigma experiences

Even though the damaging aspects of stigma and discrimination experiences have been widely researched (Dickerson et al., 2002; Thornicroft et al., 2019; Vass et al., 2017), this study was the first study to meta-analytically demonstrate the negative impact of enacted stigma in psychosis through an examination of each aspect of personal stigma. This was particularly evident in the large association observed between experienced stigma and internalised stigma as well as the robust negative associations between experienced stigma and a range of wellbeing outcomes including self-efficacy, self-esteem and recovery. Whilst it was previously highlighted how theoretical accounts of stigma shifted away from an individualistic focus towards emphasising how stigma is the result of socio-political power relations that shapes our cultural image of stigmatising conditions (Link et al., 2004; Link and Phelan, 2001), the current meta-analysis further highlight the importance of emphasising that internalised stigma, as well as resulting from individuals being aware of their 'stigmatised identity', is further enhanced through continuous unfair societal treatment (e.g. see Thornicroft et al., 2019). These findings lend support to the more recent theoretical account of internalised stigma in psychosis that highlights the importance of stigma experiences in triggering internalised stigma (Wood et al., 2017). Placing greater emphasis on the negative impact of enacted stigma might also help to further highlight importance of tackling personal stigma through wider public health and community interventions in order to change cultural and societal images of psychosis, that not only enables the unfolding of internalised stigma but also facilitates unjust behaviours towards those with a stigmatising identity (Dubreucq et al., 2021; Evans-Lacko, Brohan, Mojtabai, & Thornicroft, 2012). However, whilst there are indications that public attitudes towards mental ill health are amenable to change, both following societal anti-stigma campaigns (e.g. Evans-Lacko, Corker, Williams, Henderson, & Thornicroft, 2014; Hansson, Stjernswärd, & Svensson, 2016; Sampogna et al., 2017; Thornicroft et al., 2016), and following anti-stigma interventions (e.g. Corrigan, Morris, Michaels, Rafacz, & Rüsch, 2012; Morgan, Reavley, Ross, Too, & Jorm, 2018; Xu, Rüsch, Huang, & Kösters, 2017), reports of stigmatising experiences among individuals with schizophrenia continue to be high (Thornicroft et al., 2019). Moreover, recent findings regarding the impact of the Time to Change (TTC) (http://www.time-to-change.org.uk/), indicated that being aware of the TTC program did not result lower responses to anticipated discrimination (such as stopping oneself applying for work, or having a close relationship or concealing the illness) among mental health services users (Sampogna et al., 2021). Hence, whilst such and other campaigns are key to changing public discourse on mental ill health, these need to sit alongside more multifaceted efforts to tackle personal stigma in order to further empower mental health consumers.

4.2. Limitations

This study has several limitations. Firstly, a similar issue to that reported by Gerlinger et al. (2013) and Livingston and Boyd (2010) is the seeming lack of longitudinal studies with available bivariate data for inclusion in the meta-analysis. Therefore, inferences about causality and directionality are limited. Another issue, common in meta-analytic investigations, is that of 'the file drawer problem' and lack of availability of data leading to risk of publication bias. Even though many researchers contacted, kindly provided unpublished bivariate and non-significant data, this issue needs to be considered. To minimize possible inflation of the results, the current study assigned an effect size of zero to non-significant findings where data was not provided. Moreover, whilst all aspects of personal stigma were investigated, this study did not consider the impact of other stigma related factors that can influence the stigmatisation process, including stigma coping and cognitive appraisals of stigma. Several considerations regarding the moderator analyses are also important to highlight. Due to the lack of studies conducted among inpatient samples, moderator analyses could often not be conducted on this variable. Considering the positive association between internalised stigma and number of hospitalizations future studies should consider an increased focus on the stigma process among inpatient samples. Some issues regarding the interpretations of the moderator analyses also need to be highlighted. Whilst years of education was found to moderate the association between experienced stigma and symptom outcomes it should be noted that due to many studies not reporting on years of education as a continuous variable, there was a large amount of missing data suggesting caution in interpreting these results. Furthermore, whilst dividing countries along the individualist-collectivist dimension is an established tool in cross-cultural psychology research (Krendl & Pescosolido, 2020; Papadopoulos et al., 2013; Yang and Parrott, 2018) it should be noted that differences in ethnicity within studies was not taken into account. However, the lack of reporting on participant ethnicities within studies suggest that dividing studies by cultural setting was a reasonable compromise. Nevertheless, future studies should also consider how cultural differences might moderate the correlates of personal stigma on an individual level, perhaps by individual ethnicity or by directly assessing a person's cultural values.

4.3. Concluding remarks

This meta-analysis provides an extensive summary of the pooled effect sizes for a range of correlates of personal stigma in psychosis. This study also uncovered a range of moderators effects, thus building on existing reviews of personal stigma (Dubreucq et al., 2021; Gerlinger et al., 2013) by demonstrating how cultural as well as demographic factors including age, sex and education can influence the ways in which the process of personal stigma unfolds. These findings are not only of theoretical importance, but can also help inform clinical practice by, for instance, highlighting how in certain demographic groups, symptoms might serve as particularly strong triggers for developing internalised stigma, or by recognizing the role that someone's cultural background can have on the self-stigma process. Future studies should consider these study level moderators further, through investigating their influence at an individual level. This might also help continuing efforts improve interventions to empower service users in order to reduce internalised stigma (Alonso et al., 2019; Yanos et al., 2015). Finally, this meta-analysis further demonstrated the damaging effect of stigma and discrimination experiences happening at cultural, structural and interpersonal levels, highlighting the importance of continued work at reducing mental health stigma in society (Stangl et al., 2019). This is particularly important for conditions involving psychosis, where discrimination and societal stigma continue to prevail.

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Author contributions

ETE, MS and SML conceived and planned the meta-analysis. ETE conducted the data base search, screening of articles, data extraction and data analysis under the supervision of MS & SML. LM screened a subsample of 20% of articles for inclusion/exclusion. ETE wrote up the manuscript with help and input from all authors.

Conflicts of interest

None to declare.

Appendix A. List of studies included in meta-analysis

PS = perceived stigma, ES = Experienced stigma, IS = Internalised stigma.

* = correlate available but not extracted due to <five other records reporting on this correlate included.

1. Assefa, D., Shibre, T., Asher, L., & Fekadu, A. (2012). Internalised stigma among patients with schizophrenia in Ethiopia: a cross-sectional facility-based study. *BMC Psychiatry*, *12*. doi:https://doi.org/10.1186/1471-244x-12-239

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Employment, marital status, sex, residence.

2. Au, C. H., Wong, C. S., Law, C. W., Wong, M. C., & Chung, K. F. (2019). Self-stigma, stigma coping and functioning in remitted bipolar disorder. *General hospital psychiatry*, *57*, 7–12. doi:https://doi.org/10.1016/j.genhosppsych.2018.12.007

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: Age (PS, IS), education (PS, IS), sex (PS, IS), duration of illness (PS, IS), no of hospitalisations (PS, IS), depression (PS, IS), mania* (IS), functioning (PS, IS), support* (IS), perceived stigma-internalised stigma.

3. Aukst-Margetic, B. A., Jakovljevic, M., Ivanec, D., Margetic, B., & Tosic, G. (2010). Relations of internalised stigma with temperament and character in patients with schizophrenia. *Comprehensive Psychiatry*, *51*(6), 603–606. doi:https://doi.org/10.1016/j.comppsych.2010.02.010

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (ES, IS), sex (ES, IS), no of hospitalisations (IS), psychopathology (ES, IS).

4. Aukst-Margetic, B., Jaksic, N., Marsanic, V. B., & Jakovljevic, M. (2014). Harm avoidance moderates the relationship between internalised stigma and depressive symptoms in patients with schizophrenia. *Psychiatry Research*, *219*(1), 92–94. doi:https://doi.org/10.1016/j.psychres.2014.05.009

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression.

5. Bassirnia, A., Briggs, J., Kopeykina, I., Mednick, A., Yaseen, Z., & Galynker, I. (2015). Relationship between personality traits and perceived internalised stigma in bipolar patients and their treatment partners. *Psychiatry Research*, *230*(2), 436–440.

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, marital status, sex, depression, mania.

6. Ben-Zeev, D., Frounfelker, R., Morris, S. B., & Corrigan, P. W. (2012). Predictors of Self-Stigma in Schizophrenia: New Insights Using Mobile Technologies. *Journal of Dual Diagnosis*, *8*(4), 305–314. doi:https://doi.org/10.1080/15504263.2012.723311

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Anxiety, positive symptoms.

7. Berge, M., & Ranney, M. (2005). Self-esteem and stigma among persons with schizophrenia: implications for mental health. *Care management journals: Journal of case management; The journal of long term home health care*, *6*(3), 139–144. doi:https://doi.org/10.1891/cmaj.6.3.139

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Self-esteem.

8. Berry, C., & Greenwood, K. (2018). Direct and indirect associations between dysfunctional attitudes, self-stigma, hopefulness and social inclusion in young people experiencing psychosis. *Schizophrenia Research*, *193*, 197–203. https://doi.org/10.1016/j.schres.2017.06.037

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Employment.

9. Boyd, J. E., Hayward, H., Bassett, E. D., & Hoff, R. (2016). Internalised stigma of mental illness and depressive and psychotic symptoms in homeless veterans over 6 months. *Psychiatry Research*, *240*, 253–259. doi:https://doi.org/10.1016/j.psychres.2016.04.035

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Depression (ES, IS), positive symptoms (ES, IS).

10. Brain, C., Sameby, B., Allerby, K., Quinlan, P., Joas, E., Lindstrom, E., … Waern, M. (2014). Stigma, discrimination and medication adherence in schizophrenia: Results from the Swedish COAST study. *Psychiatry Research*, *220*(3), 811–817. doi:https://doi.org/10.1016/j.psychres.2014.10.016

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Insight, medication adherence, psychopathology, functioning.

11. Brohan, E., Elgie, R., Sartorius, N., Thornicroft, G., & GAMIAN-Europe Study Group (2010). Self-stigma, empowerment and perceived discrimination among people with schizophrenia in 14 European countries: the GAMIAN-Europe study. *Schizophrenia research*, *122*(1-3), 232–238. doi:https://doi.org/10.1016/j.schres.2010.02.1065

Stigma aspects extracted: Perceived stigma, Internalised stigma.

Correlates extracted: Education (IS), employment (IS), sex (IS), age of onset (IS), empowerment (IS), perceived stigma-internalised stigma.

12. Cai, C., & Yu, L. (2017). Quality of Life in Patients With Schizophrenia in China: Relationships Among Demographic Characteristics, Psychosocial Variables, and Symptom Severity. *Journal of psychosocial nursing and mental health services*, *55*(8), 48–54. doi:https://doi.org/10.3928/02793695-20,170,627-03

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Economic status, employment, psychopathology, empowerment, quality of life.

13. Campellone, T. R., Caponigro, J. M., & Kring, A. M. (2014). The power to resist: The relationship between power, stigma, and negative symptoms in schizophrenia. *Psychiatry Research*, *215*(2), 280–285. doi:https://doi.org/10.1016/j.psychres.2013.11.020

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, Education, sex, duration of illness, no of hospitalisation, psychopathology, negative symptoms.

14. Çapar, M., & Kavak, F. (2019). Effect of internalised stigma on functional recovery in patients with schizophrenia. *Perspectives in psychiatric care*, *55*(1), 103–111. doi:https://doi.org/10.1111/ppc.12309

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Marital status (ES, IS), sex (ES, IS), functioning (ES, IS).

15. Capatina, O., & Miclutia, I. (2018). Internalised stigma as a predictor of quality of life in schizophrenia. *Journal of Evidence-Based Psychotherapies*, *18*(2), 35–53. doi:10.24193/jebp.2018.2.13

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Education, no of hospitalisations, negative symptoms, quality of life.

16. Caqueo-Urizar, A., Urzua, A., Loundon, A., Boucekine, M., Fond, G., & Boyer, L. (2019). The Latin American version of the internalised stigma of mental illness scale (LA-ISMI): a multicentric validation study from three Latin American countries. *Health and Quality of Life Outcomes*, *17*(1). doi:https://doi.org/10.1186/s12955-019-1238-2

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), economic status (IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), no of hospitalisations (IS), depression (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), quality of life (IS).

17. Cavelti, M., Kvrgic, S., Beck, E. M., Rusch, N., & Vauth, R. (2012). Self-stigma and its relationship with insight, demoralization, and clinical outcome among people with schizophrenia spectrum disorders. *Comprehensive Psychiatry*, *53*(5), 468–479. doi:https://doi.org/10.1016/j.comppsych.2011.08.001

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: Insight (PS, IS), depression (PS, IS), positive symptoms (PS, IS) functioning (PS, IS), perceived stigma-internalised stigma.

18. Cavelti, M., Wirtz, M., Corrigan, P., & Vauth, R. (2017). Recovery assessment scale: Examining the factor structure of the German version (RAS-G) in people with schizophrenia spectrum disorders. *European Psychiatry*, *41*, 60–67. doi:https://doi.org/10.1016/j.eurpsy.2016.10.006

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Recovery* (IS).

19. Cerit, C., Filizer, A., Tural, U., & Tufan, A. E. (2012). Stigma: a core factor on predicting functionality in bipolar disorder. *Comprehensive Psychiatry*, *53*(5), 484–489. doi:https://doi.org/10.1016/j.comppsych.2011.08.010

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, education, employment, marital status, sex, duration of illness, insight, no of hospitalisations, support, depression, mania, functioning.

20. Chan, K. K. S., & Fung, W. T. W. (2019). The impact of experienced discrimination and self-stigma on sleep and health-related quality of life among individuals with mental disorders in Hong Kong. *Quality of Life Research*, *28*(8), 2171–2182. doi:https://doi.org/10.1007/s11136-019-02181-1

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Quality of life (ES, IS), experienced stigma-internalised stigma.

21. Chan, K. K. S., & Mak, W. W. S. (2017). The content and process of self-stigma in people with mental illness. *American Journal of Orthopsychiatry*, *87*(1), 34–43. https://doi.org/10.1037/ort0000127

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Recovery, quality of life, self-esteem.

22. Chan, K. K., & Mak, W. W. (2014). The mediating role of self-stigma and unmet needs on the recovery of people with schizophrenia living in the community. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, *23*(9), 2559–2568. DOI: https://doi.org/10.1007/s11136-014-0695-7.

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Psychopathology, positive symptoms, quality of life.

23. Chan, S. K. W., Kao, S. Y. S., Leung, S. L., Hui, C. L. M., Lee, E. H. M., Chang, W. C., & Chen, E. Y. H. (2017). Relationship between neurocognitive function and clinical symptoms with self-stigma in patients with schizophrenia-spectrum disorders. *Journal of Mental Health*, 1–6. https://doi.org/10.1080/09638237.2017.1340599

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), education (ES, IS), sex (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS).

24. Charles, H., Manoranjitham, S. D., & Jacob, K. S. (2007). Stigma and explanatory models among people with schizophrenia and their relatives in Vellore, South India. *International Journal of Social Psychiatry*, *53*(4), 325–332. doi:https://doi.org/10.1177/0020764006074538

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Age, economic status, employment, sex, residence, psychopathology.

25. Chen, E. S. M., Chang, W. C., Hui, C. L. M., Chan, S. K. W., Lee, E. H. M., & Chen, E. Y. H. (2016). Self-stigma and affiliate stigma in first-episode psychosis patients and their caregivers. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services, 51*(9), 1225–1231. doi:https://doi.org/10.1007/s00127-016-1221-8

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight, depression, psychopathology, negative symptoms, positive symptoms, quality of life.

26. Chiang, Y. S., Chang, Y. C., Liu, Y. P., & Tzeng, W. C. (2021). Quality of life in patients with comorbid serious mental illness and chronic diseases: A structural equation model. *Journal of Advanced Nursing*, *77*(3), 1271–1283. doi:https://doi.org/10.1111/jan.14663

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Psychopathology, quality of life.

27. Chrostek, A., Grygiel, P., Anczewska, M., Wciórka, J., & Świtaj, P. (2016). The intensity and correlates of the feelings of loneliness in people

with psychosis. *Comprehensive psychiatry*, *70*, 190–199. doi:https://doi.org/10.1016/j.comppsych.2016.07.015

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression, psychopathology, functioning, self-efficacy, self-esteem.

28. Chuang, S. P., Wu, J. Y. W., & Wang, C. S. (2019). Self-perception of mental illness, and subjective and objective cognitive functioning in people with schizophrenia. *Neuropsychiatric Disease and Treatment*, *15*, 967–976. https://doi.org/10.2147/NDT.S193239

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Insight.

29. Collett, N., Pugh, K., Waite, F., & Freeman, D. (2016). Negative cognitions about the self in patients with persecutory delusions: An empirical study of self-compassion, self-stigma, schematic beliefs, self-esteem, fear of madness, and suicidal ideation. *Psychiatry Research*, *239*, 79–84. doi:https://doi.org/10.1016/j.psychres.2016.02.043

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression, self-harm/suicidality, self-esteem, self-compassion.

30. Corrigan, P. W., Rafacz, J., & Rüsch, N. (2011). Examining a progressive model of self-stigma and its impact on people with serious mental illness. *Psychiatry Research, 189*(3), 339-343. doi:https://doi.org/10.1016/j.psychres.2011.05.024

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.

Correlates extracted: Hopelessness* (ES, IS), self-esteem (PS, ES, IS), perceived stigma-experienced stigma, experienced stigma-internalised stigma.

31. Cuhadar, D., & Cam, M. O. (2014). Effectiveness of Psychoeducation in Reducing Internalised Stigmatisation in Patients With Bipolar Disorder. *Archives of Psychiatric Nursing*, *28*(1), 62–66. doi:https://doi.org/10.1016/j.apnu.2013.10.008

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Functioning.

32. Dickerson, F. B., Sommerville, J., Origoni, A. E., Ringel, N. B., & Parente, F. (2002). Experiences of stigma among outpatients with schizophrenia. *Schizophrenia Bulletin, 28*(1), 143-155. doi:https://doi.org/10.1093/oxfordjournals.schbul.a006917

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Economic status, education, sex, insight, depression, psychopathology, negative symptoms, positive symptoms, functioning, quality of life.

33. Døssing, M., Nilsson, K. K., Svejstrup, S. R., Sørensen, V. V., Straarup, K. N., & Hansen, T. B. (2015). Low self-compassion in patients with bipolar disorder. *Comprehensive Psychiatry*, *60*, 53–58. doi:https://doi.org/10.1016/j.comppsych.2015.03.010

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-compassion.

34. Drapalski, A. L., Lucksted, A., Perrin, P. B., Aakre, J. M., Brown, C. H., DeForge, B. R., & Boyd, J. E. (2013). A Model of Internalised Stigma and Its Effects on People With Mental Illness. *Psychiatric Services*, *64*(3), 264–269. doi:https://doi.org/10.1176/appi.ps.001322012

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (IS), education (IS), employment (IS), sex (IS), anxiety* (IS), depression (ES, IS), psychopathology (IS), positive symptoms (ES, IS), recovery (ES, IS), self-efficacy* (IS), self-esteem (ES, IS).

35. Drapalski, A. L., Medoff, D., Dixon, L., & Bellack, A. (2016). The reliability and validity of the Maryland Assessment of Recovery in Serious Mental Illness Scale. *Psychiatry Research*, *239*, 259–264. doi:https://doi.org/10.1016/j.psychres.2016.03.031

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Recovery.

36. Espinosa, R., Valiente, C., Rigabert, A., & Song, H. (2016). Recovery style and stigma in psychosis: The healing power of integrating. *Cognitive Neuropsychiatry*, *21*(2), 146–155. doi:https://doi.org/10.1080/13546805.2016.1147427

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Anxiety* (IS), depression (ES, IS), recovery (ES, IS), experienced stigma-internalised stigma.

37. Fadipe, B., Abebowale, T. O., Ogunwale, A., Fadipe, Y. O., Ojeyinka, A-H. A., Olagunju, A. T. (2018). Internalised stigma in schizophrenia: a cross-sectional study of prevalence and predictors. *International Journal of Culture and Mental Health, 11*(4), 583-594. doi:https://doi.org/10.1080/17542863.2018.1450431

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, economic status, marital status, sex, age of onset, duration of illness, psychopathology.

38. Fadipe, B., Olagunju, A. T., Ogunwale, A., Fadipe, Y. O., & Adebowale, T. O. (2020). Self-stigma and decision about medication use among a sample of Nigerian outpatients with schizophrenia. *Psychiatric Rehabilitation Journal, 43*(3), 214–224. https://doi.org/10.1037/prj0000408

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Medication adherence (ES, IS).

39. Feldhaus, T., Falke, S., von Gruchalla, L., Maisch, B., Uhlmann, C., Bock, E., & Lencer, R. (2018). The impact of self-stigmatisation on medication attitude in schizophrenia patients. *Psychiatry Research*, *261*, 391–399. https://doi.org/10.1016/j.psychres.2018.01.012

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Education (ES, IS), sex (ES, IS), insight (ES, IS), medication adherence (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), quality of life (ES, IS), experienced stigma-internalised stigma.

40. Firmin, R. L., Lysaker, P. H., Luther, L., Yanos, P. T., Leonhardt, B., Breier, A., & Vohs, J. L. (2019). Internalised stigma in adults with early phase versus prolonged psychosis. *Early intervention in psychiatry*, *13*(4), 745–751. doi:https://doi.org/10.1111/eip.12553

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Insight (ES, IS), depression (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS).

41. Forthal, S., Fekadu, A., Medhin, G., Selamu, M., Thornicroft, G., & Hanlon, C. (2019). Rural vs urban residence and experience of discrimination among people with severe mental illnesses in Ethiopia. *BMC Psychiatry 19*(340), 1-10. doi:https://doi.org/10.1186/s12888-019-2345-7

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Age, economic status, marital status, sex, residence, psychopathology, functioning, support.

42. Fresan, A., Robles-Garcia, R., Madrigal, E., Tovilla-Zarate, C. A., Martinez-Lopez, N., & de Montis, I. A. (2018). Demographic and clinical features related to perceived discrimination in schizophrenia. *Psychiatry Research*, *262*, 427–430. doi:https://doi.org/10.1016/j.psychres.2017.09.019

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Age, education, age of onset, no of hospitalisations, psychopathology, negative symptoms, positive symptoms.

43. Fung, K. M. T., Tsang, H. W. H., & Chan, F. (2010). Self-stigma, stages of change and psychosocial treatment adherence among Chinese people with schizophrenia: a path analysis. *Social Psychiatry and Psychiatric Epidemiology*, *45*(5), 561–568. doi:https://doi.org/10.1007/s00127-009-0098-1

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight.

44. Fung, K. M., Tsang, H. W., Corrigan, P. W., Lam, C. S., & Cheung, W. M. (2007). Measuring self-stigma of mental illness in China and its implications for recovery. *The International journal of social psychiatry*, *53*(5), 408–418. doi:https://doi.org/10.1177/0020764007078342

Stigma aspects extracted: Perceived stigma, Internalised stigma.

Correlates extracted: Self-efficacy* (IS), self-esteem (PE, IS), perceived stigma-internalised stigma.

45. Galderisi, S., Rossi, A., Rocca, P., Bertolino, A., Mucci, A., Bucci, P., Rucci, P., Gibertoni, D., Aguglia, E., Amore, M., Bellomo, A., Biondi, M., Brugnoli, R., Dell'Osso, L., De Ronchi, D., Di Emidio, G., Di Giannantonio, M., Fagiolini, A., Marchesi, C., Monteleone, P., … Italian Network For Research on Psychoses (2014). The influence of illness-related variables, personal resources and context-related factors on real-life functioning of people with schizophrenia. *World psychiatry: official journal of the World Psychiatric Association (WPA)*, *13*(3), 275–287. doi:https://doi.org/10.1002/wps.20167

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Resilience, depression, negative symptoms, positive symptoms, functioning.

46. Galderisi, S., Rossi, A., Rocca, P., Bertolino, A., Mucci, A., Bucci, P., … Maj, M. (2016). Pathways to functional outcome in subjects with schizophrenia living in the community and their unaffected first-degree relatives. *Schizophrenia Research*, *175*(1–3), 154–160. doi:https://doi.org/10.1016/j.schres.2016.04.043

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Age, education, sex, positive symptoms, functioning.

47. Grover, S., Avasthi, A., Singh, A., Dan, A., Neogi, R., Kaur, D., … Behere, P. (2017). Stigma experienced by patients with severe mental disorders: A nationwide multicentric study from India. *Psychiatry Research*, *257*, 550–558. https://doi.org/10.1016/j.psychres.2017.08.027

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), economic status (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), depression (ES, IS), psychopathology (ES, IS), mania* (IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS).

48. Grover, S., Hazari, N., Aneja, J., Chakrabarti, S., & Avasthi, A. (2016). Stigma and its correlates among patients with bipolar disorder: A study from a tertiary care hospital of North India. *Psychiatry Research*, *244*, 109–116. https://doi.org/10.1016/j.psychres.2016.07.012

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), economic status (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), duration of illness (ES, IS), depression (ES, IS), functioning (ES, IS), experienced stigma-internalised stigma.

49. Grover, S., Hazari, N., Aneja, J., Chakrabarti, S., Sharma, S., & Avasthi, A. (2016). Recovery and its correlates among patients with bipolar disorder: A study from a tertiary care centre in North India. *International Journal of Social Psychiatry*, *62*(8), 726–736. doi:https://doi.org/10.1177/0020764016676214

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Recovery.

50. Grover, S., Sahoo, S., & Nehra, R. (2019). A comparative study of childhood/ adolescent and adult onset schizophrenia: does the neurocognitive and psychosocial outcome differ? *Asian Journal of Psychiatry*, *43*, 160–169. https://doi.org/10.1016/j.ajp.2019.05.031

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age of onset.

51. Grover, S., Sahoo, S., Chakrabarti, S., & Avasthi, A. (2018). Association of internalised stigma and insight in patients with schizophrenia. *International Journal of Culture and Mental Health*, *11*(3), 338–350. https://doi.org/10.1080/17542863.2017.1381750

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), insight (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS).

52. Gruber, M., Rumpold, T., Schrank, B., Sibitz, I., Otzelberger, B., Jahn, R., Amering, M., & Unger, A. (2018). Recover recovery style from psychosis: a psychometric evaluation of the German version of the Recovery Style Questionnaire (RSQ). *Epidemiology and psychiatric sciences*, *29*, e4. doi:https://doi.org/10.1017/S2045796018000471

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Recovery.

53. Hajda, M., Kamaradova, D., Latalova, K., Prasko, J., Ociskova, M., Mainerova, B., … Tichackova, A. (2015). Self-stigma, treatment adherence, and medication discontinuation in patients with bipolar disorders in remission - a cross sectional study. *Activitas Nervosa Superior Rediviva*, *57*(1–2), 6–11.

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Medication adherence.

54. Hasson-Ohayon, I., Eizenberg, M. M., Lysaker, P. H., & Roe, D. (2016). Self-clarity and different clusters of insight and self-stigma in mental illness. *Psychiatry Research*, *240*, 308–313. doi:https://doi.org/10.1016/j.psychres.2016.04.060

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight, recovery, hopelessness, functioning.

55. Hasson-Ohayon, I., Mashiach-Eizenberg, M., Elhasid, N., Yanos, P. T., Lysaker, P. H., & Roe, D. (2014). Between self-clarity and recovery in schizophrenia: reducing the self-stigma and finding meaning. *Comprehensive Psychiatry*, *55*(3), 675–680. doi:https://doi.org/10.1016/j.comppsych.20

13.11.009

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Recovery (ES, IS), experienced stigma-internalised stigma.

56. Hayward, P., Wong, G., Bright, J. A., & Lam, D. (2002). Stigma and self-esteem in manic depression: an exploratory study. *Journal of affective disorders*, *69*(1-3), 61–67. doi:https://doi.org/10.1016/s0165-0327(00)00380-3

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Functioning, self-esteem.

57. Helene, T., Helene, V., Jean, B., Jean-Marc, D., & Antoinette, P. (2014). Impact of interpersonal factors on insight in schizophrenia. *Schizophrenia Research*, *159*(2–3), 527–532. doi:https://doi.org/10.1016/j.schres.2014.08.009

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Support.

58. Hill, K., & Startup, M. (2013). The relationship between internalised stigma, negative symptoms and social functioning in schizophrenia: The mediating role of self-efficacy. *Psychiatry Research*, *206*(2–3), 151–157. doi:https://doi.org/10.1016/j.psychres.2012.09.056

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Negative symptoms, quality of life, self-efficacy.

59. Ho, R. W. H., Chang, W. C., Kwong, V. W. Y., Lau, E. S. K., Chan, G. H. K., Jim, O. T. T., … Chen, E. Y. H. (2018). Prediction of self-stigma in early psychosis: 3-Year follow-up of the randomized-controlled trial on extended early intervention. *Schizophrenia Research*, *195*, 463–468. https://doi.org/10.1016/j.schres.2017.09.004

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight, medication adherence, depression, negative symptoms, positive symptoms, functioning, quality of life.

60. Ho, W. W. N., Chiu, M. Y. L., Lo, W. T. L., & Yiu, M. G. C. (2010). Recovery components as determinants of the health-related quality of life among patients with schizophrenia: structural equation modelling analysis. Australian and New Zealand Journal of Psychiatry, 44(1), 71–84. doi:https://doi.org/10.3109/00048670903393654

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Hopelessness, functioning, quality of life, resilience, self-efficacy, support.

61. Hofer, A., Mizuno, Y., Frajo-Apor, B., Kemmler, G., Suzuki, T., Pardeller, S., … Uchida, H. (2016). Resilience, internalised stigma, self-esteem, and hopelessness among people with schizophrenia: Cultural comparison in Austria and Japan. Schizophrenia Research, 171(1–3), 86–91. doi:https://doi.org/10.1016/j.schres.2016.01.027

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Hopelessness, psychopathology, resilience, self-esteem.

62. Hofer, A., Post, F., Pardeller, S., Frajo-Apor, B., Hoertnagl, C. M., Kemmler, G., & Fleischhacker, W. W. (2019). Self-stigma versus stigma resistance in schizophrenia: Associations with resilience, premorbid adjustment, and clinical symptoms. *Psychiatry Research*, *271*, 396–401. https://doi.org/10.1016/j.psychres.2018.12.029

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, education, sex, age of onset, duration of illness, negative symptoms, positive symptoms, psychopathology, resilience.

63. Holubova, M., Prasko, J., Latalova, K., Ociskova, M., Grambal, A., Kamaradova, D., … Hruby, R. (2016). Are self-stigma, quality of life, and clinical data interrelated in schizophrenia spectrum patients? A cross-sectional outpatient study. Patient Preference and Adherence, 10, 265–274.

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (EI, IS), employment (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), no of hospitalisations (ES, IS), psychopathology (ES, IS), quality of life (ES, IS).

64. Horsselenberg, E. M. A., van Busschbach, J. T., Aleman, A., & Pijnenborg, G. H. M. (2016). Self-stigma and its relationship with victimization, psychotic symptoms and self-esteem among people with schizophrenia spectrum disorders. *PLoS ONE, 11*(10), Article e0149763. doi:https://doi.org/10.1371/journal.pone.0149763

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Negative symptoms, positive symptoms, self-esteem.

65. Howland, M., Levin, J., Blixen, C., Tatsuoka, C., & Sajatovic, M. (2016). Mixed-methods analysis of internalised stigma correlates in poorly adherent individuals with bipolar disorder. *Comprehensive Psychiatry*, *70*, 174–180. doi:https://doi.org/10.1016/j.comppsych.2016.07.012.

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (IS), education (IS), sex (IS), age of onset (IS), duration of illness (IS), depression (ES, IS), psychopathology (ES, IS), mania* (IS), self-efficacy* (IS).

66. Huang, W.-Y., Chen, S.-P., Pakpour, A. H., & Lin, C.-Y. (2018). The mediation role of self-esteem for self-stigma on quality of life for people with schizophrenia: A retrospectively longitudinal study. *Journal of Pacific Rim Psychology*, *12*. Article e10.https://doi.org/10.1017/prp.2017.18

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Quality of life, self-esteem.

67. İpçi, K., Yildiz, M., İncedere, A., Kiras, F., Esen, D., & Gürcan, M. B. (2020). Subjective Recovery in Patients with Schizophrenia and Related Factors. *Community mental health journal*, *56*(6), 1180–1187. doi:https://doi.org/10.1007/s10597-020-00616-5

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Recovery.

68. Jahn, D. R., Leith, J., Muralidharan, A., Brown, C. H., Drapalski, A. L., Hack, S., & Lucksted, A. (2020). The Influence of Experiences of Stigma on Recovery: Mediating Roles of Internalised Stigma, Self-Esteem, and Self-Efficacy. *Psychiatric Rehabilitation Journal*, *43*(2), 97–105. doi:https://doi.org/10.1037/prj0000377

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (ES, IS), education (ES, IS), ethnicity (ES, IS), sex (ES, IS), depression (ES, IS), functioning (ES, IS), quality of life (ES, IS), recovery (ES, IS), self-efficacy* (IS), self-esteem (ES, IS), experienced stigma-internalised stigma.

69. Kalisova, L., Michalec, J., Hadjipapanicolaou, D., & Raboch, J. (2018). Factors influencing the level of self-stigmatisation in people with mental illness. *The International Journal of Social Psychiatry*, *64*(4), 374–380. https://doi.org/10.1177/0020764018766561

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, duration of illness.

70. Kao, Y. C., Lien, Y. J., Chang, H. A., Tzeng, N. S., Yeh, C. B., & Loh, C. H. (2017). Stigma Resistance in Stable Schizophrenia: The Relative Contributions of Stereotype Endorsement, Self-Reflection, Self-Esteem, and Coping Styles. *Canadian Journal of Psychiatry-Revue Canadienne De Psychiatrie*, *62*(10), 735–744. doi:https://doi.org/10.1177/0706743717730827
Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Sex.

71. Kao, Y. C., Lien, Y. J., Chang, H. A., Wang, S. C., Tzeng, N. S., & Loh, C. H. (2016). Evidence for the indirect effects of perceived public stigma on psychosocial outcomes: The mediating role of self-stigma. *Psychiatry research*, *240*, 187–195. doi:https://doi.org/10.1016/j.psychres.2016.04.030
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Depression (IS), quality of life (IS), self-esteem (IS).

72. Karakas, S. A., Okanli, A., & Yilmaz, E. (2016). The Effect of Internalised Stigma on the Self Esteem in Patients with Schizophrenia. *Archives of Psychiatric Nursing*, *30*(6), 648–652. doi:https://doi.org/10.1016/j.apnu.2016.02.006
Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Self-esteem.

73. Karidi, M. V, Vasilopoulou, D., Savvidou, E., Vitoratou, S., Rabavilas, A. D., & Stefanis, C. N. (2014). Aspects of perceived stigma: The Stigma Inventory for Mental Illness, its development, latent structure and psychometric properties. *Comprehensive Psychiatry*, *55*(7), 1620–1625. doi:https://doi.org/10.1016/j.comppsych.2014.04.002
Stigma aspects extracted: Perceived stigma, Internalised stigma.
Correlates extracted: Age (PS, IS), economic status* (IS), education (PS, IS), marital status* (IS), sex (PS, IS), anxiety* (IS), depression (ES, IS), psychopathology (PS, IS) negative symptoms (PS, IS), positive symptoms (PS, IS), functioning (PS, IS).

74. Karidi, M. V, Vassilopoulou, D., Savvidou, E., Vitoratou, S., Maillis, A., Rabavilas, A., & Stefanis, C. N. (2015). Bipolar disorder and self-stigma: A comparison with schizophrenia. *Journal of Affective Disorders*, *184*, 209–215. doi:https://doi.org/10.1016/j.jad.2015.05.038
Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Depression (PS, IS), psychopathology (PS, IS), mania* (IS), negative symptoms (PS, IS), positive symptoms (PS, IS), functioning (PS, IS), self-esteem (PS, IS).

75. Kaşli, S., Al, O., & Bademli, K. (2020). Internalised stigmatisation and subjective recovery in individuals with chronic mental illness. *International Journal of Social Psychiatry*, *0*(00), 1–6. doi:https://doi.org/10.1177/0020764020960762
Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), sex (ES, IS), recovery (ES, IS), experienced stigma-internalised stigma.

76. Kim, E. Y., & Jang, M. H. (2019). The Mediating Effects of Self-Esteem and Resilience on the Relationship Between Internalised Stigma and Quality of Life in People with Schizophrenia. *Asian Nursing Research*, *13*(4), 257–263. https://doi.org/10.1016/j.anr.2019.09.00
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Quality of life, resilience, self-esteem.

77. Kim, W. J., Song, Y. J., Ryu, H. S., Ryu, V., Kim, J. M., Ha, R. Y., … Cho, H. S. (2015). Internalised stigma and its psychosocial correlates in Korean patients with serious mental illness. *Psychiatry Research*, *225*(3), 433–439. doi:https://doi.org/10.1016/j.psychres.2014.11.071
Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), employment (IS), sex (IS), duration of illness (ES, IS), insight (ES, IS), no of hospitalisations (IS), support (ES, IS), hopelessness (ES, IS), psychopathology (ES, IS), self-esteem (ES, IS), experienced stigma-internalised stigma.

78. Kleim, B., Vauth, R., Adam, G., Stieglitz, R. D., Hayward, P., & Corrigan, P. (2008). Perceived stigma predicts low self-efficacy and poor coping in schizophrenia. *Journal of Mental Health*, *17*(5), 482–491. doi:https://doi.org/10.1080/09638230701506283
Stigma aspects extracted: Perceived stigma.
Correlates extracted: Age, sex, insight, depression, psychopathology, negative symptoms, positive symptoms.

79. Kondrátová, L., König, D., Mladá, K., & Winkler, P. (2019). Correlates of Negative Attitudes towards Medication in People with Schizophrenia. The Psychiatric quarterly, 90(1), 159–169. doi:https://doi.org/10.1007/s11126-018-9618-z
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Medication adherence.

80. Korkmaz, G., & Kucuk, L. (2016). Internalised Stigma and Perceived Family Support in Acute Psychiatric In-Patient Units. *Archives of Psychiatric Nursing*, *30*(1), 55–61. doi:https://doi.org/10.1016/j.apnu.2015.10.003
Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Sex (ES, IS), support (ES, IS).

81. Koschorke, M., Padmavati, R., Kumar, S., Cohen, A., Weiss, H. A., Chatterjee, S., … Patel, V. (2014). Experiences of stigma and discrimination of people with schizophrenia in India. *Social Science & Medicine*, *123*, 149–159. doi:https://doi.org/10.1016/j.socscimed.2014.10.035
Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, negative symptoms, positive symptoms.

82. Lasalvia, A., Zoppei, S., Bonetto, C., Tosato, S., Zanatta, G., Cristofalo, D., … Ruggeri, M. (2014). The Role of Experienced and Anticipated Discrimination in the Lives of People With First-Episode Psychosis. *Psychiatric Services*, *65*(8), 1034–1040. doi:https://doi.org/10.1176/appi.ps.201300291
Stigma aspects extracted: Experienced stigma.
Correlates extracted: Education, functioning.

83. Lee, A. M. R., Simeon, D., Cohen, L. J., Samuel, J., Steele, A., & Galynker, I. I. (2011). Predictors of Patient and Caregiver Distress in an Adult Sample With Bipolar Disorder Seeking Family Treatment. *Journal of Nervous and Mental Disease*, *199*(1), 18–24. doi:https://doi.org/10.1097/NMD.0b013e3182043b73
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Anxiety, depression, quality of life.

84. Leith, J., & Stein, C. H. (2020). Stage and Process Models of Consumer-Oriented Recovery Among Adults With Serious Mental Illness: The Role

of Personal Loss and Internalised Stigma. *American Journal of Orthopsychiatry*, *90*(6), 653–666. doi:https://doi.org/10.1037/ort0000493

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Recovery, psychopathology.

85. Li, J., Guo, Y. B., Huang, Y. G., Liu, J. W., Chen, W., Zhang, X. Y., … Thornicroft, G. (2017). Stigma and discrimination experienced by people with schizophrenia living in the community in Guangzhou, China. *Psychiatry Research*, *255*, 225–231. https://doi.org/10.1016/j.psychres.2017.05.040

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Self-esteem (IS), experienced stigma-internalised stigma.

86. Lien, Y. J., Chang, H. A., Kao, Y. C., Tzeng, N. S., Lu, C. W., & Loh, C. H. (2016). Insight, Self-stigma and Psychosocial Outcomes in Schizophrenia: A Structural Equation Modelling Approach. *Epidemiology and Psychiatric Sciences*, 1–10. doi:https://doi.org/10.1017/S2045796016000950

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Insight (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), quality of life (ES, IS), self-esteem (ES, IS), experienced stigma-internalised stigma.

87. Lien, Y. J., Chang, H. A., Kao, Y. C., Tzeng, N. S., Yeh, C. B., & Loh, C. H. (2018). Self-Stigma Mediates the Impact of Insight on Current Suicide Ideation in Suicide Attempters with Schizophrenia: Results of a Moderated Mediation Approach. *Suicide & Life-Threatening Behavior*, *48*(6), 661–676. https://doi.org/10.1111/sltb.12384

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Hopelessness, self-harm/suicidality.

88. Lien, Y. J., Chang, H. A., Kao, Y. C., Tzeng, N. S., Lu, C. W., & Loh, C. H. (2018). The impact of cognitive insight, self-stigma, and medication compliance on the quality of life in patients with schizophrenia. *European Archives of Psychiatry and Clinical Neuroscience*, *268*(1), 27–38. https://doi.org/10.1007/s00406-017-0829-3

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Medication adherence.

89. Lim, M., Li, Z., Xie, H., Tan, B. L., & Lee, J. (2019). An Asian study on clinical and psychological factors associated with personal recovery in people with psychosis. *BMC Psychiatry, 19*(1), 256. https://doi.org/10.1186/s12888-019-2238-9

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Recovery.

90. Lin, C.-Y., Chang, C.-C., Wu, T.-H., & Wang, J.-D. (2016). Dynamic changes of self-stigma, quality of life, somatic complaints, and depression among people with schizophrenia: A pilot study applying kernel smoothers. *Stigma and Health*, *1*(1), 29–43. doi:https://doi.org/10.1037/sah0000014

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression, quality of life.

91. Link, B. G., Wells, J., Phelan, J. C., & Yang, L. (2015). Understanding the importance of "symbolic interaction stigma": How expectations about the reactions of others adds to the burden of mental illness stigma. *Psychiatric Rehabilitation Journal, 38*(2), 117–124. doi:https://doi.org/10.1037/prj0000142

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: No of hospitalisations (PS, IS), functioning (PS, IS).

92. Livingston, J. D., Rossiter, K. R., & Verdun-Jones, S. N. (2011). "Forensic" labelling: An empirical assessment of its effects on self-stigma for people with severe mental illness. *Psychiatry Research*, *188*(1), 115–122. doi:https://doi.org/10.1016/j.psychres.2011.01.018

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (ES, IS), education (ES, IS), employment (ES, IS), ethnicity (ES, IS), marital status (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), depression (ES, IS), hopelessness (ES, IS), psychopathology (ES, IS), positive symptoms (ES, IS), self-harm/suicidality* (IS), functioning (ES, IS), quality of life (ES, IS).

93. Lu, Y., & Wang, X. (2012). Correlation between insight and internalised stigma in patients with schizophrenia. *Shanghai Arhives of Psychiatry, 24*(2), 91-98. doi:https://doi.org/10.3969/j.issn.1002-0829.2012.02.004

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Insight.

94. Lv, Y., Wolf, A., & Wang, X. P. (2013). Experienced stigma and self-stigma in Chinese patients with schizophrenia. *General Hospital Psychiatry*, *35*(1), 83–88. doi:https://doi.org/10.1016/j.genhosppsych.2012.07.007

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Negative symptoms (IS), positive symptoms (IS), experienced stigma-internalised stigma.

95. Lysaker, P. H., Buck, K. D., Taylor, A. C., & Roe, D. (2008a). Associations of metacognition and internalised stigma with quantitative assessments of self-experience in narratives of schizophrenia. Psychiatry Research, 157(1–3), 31–38. doi:https://doi.org/10.1016/j.psychres.2007.04.023

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Recovery (ES, IS).

96. Lysaker, P. H., Salyers, M. P., Tsai, J., Spurrier, L. Y., & Davis, L. W. (2008c). Clinical and psychological correlates of two domains of hopelessness in schizophrenia. *Journal of Rehabilitation Research and Development*, *45*(6), 911–919. doi:https://doi.org/10.1682/jrrd.2007.07.0108

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Hopelessness.

97. Lysaker, P. H., Tsai, J., Yanos, P., & Roe, D. (2008b). Associations of multiple domains of self-esteem with four dimensions of stigma in schizophrenia. *Schizophrenia Research*, *98*(1–3), 194–200. doi:https://doi.org/10.1016/j.schres.2007.09.035

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (ES, IS), education (ES, IS).

98. Lysaker, P. H., Yanos, P. T., Outcalt, J., & Roe, D. (2010). Association of Stigma, Self-Esteem, and Symptoms with Concurrent and Prospective Assessment of Social Anxiety in Schizophrenia. *Clinical & Schizophrenia Related Psychoses, 4*(1), 41.48. doi:https://doi.org/10.3371/CSRP.4.1.3

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Anxiety.

99. Lysaker, P. H., Davis, L. W., Warman, D. M., Strasburger, A., & Beattie, N. (2007a). Stigma, social function and symptoms in schizophrenia and schizoaffective disorder: associations across 6 months. *Psychiatry research*, *149*(1-3), 89–95. doi:https://doi.org/10.1016/j.psychres.2006.03.007

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Number of hospitalisations (ES, IS), Positive symptoms (ES), functioning (ES), experienced stigma-internalised stigma.

100. Lysaker, P. H., Roe, D., & Yanos, P. T. (2007). Towards understanding the insight paradox: internalised stigma moderates the association between insight and social functioning, hope, and self-esteem among people with schizophrenia spectrum disorders. *Schizophrenia bulletin*, *33*(1), 192–199. doi:https://doi.org/10.1093/schbul/sbl016

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Negative symptoms, positive symptoms, functioning, self-esteem.

101. Lysaker, P. H., Tunze, C., Yanos, P. T., Roe, D., Ringer, J., & Rand, K. (2012). Relationships between stereotyped beliefs about mental illness, discrimination experiences, and distressed mood over 1 year among persons with schizophrenia enrolled in rehabilitation. *Social Psychiatry and Psychiatric Epidemiology*, 47(6), 849-855.doi:https://doi.org/10.1007/s00127-011-0396-2

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Experienced stigma-internalised stigma.

102. MacDougall, A. G., Vandermeer, M. R. J., & Norman, R. M. G. (2015). Negative future self as a mediator in the relationship between insight and depression in psychotic disorders. *Schizophrenia Research*, *165*(1), 66–69. doi:https://doi.org/10.1016/j.schres.2015.03.035

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: Insight.

103. MacDougall, A. G., Vandermeer, M., & Norman, R. (2017). Determinants of self-esteem in early psychosis: The role of perceived social dominance. *Psychiatry research*, *258*, 583–586. doi:https://doi.org/10.1016/j.psychres.2016.05.050

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-esteem.

104. Magallares, A., Perez-Garin, D., & Molero, F. (2016). Social stigma and well-being in a sample of schizophrenia patients. *Clinical Schizophrenia and Related Psychoses*, *10*(1), 51–57. doi:https://doi.org/10.3371/CSRP.MAPE.043013

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Self-esteem.

105. Mak, W. W. S., & Cheung, R. Y. M. (2010). Self-Stigma Among Concealable Minorities in Hong Kong: Conceptualization and Unified Measurement. *American Journal of Orthopsychiatry, 80*(2), 267–281. doi:https://doi.org/10.1111/j.1939-0025.2010.01030.x

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, economic status, education, employment, sex, duration of illness, self-efficacy, self-esteem.

106. Manor-Binyamini, I. (2020). Internalised Stigma among Bedouin and Jews with Mental Illness: Comparing Self-Esteem, Hope, and Quality of Life. *Psychiatric Quarterly*. doi:https://doi.org/10.1007/s11126-020-09758-x

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Hopelessness, quality of life, self-esteem.

107. Markiewicz, A., & Hintze, B. (2016). Stigma and social support - Similarities and differences in group of women suffering from chronic diseases TT - Pietno a wsparcie spoleczne - podobienstwa i roznice w grupach kobiet chorujacych przewlekle. *Postepy Psychiatrii i Neurologii*, *25*(3), 147–158.

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Age, education, marital status, age of onset, support.

108. Martínez-Zambrano, F., Pizzimenti, M., Barbeito, S., Vila-Badia, R., Comellas, G., José Escandell, M., … Ochoa, S. (2016). Spanish version of the Link's Perceived Devaluation and Discrimination scale. *Psicothema*, *28*(2), 201–206.

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: Depression (PS), psychopathology (PS), negative symptoms (PS), positive symptoms (PS), functioning (PS), perceived stigma-internalised stigma.

109. Mechanic, D., McAlpine, D., Rosenfield, S., & Davis, D. (1994). Effects of illness attribution and depression on the quality of life among persons with serious mental illness. *Social science & medicine (1982)*, *39*(2), 155–164. doi:https://doi.org/10.1016/0277-9536(94)90324-7

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Quality of life.

110. Meiser, B., Mitchell, P. B., Kasparian, N. A., Strong, K., Simpson, J. M., Mireskandari, S., … Schofield, P. R. (2007). Attitudes towards childbearing, causal attributions for bipolar disorder and psychological distress: A study of families with multiple cases of bipolar disorder. *Psychological Medicine*, *37*(11), 1601–1611. doi:https://doi.org/10.1017/S0033291707000852

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Psychopathology.

111. Mizuno, Y., Hofer, A., Suzuki, T., Frajo-Apor, B., Wartelsteiner, F., Kemmler, G., … Uchida, H. (2016). Clinical and biological correlates of resilience in patients with schizophrenia and bipolar disorder: A cross-sectional study. *Schizophrenia Research*, *175*(1–3), 148–153. doi:https://doi.org/10.1016/j.schres.2016.04.047

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Resilience.

112. Moraleda, A., Galan-Casado, D., & Cangas, A. J. (2019). Reducing Self-Stigma in People with Severe Mental Illness Participating in a Regular Football League: An Exploratory Study. *International Journal of Environmental Research and Public Health*, *16*(19). doi:https://doi.org/10.3390/ijerph16193599

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age.

113. Morgades-Bamba, C. I., Fuster-Ruizdeapodaca, M. J., & Molero, F. (2019). Internalised stigma and its impact on schizophrenia quality of life. *Psychology Health & Medicine*, *24*(8), 992–1004. doi:https://doi.org/10.1080/13548506.2019.1612076

Stigma aspects extracted: Internalised stigma.
Correlates extractecd: Quality of life.

114. Morgades-Bamba, C. I., Fuster-Ruizdeapodaca, M. J., & Molero, F. (2019). The impact of internalised stigma on the well-being of people with Schizophrenia. *Psychiatry Research*, *271*, 621–627. https://doi.org/10.1016/j.psychres.2018.12.060
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Anxiety, self-efficacy, self-esteem.

115. Mosanya, T. J., Adelufosi, A. O., Adebowale, O. T., Ogunwale, A., & Adebayo, O. K. (2014). Self-stigma, quality of life and schizophrenia: An outpatient clinic survey in Nigeria. *International Journal of Social Psychiatry*, *60*(4), 377–386. doi:https://doi.org/10.1177/0020764013491738
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Economic status, employment, sex, age of onset, duration of illness, psychopathology, quality of life.

116. Mueser, K. T., DeTore, N. R., Kredlow, M. A., Bourgeois, M. L., Penn, D. L., & Hintz, K. (2019). Clinical and demographic correlates of stigma in first-episode psychosis: The impact of duration of untreated psychosis. *Acta Psychiatrica Scandinavica, 141*(2),157-166. https://doi.org/10.1111/acps.13102
Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, education, employment, ethnicity, sex, depression, psychopathology, negative symptoms, positive symptoms, functioning, quality of life, recovery.

117. Munoz, M., Sanz, M., Perez-Santos, E., & Quiroga, M. D. (2011). Proposal of a socio-cognitive-behavioral structural equation model of internalised stigma in people with severe and persistent mental illness. *Psychiatry Research*, *186*(2–3), 402–408. doi:https://doi.org/10.1016/j.psychres.2010.06.019
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, education, functioning, empowerment, recovery. Note: *Correlation between ISMI total and ISMI discrimination experience subscale given, but since only the total ISMI score was used (rather than individual subscales) this was not extracted as a measure of the correlation between experienced and internalised stigma to avoid bias in inflating effect size.*

118. Murri, M., Amore, M., Calcagno, P., Respino, M., Marozzi, V., Masotti, M., Bugliani, M., Innamorati, M., Pompili, M., Galderisi, S., & Maj, M. (2016). The "Insight Paradox" in Schizophrenia: Magnitude, Moderators and Mediators of the Association Between Insight and Depression. *Schizophrenia bulletin*, *42*(5), 1225–1233. doi:https://doi.org/10.1093/schbul/sbw040
Stigma aspects extracted: Perceived stigma.
Correlates extracted: Insight, depression.

119. Nagai, K., & Kajita, E. (2018). "Coming Out" with a Mental Disorder in Japan: How Self-Stigma and Empowerment Affect this Decision. *Issues in Mental Health Nursing*, *39*(3), 215–225. doi:https://doi.org/10.1080/01612840.2017.1354102
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Empowerment, self-efficacy, support.

120. Nilsson, K. K., Kugathasan, P., & Straarup, K. N. (2016). Characteristics, correlates and outcomes of perceived stigmatisation in bipolar disorder patients. *Journal of Affective Disorders*, *194*, 196–201. doi:https://doi.org/10.1016/j.jad.2016.01.025
Stigma aspects extracted: Perceived stigma.
Correlates extracted: Duration of illness, no of hospitalisations.

121. Norman, R. M. G., Windell, D., Lynch, J., & Manchanda, R. (2011). Parsing the relationship of stigma and insight to psychological well-being in psychotic disorders. *Schizophrenia Research*, *133*(1–3), 3–7. doi:https://doi.org/10.1016/j.schres.2011.09.002
Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Anxiety* (IS), depression (PS, IS).

122. Noyman-Veksler, G., Weinberg, D., Fennig, S., Davidson, L., & Shahar, G. (2013). Perceived stigma exposure in schizophrenia: The key role of self-concept clarity. *Self and Identity*, *12*(6), 663–674. doi:https://doi.org/10.1080/15298868.2012.732265
Stigma aspects extracted: Experienced stigma.
Correlates extracted: Depression, negative symptoms, positive symptoms, self-esteem.

123. O'Connor, L. K., Yanos, P. T., & Firmin, R. L. (2018). Correlates and moderators of stigma resistance among people with severe mental illness. Psychiatry Research, 270, 198–204. https://doi.org/10.1016/j.psychres.2018.09.040
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Hopelessness, negative symptoms, positive symptoms, functioning, self-esteem. Note: *Correlation between ISMI total and ISMI discrimination experience subscale given, but since only the total ISMI score was used (rather than individual subscales) this was not extracted as a measure of the correlation between experienced and internalised stigma to avoid bias in inflating effect size.*

124. Ochoa, S., Martinez-Zambrano, F., Garcia-Franco, M., Vilamala, S., Ribas, M., Arenas, O., … Haro, J. M. (2015). Development and validation of the Self-Stigma Questionnaire (SSQ) for people with schizophrenia and its relation to social functioning. *Comprehensive Psychiatry*, *62*, 93–99.
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Functioning.

125. Oduguwa, T. O., Akinwotu, O. O., & Adeoye, A. A. (2014). A comparative study of self stigma between HIV/AIDS and schizophrenia patients. *African Journal of Psychiatry (South Africa)*, *17*(2), 525–531. https://doi.org/10.4172/Psychiatry.1000109
Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES; IS), duration of illness (ES, IS).

126. Olçun, Z., & Altun, O. S. (2017). The Correlation Between Schizophrenic Patients' Level of Internalised Stigma and Their Level of Hope. *Archives of Psychiatric Nursing*, *31*(4), 332–337. doi:https://doi.org/10.1016/j.apnu.2017.03.001
Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Hopelessness.

127. Or, S. E. B., Hasson-Ohayon, I., Feingold, D., Vahab, K., Amiaz, R., Weiser, M., & Lysaker, P. H. (2013). Meaning in life, insight and self-stigma among people with severe mental illness. *Comprehensive Psychiatry*, *54*(2), 195–200. doi:https://doi.org/10.1016/j.comppsych.2012.07.011
Stigma aspects extracted: Internalised stigma.
Correlates extracted: Insight.

128. Ow, C. Y., & Lee, B. O. (2015). Relationships between perceived stigma, coping orientations, self-esteem, and quality of life in patients with schizophrenia. *Asia-Pacific Journal of Public Health / Asia-Pacific Academic Consortium for Public Health*, *27*(2), NP1932–NP1941. doi:https://doi.org/10.1177/1010539512469246

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Depression, quality of life, self-esteem.

129. Pal, A., Sharan, P., & Chadda, R. K. (2017). Internalised stigma and its impact in Indian outpatients with bipolar disorder. *Psychiatry Research, 258,* 158–165. https://doi.org/10.1016/j.psychres.2017.09.087

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Economic status (ES, IS), education (ES, IS), functioning (ES, IS), quality of life (ES, IS), self-esteem (ES, IS).

130. Park, K., MinHwa, L., & Seo, M. (2019). The impact of self-stigma on self-esteem among persons with different mental disorders. *International Journal of Social Psychiatry*, *65*(7–8), 558–565. doi:https://doi.org/10.1177/0020764019867352

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: self-esteem (ES, IS), experienced stigma-internalised stigma.

131. Park, S. G., Bennett, M. E., Couture, S. M., & Blanchard, J. J. (2013). Internalised stigma in schizophrenia: Relations with dysfunctional attitudes, symptoms, and quality of life. *Psychiatry Research*, *205*(1–2), 43–47. doi:https://doi.org/10.1016/j.psychres.2012.08.040

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression, negative symptoms, quality of life.

132. Pellet, J., Golay, P., Nguyen, A., Suter, C., Ismailaj, A., Bonsack, C., & Favrod, J. (2019). The relationship between self-stigma and depression among people with schizophrenia-spectrum disorders: A longitudinal study. *Psychiatry Research*, *275*, 115–119. https://doi.org/10.1016/j.psychres.2019.03.022

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Age, education, duration of illness, depression.

133. Post, F., Pardeller, S., Frajo-Apor, B., Kemmler, G., Sondermann, C., Hausmann, A., … Hofer, A. (2018). Quality of life in stabilized outpatients with bipolar I disorder: Associations with resilience, internalised stigma, and residual symptoms. *Journal of Affective Disorders*, *238*, 399–404. https://doi.org/10.1016/j.jad.2018.05.055

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Quality of life.

134. Pribadi, T., Lin, E. C.-L., Chen, P.-S., Lee, S.-K., Fitryasari, R., & Chen Teguh; (2020). Factors associated with internalised stigma for indonesian individuals diagnosed with schizophrenia in a community setting. *Journal of Psychiatric and Mental Health Nursing*, *00,* 1-11. https://doi.org/10.1111/jpm.12611

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, education, employment, marital status, sex, no of hospitalisations.

135. Pruss, L., Wiedl, K. H., & Waldorf, M. (2012). Stigma as a predictor of insight in schizophrenia. *Psychiatry Research*, *198*(2), 187–193. doi:https://doi.org/10.1016/j.psychres.2011.12.012

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Sex, age of onset, duration of illness, insight, negative symptoms, positive symptoms.

136. Ran, M. S., Zhang, T. M., Wong, I. Y. L., Yang, X., Liu, C. C., Liu, B., … Chan, C. L. W. (2018). Internalised stigma in people with severe mental illness in rural China. *The International Journal of Social Psychiatry*, *64*(1), 9–16. https://doi.org/10.1177/0020764017743999

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, economic status, education, sex.

137. Rayan, A., & Obiedate, K. (2017). The Correlates of Quality of Life Among Jordanian Patients With Schizophrenia. *Journal of the American Psychiatric Nurses Association*, *23*(6), 404–413. https://doi.org/10.1177/1078390317710498

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Age, sex, depression, quality of life.

138. Razali, S. M., Hussein, S., & Ismail, T. A. T. (2010). Perceived stigma and self-esteem among patients with schizophrenia. *International Medical Journal*, *17*(4), 255-260.

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Age, education, sex, duration of illness, no of hospitalisations, depression.

139. Ren, Z., Wang, H., Feng, B., Gu, C., Ma, Y., Chen, H., … Liu, L. (2016). An exploratory cross-sectional study on the impact of education on perception of stigma by Chinese patients with schizophrenia. *BMC Health Services Research*, *16*(1), 210. https://doi.org/10.1186/s12913-016-1424-4

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Education.

140. Reneses, B., Sevilla-Llewellyn-Jones, J., Vila-Badia, R., Palomo, T., Lopez-Micó, C., Pereira, M., … Ochoa, S. (2020). The relationships between sociodemographic, psychosocial and clinical variables. *Actas Espanolas de Psiquiatria*, *48*(3), 116–125.

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), psychopathology (ES, IS), functioning (ES, IS).

141. Rodak, J., Witusik, A., Nowakowska-Domagała, K., Pietras, T., & Mokros, Ł. (2018). Psychopathological profile and antipsychotic treatment may be linked to internalised stigma in schizophrenia – A cross-sectional study. *Postepy Psychiatrii i Neurologii, 27*(2), 77-86. doi:https://doi.org/10.5114/ppn.2018.77034

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (ES, IS), sex (ES, IS), insight (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), psychopathology (ES, IS), functioning (ES, IS).

142. Rossi, A., Amore, M., Galderisi, S., Rocca, P., Bertolino, A., Aguglia, E., … Bracale, N. (2018). The complex relationship between self-reported "personal recovery" and clinical recovery in schizophrenia. *Schizophrenia Research*, *192*, 108–112. https://doi.org/10.1016/j.schres.2017.04.040

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight, psychopathology.

143. Rüsch, N., Corrigan, P. W., Todd, A. R., & Bodenhausen, G. V. (2010). Implicit Self-Stigma in People With Mental Illness. *Journal of Nervous and Mental Disease*, *198*(2), 150–153. doi:https://doi.org/10.1097/NMD.0b013e3181cc43b5

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.

Correlates extracted: Age (PS, ES, IS), economic status* (ES, IS), education (PS, ES, IS), employment (PS, ES, IS), ethnicity* (ES, IS), sex (PS, ES, IS), duration of illness (PS, ES, IS), medication adherence (PS, ES, IS), insight (PS, ES, IS), no of hospitalisations (PS, ES, IS), support* (ES, IS).

144. Rüsch, N., Corrigan, P. W., Wassel, A., Michaels, P., Larson, J. E., Olschewski, M., … Batia, K. (2009). Self-stigma, group identification, perceived legitimacy of discrimination and mental health service use. *British Journal of Psychiatry*, *195*(6), 551–552. doi:https://doi.org/10.1192/bjp.bp.109.067157

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.

Correlates extracted: Psychopathology.

145. Rüsch, N., Corrigan, P. W., Wassel, A., Michaels, P., Olschewski, M., Wilkniss, S., & Batia, K. (2009). Ingroup perception and responses to stigma among persons with mental illness. *Acta Psychiatrica Scandinavica*, *120*(4), 320–328. doi:https://doi.org/10.1111/j.1600-0447.2009.01403.x

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.

Correlates extracted: Depression.

146. Schrank, B., Amering, M., Hay, A. G., Weber, M., & Sibitz, I. (2014). Insight, positive and negative symptoms, hope, depression and self-stigma: a comprehensive model of mutual influences in schizophrenia spectrum disorders. *Epidemiology and Psychiatric Sciences*, *23*(3), 271–279. doi:https://doi.org/10.1017/s2045796013000322

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight, depression, hopelessness, negative symptoms, positive symptoms.

147. Schwarzbold, M. L., Kern, R. S., Novacek, D. M., McGovern, J. E., Catalano, L. T., & Green, M. F. (2021). Self-stigma in psychotic disorders: Clinical, cognitive, and functional correlates in a diverse sample. *Schizophrenia Research*, *228*, 145–150. doi:https://doi.org/10.1016/j.schres.2020.12.003

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression, positive symptoms, negative symptoms.

148. Segalovich, J., Doron, A., Behrbalk, P., Kurs, R., & Romem, P. (2013). Internalisation of stigma and self-esteem as it affects the capacity for intimacy among patients with schizophrenia. *Archives of Psychiatric Nursing*, *27*(5), 231–234. doi:https://doi.org/10.1016/j.apnu.2013.05.002

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-esteem.

149. Sharaf, A. Y., Ossman, L. H., & Lachine, O. A. (2012). A cross-sectional study of the relationships between illness insight, internalised stigma, and suicide risk in individuals with schizophrenia. *International Journal of Nursing Studies*, *49*(12), 1512–1520. doi:https://doi.org/10.1016/j.ijnurstu.2012.08.006

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight, depression, self-harm/suicidality.

150. Shin, Y. J., Joo, Y. H., & Kim, J. H. (2016). Self-perceived cognitive deficits and their relationship with internalised stigma and quality of life in patients with schizophrenia. *Neuropsychiatric Disease and Treatment*, *12*, 1411–1417. doi:https://doi.org/10.2147/NDT.S108537

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, education, marital status, sex, duration of illness, anxiety, depression, negative symptoms, positive symptoms.

151. Sibitz, I., Amering, M., Unger, A., Seyringer, M. E., Bachmann, A., Schrank, B., … Woppmann, A. (2011). The impact of the social network, stigma and empowerment on the quality of life in patients with schizophrenia. *European Psychiatry*, *26*(1), 28–33. doi:https://doi.org/10.1016/j.eurpsy.2010.08.010

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: Age (PS, IS), education (PS, IS), sex (PS, IS), age of onset* (IS), duration of illness (PS, IS), no of hospitalisations (PS, IS), depression, empowerment* (IS), quality of life (PS, IS).

152. Sibitz, I., Unger, A., Woppmann, A., Zidek, T., & Amering, M. (2011). Stigma resistance in patients with schizophrenia. *Schizophrenia bulletin*, *37*(2), 316–323. doi:https://doi.org/10.1093/schbul/sbp048

Stigma aspects extracted: Percieved stigma, experienced stigma, internalised stigma.

Correlates extracted: Perceived stigma-Experienced stigma, Perceived stigma-Internalised stigma, Experienced stigma-Internalised stigma.

153. Sideli, L., Mulè, A., La Cascia, C., Barone, M. V., Seminerio, F., Sartorio, C., … La Barbera, D. (2016). Validation of the Italian version of the Devaluation consumers' Scale and the Devaluation Consumers Families Scale. *Journal of Psychopathology*, *22*(4), 251–257.

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Duration of illness, psychopathology, functioning.

154. Singh, A., Grover, S., & Mattoo, S. K. (2016). Validation of Hindi Version of Internalised Stigma of Mental Illness Scale. *Indian Journal of Social Psychiatry, 32*(2), 104-114. doi:https://doi.org/10.4103/0971-9962.181089

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Experienced stigma-Internalised stigma.

155. Singh, A., Mattoo, S. K., & Grover, S. (2016). Stigma and its correlates in patients with schizophrenia attending a general hospital psychiatric unit. *Indian Journal of Psychiatry*, *58*(3), 291–300. doi:https://doi.org/10.4103/0019-5545.192024

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), economic status (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS).

156. Singla, N., Avasthi, A., & Grover, S. (2020). Recovery and its correlates in patients with schizophrenia. *Asian Journal of Psychiatry*, *52*, 102,162. doi:https://doi.org/10.1016/j.ajp.2020.102162

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Recovery.

157. Smilowitz, S., Aftab, A., Aebi, M., Levin, J., Tatsuoka, C., & Sajatovic, M. (2019). Age-Related Differences in Medication Adherence, Symptoms, and Stigma in Poorly Adherent Adults With Bipolar Disorder. *Journal of Geriatric Psychiatry and Neurology*, *33*(5), 250-255. https://doi.org/10.1177/0891988719874116

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age.

158. Spivak, S., Cullen, B., Eaton, W. W., Rodriguez, K., & Mojtabai, R. (2019). Financial hardship among individuals with serious mental illness. *Psychiatry Research*, *282*, 112,632. doi:https://doi.org/10.1016/j.psychres.2019.112632

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Economic status.

159. Staring, A. B. P., der Gaag, M., den Berge, M., Duivenvoorden, H. J., & Mulder, C. L. (2009). Stigma moderates the associations of insight with depressed mood, low self-esteem, and low quality of life in patients with schizophrenia spectrum disorders. *Schizophrenia Research*, *115*(2–3), 363–369.

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Insight, depression, quality of life, self-esteem.

160. Sum, M. Y., Chan, S. K. W., Tse, S., Bola, J. R., Ng, R. M. K., Hui, C. L. M., … Chen, E. Y. H. (2020). Elucidating the relationship between internalised stigma, cognitive insight, illness severity, and functioning in patients with schizophrenia using a path analysis approach. *Journal of Mental Health*. doi:https://doi.org/10.1080/09638237.2020.1836553

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (ES, IS), education (ES, IS), duration of illness (ES, IS), sex (ES, IS), psychopathology (ES, IS), functioning (ES, IS).

161. Switaj, P., Grygiel, P., Anczewska, M., & Wciorka, J. (2015). Experiences of discrimination and the feelings of loneliness in people with psychotic disorders: The mediating effects of self-esteem and support seeking. *Comprehensive Psychiatry*, *59*, 73–79. doi:https://doi.org/10.1016/j.comppsych.2015.02.016

Stigma aspects extracted: Experienced stigma.

Correlates extracted: self-esteem.

162. Switaj, P., Grygiel, P., Anczewska, M., & Wciorka, J. (2014). Loneliness mediates the relationship between internalised stigma and depression among patients with psychotic disorders. *International Journal of Social Psychiatry*, *60*(8), 733–740. doi:https://doi.org/10.1177/0020764013513442

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression, negative symptoms, positive symptoms, functioning.

163. Switaj, P., Grygiel, P., Chrostek, A., & Anczewska, M. (2021). Disentangling the relationships between interpersonal competence, social network, social support and the experience of being stigmatised among people with psychotic disorders: A path modelling approach. *Schizophrenia Research*, *228*, 305–310. https://doi.org/10.1016/j.schres.2020.12.033

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Perceived support.

164. Switaj, P., Grygiel, P., Chrostek, A., Nowak, I., Wciorka, J., & Anczewska, M. (2017). The relationship between internalised stigma and quality of life among people with mental illness: are self-esteem and sense of coherence sequential mediators? *Quality of Life Research*, *26*(9), 2471–2478. https://doi.org/10.1007/s11136-017-1596-3

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Psychopathology, quality of life, self-esteem.

165. Switaj, P., Wciorka, J., Smolarska-Switaj, J., & Grygiel, P. (2009). Extent and predictors of stigma experienced by patients with schizophrenia. *European Psychiatry*, *24*(8), 513–520. doi:https://doi.org/10.1016/j.eurpsy.2009.06.003

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Age, education, employment, marital status, sex, age of onset, duration of illness, insight, no of hospitalisations, depression, psychopathology, negative symptoms, positive symptoms, functioning, quality of life.

166. Tan, B. L., Lim, M. W. Z., Xie, H., Li, Z., & Lee, J. (2020). Defining occupational competence and occupational identity in the context of recovery in schizophrenia. *American Journal of Occupational Therapy*, *74*(4). doi:https://doi.org/10.5014/ajot.2020.034843

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Functioning.

167. Tanabe, Y., Hayashi, K., & Ideno, Y. (2016). The Internalised Stigma of Mental Illness (ISMI) scale: validation of the Japanese version. *BMC Psychiatry*, *16*, 116.doi:https://doi.org/10.1186/s12888-016-0825-6

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Depression (ES, IS), empowerment* (IS), self-esteem (ES, IS).

168. Tang, I. C., & Wu, H. C. (2012). Quality of Life and Self-Stigma in Individuals with Schizophrenia. *Psychiatric Quarterly*, *83*(4), 497–507. doi:https://doi.org/10.1007/s11126-012-9218-2

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Quality of life (ES, IS), experienced stigma-internalised stigma.

169. Temesgen, W. A., Chien, W. T., Valimaki, M. A., & Bressington Worku Animaw (2020). Predictors of subjective recovery from recent-onset psychosis in a developing country: A mixed-methods study. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services*, *55,* 1187-1199. https://doi.org/10.1007/s00127-020-01853-5

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, economic status, duration of illness, psychopathology, negative symptoms, positive symptoms, functioning, quality of life, recovery, support.

170. Tesfaw, G., Kibru, B., & Ayano, G. (2020). Prevalence and factors associated with higher levels of perceived stigma among people with schizophrenia Addis Ababa, Ethiopia. *International Journal of Mental Health Systems*, *14*(1), 19. https://doi.org/10.1186/s13033-020-00348-9

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Sex.

171. Thoits, P. A., & Link, B. G. (2016). Stigma Resistance and Well-being among People in Treatment for Psychosis. *Society and Mental Health*, *6*(1),

1–20. doi:https://doi.org/10.1177/2156869315591367

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.

Correlates extracted: Education (PS, ES, IS), ethnicity*(ES, IS), sex (PS, ES, IS), depression (PS, ES, IS), quality of life (PS, ES, IS), self-esteem (PS, ES, IS), perceived stigma-experienced stigma, perceived stigma-internalised stigma, experienced stigma-internalised stigma.

172. Thome, E. S., Dargel, A. A., Migliavacca, F. M., Potter, W. A., Jappur, D. M. C., Kapczinski, F., & Cereser, K. M. (2012). Stigma experiences in bipolar patients: The impact upon functioning. *Journal of Psychiatric and Mental Health Nursing*, *19*(8), 665–671.

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Depression, functioning.

173. Thornicroft, G., Brohan, E., Rose, D., Sartorius, N., & Leese, M. (2009). Global pattern of experienced and anticipated discrimination against people with schizophrenia: a cross-sectional survey. *The Lancet, 373*(9661), 408–415. doi:https://doi.org/10.1016/S0140-6736(08)61817-6

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Education, employment, sex, duration of illness.

174. Tirfessa, K., Lund, C., Medhin, G., Hailemichael, Y., Habtamu, K., Fekadu, A., & Hanlon, C. (2019). Food insecurity and work impairment in people with severe mental disorders in a rural district of Ethiopia: a cross-sectional survey. *Social Psychiatry and Psychiatric Epidemiology*, *54*(9), 1055–1066. doi:https://doi.org/10.1007/s00127-019-01709-7

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Functioning.

175. Tourino, R., Acosta, F. J., Giraldez, A., Alvarez, J., Gonzalez, J. M., Abelleira, C., … Rodriguez, C. J. (2018). Suicidal risk, hopelessness and depression in patients with schizophrenia and internalised stigma. *Actas Espanolas de Psiquiatria*, *46*(2), 33–41.

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, sex, depression, self-harm/suicidality, self-compassion.

176. Treichler, E. B. H., & Lucksted, A. A. (2018). The Role of Sense of Belonging in Self-Stigma Among People With Serious Mental Illnesses. *Psychiatric Rehabilitation Journal*, *41*(2), 149–152. doi:https://doi.org/10.1037/prj0000281

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Ethnicity (ES, IS), sex (ES, IS), experienced-internalised stigma.

177. Tsang, H. W. H., Fung, K. M. T., & Corrigan, P. W. (2009). Psychosocial and socio-demographic correlates of medication compliance among people with schizophrenia. *Journal of Behavior Therapy and Experimental Psychiatry*, *40*(1), 3–14. doi:https://doi.org/10.1016/j.jbtep.2008.02.003

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Medication adherence.

178. Ucok, A., Karadayi, G., Emiroglu, B., & Sartorius, N. (2013). Anticipated discrimination is related to symptom severity, functionality and quality of life in schizophrenia. *Psychiatry Research*, *209*(3), 333–339. doi:https://doi.org/10.1016/j.psychres.2013.02.022

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Duration of illness, depression, psychopathology, functioning.

179. Uhlmann, C., Kaehler, J., Harris, M. S. H., Unser, J., Arolt, V., & Lencer, R. (2014). Negative impact of self-stigmatisation on attitude towards medication adherence in patients with psychosis. *Journal of Psychiatric Practice*, *20*(5), 405-410. doi:https://doi.org/10.1097/01.pra.0000454787.75106.ae

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Medication adherence (ES, IS), experienced stigma-internalised stigma.

180. Uzer-Kremers, L., Bralet, M. C., Angerville, B., Jeanblanc, J., Naassila, M., Pierrefiche, O., & Dervaux, A. (2020). P.546 Is self-compassion linked to treatment adherence in schizophrenia? *European Neuropsychopharmacology*, *40*(Supplement 1), S307–S308. https://doi.org/10.1016/j.euroneuro.2020.09.398

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Medication adherence, self-compassion.

181. Valiente, C., Provencio, M., Espinosa, R., Duque, A., & Everts, F. (2015). Insight in paranoia: The role of experiential avoidance and internalised stigma. *Schizophrenia Research, 164*(1-3), 214-220. doi:https://doi.org/10.1016/j.schres.2015.03.010

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Insight.

182. van Zelst, C., Van Nierop, M., Oorschot, M., Myin-Germeys, I., Van Os, J., & Delespaul, P. (2014). Stereotype awareness, self-esteem and psychopathology in people with psychosis. *PLoS ONE*, *9* (2), e88586. doi:https://doi.org/10.1371/journal.pone.0088586

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Self-esteem.

183. van Zelst, C., van Nierop, M., van Dam, D. S., Bartels-Velthuis, A. A., Delespaul, P., & Investigators, G. R. P. (2015). Associations between Stereotype Awareness, Childhood Trauma and Psychopathology: A Study in People with Psychosis, Their Siblings and Controls. *Plos One*, *10*(2). doi:https://doi.org/10.1371/journal.pone.0117386

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Psychopathology.

184. Vass, V., Morrison, A. P., Law, H., Dudley, J., Taylor, P., Bennett, K. M., & Bentall, R. P. (2015). How stigma impacts on people with psychosis: The mediating effect of self-esteem and hopelessness on subjective recovery and psychotic experiences. *Psychiatry Research*, *230*(2), 487–495. doi:https://doi.org/10.1016/j.psychres.2015.09.042

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Hopelessness, psychopathology, negative symptoms, positive symptoms, recovery, self-esteem.

185. Vass, V., Sitko, K., West, S., & Bentall, R. P. (2017). How stigma gets under the skin: The role of stigma, self-stigma and self-esteem in subjective recovery from psychosis. *Psychosis: Psychological, Social and Integrative Approaches, 9*(3), 235–244. doi:https://doi.org/10.1080/17522439.2017.1300184

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (ES, IS), sex (ES, IS), recovery (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS),

self-esteem (ES, IS), experienced stigma-internalised stigma.

186. Vauth, R., Kleim, B., Wirtz, M., & Corrigan, P. W. (2007). Self-efficacy and empowerment as outcomes of self-stigmatising and coping in schizophrenia. *Psychiatry Research*, *150*(1), 71–80. doi:https://doi.org/10.1016/j.psychres.2006.07.005

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Depression, psychopathology, negative symptoms, positive symptoms, quality of life.

187. Vazquez, G. H., Kapczinski, F., Magalhaes, P. V, Cordoba, R., Lopez Jaramillo, C., Rosa, A. R., … Tohen, M. (2011). Stigma and functioning in patients with bipolar disorder. *Journal of Affective Disorders*, *130*(1–2), 323–327. doi:https://doi.org/10.1016/j.jad.2010.10.012

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Functioning.

188. Verdoux, H., Quiles, C., Bon, L., Chéreau-Boudet, I., Dubreucq, J., Legros-Lafarge, E., … Franck, N. (2020). Characteristics associated with self-reported medication adherence in persons with psychosis referred to psychosocial rehabilitation centers. *European Archives of Psychiatry and Clinical Neuroscience*. doi:https://doi.org/10.1007/s00406-020-01207-x

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Medication adherence.

189. Villagonzalo, K.-A., Leitan, N., Farhall, J., Foley, F., McLeod, B., & Thomas, N. (2018). Development and validation of a scale for self-efficacy for personal recovery in persisting mental illness. *Psychiatry Research*, *269*, 354–360. https://doi.org/10.1016/j.psychres.2018.08.093

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-efficacy.

190. Violeau, L., Dudilot, A., Roux, S., & Prouteau, A. (2020). How internalised stigma reduces self-esteem in schizophrenia: The crucial role of off-line metacognition. *Cognitive Neuropsychiatry*, *25*(2), 154–161. https://doi.org/10.1080/13546805.2020.1714570

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-esteem.

191. Vrbova, K., Kamaradova, D., Latalova, K., Ociskova, M., Prasko, J., Mainerova, B., … Tichackova, A. (2014). Self-stigma and adherence to medication in patients with psychotic disorders - cross-sectional study. *Neuroendocrinology Letters*, *35*(7), 645–652.

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, age of onset, no of hospitalisations, medication adherence.

192. Vrbova, K., Prasko, J., Holubova, M., Kamaradova, D., Ociskova, M., Marackova, M., … Zatkova, M. (2016). Self-stigma and schizophrenia: A cross-sectional study. *Neuropsychiatric Disease and Treatment*, *12*, 3011–3020. https://doi.org/10.2147/NDT.S120298

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Age (ES, IS), employment (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), no of hospitalisations (ES, IS), psychopathology (ES, IS).

193. Vrbova, K., Prasko, J., Ociskova, M., & Holubova, M. (2017). Comorbidity of schizophrenia and social phobia - impact on quality of life, hope, and personality traits: A cross sectional study. *Neuropsychiatric Disease and Treatment*, *13*, 2073–2083. https://doi.org/10.2147/NDT.S141749

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Social phobia extracted to anxiety correlate.

194. Vrbova, K., Prasko, J., Ociskova, M., Holubova, M., Kantor, K., Kolek, A., … Slepecky, M. (2018). Suicidality, self-stigma, social anxiety and personality traits in stabilized schizophrenia patients - A cross-sectional study. *Neuropsychiatric Disease and Treatment*, *14*, 1415–1424. https://doi.org/10.2147/NDT.S162070

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-harm/suicidality.

195. Vrbova, K., Prasko, J., Ociskova, M., Kamaradova, D., Marackova, M., Holubova, M., … Latalova, K. (2017). Quality of life, self-stigma, and hope in schizophrenia spectrum disorders: a cross-sectional study. *Neuropsychiatric Disease and Treatment*, *13*, 567–576. doi:https://doi.org/10.2147/ndt.s122483

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Quality of life.

196. Vrbova, K., Prasko, J., Holubova, M., Slepecky, M., & Ociskova, M. (2018). Positive and negative symptoms in schizophrenia and their relation to depression, anxiety, hope, self-stigma and personality traits - A cross-sectional study. *Neuroendocrinology Letters*, *39*(1), 9–18.

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: General psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS).

197. Wang, X. Q., Petrini, M. A., & Morisky, D. E. (2017). Predictors of quality of life among Chinese people with schizophrenia. *Nursing & Health Sciences*, *19*(2), 142–148. https://doi.org/10.1111/nhs.12286

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: Age (PS, IS), duration of illness (PS, IS), medication adherence*(IS), quality of life (PS, IS), perceived stigma-internalised stigma.

198. Wastler, H., Lucksted, A., Phalen, P., & Drapalski, A. (2020). Internalised stigma, sense of belonging, and suicidal ideation among veterans with serious mental illness. *Psychiatric Rehabilitation Journal*, *43*(2), 91–96. doi:https://doi.org/10.1037/prj0000386

Stigma aspects extracted: Internalised stigma.

Correlates extracted: self-harm/suicidality.

199. Waynor, W. R., Eissenstat, S. J., Yanos, P. T., Reinhardt-Wood, D., Taylor, E., Karyczak, S., & Lu, W. L. (2020). The role of illness identity in assertive community treatment. *Rehabilitation Counseling Bulletin*, *63*(4), 216-223. doi:https://doi.org/10.1177/0034355219886916

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-efficacy, psychopathology.

200. Wciorka, J., Switaj, P., & Anczewska, M. (2015). The sense of empowerment in the early stage of recovery from psychosis. *Psychosis-Psychological Social and Integrative Approaches*, *7*(3), 249–260. doi:https://doi.org/10.1080/17522439.2014.910253

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Empowerment.

201. Werner, P., Aviv, A., & Barak, Y. (2008). Self-stigma, self-esteem and age in persons with schizophrenia. *International Psychogeriatrics*, *20*(1), 174–187. doi:https://doi.org/10.1017/s1041610207005340

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Self-esteem.

202. West, M. L., Vayshenker, B., Rotter, M., & Yanos, P. T. (2015). The influence of mental illness and criminality self-stigmas and racial self-concept on outcomes in a forensic psychiatric sample. *Psychiatric Rehabilitation Journal*, *38*(2), 150–157. doi:https://doi.org/10.1037/prj0000133

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Medication adherence, depression, self-esteem.

203. Williams, C. C., Almeida, M., & Knyahnytska, Y. (2015). Towards a Biopsychosociopolitical Frame for Recovery in the Context of Mental Illness. *British Journal of Social Work*, *45*, 9–26. doi:https://doi.org/10.1093/bjsw/bcv100

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Insight, hopelessness, psychopathology, recovery.

204. Wood, L., Burke, E., Byrne, R., Enache, G., & Morrison, A. P. (2016). Semi-structured Interview Measure of Stigma (SIMS) in psychosis: Assessment of psychometric properties. *Schizophrenia Research*, *176*(2–3), 398–403. doi:https://doi.org/10.1016/j.schres.2016.06.008

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Depression, hopelessness, recovery, self-esteem.

205. Wood, L., Byrne, R., Burke, E., Enache, G., & Morrison, A. P. (2017). The impact of stigma on emotional distress and recovery from psychosis: The mediatory role of internalised shame and self-esteem. *Psychiatry Research*, *255*, 94–100. https://doi.org/10.1016/j.psychres.2017.05.016

Stigma aspects extracted: Perceived stigma, experienced stigma.

Correlates extracted: Depression (PS, ES) hopelessness* (ES), recovery* (ES), self-esteem (PS, ES) perceived stigma-experienced stigma.

206. Wood, L., & Irons, C. (2017). Experienced stigma and its impacts in psychosis: The role of social rank and external shame. *Psychology and Psychotherapy: Theory, Research and Practice, 90*(3), 419-431. doi:https://doi.org/10.1111/papt.12127

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Depression, positive symptoms, recovery.

207. Yang, X., & Mak, W. W. S. (2017). The Differential Moderating Roles of Self-Compassion and Mindfulness in Self-Stigma and Well-Being Among People Living with Mental Illness or HIV. *Mindfulness*, *8*(3), 595–602. doi:https://doi.org/10.1007/s12671-016-0635-4

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Self-compassion.

208. Yanos, P. T., Roe, D., Markus, K., & Lysaker, P. H. (2008). Pathways Between Internalised Stigma and Outcomes Related to Recovery in Schizophrenia Spectrum Disorders. *Psychiatric Services*, *59*(12), 1437–1442. doi:https://doi.org/10.1176/appi.ps.59.12.1437

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Ethnicity (ES, IS), sex (ES, IS), age at first hospitalisation (ES, IS), no of hospitalisations (ES, IS), Insight (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), self-esteem (ES, IS).

209. Yanos, P. T., West, M. L., Gonzales, L., Smith, S. M., Roe, D., & Lysaker, P. H. (2012). Change in internalised stigma and social functioning among persons diagnosed with severe mental illness. *Psychiatry Research*, *200*(2–3), 1032–1034. doi:https://doi.org/10.1016/j.psychres.2012.06.017

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Functioning.

210. Yildiz, M., Kiras, F., Incedere, A., & Abut, F. B. (2018). Development of self-stigma inventory for patients with schizophrenia (SSI-P): Reliability and validity study in turkey. *Schizophrenia Bulletin*, *44* (Supplement 1), S211. https://doi.org/10.1093/schbul/sby016.518

Stigma aspects extracted: Experienced stigma, internalised stigma.

Correlates extracted: Depression (IS), hopelessness (IS), positive symptoms (IS), psychopathology (IS), functioning (IS), self-esteem (IS), experienced stigma-internalised stigma.

211. Yilmaz, E., & Okanli, A. (2015). The effect of internalised stigma on the adherence to treatment in patients with schizophrenia. *Archives of Psychiatric Nursing*, *29*(5), 297–301. doi:https://doi.org/10.1016/j.apnu.2015.05.006

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Medication adherence.

212. Yokoyama, K., Morimoto, T., Ichihara-Takeda, S., Yoshino, J., Matsuyama, K., & Ikeda, N. (2019). Relationship between self-disclosure to first acquaintances and subjective well-being in people with schizophrenia spectrum disorders living in the community. *PLoS ONE*, *14*(10), e0223819. https://doi.org/10.1371/journal.pone.0223819

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Sex, quality of life, self-esteem.

213. Yoo, T., Kim, S. W., Kim, S. Y., Lee, J. Y., Kang, H. J., Bae, K. Y., … Yoon, J. S. (2015). Relationship between Suicidality and Low Self-esteem in Patients with Schizophrenia. *Clinical Psychopharmacology and Neuroscience*, *13*(3), 296–301. doi:https://doi.org/10.9758/cpn.2015.13.3.296

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Hopelessness, depression, psychopathology, self-esteem.

214. Young, D. K. W., & Ng, P. Y. N. (2016). The prevalence and predictors of self-stigma of individuals with mental health illness in two Chinese cities. *International Journal of Social Psychiatry*, *62*(2), 176–185. doi:https://doi.org/10.1177/0020764015614596

Stigma aspects extracted: Internalised stigma.

Correlates extracted: Age, sex, duration of illness, no of hospitalisations, recovery, quality of life, self-esteem.

215. Zhang, T.-M., Wong, I. Y.-L., Yu, Y.-H., Ni, S.-G., He, X.-S., Bacon-Shone, J., … Ran, M.-S. (2018). An integrative model of internalised stigma and recovery-related outcomes among people diagnosed with schizophrenia in rural china. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services*, *54*(8), 911–918. https://doi.org/10.1007/s00127-018-1646-3

Stigma aspects extracted: Experienced stigma, Internalised stigma.

Correlates extracted: Age (IS), education (IS), sex (IS), perceived support (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS), experienced stigma-internalised stigma.

216. Zäske, H., Linden, M., Degner, D., Jockers-Scherubl, M., Klingberg, S., Klosterkotter, J., … Gaebel, W. (2018). Stigma experiences and perceived stigma in patients with first-episode schizophrenia in the course of 1 year after their first in-patient treatment. *European Archives of Psychiatry and Clinical Neuroscience*, *269*(4), 459–468. https://doi.org/10.1007/s00406-018-0892-4

Stigma aspects extracted: Perceived stigma, experienced stigma.

Correlates extracted: Depression (PS, ES), psychopathology (PS, ES), functioning (PS, ES), quality of life (PS, ES), self-esteem (PS, ES), perceived stigma-experienced stigma.

Table B1
List of stigma scales included.

Stigma scale	Authors	Description	Personal stigma aspect(s) extracted from measure:		
			Perceived	Experienced	Internalised
Internalised Stigma of Mental Illness Inventory (ISMI)	Ritsher et al. (2003)	29-item questionnaire. Includes five subscales: Alienation (6 items) Stereotype endorsement (7 items), Social withdrawal (6 items), Discrimination experience (5 items) and Stigma resistance (5 items). The scale total score is used to assess internalised stigma. However, based on findings that the Stigma resistance subscale is a separate construct to internalised stigma (e.g. Lysaker et al., 2007), several studies choose to exclude this subscale and base the total score on the remaining 24-items. Each item is rated on a four-point Likert scale ranging from 1 = strongly disagree to 4 = strongly agree. Internal consistency of the 29 and 24-item ISMI scale were excellent (α = 0.90 & 0.91). Internal consistency of the subscales were good: Alienation α = 0.79, Stereotype endorsement α = 0.72, Discrimination experience α = 0.75, Social Withdrawal α = 0.80, whereas the Stigma Resistance subscale showed poor internal consistency: α = 0.58 (Ritsher et al., 2003).		✓ n = 64	✓ n = 139
Perceived Devaluation and Discrimination Scale (PDD)	Link (1987)	12-item questionnaire. Measures perceived discrimination (6 items) and perceived devaluation (6 items). Each item is scored on a six-point Likert scale, ranging from 1 = strongly disagree to 6 = strongly agree. Internal consistency of the PDD is good: α = 0.86 - α = 0.88 (Link, 1987; Link et al., 2001).	✓ n = 25		
Self-Stigma of Mental Illness Scale (SSMIS)	Corrigan et al. (2006)	40-item questionnaire. Includes four subscales: Stereotype awareness (10 items), Stereotype agreement (10 items), Self-concurrence (10 items), Self-esteem decrement (10 items). The stereotype awareness subscale is used to measure perceived stigma, whereas the remaining subscales represent self-stigma aspects. Most studies using the SSMIS report correlates of each subscale separately. Correlates on internalised stigma were obtained by averaging the self-concurrence and self-esteem decrement subscales as these represent the change in self-concept due to internalisation of stereotypes (Corrigan et al., 2011). Each item is rated on a 9-point Likert scale ranging from 0 = strongly disagree to 9 = strongly agree). Internal consistency of the subscales was good to excellent: Stereotype Awareness α = 0.91, Stereotype Agreement α = 0.72, Self-concurrence α = 0.81, Self-esteem decrement α = 0.88 (Corrigan et al., 2006).	✓ n = 5		✓ n = 16
Mental Health Consumer's Experience of Stigma (CESQ)	Wahl (1999)	21-item questionnaire measuring experiences of stigma. Includes questions about stigma (9 items) and discrimination (12 items) experiences. The questionnaire was adapted by Dickerson et al. (2002) by changing the original term "mental health consumers" to "persons with mental illness". Items are rated on a 5-point Likert scale ranging from never to very often and then summed for each subscale score. Whilst psychometric properties were not reported by Wahl (1999), the scale has been validated by other studies, generally showing an acceptable to good internal consistency of the total scale (α = 0.635–0.861 (Lv et al., 2013; Treichler & Lucksted, 2018). Since the discrimination subscale has been shown to have low internal consistency (e.g see Switaj et al., 2013), several studies included in the current review only reported the stigma experiences subscale (α = 0.70 - 0.81; Jahn et al., 2020; Markiewicz & Hintze, 2016; Switaj et al., 2009; Switaj et al., 2021). For this reason, in the two instances where studies reported both subscales, data was extracted from the stigma experiences subscale only (Dickerson et al., 2002; Lu & Wang, 2012).		✓ n = 10	
The Discrimination and Stigma Scale (DISC)	Brohan et al. (2013)	The DISC scale (latest version: DISC-12) is an interview based measure used to collect quantitative and qualitative information on experiences of discrimination (Brohan et al., 2013). It has four subscales; Unfair treatment (Items 1-21) assessing discrimination experiences in a range of areas, Stopping self (items 22-25) due to anticipated stigma, Overcoming stigma (items 26-27) and Positive treatment (items 28.32). For the current meta-analysis data from the Unfair treatment subscale was extracted based on recommendations from Brohan et al. (2013). The Stopping self subscale was not extracted as a measure of perceived stigma, as even though it could be seen as a proxy measure for perceived stigmatisation, it has been established that reactions to perceived stigma can vary, where not everyone react by withdrawing		✓ n = 9	

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Table B1 (*continued*)

Stigma scale	Authors	Description	Personal stigma aspect(s) extracted from measure:		
			Perceived	Experienced	Internalised
		or limiting themselves in their every-day lives (e.g. Corrigan and Watson, 2002). Items are scored as 0 = no difference, 1 = a little, 2 = moderately or 3 = a lot (or A = not applicable). The unfair treatment DISC scale has shown acceptable internal consistency: α = 0.78 (Brohan et al., 2013).			
Self-Stigma Scale -Short form (SSS-S)	Mak and Cheung (2010)	9-item questionnaire. Includes three subscales all measuring aspects of internalised stigma including: Self-stigmatising cognitions (SSC, 3 items), Self-stigmatising affect (SSA, 3 items) Self-stigmatising behaviours (SSB, 3 items). The scale is rated on a 4-point Likert scale ranging from 1 = strongly disagree to 4 = strongly agree. The total scale has been shown to have excellent internal consistency (α = 0.91). Internal consistency of the subscales is good: SSC α = 0.81, SSA α = 0.84, SSB α = 0.80 (Mak & Cheung, 2010).			✓ n = 8
King Stigma Scale (KSS)	King et al. (2007)	28-item questionnaire. The questionnaire has three subscales addressing experienced discrimination (12 items), disclosure* (11 items) and positive aspects of mental illness (5 items). In most instances, correlates of the subscales were reported separately whereby data from the discrimination subscale was extracted. The KSS is rater on a 5-point Likert scale ranging from 0 = strongly disagree to 4 = strongly agree. Internal consistency of the total scale is good α = 0.87, with internal consistency of the subscales being α = 0.87 for the discrimination subscale, α = 0.85 for the disclosure subscale, with questionable internal consistency (α = 0.64) for the positive aspects subscale (King et al., 2007).		✓ n = 7	
Stigma Inventory for Mental Illness (SIMI)	Karidi et al. (2014)	12-item questionnaire including two subscales: Perceived stigmatisation (8 items) and self-image assessing self-stigma (4 items). The scale is rated on a 5-point Likert scale ranging from 1 = no never to 5 = always. Internal consistency of the total scale is excellent (α = 0.90), with internal consistency of the subscales being α = 0.85 for the perceived stigma subscale, α = 0.75 for the self-image subscale (Karidi et al., 2014).	✓ n = 2		✓ n = 2
Devaluation of Consumers Scale (DCS)	Struening et al. (2001)	8-item questionnaire similar to the PDD (Link, 1987), the DCS assesses perceived devaluation including 3 factors: Status reduction (5 items), Role restriction (2 items) and friendship refusal (1 item) all assessing aspects of perceived stigmatisation. All items are rated on a 4-point Likert scale from 1 = strongly disagree to 4 = strongly disagree . Internal consistency of the DCS was shown to be good α = 0.82 (Struening et al., 2001).	✓ n = 3		
Inventory of Stigmatising Experiences (ISE)	Stuart, Milev & Koller (2005)	17-items stigma questionnaire, used to assess people's experiences of stigma and its impact in a range of areas. The scale has two subscales: The Stigma Experiences Scale (SES, 10 items) and the Stigma Impact Scale (SIS, 7 items). For the current meta-analysis the SES subscale was used to extract data on experienced stigma. Items in the SES are coded into binary variables: 0 = absence of stigma experience and 1 = presence of stigma, with a total score ranging from 0 to 10. The reliability coefficient for the SES scale is good: KR-20 = 0.83 (Stuart et al., 2005).		✓ n = 3	
Internalised Stigma Scale	Link, Wells, Phelan & Yang (2015)	8-item questionnaire assessing aspects of internalised stigma including items capturing feelings of shame, embarrassment and feeling very different from others based on having a mental illness. The first five items are rated on a 7-point Likert scale ranging from 0 = Not at all to 6 = Very strongly, whereas the latter three are rated on a 4-point scale rating from 0 = never to 4 = very often. However, as the scale includes items scored both 0-6 and 0-4, when summing the scale, the latter items are recoded so that never equals 0, almost never 1.5, sometimes 3, fairly often 4.5, very often 6. The scale has shown good internal consistency: α = 0.89 (Link et al., 2015).			✓ n = 3
Self-Esteem and Stigma Questionnaire (SE/SQ):	Hayward, Wong, Bright & Lam (2002)	14-item questionnaire. Includes eight items on perceived stigmatisation (SQ) which are based on Link (1987) PDD scale, and six items on self-esteem (SE). The stigma scale items (SQ) on perceived stigma were extracted for the current meta-analysis. All items are rated on 6-point Likert scale ranging from 1 = strongly agree to 6 = strongly disagree. Internal consistency is good: α = 0.80 (Hayward et al., 2002).	✓ n = 2		
Self-Stigma Questionnaire (SSQ)	Ochoa et al. (2015)	14-item questionnaire addressing self-stigma. This measure includes items relating to negative self-image due to illness, perceived capabilities, and concealment of one's mental health condition. Items are rated on a 7-point Likert scale ranging from 1 = strongly agree to 7 = strongly disagree. Internal consistency for the SSQ is strong, ranging between α = 0.88 to α = 0.90 (Ochoa et al., 2015).			✓ n = 3
Semi-structured Interview Measure of Stigma (SIMS)	Wood et al. (2016)	11-item semi-structured interview (10 scored items), that assesses elements of perceived, experienced and internalised stigma. The interview sections are rated on 5-point Likert scale, ranging from 0 = no impact/experience to 4 = severe impact/experience. When rating,	✓ n = 1	✓ n = 1	**

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Table B1 (*continued*)

Stigma scale	Authors	Description	Personal stigma aspect(s) extracted from measure:		
			Perceived	Experienced	Internalised
		the interviewer must take into consideration the frequency, duration, amount of distress, intensity of distress, and impacts on day to day functioning. All items are rated on the interviewees experiences in the past month. The scale has been shown to have good internal consistency: α = 0.87 (Wood et al., 2016).			
Multidimensional Scale of Perceived Discrimination (MSPD)	Molero, Recio, García-Ael, Fuster and Sanjuán (2013)	20-item questionnaire including four subscales two measuring perceived stigmatisation: Blatant group discrimination (BGD; 7 items) and Subtle Group Discrimination (SGD; 3 items), and two subscales measuring discrimination experiences: Blatant Individual Discrimination (BID; 7 items) and Subtle Individual Discrimination (SID; 3 items). Participants indicate on a 5-point Likert scale the extent to which they agree with each statement. For the current meta-analysis, the one study using this questionnaire only used the first two subscales measuring perceived stigma. Internal consistency for the full scale is excellent: α = 0.94, and good for each of the subscales: BGD α = 0.88, SGD α = 0.79, BID α = 0.89, SID α = 0.84).	✓ n = 1		
Illness Related Stress Scale	Shahar, Weinberg, McGlashan and Davidson (2010)	14-item measure, seven items asking about exposure to community violence and seven items asking about exposure to stigma experiences. The exposure to stigma questions are based in Link's (1987) PDD but is reformulated to refer to actual discrimination experiences. Correlates of the exposure to stigma subscale were extracted for the meta-analysis. The items are rated on a 4-point Likert ranging from 0 = did not occur to 3 = Occurred many times. The seven-item exposure to stigma subscale had good internal consistency α = 0.73 - 0.84 (Noyman-Veksler et al., 2013).		✓ n = 1	
Burden due to Stigma Experiences (B-STE)	Zäske et al. (2016)	5-item questionnaire rating frequency of stigma and discrimination experiences in a range of areas. Items are rated on a 5-point Likert scale ranging from 1 = never to 5 = very often. The scale was found to have good internal consistency: α = 0.796 (Zäske et al., 2016).		✓ n = 1	
Self-Stigma Inventory for Patients (SSI-P)	Yildiz et al. (2018)	17-item questionnaire measure of self-stigma. Includes three subscales: Perceived devaluation (mainly in regards to a devalued self-image closer to the construct of self-stigma; 8 items), Internalised stereotypes & social withdrawal (7 items) and concealment of the illness (2 items). The scale's total score was used to extract data on internalised stigma. Items are rated on a 5-point Likert scale ranging from 1 = do not agree to 5 = totally agree. The total scale was found to have excellent internal consistency: α = 0.93, with subscale alpha coefficients being α = 0.91 for perceived devaluation, α = 0.87 for the internalised stereotypes & social withdrawal and α = 0.60 for the concealment of the illness.			✓ n = 1

One included study (Kao et al., 2016) used both the ISMI scale to assess internalised stigma and the total score of the Perceived Psychiatric Stigma Scale (PPSS; Han & Chen, 2008) to assess perceived psychiatric stigmatisation. However, since the PPSS includes items on perceived/experienced stigma as well as items regarding self-depreciation (similar to self-stigma), where the measure has been used to assess self-stigma in other studies (Han, Chen & Li, 2016), only the ISMI scale was extracted from this record.

* Whilst the lack of disclosure/withdrawal or avoidance can reflect self-stigma, these subscales were not included as measures of self-stigma in accordance with the opinion of the scale authors of the King Stigma Scale (King et al., 2007) highlighting that reluctance to disclose ones mental health status can arise, not exclusively from internalising a negative self-image, but also as a means to cope with experienced discrimination or to cope with fear of prejudice or rejection.

** In the study where this measure was used to examine internalised stigma (Wood et al. 2016), the ISMI was also used and therefore this was extracted instead due to being a more common measure.

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Yanos, P. T., Roe, D., & Lysaker, P. H. (2010). The impact of illness identity on recovery from severe mental illness. *American Journal of Psychiatric Rehabilitation, 13*, 73–93. https://doi.org/10.1080/15487761003756860.

Appendix 2.

List of studies included in meta-analysis.

PS = perceived stigma, ES = Experienced stigma, IS = Internalised stigma

* = correlate available but not extracted due to < five other records reporting on this correlate included.

1. Assefa, D., Shibre, T., Asher, L., & Fekadu, A. (2012). Internalized stigma among patients with schizophrenia in Ethiopia: a cross-sectional facility-based study. *BMC Psychiatry*, *12*. https://doi.org/10.1186/1471-244x-12-239

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Employment, marital status, sex, residence.

2. Au, C. H., Wong, C. S., Law, C. W., Wong, M. C., & Chung, K. F. (2019). Self-stigma, stigma coping and functioning in remitted bipolar disorder. *General hospital psychiatry*, *57*, 7–12. https://doi.org/10.1016/j.genhosppsych.2018.12.007

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Age (PS, IS), education (PS, IS), sex (PS, IS), duration of illness (PS, IS), no of hospitalisations (PS, IS), depression (PS, IS), mania* (IS), functioning (PS, IS), support* (IS), perceived stigma-internalised stigma.

3. Aukst-Margetic, B. A., Jakovljevic, M., Ivanec, D., Margetic, B., & Tosic, G. (2010). Relations of internalized stigma with temperament and character in patients with schizophrenia. *Comprehensive Psychiatry*, *51*(6), 603–606. https://doi.org/10.1016/j.comppsych.2010.02.010

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), sex (ES, IS), no of hospitalisations (IS), psychopathology (ES, IS).

4. Aukst-Margetic, B., Jaksic, N., Marsanic, V. B., & Jakovljevic, M. (2014). Harm avoidance moderates the relationship between internalized stigma and depressive symptoms in patients with schizophrenia. *Psychiatry Research*, *219*(1), 92–94. https://doi.org/10.1016/j.psychres.2014.05.009

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Depression.

5. Bassirnia, A., Briggs, J., Kopeykina, I., Mednick, A., Yaseen, Z., & Galynker, I. (2015). Relationship between personality traits and perceived internalized stigma in bipolar patients and their treatment partners. *Psychiatry Research*, *230*(2), 436–440.

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, marital status, sex, depression, mania.

6. Ben-Zeev, D., Frounfelker, R., Morris, S. B., & Corrigan, P. W. (2012). Predictors of Self-Stigma in Schizophrenia: New Insights Using Mobile Technologies. *Journal of Dual Diagnosis*, *8*(4), 305–314. https://doi.org/10.1080/15504263.2012.723311

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Anxiety, positive symptoms.

7. Berge, M., & Ranney, M. (2005). Self-esteem and stigma among persons with schizophrenia: implications for mental health. *Care management journals : Journal of case management ; The journal of long term home health care*, *6*(3), 139–144. https://doi.org/10.1891/cmaj.6.3.139

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Self-esteem.

8. Berry, C., & Greenwood, K. (2018). Direct and indirect associations between dysfunctional attitudes, self-stigma, hopefulness and social inclusion in young people experiencing psychosis. *Schizophrenia Research*, *193*, 197–203. https://doi.org/http://dx.doi.org/10.1016/j.schres.2017.06.037

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Employment.

9. Boyd, J. E., Hayward, H., Bassett, E. D., & Hoff, R. (2016). Internalized stigma of mental illness and depressive and psychotic symptoms in homeless veterans over 6 months. *Psychiatry Research*, *240*, 253–259. https://doi.org/10.1016/j.psychres.2016.04.035

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Depression (ES, IS), positive symptoms (ES, IS).

10. Brain, C., Sameby, B., Allerby, K., Quinlan, P., Joas, E., Lindstrom, E., … Waern, M. (2014). Stigma, discrimination and medication adherence in schizophrenia: Results from the Swedish COAST study. *Psychiatry Research*, *220*(3), 811–817. https://doi.org/10.1016/j.psychres.2014.10.016

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Insight, medication adherence, psychopathology, functioning.

11. Brohan, E., Elgie, R., Sartorius, N., Thornicroft, G., & GAMIAN-Europe Study Group (2010). Self-stigma, empowerment and perceived discrimination among people with schizophrenia in 14 European countries: the GAMIAN-Europe study. *Schizophrenia research*, *122*(1-3), 232–238. https://doi.org/10.1016/j.schres.2010.02.1065

Stigma aspects extracted: Perceived stigma, Internalised stigma.
Correlates extracted: Education (IS), employment (IS), sex (IS), age of onset (IS), empowerment (IS), perceived stigma-internalised stigma.

12. Cai, C., & Yu, L. (2017). Quality of Life in Patients With Schizophrenia in China: Relationships Among Demographic Characteristics, Psychosocial Variables, and Symptom Severity. *Journal of psychosocial nursing and mental health services*, *55*(8), 48–54. https://doi.org/10.3928/02793695-20170627-03

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Economic status, employment, psychopathology, empowerment, quality of life.

13. Campellone, T. R., Caponigro, J. M., & Kring, A. M. (2014). The power to resist: The relationship between power, stigma, and negative symptoms in schizophrenia. *Psychiatry Research*, *215*(2), 280–285. https://doi.org/10.1016/j.psychres.2013.11.020

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, Education, sex, duration of illness, no of hospitalisation, psychopathology, negative symptoms.

14. Çapar, M., & Kavak, F. (2019). Effect of internalized stigma on functional recovery in patients with schizophrenia. *Perspectives in psychiatric care*, *55*(1), 103–111. https://doi.org/10.1111/ppc.12309

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Marital status (ES, IS), sex (ES, IS), functioning (ES, IS).

15. Capatina, O., & Miclutia, I. (2018). Internalized stigma as a predictor of quality of life in schizophrenia. *Journal of Evidence-Based Psychotherapies*, *18*(2), 35–53. https://doi.org/10.24193/jebp.2018.2.13

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Education, no of hospitalisations, negative symptoms, quality of life.

16. Caqueo-Urizar, A., Urzua, A., Loundon, A., Boucekine, M., Fond, G., & Boyer, L. (2019). The Latin American version of the internalized stigma of mental illness scale (LA-ISMI): a multicentric validation study from three Latin American countries. *Health and Quality of Life Outcomes*, *17*(1). https://doi.org/10.1186/s12955-019-1238-2

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age (ES, IS), economic status (IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), no of hospitalisations (IS), depression (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), quality of life (IS).

17. Cavelti, M., Kvrgic, S., Beck, E. M., Rusch, N., & Vauth, R. (2012). Self-stigma and its relationship with insight, demoralization, and clinical outcome among people with schizophrenia spectrum disorders. *Comprehensive Psychiatry*, *53*(5), 468–479. https://doi.org/10.1016/j.comppsych.2011.08.001

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Insight (PS, IS), depression (PS, IS), positive symptoms (PS, IS) functioning (PS, IS), perceived stigma-internalised stigma.

18. Cavelti, M., Wirtz, M., Corrigan, P., & Vauth, R. (2017). Recovery assessment scale: Examining the factor structure of the German version (RAS-G) in people with schizophrenia spectrum disorders. *European Psychiatry*, *41*, 60–67. https://doi.org/10.1016/j.eurpsy.2016.10.006

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Recovery* (IS).

19. Cerit, C., Filizer, A., Tural, U., & Tufan, A. E. (2012). Stigma: a core factor on predicting functionality in bipolar disorder. *Comprehensive Psychiatry*, *53*(5), 484–489. https://doi.org/10.1016/j.comppsych.2011.08.010

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, education, employment, marital status, sex, duration of illness, insight, no of hospitalisations, support, depression, mania, functioning.

20. Chan, K. K. S., & Fung, W. T. W. (2019). The impact of experienced discrimination and self-stigma on sleep and health-related quality of life among individuals with mental disorders in Hong Kong. *Quality of Life Research*, *28*(8), 2171–2182. https://doi.org/10.1007/s11136-019-02181-1

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Quality of life (ES, IS), experienced stigma-internalised stigma.

21. Chan, K. K. S., & Mak, W. W. S. (2017). The content and process of self-stigma in people with mental illness. *American Journal of Orthopsychiatry*, *87*(1), 34–43. https://doi.org/http://dx.doi.org/10.1037/ort0000127

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Recovery, quality of life, self-esteem.

22. Chan, K. K., & Mak, W. W. (2014). The mediating role of self-stigma and unmet needs on the recovery of people with schizophrenia living in the community. *Quality of Life Research : An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, *23*(9), 2559–2568. DOI: 10.1007/s11136-014-0695-7.

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Psychopathology, positive symptoms, quality of life.

23. Chan, S. K. W., Kao, S. Y. S., Leung, S. L., Hui, C. L. M., Lee, E. H. M., Chang, W. C., & Chen, E. Y. H. (2017). Relationship between neurocognitive function and clinical symptoms with self-stigma in patients with schizophrenia-spectrum disorders. *Journal of Mental Health*, 1–6. https://doi.org/http://dx.doi.org/10.1080/09638237.2017.1340599

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), sex (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS).

24. Charles, H., Manoranjitham, S. D., & Jacob, K. S. (2007). Stigma and explanatory models among people with schizophrenia and their relatives in Vellore, South India. *International Journal of Social Psychiatry*, *53*(4), 325–332. https://doi.org/10.1177/0020764006074538

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, economic status, employment, sex, residence, psychopathology.

25. Chen, E. S. M., Chang, W. C., Hui, C. L. M., Chan, S. K. W., Lee, E. H. M., & Chen, E. Y. H. (2016). Self-stigma and affiliate stigma in first-episode psychosis patients and their caregivers. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services, 51*(9), 1225–1231. https://doi.org/10.1007/s00127-016-1221-8

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Insight, depression, psychopathology, negative symptoms, positive symptoms, quality of life.

26. Chiang, Y. S., Chang, Y. C., Liu, Y. P., & Tzeng, W. C. (2021). Quality of life in patients with comorbid serious mental illness and chronic diseases: A structural equation model. *Journal of Advanced Nursing*, *77*(3), 1271–1283. https://doi.org/10.1111/jan.14663

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Psychopathology, quality of life.

27. Chrostek, A., Grygiel, P., Anczewska, M., Wciórka, J., & Świtaj, P. (2016). The intensity and correlates of the feelings of loneliness in people with psychosis. *Comprehensive psychiatry*, *70*, 190–199. https://doi.org/10.1016/j.comppsych.2016.07.015

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Depression, psychopathology, functioning, self-efficacy, self-esteem.

28. Chuang, S. P., Wu, J. Y. W., & Wang, C. S. (2019). Self-perception of mental illness, and subjective and objective cognitive functioning in people with schizophrenia. *Neuropsychiatric Disease and Treatment*, *15*, 967–976. https://doi.org/http://dx.doi.org/10.2147/NDT.S193239

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Insight.

29. Collett, N., Pugh, K., Waite, F., & Freeman, D. (2016). Negative cognitions about the self in patients with persecutory delusions: An empirical study of self-compassion, self-stigma, schematic beliefs, self-esteem, fear of madness, and suicidal ideation. *Psychiatry Research*, *239*, 79–84. https://doi.org/10.1016/j.psychres.2016.02.043

Stigma aspects extracted: Internalised stigma
Correlates extracted: Depression, self-harm/suicidality, self-esteem, self-compassion.

30. Corrigan, P. W., Rafacz, J., & Rüsch, N. (2011). Examining a progressive model of self-stigma and its impact on people with serious mental illness. *Psychiatry Research, 189*(3), 339-343. https://doi.org/10.1016/j.psychres.2011.05.024

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma
Correlates extracted: Hopelessness* (ES, IS), self-esteem (PS, ES, IS), perceived stigma-experienced stigma, experienced stigma-internalised stigma.

31. Cuhadar, D., & Cam, M. O. (2014). Effectiveness of Psychoeducation in Reducing Internalized Stigmatization in Patients With Bipolar Disorder. *Archives of Psychiatric Nursing*, *28*(1), 62–66. https://doi.org/10.1016/j.apnu.2013.10.008

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Functioning.

32. Dickerson, F. B., Sommerville, J., Origoni, A. E., Ringel, N. B., & Parente, F. (2002). Experiences of stigma among outpatients with schizophrenia. *Schizophrenia Bulletin, 28*(1), 143-155. https://doi.org/10.1093/oxfordjournals.schbul.a006917

Stigma aspects extracted: Experienced stigma
Correlates extracted: Economic status, education, sex, insight, depression, psychopathology, negative symptoms, positive symptoms, functioning, quality of life.

33. Døssing, M., Nilsson, K. K., Svejstrup, S. R., Sørensen, V. V., Straarup, K. N., & Hansen, T. B. (2015). Low self-compassion in patients with bipolar disorder. *Comprehensive Psychiatry*, *60*, 53–58. https://doi.org/10.1016/j.comppsych.2015.03.010

Stigma aspects extracted: Internalised stigma
Correlates extracted: Self-compassion

34. Drapalski, A. L., Lucksted, A., Perrin, P. B., Aakre, J. M., Brown, C. H., DeForge, B. R., & Boyd, J. E. (2013). A Model of Internalized Stigma and Its Effects on People With Mental Illness. *Psychiatric Services*, *64*(3), 264–269. https://doi.org/10.1176/appi.ps.001322012

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Age (IS), education (IS), employment (IS), sex (IS), anxiety* (IS), depression (ES, IS), psychopathology (IS), positive symptoms (ES, IS), recovery (ES, IS), self-efficacy* (IS), self-esteem (ES, IS).

35. Drapalski, A. L., Medoff, D., Dixon, L., & Bellack, A. (2016). The reliability and validity of the Maryland Assessment of Recovery in Serious Mental Illness Scale. *Psychiatry Research*, *239*, 259–264. https://doi.org/10.1016/j.psychres.2016.03.031

Stigma aspects extracted: Internalised stigma
Correlates extracted: Recovery

36. Espinosa, R., Valiente, C., Rigabert, A., & Song, H. (2016). Recovery style and stigma in psychosis: The healing power of integrating. *Cognitive Neuropsychiatry*, *21*(2), 146–155. https://doi.org/10.1080/13546805.2016.1147427

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Anxiety* (IS), depression (ES, IS), recovery (ES, IS), experienced stigma-internalised stigma.

37. Fadipe, B., Abebowale, T. O., Ogunwale, A., Fadipe, Y. O., Ojeyinka, A-H. A., Olagunju, A. T. (2018). Internalized stigma in schizophrenia: a cross-sectional study of prevalence and predictors. *International Journal of Culture and Mental Health, 11*(4), 583-594. https://doi.org/10.1080/17542863.2018.1450431

Stigma aspects extracted: Internalised stigma
Correlates extracted: Age, economic status, marital status, sex, age of onset, duration of illness, psychopathology.

38. Fadipe, B., Olagunju, A. T., Ogunwale, A., Fadipe, Y. O., & Adebowale, T. O. (2020). Self-stigma and decision about medication use among a sample of Nigerian outpatients with schizophrenia. *Psychiatric Rehabilitation Journal, 43*(3), 214–224. https://doi.org/http://dx.doi.org/10.1037/prj0000408

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Medication adherence (ES, IS)

39. Feldhaus, T., Falke, S., von Gruchalla, L., Maisch, B., Uhlmann, C., Bock, E., & Lencer, R. (2018). The impact of self-stigmatization on medication attitude in schizophrenia patients. *Psychiatry Research*, *261*, 391–399. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2018.01.012

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Education (ES, IS), sex (ES, IS), insight (ES, IS), medication adherence (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), quality of life (ES, IS), experienced stigma-internalised stigma.

40. Firmin, R. L., Lysaker, P. H., Luther, L., Yanos, P. T., Leonhardt, B., Breier, A., & Vohs, J. L. (2019). Internalized stigma in adults with early phase versus prolonged psychosis. *Early intervention in psychiatry*, *13*(4), 745–751. https://doi.org/10.1111/eip.12553

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Insight (ES, IS), depression (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS).

41. Forthal, S., Fekadu, A., Medhin, G., Selamu, M., Thornicroft, G., & Hanlon, C. (2019). Rural vs urban residence and experience of discrimination among people with severe mental illnesses in Ethiopia. *BMC Psychiatry 19*(340), 1-10. https://doi.org/10.1186/s12888-019-2345-7

Stigma aspects extracted: Experienced stigma
Correlates extracted: Age, economic status, marital status, sex, residence, psychopathology, functioning, support.

42. Fresan, A., Robles-Garcia, R., Madrigal, E., Tovilla-Zarate, C. A., Martinez-Lopez, N., & de Montis, I. A. (2018). Demographic and clinical features related to perceived discrimination in schizophrenia. *Psychiatry Research*, *262*, 427–430. https://doi.org/10.1016/j.psychres.2017.09.019

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, education, age of onset, no of hospitalisations, psychopathology, negative symptoms, positive symptoms.

43. Fung, K. M. T., Tsang, H. W. H., & Chan, F. (2010). Self-stigma, stages of change and psychosocial treatment adherence among Chinese people with schizophrenia: a path

analysis. *Social Psychiatry and Psychiatric Epidemiology*, *45*(5), 561–568. https://doi.org/10.1007/s00127-009-0098-1

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Insight.

44. Fung, K. M., Tsang, H. W., Corrigan, P. W., Lam, C. S., & Cheung, W. M. (2007). Measuring self-stigma of mental illness in China and its implications for recovery. *The International journal of social psychiatry*, *53*(5), 408–418. https://doi.org/10.1177/0020764007078342

Stigma aspects extracted: Perceived stigma, Internalised stigma
Correlates extracted: Self-efficacy* (IS), self-esteem (PE, IS), perceived stigma-internalised stigma

45. Galderisi, S., Rossi, A., Rocca, P., Bertolino, A., Mucci, A., Bucci, P., Rucci, P., Gibertoni, D., Aguglia, E., Amore, M., Bellomo, A., Biondi, M., Brugnoli, R., Dell'Osso, L., De Ronchi, D., Di Emidio, G., Di Giannantonio, M., Fagiolini, A., Marchesi, C., Monteleone, P., … Italian Network For Research on Psychoses (2014). The influence of illness-related variables, personal resources and context-related factors on real-life functioning of people with schizophrenia. *World psychiatry : official journal of the World Psychiatric Association (WPA)*, *13*(3), 275–287. https://doi.org/10.1002/wps.20167

Stigma aspects extracted: Internalised stigma
Correlates extracted: Resilience, depression, negative symptoms, positive symptoms, functioning.

46. Galderisi, S., Rossi, A., Rocca, P., Bertolino, A., Mucci, A., Bucci, P., … Maj, M. (2016). Pathways to functional outcome in subjects with schizophrenia living in the community and their unaffected first-degree relatives. *Schizophrenia Research*, *175*(1–3), 154–160. https://doi.org/10.1016/j.schres.2016.04.043

Stigma aspects extracted: Perceived stigma
Correlates extracted: Age, education, sex, positive symptoms, functioning.

47. Grover, S., Avasthi, A., Singh, A., Dan, A., Neogi, R., Kaur, D., … Behere, P. (2017). Stigma experienced by patients with severe mental disorders: A nationwide multicentric study from India. *Psychiatry Research*, *257*, 550–558. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2017.08.027

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Age (ES, IS), economic status (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), depression (ES, IS), psychopathology (ES, IS), mania* (IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS).

48. Grover, S., Hazari, N., Aneja, J., Chakrabarti, S., & Avasthi, A. (2016). Stigma and its correlates among patients with bipolar disorder: A study from a tertiary care hospital of North India. *Psychiatry Research*, *244*, 109–116. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2016.07.012

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Age (ES, IS), economic status (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), duration of illness (ES, IS), depression (ES, IS), functioning (ES, IS), experienced stigma-internalised stigma.

49. Grover, S., Hazari, N., Aneja, J., Chakrabarti, S., Sharma, S., & Avasthi, A. (2016). Recovery and its correlates among patients with bipolar disorder: A study from a tertiary care centre in North India. *International Journal of Social Psychiatry*, *62*(8), 726–736. https://doi.org/10.1177/0020764016676214

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Recovery

50. Grover, S., Sahoo, S., & Nehra, R. (2019). A comparative study of childhood/ adolescent and adult onset schizophrenia: does the neurocognitive and psychosocial outcome differ? *Asian Journal of Psychiatry*, *43*, 160–169. https://doi.org/http://dx.doi.org/10.1016/j.ajp.2019.05.031

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age of onset.

51. Grover, S., Sahoo, S., Chakrabarti, S., & Avasthi, A. (2018). Association of internalized stigma and insight in patients with schizophrenia. *International Journal of Culture and Mental Health*, *11*(3), 338–350. https://doi.org/http://dx.doi.org/10.1080/17542863.2017.1381750

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Age (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), insight (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS).

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Stigma aspects extracted: Internalised stigma
Correlates extracted: Recovery.

53. Hajda, M., Kamaradova, D., Latalova, K., Prasko, J., Ociskova, M., Mainerova, B., … Tichackova, A. (2015). Self-stigma, treatment adherence, and medication discontinuation in patients with bipolar disorders in remission - a cross sectional study. *Activitas Nervosa Superior Rediviva*, *57*(1–2), 6–11.

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Medication adherence.

54. Hasson-Ohayon, I., Eizenberg, M. M., Lysaker, P. H., & Roe, D. (2016). Self-clarity and different clusters of insight and self-stigma in mental illness. *Psychiatry Research*, *240*, 308–313. https://doi.org/10.1016/j.psychres.2016.04.060

Stigma aspects extracted: Internalised stigma
Correlates extracted: Insight, recovery, hopelessness, functioning.

55. Hasson-Ohayon, I., Mashiach-Eizenberg, M., Elhasid, N., Yanos, P. T., Lysaker, P. H., & Roe, D. (2014). Between self-clarity and recovery in schizophrenia: reducing the self-stigma and finding meaning. *Comprehensive Psychiatry*, *55*(3), 675–680. https://doi.org/10.1016/j.comppsych.2013.11.009

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Recovery (ES, IS), experienced stigma-internalised stigma

56. Hayward, P., Wong, G., Bright, J. A., & Lam, D. (2002). Stigma and self-esteem in manic depression: an exploratory study. *Journal of affective disorders*, *69*(1-3), 61–67. https://doi.org/10.1016/s0165-0327(00)00380-3

Stigma aspects extracted: Perceived stigma
Correlates extracted: Functioning, self-esteem

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Stigma aspects extracted: Internalised stigma
Correlates extracted: Support.

58. Hill, K., & Startup, M. (2013). The relationship between internalized stigma, negative symptoms and social functioning in schizophrenia: The mediating role of self-efficacy. *Psychiatry Research*, *206*(2–3), 151–157. https://doi.org/10.1016/j.psychres.2012.09.056

Stigma aspects extracted: Internalised stigma
Correlates extracted: Negative symptoms, quality of life, self-efficacy.

59. Ho, R. W. H., Chang, W. C., Kwong, V. W. Y., Lau, E. S. K., Chan, G. H. K., Jim, O. T. T., … Chen, E. Y. H. (2018). Prediction of self-stigma in early psychosis: 3-Year follow-up of the randomized-controlled trial on extended early intervention. *Schizophrenia Research*, *195*, 463–468. https://doi.org/http://dx.doi.org/10.1016/j.schres.2017.09.004

Stigma aspects extracted: Internalised stigma
Correlates extracted: Insight, medication adherence, depression, negative symptoms, positive symptoms, functioning, quality of life.

60. Ho, W. W. N., Chiu, M. Y. L., Lo, W. T. L., & Yiu, M. G. C. (2010). Recovery components as determinants of the health-related quality of life among patients with schizophrenia: structural equation modelling analysis. Australian and New Zealand Journal of Psychiatry, 44(1), 71–84. https://doi.org/10.3109/00048670903393654

Stigma aspects extracted: Internalised stigma
Correlates extracted: Hopelessness, functioning, quality of life, resilience, self-efficacy, support.

61. Hofer, A., Mizuno, Y., Frajo-Apor, B., Kemmler, G., Suzuki, T., Pardeller, S., … Uchida, H. (2016). Resilience, internalized stigma, self-esteem, and hopelessness among people with schizophrenia: Cultural comparison in Austria and Japan. Schizophrenia Research, 171(1–3), 86–91. https://doi.org/10.1016/j.schres.2016.01.027

Stigma aspects extracted: Internalised stigma
Correlates extracted: Hopelessness, psychopathology, resilience, self-esteem.

62. Hofer, A., Post, F., Pardeller, S., Frajo-Apor, B., Hoertnagl, C. M., Kemmler, G., & Fleischhacker, W. W. (2019). Self-stigma versus stigma resistance in schizophrenia: Associations with resilience, premorbid adjustment, and clinical symptoms. *Psychiatry Research*, *271*, 396–401. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2018.12.029

Stigma aspects extracted: Internalised stigma
Correlates extracted: Age, education, sex, age of onset, duration of illness, negative symptoms, positive symptoms, psychopathology, resilience.

63. Holubova, M., Prasko, J., Latalova, K., Ociskova, M., Grambal, A., Kamaradova, D., … Hruby, R. (2016). Are self-stigma, quality of life, and clinical data interrelated in schizophrenia spectrum patients? A cross-sectional outpatient study. Patient Preference and Adherence, 10, 265–274.

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Age (EI, IS), employment (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), no of hospitalisations (ES, IS), psychopathology (ES, IS), quality of life (ES, IS).

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Stigma aspects extracted: Internalised stigma.
Correlates extracted: Negative symptoms, positive symptoms, self-esteem.

65. Howland, M., Levin, J., Blixen, C., Tatsuoka, C., & Sajatovic, M. (2016). Mixed-methods analysis of internalized stigma correlates in poorly adherent individuals with bipolar disorder. *Comprehensive Psychiatry*, *70*, 174–180. doi:10.1016/j.comppsych.2016.07.012.

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (IS), education (IS), sex (IS), age of onset (IS), duration of illness (IS), depression (ES, IS), psychopathology (ES, IS), mania* (IS), self-efficacy* (IS).

66. Huang, W.-Y., Chen, S.-P., Pakpour, A. H., & Lin, C.-Y. (2018). The mediation role of self-esteem for self-stigma on quality of life for people with schizophrenia: A retrospectively longitudinal study. *Journal of Pacific Rim Psychology*, *12*. Article e10.https://doi.org/http://dx.doi.org/10.1017/prp.2017.18

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Quality of life, self-esteem.

67. İpçi, K., Yildiz, M., İncedere, A., Kiras, F., Esen, D., & Gürcan, M. B. (2020). Subjective Recovery in Patients with Schizophrenia and Related Factors. *Community mental health journal*, *56*(6), 1180–1187. https://doi.org/10.1007/s10597-020-00616-5

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Recovery.

68. Jahn, D. R., Leith, J., Muralidharan, A., Brown, C. H., Drapalski, A. L., Hack, S., & Lucksted, A. (2020). The Influence of Experiences of Stigma on Recovery: Mediating Roles of Internalized Stigma, Self-Esteem, and Self-Efficacy. *Psychiatric Rehabilitation Journal*, *43*(2), 97–105. https://doi.org/10.1037/prj0000377

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), ethnicity (ES, IS), sex (ES, IS), depression (ES, IS), functioning (ES, IS), quality of life (ES, IS), recovery (ES, IS), self-efficacy* (IS), self-esteem (ES, IS), experienced stigma-internalised stigma.

69. Kalisova, L., Michalec, J., Hadjipapanicolaou, D., & Raboch, J. (2018). Factors influencing the level of self-stigmatisation in people with mental illness. *The International Journal of Social Psychiatry*, *64*(4), 374–380. https://doi.org/http://dx.doi.org/10.1177/0020764018766561

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, duration of illness.

70. Kao, Y. C., Lien, Y. J., Chang, H. A., Tzeng, N. S., Yeh, C. B., & Loh, C. H. (2017). Stigma Resistance in Stable Schizophrenia: The Relative Contributions of Stereotype Endorsement, Self-Reflection, Self-Esteem, and Coping Styles. *Canadian Journal of Psychiatry-Revue Canadienne De Psychiatrie*, *62*(10), 735–744. https://doi.org/10.1177/0706743717730827

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Sex.

71. Kao, Y. C., Lien, Y. J., Chang, H. A., Wang, S. C., Tzeng, N. S., & Loh, C. H. (2016). Evidence for the indirect effects of perceived public stigma on psychosocial outcomes: The mediating role of self-stigma. *Psychiatry research*, *240*, 187–195. https://doi.org/10.1016/j.psychres.2016.04.030

Stigma aspects extracted: Internalised stigma
Correlates extracted: Depression (IS), quality of life (IS), self-esteem (IS).

72. Karakas, S. A., Okanli, A., & Yilmaz, E. (2016). The Effect of Internalized Stigma on the Self Esteem in Patients with Schizophrenia. *Archives of Psychiatric Nursing*, *30*(6), 648–652. https://doi.org/10.1016/j.apnu.2016.02.006

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Self-esteem.

73. Karidi, M. V, Vasilopoulou, D., Savvidou, E., Vitoratou, S., Rabavilas, A. D., & Stefanis, C. N. (2014). Aspects of perceived stigma: The Stigma Inventory for Mental Illness,

its development, latent structure and psychometric properties. *Comprehensive Psychiatry*, *55*(7), 1620–1625. https://doi.org/10.1016/j.comppsych.2014.04.002

Stigma aspects extracted: Perceived stigma, Internalised stigma
Correlates extracted: Age (PS, IS), economic status* (IS), education (PS, IS), marital status* (IS), sex (PS, IS), anxiety* (IS), depression (ES, IS), psychopathology (PS, IS) negative symptoms (PS, IS), positive symptoms (PS, IS), functioning (PS, IS).

74. Karidi, M. V, Vassilopoulou, D., Savvidou, E., Vitoratou, S., Maillis, A., Rabavilas, A., & Stefanis, C. N. (2015). Bipolar disorder and self-stigma: A comparison with schizophrenia. *Journal of Affective Disorders*, *184*, 209–215. https://doi.org/10.1016/j.jad.2015.05.038

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Depression (PS, IS), psychopathology (PS, IS), mania* (IS), negative symptoms (PS, IS), positive symptoms (PS, IS), functioning (PS, IS), self-esteem (PS, IS).

75. Kaşli, S., Al, O., & Bademli, K. (2020). Internalized stigmatization and subjective recovery in individuals with chronic mental illness. *International Journal of Social Psychiatry*, *0*(00), 1–6. https://doi.org/10.1177/0020764020960762

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), sex (ES, IS), recovery (ES, IS), experienced stigma-internalised stigma.

76. Kim, E. Y., & Jang, M. H. (2019). The Mediating Effects of Self-Esteem and Resilience on the Relationship Between Internalized Stigma and Quality of Life in People with Schizophrenia. *Asian Nursing Research*, *13*(4), 257–263. https://doi.org/http://dx.doi.org/10.1016/j.anr.2019.09.00

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Quality of life, resilience, self-esteem

77. Kim, W. J., Song, Y. J., Ryu, H. S., Ryu, V., Kim, J. M., Ha, R. Y., … Cho, H. S. (2015). Internalized stigma and its psychosocial correlates in Korean patients with serious mental illness. *Psychiatry Research*, *225*(3), 433–439. https://doi.org/10.1016/j.psychres.2014.11.071

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), employment (IS), sex (IS), duration of illness (ES, IS), insight (ES, IS), no of hospitalisations (IS), support (ES, IS), hopelessness (ES, IS), psychopathology (ES, IS), self-esteem (ES, IS), experienced stigma-internalised stigma

78. Kleim, B., Vauth, R., Adam, G., Stieglitz, R. D., Hayward, P., & Corrigan, P. (2008). Perceived stigma predicts low self-efficacy and poor coping in schizophrenia. *Journal of Mental Health*, *17*(5), 482–491. https://doi.org/10.1080/09638230701506283

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Age, sex, insight, depression, psychopathology, negative symptoms, positive symptoms.

79. Kondrátová, L., König, D., Mladá, K., & Winkler, P. (2019). Correlates of Negative Attitudes towards Medication in People with Schizophrenia. The Psychiatric quarterly, 90(1), 159–169. https://doi.org/10.1007/s11126-018-9618-z

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Medication adherence.

80. Korkmaz, G., & Kucuk, L. (2016). Internalized Stigma and Perceived Family Support in Acute Psychiatric In-Patient Units. *Archives of Psychiatric Nursing*, *30*(1), 55–61. https://doi.org/10.1016/j.apnu.2015.10.003

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Sex (ES, IS), support (ES, IS).

81. Koschorke, M., Padmavati, R., Kumar, S., Cohen, A., Weiss, H. A., Chatterjee, S., … Patel, V. (2014). Experiences of stigma and discrimination of people with schizophrenia in India. *Social Science & Medicine*, *123*, 149–159. https://doi.org/10.1016/j.socscimed.2014.10.035

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, negative symptoms, positive symptoms.

82. Lasalvia, A., Zoppei, S., Bonetto, C., Tosato, S., Zanatta, G., Cristofalo, D., … Ruggeri, M. (2014). The Role of Experienced and Anticipated Discrimination in the Lives of People With First-Episode Psychosis. *Psychiatric Services*, *65*(8), 1034–1040. https://doi.org/10.1176/appi.ps.201300291

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Education, functioning.

83. Lee, A. M. R., Simeon, D., Cohen, L. J., Samuel, J., Steele, A., & Galynker, I. I. (2011). Predictors of Patient and Caregiver Distress in an Adult Sample With Bipolar Disorder Seeking Family Treatment. *Journal of Nervous and Mental Disease*, *199*(1), 18–24. https://doi.org/10.1097/NMD.0b013e3182043b73

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Anxiety, depression, quality of life.

84. Leith, J., & Stein, C. H. (2020). Stage and Process Models of Consumer-Oriented Recovery Among Adults With Serious Mental Illness: The Role of Personal Loss and Internalized Stigma. *American Journal of Orthopsychiatry*, *90*(6), 653–666. https://doi.org/10.1037/ort0000493

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Recovery, psychopathology.

85. Li, J., Guo, Y. B., Huang, Y. G., Liu, J. W., Chen, W., Zhang, X. Y., … Thornicroft, G. (2017). Stigma and discrimination experienced by people with schizophrenia living in the community in Guangzhou, China. *Psychiatry Research*, *255*, 225–231. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2017.05.040

Stigma aspects extracted: Experienced stigma, internalised stigma

Correlates extracted: Self-esteem (IS), experienced stigma-internalised stigma.

86. Lien, Y. J., Chang, H. A., Kao, Y. C., Tzeng, N. S., Lu, C. W., & Loh, C. H. (2016). Insight, Self-stigma and Psychosocial Outcomes in Schizophrenia: A Structural Equation Modelling Approach. *Epidemiology and Psychiatric Sciences*, 1–10. https://doi.org/10.1017/S2045796016000950

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Insight (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), quality of life (ES, IS), self-esteem (ES, IS), experienced stigma-internalised stigma.

87. Lien, Y. J., Chang, H. A., Kao, Y. C., Tzeng, N. S., Yeh, C. B., & Loh, C. H. (2018). Self-Stigma Mediates the Impact of Insight on Current Suicide Ideation in Suicide Attempters with Schizophrenia: Results of a Moderated Mediation Approach. *Suicide & Life-Threatening Behavior*, *48*(6), 661–676. https://doi.org/http://dx.doi.org/10.1111/sltb.12384

Stigma aspects extracted: Internalised stigma
Correlates extracted: Hopelessness, self-harm/suicidality

88. Lien, Y. J., Chang, H. A., Kao, Y. C., Tzeng, N. S., Lu, C. W., & Loh, C. H. (2018). The impact of cognitive insight, self-stigma, and medication compliance on the quality of life in patients with schizophrenia. *European Archives of Psychiatry and Clinical Neuroscience*, *268*(1), 27–38. https://doi.org/http://dx.doi.org/10.1007/s00406-017-0829-3

Stigma aspects extracted: Internalised stigma
Correlates extracted: Medication adherence.

89. Lim, M., Li, Z., Xie, H., Tan, B. L., & Lee, J. (2019). An Asian study on clinical and psychological factors associated with personal recovery in people with psychosis. *BMC Psychiatry, 19*(1), 256. https://doi.org/http://dx.doi.org/10.1186/s12888-019-2238-9

Stigma aspects extracted: Internalised stigma
Correlates extracted: Recovery

90. Lin, C.-Y., Chang, C.-C., Wu, T.-H., & Wang, J.-D. (2016). Dynamic changes of self-stigma, quality of life, somatic complaints, and depression among people with schizophrenia: A pilot study applying kernel smoothers. *Stigma and Health*, *1*(1), 29–43. https://doi.org/10.1037/sah0000014

Stigma aspects extracted: Internalised stigma
Correlates extracted: Depression, quality of life.

91. Link, B. G., Wells, J., Phelan, J. C., & Yang, L. (2015). Understanding the importance of "symbolic interaction stigma": How expectations about the reactions of others adds to the burden of mental illness stigma. *Psychiatric Rehabilitation Journal, 38*(2), 117–124. https://doi.org/10.1037/prj0000142

Stigma aspects extracted: Perceived stigma, internalised stigma.

Correlates extracted: No of hospitalisations (PS, IS), functioning (PS, IS).

92. Livingston, J. D., Rossiter, K. R., & Verdun-Jones, S. N. (2011). "Forensic" labelling: An empirical assessment of its effects on self-stigma for people with severe mental illness. *Psychiatry Research*, *188*(1), 115–122. https://doi.org/10.1016/j.psychres.2011.01.018

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Age (ES, IS), education (ES, IS), employment (ES, IS), ethnicity (ES, IS), marital status (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), depression (ES, IS), hopelessness (ES, IS), psychopathology (ES, IS), positive symptoms (ES, IS), self-harm/suicidality* (IS), functioning (ES, IS), quality of life (ES, IS).

93. Lu, Y., & Wang, X. (2012). Correlation between insight and internalized stigma in patients with schizophrenia. *Shanghai Arhives of Psychiatry, 24*(2), 91-98. https://doi.org/10.3969/j.issn.1002-0829.2012.02.004

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Insight

94. Lv, Y., Wolf, A., & Wang, X. P. (2013). Experienced stigma and self-stigma in Chinese patients with schizophrenia. *General Hospital Psychiatry*, *35*(1), 83–88. https://doi.org/10.1016/j.genhosppsych.2012.07.007

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Negative symptoms (IS), positive symptoms (IS), experienced stigma-internalised stigma.

95. Lysaker, P. H., Buck, K. D., Taylor, A. C., & Roe, D. (2008a). Associations of metacognition and internalized stigma with quantitative assessments of self-experience in narratives of schizophrenia. Psychiatry Research, 157(1–3), 31–38. https://doi.org/10.1016/j.psychres.2007.04.023

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Recovery (ES, IS).

96. Lysaker, P. H., Salyers, M. P., Tsai, J., Spurrier, L. Y., & Davis, L. W. (2008c). Clinical and psychological correlates of two domains of hopelessness in schizophrenia. *Journal of Rehabilitation Research and Development*, *45*(6), 911–919. https://doi.org/10.1682/jrrd.2007.07.0108

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Hopelessness.

97. Lysaker, P. H., Tsai, J., Yanos, P., & Roe, D. (2008b). Associations of multiple domains of self-esteem with four dimensions of stigma in schizophrenia. *Schizophrenia Research*, *98*(1–3), 194–200. https://doi.org/10.1016/j.schres.2007.09.035

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Age (ES, IS), education (ES, IS).

98. Lysaker, P. H., Yanos, P. T., Outcalt, J., & Roe, D. (2010). Association of Stigma, Self-Esteem, and Symptoms with Concurrent and Prospective Assessment of Social Anxiety in Schizophrenia. *Clinical & Schizophrenia Related Psychoses, 4*(1), 41.48. https://doi.org/10.3371/CSRP.4.1.3

Stigma aspects extracted: Internalised stigma
Correlates extracted: Anxiety

99. Lysaker, P. H., Davis, L. W., Warman, D. M., Strasburger, A., & Beattie, N. (2007a). Stigma, social function and symptoms in schizophrenia and schizoaffective disorder: associations across 6 months. *Psychiatry research*, *149*(1-3), 89–95. https://doi.org/10.1016/j.psychres.2006.03.007

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Number of hospitalisations (ES, IS), Positive symptoms (ES), functioning (ES), experienced stigma-internalised stigma.

100. Lysaker, P. H., Roe, D., & Yanos, P. T. (2007). Toward understanding the insight paradox: internalized stigma moderates the association between insight and social functioning, hope, and self-esteem among people with schizophrenia spectrum disorders. *Schizophrenia bulletin*, *33*(1), 192–199. https://doi.org/10.1093/schbul/sbl016

Stigma aspects extracted: Internalised stigma
Correlates extracted: Negative symptoms, positive symptoms, functioning, self-esteem.

101. Lysaker, P. H., Tunze, C., Yanos, P. T., Roe, D., Ringer, J., & Rand, K. (2012). Relationships between stereotyped beliefs about mental illness, discrimination experiences, and distressed mood over 1 year among persons with schizophrenia enrolled in rehabilitation. *Social Psychiatry and Psychiatric Epidemiology*, 47(6), 849-855.https://doi.org/10.1007/s00127-011-0396-2

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Experienced stigma-internalised stigma.

102. MacDougall, A. G., Vandermeer, M. R. J., & Norman, R. M. G. (2015). Negative future self as a mediator in the relationship between insight and depression in psychotic disorders. *Schizophrenia Research*, *165*(1), 66–69. https://doi.org/10.1016/j.schres.2015.03.035

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Insight.

103. MacDougall, A. G., Vandermeer, M., & Norman, R. (2017). Determinants of self-esteem in early psychosis: The role of perceived social dominance. *Psychiatry research*, *258*, 583–586. https://doi.org/10.1016/j.psychres.2016.05.050

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Self-esteem.

104. Magallares, A., Perez-Garin, D., & Molero, F. (2016). Social stigma and well-being in a sample of schizophrenia patients. *Clinical Schizophrenia and Related Psychoses*, *10*(1), 51–57. https://doi.org/10.3371/CSRP.MAPE.043013

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Self-esteem.

105. Mak, W. W. S., & Cheung, R. Y. M. (2010). Self-Stigma Among Concealable Minorities in Hong Kong: Conceptualization and Unified Measurement. *American Journal of Orthopsychiatry, 80*(2), 267–281. https://doi.org/10.1111/j.1939-0025.2010.01030.x

Stigma aspects extracted: Internalised stigma
Correlates extracted: Age, economic status, education, employment, sex, duration of illness, self-efficacy, self-esteem.

106. Manor-Binyamini, I. (2020). Internalized Stigma among Bedouin and Jews with Mental Illness: Comparing Self-Esteem, Hope, and Quality of Life. *Psychiatric Quarterly*. https://doi.org/10.1007/s11126-020-09758-x

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Hopelessness, quality of life, self-esteem.

107. Markiewicz, A., & Hintze, B. (2016). Stigma and social support - Similarities and differences in group of women suffering from chronic diseases TT - Pietno a wsparcie spoleczne - podobienstwa i roznice w grupach kobiet chorujacych przewlekle. *Postepy Psychiatrii i Neurologii*, *25*(3), 147–158.

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, education, marital status, age of onset, support.

108. Martínez-Zambrano, F., Pizzimenti, M., Barbeito, S., Vila-Badia, R., Comellas, G., José Escandell, M., … Ochoa, S. (2016). Spanish version of the Link's Perceived Devaluation and Discrimination scale. *Psicothema*, *28*(2), 201–206.

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Depression (PS), psychopathology (PS), negative symptoms (PS), positive symptoms (PS), functioning (PS), perceived stigma-internalised stigma.

109. Mechanic, D., McAlpine, D., Rosenfield, S., & Davis, D. (1994). Effects of illness attribution and depression on the quality of life among persons with serious mental illness. *Social science & medicine (1982)*, *39*(2), 155–164. https://doi.org/10.1016/0277-9536(94)90324-7

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Quality of life.

110. Meiser, B., Mitchell, P. B., Kasparian, N. A., Strong, K., Simpson, J. M., Mireskandari, S., … Schofield, P. R. (2007). Attitudes towards childbearing, causal attributions for bipolar disorder and psychological distress: A study of families with multiple cases of bipolar disorder. *Psychological Medicine*, *37*(11), 1601–1611. https://doi.org/10.1017/S0033291707000852

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Psychopathology.

111. Mizuno, Y., Hofer, A., Suzuki, T., Frajo-Apor, B., Wartelsteiner, F., Kemmler, G., … Uchida, H. (2016). Clinical and biological correlates of resilience in patients with schizophrenia and bipolar disorder: A cross-sectional study. *Schizophrenia Research*, *175*(1–3), 148–153. https://doi.org/10.1016/j.schres.2016.04.047

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Resilience.

112. Moraleda, A., Galan-Casado, D., & Cangas, A. J. (2019). Reducing Self-Stigma in People with Severe Mental Illness Participating in a Regular Football League: An Exploratory Study. *International Journal of Environmental Research and Public Health*, *16*(19). https://doi.org/10.3390/ijerph16193599

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age.

113. Morgades-Bamba, C. I., Fuster-Ruizdeapodaca, M. J., & Molero, F. (2019). Internalized stigma and its impact on schizophrenia quality of life. *Psychology Health & Medicine*, *24*(8), 992–1004. https://doi.org/10.1080/13548506.2019.1612076

Stigma aspects extracted: Internalised stigma.
Correlates extractecd: Quality of life.

114. Morgades-Bamba, C. I., Fuster-Ruizdeapodaca, M. J., & Molero, F. (2019). The impact of internalized stigma on the well-being of people with Schizophrenia. *Psychiatry Research*, *271*, 621–627. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2018.12.060

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Anxiety, self-efficacy, self-esteem.

115. Mosanya, T. J., Adelufosi, A. O., Adebowale, O. T., Ogunwale, A., & Adebayo, O. K. (2014). Self-stigma, quality of life and schizophrenia: An outpatient clinic survey in Nigeria. *International Journal of Social Psychiatry*, *60*(4), 377–386. https://doi.org/10.1177/0020764013491738

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Economic status, employment, sex, age of onset, duration of illness, psychopathology, quality of life.

116. Mueser, K. T., DeTore, N. R., Kredlow, M. A., Bourgeois, M. L., Penn, D. L., & Hintz, K. (2019). Clinical and demographic correlates of stigma in first-episode psychosis: The impact of duration of untreated psychosis. *Acta Psychiatrica Scandinavica, 141*(2),157-166. https://doi.org/http://dx.doi.org/10.1111/acps.13102

Stigma aspects extracted: Experienced stigma.

Correlates extracted: Age, education, employment, ethnicity, sex, depression, psychopathology, negative symptoms, positive symptoms, functioning, quality of life, recovery.

117. Munoz, M., Sanz, M., Perez-Santos, E., & Quiroga, M. D. (2011). Proposal of a socio-cognitive-behavioral structural equation model of internalized stigma in people with severe and persistent mental illness. *Psychiatry Research*, *186*(2–3), 402–408. https://doi.org/10.1016/j.psychres.2010.06.019

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, education, functioning, empowerment, recovery. Note: *Correlation between ISMI total and ISMI discrimination experience subscale given, but since only the total ISMI score was used (rather than individual subscales) this was not extracted as a measure of the correlation between experienced and internalised stigma to avoid bias in inflating effect size.*

118. Murri, M., Amore, M., Calcagno, P., Respino, M., Marozzi, V., Masotti, M., Bugliani, M., Innamorati, M., Pompili, M., Galderisi, S., & Maj, M. (2016). The "Insight Paradox" in Schizophrenia: Magnitude, Moderators and Mediators of the Association Between Insight and Depression. *Schizophrenia bulletin*, *42*(5), 1225–1233. https://doi.org/10.1093/schbul/sbw040

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Insight, depression.

119. Nagai, K., & Kajita, E. (2018). “Coming Out” with a Mental Disorder in Japan: How Self-Stigma and Empowerment Affect this Decision. *Issues in Mental Health Nursing*, *39*(3), 215–225. https://doi.org/10.1080/01612840.2017.1354102

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Empowerment, self-efficacy, support.

120. Nilsson, K. K., Kugathasan, P., & Straarup, K. N. (2016). Characteristics, correlates and outcomes of perceived stigmatization in bipolar disorder patients. *Journal of Affective Disorders*, *194*, 196–201. https://doi.org/10.1016/j.jad.2016.01.025

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Duration of illness, no of hospitalisations.

121. Norman, R. M. G., Windell, D., Lynch, J., & Manchanda, R. (2011). Parsing the relationship of stigma and insight to psychological well-being in psychotic disorders. *Schizophrenia Research*, *133*(1–3), 3–7. https://doi.org/10.1016/j.schres.2011.09.002

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Anxiety* (IS), depression (PS, IS).

122. Noyman-Veksler, G., Weinberg, D., Fennig, S., Davidson, L., & Shahar, G. (2013). Perceived stigma exposure in schizophrenia: The key role of self-concept clarity. *Self and Identity*, *12*(6), 663–674. https://doi.org/10.1080/15298868.2012.732265

Stigma aspects extracted: Experienced stigma
Correlates extracted: Depression, negative symptoms, positive symptoms, self-esteem.

123. O'Connor, L. K., Yanos, P. T., & Firmin, R. L. (2018). Correlates and moderators of stigma resistance among people with severe mental illness. Psychiatry Research, 270, 198–204. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2018.09.040

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Hopelessness, negative symptoms, positive symptoms, functioning, self-esteem. Note: *Correlation between ISMI total and ISMI discrimination experience subscale given, but since only the total ISMI score was used (rather than individual subscales) this was not extracted as a measure of the correlation between experienced and internalised stigma to avoid bias in inflating effect size.*

124. Ochoa, S., Martinez-Zambrano, F., Garcia-Franco, M., Vilamala, S., Ribas, M., Arenas, O., … Haro, J. M. (2015). Development and validation of the Self-Stigma Questionnaire (SSQ) for people with schizophrenia and its relation to social functioning. *Comprehensive Psychiatry*, *62*, 93–99.

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Functioning.

125. Oduguwa, T. O., Akinwotu, O. O., & Adeoye, A. A. (2014). A comparative study of self stigma between HIV/AIDS and schizophrenia patients. *African Journal of Psychiatry (South Africa)*, *17*(2), 525–531. http://dx.doi.org/10.4172/Psychiatry.1000109

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES; IS), duration of illness (ES, IS).

126. Olçun, Z., & Altun, O. S. (2017). The Correlation Between Schizophrenic Patients' Level of Internalized Stigma and Their Level of Hope. *Archives of Psychiatric Nursing*, *31*(4), 332–337. https://doi.org/10.1016/j.apnu.2017.03.001

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Hopelessness.

127. Or, S. E. B., Hasson-Ohayon, I., Feingold, D., Vahab, K., Amiaz, R., Weiser, M., & Lysaker, P. H. (2013). Meaning in life, insight and self-stigma among people with severe mental illness. *Comprehensive Psychiatry*, *54*(2), 195–200. https://doi.org/10.1016/j.comppsych.2012.07.011

Stigma aspects extracted: Internalised stigma
Correlates extracted: Insight.

128. Ow, C. Y., & Lee, B. O. (2015). Relationships between perceived stigma, coping orientations, self-esteem, and quality of life in patients with schizophrenia. *Asia-Pacific Journal of Public Health / Asia-Pacific Academic Consortium for Public Health*, *27*(2), NP1932–NP1941. https://doi.org/10.1177/1010539512469246

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Depression, quality of life, self-esteem.

129. Pal, A., Sharan, P., & Chadda, R. K. (2017). Internalized stigma and its impact in Indian outpatients with bipolar disorder. *Psychiatry Research, 258,* 158–165. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2017.09.087

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Economic status (ES, IS), education (ES, IS), functioning (ES, IS), quality of life (ES, IS), self-esteem (ES, IS).

130. Park, K., MinHwa, L., & Seo, M. (2019). The impact of self-stigma on self-esteem among persons with different mental disorders. *International Journal of Social Psychiatry*, *65*(7–8), 558–565. https://doi.org/10.1177/0020764019867352

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: self-esteem (ES, IS), experienced stigma-internalised stigma.

131. Park, S. G., Bennett, M. E., Couture, S. M., & Blanchard, J. J. (2013). Internalized stigma in schizophrenia: Relations with dysfunctional attitudes, symptoms, and quality of life. *Psychiatry Research*, *205*(1–2), 43–47. https://doi.org/10.1016/j.psychres.2012.08.040

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Depression, negative symptoms, quality of life.

132. Pellet, J., Golay, P., Nguyen, A., Suter, C., Ismailaj, A., Bonsack, C., & Favrod, J. (2019). The relationship between self-stigma and depression among people with schizophrenia-spectrum disorders: A longitudinal study. *Psychiatry Research*, *275*, 115–119. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2019.03.022

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, education**,** duration of illness, depression.

133. Post, F., Pardeller, S., Frajo-Apor, B., Kemmler, G., Sondermann, C., Hausmann, A., … Hofer, A. (2018). Quality of life in stabilized outpatients with bipolar I disorder: Associations with resilience, internalized stigma, and residual symptoms. *Journal of Affective Disorders*, *238*, 399–404. https://doi.org/http://dx.doi.org/10.1016/j.jad.2018.05.055

Stigma aspects extracted: Internalised stigma
Correlates extracted: Quality of life

134. Pribadi, T., Lin, E. C.-L., Chen, P.-S., Lee, S.-K., Fitryasari, R., & Chen Teguh; (2020). Factors associated with internalized stigma for indonesian individuals diagnosed with schizophrenia in a community setting. *Journal of Psychiatric and Mental Health Nursing*, *00,* 1-11. https://doi.org/http://dx.doi.org/10.1111/jpm.12611

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, education, employment, marital status, sex, no of hospitalisations.

135. Pruss, L., Wiedl, K. H., & Waldorf, M. (2012). Stigma as a predictor of insight in schizophrenia. *Psychiatry Research*, *198*(2), 187–193. https://doi.org/10.1016/j.psychres.2011.12.012

Stigma aspects extracted: Internalised stigma
Correlates extracted: Sex, age of onset, duration of illness, insight, negative symptoms, positive symptoms.

136. Ran, M. S., Zhang, T. M., Wong, I. Y. L., Yang, X., Liu, C. C., Liu, B., … Chan, C. L. W. (2018). Internalized stigma in people with severe mental illness in rural China. *The International Journal of Social Psychiatry*, *64*(1), 9–16. https://doi.org/http://dx.doi.org/10.1177/0020764017743999

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, economic status, education, sex.

137. Rayan, A., & Obiedate, K. (2017). The Correlates of Quality of Life Among Jordanian Patients With Schizophrenia. *Journal of the American Psychiatric Nurses Association*, *23*(6), 404–413. https://doi.org/http://dx.doi.org/10.1177/1078390317710498

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Age, sex, depression, quality of life.

138. Razali, S. M., Hussein, S., & Ismail, T. A. T. (2010). Perceived stigma and self-esteem among patients with schizophrenia. *International Medical Journal*, *17*(4), 255-260.

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Age, education, sex, duration of illness, no of hospitalisations, depression.

139. Ren, Z., Wang, H., Feng, B., Gu, C., Ma, Y., Chen, H., … Liu, L. (2016). An exploratory cross-sectional study on the impact of education on perception of stigma by Chinese patients with schizophrenia. *BMC Health Services Research*, *16*(1), 210. https://doi.org/http://dx.doi.org/10.1186/s12913-016-1424-4

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Education.

140. Reneses, B., Sevilla-Llewellyn-Jones, J., Vila-Badia, R., Palomo, T., Lopez-Micó, C., Pereira, M., … Ochoa, S. (2020). The relationships between sociodemographic, psychosocial and clinical variables. *Actas Espanolas de Psiquiatria*, *48*(3), 116–125.

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Age (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), psychopathology (ES, IS), functioning (ES, IS).

141. Rodak, J., Witusik, A., Nowakowska-Domagała, K., Pietras, T., & Mokros, Ł. (2018). Psychopathological profile and antipsychotic treatment may be linked to internalised stigma in schizophrenia – A cross-sectional study. *Postepy Psychiatrii i Neurologii, 27*(2), 77-86. https://doi.org/10.5114/ppn.2018.77034

Stigma aspects extracted: Experienced stigma, internalised stigma

Correlates extracted: Age (ES, IS), sex (ES, IS), insight (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), psychopathology (ES, IS), functioning (ES, IS).

142. Rossi, A., Amore, M., Galderisi, S., Rocca, P., Bertolino, A., Aguglia, E., … Bracale, N. (2018). The complex relationship between self-reported "personal recovery" and clinical recovery in schizophrenia. *Schizophrenia Research*, *192*, 108–112. https://doi.org/http://dx.doi.org/10.1016/j.schres.2017.04.040

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Insight, psychopathology.

143. Rüsch, N., Corrigan, P. W., Todd, A. R., & Bodenhausen, G. V. (2010). Implicit Self-Stigma in People With Mental Illness. *Journal of Nervous and Mental Disease*, *198*(2), 150–153. https://doi.org/10.1097/NMD.0b013e3181cc43b5

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.
Correlates extracted: Age (PS, ES, IS), economic status* (ES, IS), education (PS, ES, IS), employment (PS, ES, IS), ethnicity* (ES, IS), sex (PS, ES, IS), duration of illness (PS, ES, IS), medication adherence (PS, ES, IS), insight (PS, ES, IS), no of hospitalisations (PS, ES, IS), support* (ES, IS).

144. Rüsch, N., Corrigan, P. W., Wassel, A., Michaels, P., Larson, J. E., Olschewski, M., … Batia, K. (2009). Self-stigma, group identification, perceived legitimacy of discrimination and mental health service use. *British Journal of Psychiatry*, *195*(6), 551–552. https://doi.org/10.1192/bjp.bp.109.067157

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.
Correlates extracted: Psychopathology.

145. Rüsch, N., Corrigan, P. W., Wassel, A., Michaels, P., Olschewski, M., Wilkniss, S., & Batia, K. (2009). Ingroup perception and responses to stigma among persons with mental illness. *Acta Psychiatrica Scandinavica*, *120*(4), 320–328. https://doi.org/10.1111/j.1600-0447.2009.01403.x

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.
Correlates extracted: Depression.

146. Schrank, B., Amering, M., Hay, A. G., Weber, M., & Sibitz, I. (2014). Insight, positive and negative symptoms, hope, depression and self-stigma: a comprehensive model of mutual influences in schizophrenia spectrum disorders. *Epidemiology and Psychiatric Sciences*, *23*(3), 271–279. https://doi.org/10.1017/s2045796013000322

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Insight, depression, hopelessness, negative symptoms, positive symptoms.

147. Schwarzbold, M. L., Kern, R. S., Novacek, D. M., McGovern, J. E., Catalano, L. T., & Green, M. F. (2021). Self-stigma in psychotic disorders: Clinical, cognitive, and functional correlates in a diverse sample. *Schizophrenia Research*, *228*, 145–150. https://doi.org/10.1016/j.schres.2020.12.003

Stigma aspects extracted: Internalised stigma
Correlates extracted: Depression, positive symptoms, negative symptoms.

148. Segalovich, J., Doron, A., Behrbalk, P., Kurs, R., & Romem, P. (2013). Internalization of stigma and self-esteem as it affects the capacity for intimacy among patients with schizophrenia. *Archives of Psychiatric Nursing*, *27*(5), 231–234. https://doi.org/10.1016/j.apnu.2013.05.002

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Self-esteem.

149. Sharaf, A. Y., Ossman, L. H., & Lachine, O. A. (2012). A cross-sectional study of the relationships between illness insight, internalized stigma, and suicide risk in individuals with schizophrenia. *International Journal of Nursing Studies*, *49*(12), 1512–1520. https://doi.org/10.1016/j.ijnurstu.2012.08.006

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Insight, depression, self-harm/suicidality.

150. Shin, Y. J., Joo, Y. H., & Kim, J. H. (2016). Self-perceived cognitive deficits and their relationship with internalized stigma and quality of life in patients with schizophrenia. *Neuropsychiatric Disease and Treatment*, *12*, 1411–1417. https://doi.org/10.2147/NDT.S108537

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, education, marital status, sex, duration of illness, anxiety, depression, negative symptoms, positive symptoms.

151. Sibitz, I., Amering, M., Unger, A., Seyringer, M. E., Bachmann, A., Schrank, B., … Woppmann, A. (2011). The impact of the social network, stigma and empowerment on the quality of life in patients with schizophrenia. *European Psychiatry*, *26*(1), 28–33. https://doi.org/10.1016/j.eurpsy.2010.08.010

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Age (PS, IS), education (PS, IS), sex (PS, IS), age of onset* (IS), duration of illness (PS, IS), no of hospitalisations (PS, IS), depression, empowerment* (IS), quality of life (PS, IS).

152. Sibitz, I., Unger, A., Woppmann, A., Zidek, T., & Amering, M. (2011). Stigma resistance in patients with schizophrenia. *Schizophrenia bulletin*, *37*(2), 316–323. https://doi.org/10.1093/schbul/sbp048

Stigma aspects extracted: Percieved stigma, experienced stigma, internalised stigma.
Correlates extracted: Perceived stigma-Experienced stigma, Perceived stigma-Internalised stigma, Experienced stigma-Internalised stigma.

153. Sideli, L., Mulè, A., La Cascia, C., Barone, M. V., Seminerio, F., Sartorio, C., … La Barbera, D. (2016). Validation of the Italian version of the Devaluation consumers' Scale and the Devaluation Consumers Families Scale. *Journal of Psychopathology*, *22*(4), 251–257.

Stigma aspects extracted: Perceived stigma.

Correlates extracted: Duration of illness, psychopathology, functioning.

154. Singh, A., Grover, S., & Mattoo, S. K. (2016). Validation of Hindi Version of Internalized Stigma of Mental Illness Scale. *Indian Journal of Social Psychiatry, 32*(2), 104-114. https://doi.org/10.4103/0971-9962.181089

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Experienced stigma-Internalised stigma.

155. Singh, A., Mattoo, S. K., & Grover, S. (2016). Stigma and its correlates in patients with schizophrenia attending a general hospital psychiatric unit. *Indian Journal of Psychiatry*, *58*(3), 291–300. https://doi.org/10.4103/0019-5545.192024

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age (ES, IS), economic status (ES, IS), education (ES, IS), employment (ES, IS), marital status (ES, IS), sex (ES, IS), residence (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS)

156. Singla, N., Avasthi, A., & Grover, S. (2020). Recovery and its correlates in patients with schizophrenia. *Asian Journal of Psychiatry*, *52*, 102162. https://doi.org/10.1016/j.ajp.2020.102162

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Recovery

157. Smilowitz, S., Aftab, A., Aebi, M., Levin, J., Tatsuoka, C., & Sajatovic, M. (2019). Age-Related Differences in Medication Adherence, Symptoms, and Stigma in Poorly Adherent Adults With Bipolar Disorder. *Journal of Geriatric Psychiatry and Neurology*, *33*(5), 250-255. https://doi.org/http://dx.doi.org/10.1177/0891988719874116

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age.

158. Spivak, S., Cullen, B., Eaton, W. W., Rodriguez, K., & Mojtabai, R. (2019). Financial hardship among individuals with serious mental illness. *Psychiatry Research*, *282*, 112632. https://doi.org/10.1016/j.psychres.2019.112632

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Economic status.

159. Staring, A. B. P., der Gaag, M., den Berge, M., Duivenvoorden, H. J., & Mulder, C. L. (2009). Stigma moderates the associations of insight with depressed mood, low self-esteem, and low quality of life in patients with schizophrenia spectrum disorders. *Schizophrenia Research*, *115*(2–3), 363–369.

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Insight, depression, quality of life, self-esteem.

160. Sum, M. Y., Chan, S. K. W., Tse, S., Bola, J. R., Ng, R. M. K., Hui, C. L. M., … Chen, E. Y. H. (2020). Elucidating the relationship between internalized stigma, cognitive

insight, illness severity, and functioning in patients with schizophrenia using a path analysis approach. *Journal of Mental Health*. https://doi.org/10.1080/09638237.2020.1836553

Stigma aspects extracted: Experienced stigma, Internalised stigma
Correlates extracted: Age (ES, IS), education (ES, IS), duration of illness (ES, IS), sex (ES, IS), psychopathology (ES, IS), functioning (ES, IS).

161. Switaj, P., Grygiel, P., Anczewska, M., & Wciorka, J. (2015). Experiences of discrimination and the feelings of loneliness in people with psychotic disorders: The mediating effects of self-esteem and support seeking. *Comprehensive Psychiatry*, *59*, 73–79. https://doi.org/10.1016/j.comppsych.2015.02.016

Stigma aspects extracted: Experienced stigma.
Correlates extracted: self-esteem.

162. Switaj, P., Grygiel, P., Anczewska, M., & Wciorka, J. (2014). Loneliness mediates the relationship between internalised stigma and depression among patients with psychotic disorders. *International Journal of Social Psychiatry*, *60*(8), 733–740. https://doi.org/10.1177/0020764013513442

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Depression, negative symptoms, positive symptoms, functioning.

163. Switaj, P., Grygiel, P., Chrostek, A., & Anczewska, M. (2021). Disentangling the relationships between interpersonal competence, social network, social support and the experience of being stigmatized among people with psychotic disorders: A path modeling approach. *Schizophrenia Research*, *228*, 305–310. https://doi.org/http://dx.doi.org/10.1016/j.schres.2020.12.033

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Perceived support.

164. Switaj, P., Grygiel, P., Chrostek, A., Nowak, I., Wciorka, J., & Anczewska, M. (2017). The relationship between internalized stigma and quality of life among people with mental illness: are self-esteem and sense of coherence sequential mediators? *Quality of Life Research*, *26*(9), 2471–2478. https://doi.org/http://dx.doi.org/10.1007/s11136-017-1596-3

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Psychopathology, quality of life, self-esteem.

165. Switaj, P., Wciorka, J., Smolarska-Switaj, J., & Grygiel, P. (2009). Extent and predictors of stigma experienced by patients with schizophrenia. *European Psychiatry*, *24*(8), 513–520. https://doi.org/10.1016/j.eurpsy.2009.06.003

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Age, education, employment, marital status, sex, age of onset, duration of illness, insight, no of hospitalisations, depression, psychopathology, negative symptoms, positive symptoms, functioning, quality of life.

166. Tan, B. L., Lim, M. W. Z., Xie, H., Li, Z., & Lee, J. (2020). Defining occupational competence and occupational identity in the context of recovery in schizophrenia. *American Journal of Occupational Therapy*, *74*(4). https://doi.org/10.5014/ajot.2020.034843

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Functioning.

167. Tanabe, Y., Hayashi, K., & Ideno, Y. (2016). The Internalized Stigma of Mental Illness (ISMI) scale: validation of the Japanese version. *BMC Psychiatry*, *16*, 116.https://doi.org/10.1186/s12888-016-0825-6

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Depression (ES, IS), empowerment* (IS), self-esteem (ES, IS).

168. Tang, I. C., & Wu, H. C. (2012). Quality of Life and Self-Stigma in Individuals with Schizophrenia. *Psychiatric Quarterly*, *83*(4), 497–507. https://doi.org/10.1007/s11126-012-9218-2

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Quality of life (ES, IS), experienced stigma-internalised stigma.

169. Temesgen, W. A., Chien, W. T., Valimaki, M. A., & Bressington Worku Animaw (2020). Predictors of subjective recovery from recent-onset psychosis in a developing country: A mixed-methods study. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services*, *55,* 1187-1199. https://doi.org/http://dx.doi.org/10.1007/s00127-020-01853-5

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, economic status, duration of illness, psychopathology, negative symptoms, positive symptoms, functioning, quality of life, recovery, support.

170. Tesfaw, G., Kibru, B., & Ayano, G. (2020). Prevalence and factors associated with higher levels of perceived stigma among people with schizophrenia Addis Ababa, Ethiopia. *International Journal of Mental Health Systems*, *14*(1), 19. https://doi.org/http://dx.doi.org/10.1186/s13033-020-00348-9

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Sex.

171. Thoits, P. A., & Link, B. G. (2016). Stigma Resistance and Well-being among People in Treatment for Psychosis. *Society and Mental Health*, *6*(1), 1–20. https://doi.org/10.1177/2156869315591367

Stigma aspects extracted: Perceived stigma, experienced stigma, internalised stigma.
Correlates extracted: Education (PS, ES, IS), ethnicity*(ES, IS), sex (PS, ES, IS), depression (PS, ES, IS), quality of life (PS, ES, IS), self-esteem (PS, ES, IS), perceived stigma-experienced stigma, perceived stigma-internalised stigma, experienced stigma-internalised stigma.

172. Thome, E. S., Dargel, A. A., Migliavacca, F. M., Potter, W. A., Jappur, D. M. C., Kapczinski, F., & Cereser, K. M. (2012). Stigma experiences in bipolar patients: The impact upon functioning. *Journal of Psychiatric and Mental Health Nursing*, *19*(8), 665–671.

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Depression, functioning

173. Thornicroft, G., Brohan, E., Rose, D., Sartorius, N., & Leese, M. (2009). Global pattern of experienced and anticipated discrimination against people with schizophrenia: a cross-sectional survey. *The Lancet, 373*(9661), 408–415. https://doi.org/10.1016/S0140-6736(08)61817-6

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Education, employment, sex, duration of illness.

174. Tirfessa, K., Lund, C., Medhin, G., Hailemichael, Y., Habtamu, K., Fekadu, A., & Hanlon, C. (2019). Food insecurity and work impairment in people with severe mental disorders in a rural district of Ethiopia: a cross-sectional survey. *Social Psychiatry and Psychiatric Epidemiology*, *54*(9), 1055–1066. https://doi.org/10.1007/s00127-019-01709-7

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Functioning.

175. Tourino, R., Acosta, F. J., Giraldez, A., Alvarez, J., Gonzalez, J. M., Abelleira, C., … Rodriguez, C. J. (2018). Suicidal risk, hopelessness and depression in patients with schizophrenia and internalized stigma. *Actas Espanolas de Psiquiatria*, *46*(2), 33–41.

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, sex, depression, self-harm/suicidality, self-compassion.

176. Treichler, E. B. H., & Lucksted, A. A. (2018). The Role of Sense of Belonging in Self-Stigma Among People With Serious Mental Illnesses. *Psychiatric Rehabilitation Journal*, *41*(2), 149–152. https://doi.org/10.1037/prj0000281

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Ethnicity (ES, IS), sex (ES, IS), experienced-internalised stigma.

177. Tsang, H. W. H., Fung, K. M. T., & Corrigan, P. W. (2009). Psychosocial and socio-demographic correlates of medication compliance among people with schizophrenia. *Journal of Behavior Therapy and Experimental Psychiatry*, *40*(1), 3–14. https://doi.org/10.1016/j.jbtep.2008.02.003

Stigma aspects extracted: Internalised stigma
Correlates extracted: Medication adherence.

178. Ucok, A., Karadayi, G., Emiroglu, B., & Sartorius, N. (2013). Anticipated discrimination is related to symptom severity, functionality and quality of life in schizophrenia. *Psychiatry Research*, *209*(3), 333–339. https://doi.org/10.1016/j.psychres.2013.02.022

Stigma aspects extracted: Experienced stigma
Correlates extracted: Duration of illness, depression, psychopathology, functioning.

179. Uhlmann, C., Kaehler, J., Harris, M. S. H., Unser, J., Arolt, V., & Lencer, R. (2014). Negative impact of self-stigmatization on attitude toward medication adherence in patients with psychosis. *Journal of Psychiatric Practice*, *20*(5), 405-410. https://doi.org/10.1097/01.pra.0000454787.75106.ae

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Medication adherence (ES, IS), experienced stigma-internalised stigma.

180. Uzer-Kremers, L., Bralet, M. C., Angerville, B., Jeanblanc, J., Naassila, M., Pierrefiche, O., & Dervaux, A. (2020). P.546 Is self-compassion linked to treatment adherence in schizophrenia? *European Neuropsychopharmacology*, *40*(Supplement 1), S307–S308. https://doi.org/http://dx.doi.org/10.1016/j.euroneuro.2020.09.398

Stigma aspects extracted: Internalised stigma
Correlates extracted: Medication adherence, self-compassion.

181. Valiente, C., Provencio, M., Espinosa, R., Duque, A., & Everts, F. (2015). Insight in paranoia: The role of experiential avoidance and internalized stigma. *Schizophrenia Research, 164*(1-3), 214-220. https://doi.org/10.1016/j.schres.2015.03.010

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Insight.

182. van Zelst, C., Van Nierop, M., Oorschot, M., Myin-Germeys, I., Van Os, J., & Delespaul, P. (2014). Stereotype awareness, self-esteem and psychopathology in people with psychosis. *PLoS ONE*, *9* (2)*,* e88586. https://doi.org/10.1371/journal.pone.0088586

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Self-esteem.

183. van Zelst, C., van Nierop, M., van Dam, D. S., Bartels-Velthuis, A. A., Delespaul, P., & Investigators, G. R. P. (2015). Associations between Stereotype Awareness, Childhood Trauma and Psychopathology: A Study in People with Psychosis, Their Siblings and Controls. *Plos One*, *10*(2). https://doi.org/10.1371/journal.pone.0117386

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Psychopathology.

184. Vass, V., Morrison, A. P., Law, H., Dudley, J., Taylor, P., Bennett, K. M., & Bentall, R. P. (2015). How stigma impacts on people with psychosis: The mediating effect of self-esteem and hopelessness on subjective recovery and psychotic experiences. *Psychiatry Research*, *230*(2), 487–495. https://doi.org/10.1016/j.psychres.2015.09.042

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Hopelessness, psychopathology, negative symptoms, positive symptoms, recovery, self-esteem.

185. Vass, V., Sitko, K., West, S., & Bentall, R. P. (2017). How stigma gets under the skin: The role of stigma, self-stigma and self-esteem in subjective recovery from psychosis. *Psychosis: Psychological, Social and Integrative Approaches, 9*(3), 235–244. https://doi.org/10.1080/17522439.2017.1300184

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), sex (ES, IS), recovery (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), self-esteem (ES, IS), experienced stigma-internalised stigma.

186. Vauth, R., Kleim, B., Wirtz, M., & Corrigan, P. W. (2007). Self-efficacy and empowerment as outcomes of self-stigmatizing and coping in schizophrenia. *Psychiatry Research*, *150*(1), 71–80. https://doi.org/10.1016/j.psychres.2006.07.005

Stigma aspects extracted: Perceived stigma.
Correlates extracted: Depression, psychopathology, negative symptoms, positive symptoms, quality of life.

187. Vazquez, G. H., Kapczinski, F., Magalhaes, P. V, Cordoba, R., Lopez Jaramillo, C., Rosa, A. R., … Tohen, M. (2011). Stigma and functioning in patients with bipolar disorder. *Journal of Affective Disorders*, *130*(1–2), 323–327. https://doi.org/10.1016/j.jad.2010.10.012

Stigma aspects extracted: Experienced stigma.
Correlates extracted: Functioning.

188. Verdoux, H., Quiles, C., Bon, L., Chéreau-Boudet, I., Dubreucq, J., Legros-Lafarge, E., … Franck, N. (2020). Characteristics associated with self-reported medication adherence in persons with psychosis referred to psychosocial rehabilitation centers. *European Archives of Psychiatry and Clinical Neuroscience*. https://doi.org/10.1007/s00406-020-01207-x

Stigma aspects extracted: Experienced stigma, internalised stigma
Correlates extracted: Medication adherence

189. Villagonzalo, K.-A., Leitan, N., Farhall, J., Foley, F., McLeod, B., & Thomas, N. (2018). Development and validation of a scale for self-efficacy for personal recovery in persisting mental illness. *Psychiatry Research*, *269*, 354–360. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2018.08.093

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Self-efficacy.

190. Violeau, L., Dudilot, A., Roux, S., & Prouteau, A. (2020). How internalised stigma reduces self-esteem in schizophrenia: The crucial role of off-line metacognition. *Cognitive Neuropsychiatry*, *25*(2), 154–161. https://doi.org/http://dx.doi.org/10.1080/13546805.2020.1714570

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Self-esteem.

191. Vrbova, K., Kamaradova, D., Latalova, K., Ociskova, M., Prasko, J., Mainerova, B., … Tichackova, A. (2014). Self-stigma and adherence to medication in patients with psychotic disorders - cross-sectional study. *Neuroendocrinology Letters*, *35*(7), 645–652.

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, age of onset, no of hospitalisations, medication adherence.

192. Vrbova, K., Prasko, J., Holubova, M., Kamaradova, D., Ociskova, M., Marackova, M., … Zatkova, M. (2016). Self-stigma and schizophrenia: A cross-sectional study. *Neuropsychiatric Disease and Treatment*, *12*, 3011–3020. https://doi.org/http://dx.doi.org/10.2147/NDT.S120298

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Age (ES, IS), employment (ES, IS), sex (ES, IS), age of onset (ES, IS), duration of illness (ES, IS), no of hospitalisations (ES, IS), psychopathology (ES, IS).

193. Vrbova, K., Prasko, J., Ociskova, M., & Holubova, M. (2017). Comorbidity of schizophrenia and social phobia - impact on quality of life, hope, and personality traits: A cross sectional study. *Neuropsychiatric Disease and Treatment*, *13*, 2073–2083. https://doi.org/http://dx.doi.org/10.2147/NDT.S141749

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Social phobia extracted to anxiety correlate.

194. Vrbova, K., Prasko, J., Ociskova, M., Holubova, M., Kantor, K., Kolek, A., … Slepecky, M. (2018). Suicidality, self-stigma, social anxiety and personality traits in stabilized schizophrenia patients - A cross-sectional study. *Neuropsychiatric Disease and Treatment*, *14*, 1415–1424. https://doi.org/http://dx.doi.org/10.2147/NDT.S162070

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Self-harm/suicidality.

195. Vrbova, K., Prasko, J., Ociskova, M., Kamaradova, D., Marackova, M., Holubova, M., … Latalova, K. (2017). Quality of life, self-stigma, and hope in schizophrenia spectrum disorders: a cross-sectional study. *Neuropsychiatric Disease and Treatment*, *13*, 567–576. https://doi.org/10.2147/ndt.s122483

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Quality of life.

196. Vrbova, K., Prasko, J., Holubova, M., Slepecky, M., & Ociskova, M. (2018). Positive and negative symptoms in schizophrenia and their relation to depression, anxiety, hope, self-stigma and personality traits - A cross-sectional study. *Neuroendocrinology Letters*, *39*(1), 9–18.

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: General psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS).

197. Wang, X. Q., Petrini, M. A., & Morisky, D. E. (2017). Predictors of quality of life among Chinese people with schizophrenia. *Nursing & Health Sciences*, *19*(2), 142–148. https://doi.org/http://dx.doi.org/10.1111/nhs.12286

Stigma aspects extracted: Perceived stigma, internalised stigma.
Correlates extracted: Age (PS, IS), duration of illness (PS, IS), medication adherence*(IS), quality of life (PS, IS), perceived stigma-internalised stigma.

198. Wastler, H., Lucksted, A., Phalen, P., & Drapalski, A. (2020). Internalized stigma, sense of belonging, and suicidal ideation among veterans with serious mental illness. *Psychiatric Rehabilitation Journal*, *43*(2), 91–96. https://doi.org/10.1037/prj0000386

Stigma aspects extracted: Internalised stigma.
Correlates extracted: self-harm/suicidality.

199. Waynor, W. R., Eissenstat, S. J., Yanos, P. T., Reinhardt-Wood, D., Taylor, E., Karyczak, S., & Lu, W. L. (2020). The role of illness identity in assertive community treatment. *Rehabilitation Counseling Bulletin*, *63*(4), 216-223. https://doi.org/10.1177/0034355219886916

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Self-efficacy, psychopathology.

200. Wciorka, J., Switaj, P., & Anczewska, M. (2015). The sense of empowerment in the early stage of recovery from psychosis. *Psychosis-Psychological Social and Integrative Approaches*, *7*(3), 249–260. https://doi.org/10.1080/17522439.2014.910253

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Empowerment.

201. Werner, P., Aviv, A., & Barak, Y. (2008). Self-stigma, self-esteem and age in persons with schizophrenia. *International Psychogeriatrics*, *20*(1), 174–187. https://doi.org/10.1017/s1041610207005340

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Self-esteem.

202. West, M. L., Vayshenker, B., Rotter, M., & Yanos, P. T. (2015). The influence of mental illness and criminality self-stigmas and racial self-concept on outcomes in a forensic psychiatric sample. *Psychiatric Rehabilitation Journal*, *38*(2), 150–157. https://doi.org/10.1037/prj0000133

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Medication adherence, depression, self-esteem.

203. Williams, C. C., Almeida, M., & Knyahnytska, Y. (2015). Towards a Biopsychosociopolitical Frame for Recovery in the Context of Mental Illness. *British Journal of Social Work*, *45*, 9–26. https://doi.org/10.1093/bjsw/bcv100

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Insight, hopelessness, psychopathology, recovery

204. Wood, L., Burke, E., Byrne, R., Enache, G., & Morrison, A. P. (2016). Semi-structured Interview Measure of Stigma (SIMS) in psychosis: Assessment of psychometric properties. *Schizophrenia Research*, *176*(2–3), 398–403. https://doi.org/10.1016/j.schres.2016.06.008

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Depression, hopelessness, recovery, self-esteem.

205. Wood, L., Byrne, R., Burke, E., Enache, G., & Morrison, A. P. (2017). The impact of stigma on emotional distress and recovery from psychosis: The mediatory role of internalised shame and self-esteem. *Psychiatry Research*, *255*, 94–100. https://doi.org/http://dx.doi.org/10.1016/j.psychres.2017.05.016

Stigma aspects extracted: Perceived stigma, experienced stigma
Correlates extracted: Depression (PS, ES) hopelessness* (ES), recovery* (ES), self-esteem (PS, ES) perceived stigma-experienced stigma.

206. Wood, L., & Irons, C. (2017). Experienced stigma and its impacts in psychosis: The role of social rank and external shame. *Psychology and Psychotherapy: Theory, Research and Practice, 90*(3), 419-431. https://doi.org/10.1111/papt.12127

Stigma aspects extracted: Experienced stigma
Correlates extracted: Depression, positive symptoms, recovery.

207. Yang, X., & Mak, W. W. S. (2017). The Differential Moderating Roles of Self-Compassion and Mindfulness in Self-Stigma and Well-Being Among People Living with Mental Illness or HIV. *Mindfulness*, *8*(3), 595–602. https://doi.org/10.1007/s12671-016-0635-4

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Self-compassion

208. Yanos, P. T., Roe, D., Markus, K., & Lysaker, P. H. (2008). Pathways Between Internalized Stigma and Outcomes Related to Recovery in Schizophrenia Spectrum Disorders. *Psychiatric Services*, *59*(12), 1437–1442. https://doi.org/10.1176/appi.ps.59.12.1437

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Ethnicity (ES, IS), sex (ES, IS), age at first hospitalisation (ES, IS), no of hospitalisations (ES, IS), Insight (ES, IS), depression (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), self-esteem (ES, IS).

209. Yanos, P. T., West, M. L., Gonzales, L., Smith, S. M., Roe, D., & Lysaker, P. H. (2012). Change in internalized stigma and social functioning among persons diagnosed with severe mental illness. *Psychiatry Research*, *200*(2–3), 1032–1034. https://doi.org/10.1016/j.psychres.2012.06.017

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Functioning.

210. Yildiz, M., Kiras, F., Incedere, A., & Abut, F. B. (2018). Development of self-stigma inventory for patients with schizophrenia (SSI-P): Reliability and validity study in

turkey. *Schizophrenia Bulletin*, *44* (Supplement 1), S211. https://doi.org/http://dx.doi.org/10.1093/schbul/sby016.518

Stigma aspects extracted: Experienced stigma, internalised stigma.
Correlates extracted: Depression (IS), hopelessness (IS), positive symptoms (IS), psychopathology (IS), functioning (IS), self-esteem (IS), experienced stigma-internalised stigma.

211. Yilmaz, E., & Okanli, A. (2015). The effect of internalized stigma on the adherence to treatment in patients with schizophrenia. *Archives of Psychiatric Nursing*, *29*(5), 297–301. https://doi.org/10.1016/j.apnu.2015.05.006

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Medication adherence.

212. Yokoyama, K., Morimoto, T., Ichihara-Takeda, S., Yoshino, J., Matsuyama, K., & Ikeda, N. (2019). Relationship between self-disclosure to first acquaintances and subjective well-being in people with schizophrenia spectrum disorders living in the community. *PLoS ONE*, *14*(10), e0223819. https://doi.org/http://dx.doi.org/10.1371/journal.pone.0223819

Stigma aspects extracted: Perceived stigma
Correlates extracted: Sex, quality of life, self-esteem.

213. Yoo, T., Kim, S. W., Kim, S. Y., Lee, J. Y., Kang, H. J., Bae, K. Y., … Yoon, J. S. (2015). Relationship between Suicidality and Low Self-esteem in Patients with Schizophrenia. *Clinical Psychopharmacology and Neuroscience*, *13*(3), 296–301. https://doi.org/10.9758/cpn.2015.13.3.296

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Hopelessness, depression, psychopathology, self-esteem.

214. Young, D. K. W., & Ng, P. Y. N. (2016). The prevalence and predictors of self-stigma of individuals with mental health illness in two Chinese cities. *International Journal of Social Psychiatry*, *62*(2), 176–185. https://doi.org/10.1177/0020764015614596

Stigma aspects extracted: Internalised stigma.
Correlates extracted: Age, sex, duration of illness, no of hospitalisations, recovery, quality of life, self-esteem.

215. Zhang, T.-M., Wong, I. Y.-L., Yu, Y.-H., Ni, S.-G., He, X.-S., Bacon-Shone, J., … Ran, M.-S. (2018). An integrative model of internalized stigma and recovery-related outcomes among people diagnosed with schizophrenia in rural china. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services*, *54*(8), 911–918. https://doi.org/http://dx.doi.org/10.1007/s00127-018-1646-3

Stigma aspects extracted: Experienced stigma, Internalised stigma.
Correlates extracted: Age (IS), education (IS), sex (IS), perceived support (ES, IS), psychopathology (ES, IS), negative symptoms (ES, IS), positive symptoms (ES, IS), functioning (ES, IS), experienced stigma-internalised stigma.

216. Zäske, H., Linden, M., Degner, D., Jockers-Scherubl, M., Klingberg, S., Klosterkotter, J., … Gaebel, W. (2018). Stigma experiences and perceived stigma in patients with first-episode schizophrenia in the course of 1 year after their first in-patient treatment. *European Archives of Psychiatry and Clinical Neuroscience*, *269*(4), 459–468. https://doi.org/http://dx.doi.org/10.1007/s00406-018-0892-4

Stigma aspects extracted: Perceived stigma, experienced stigma.
Correlates extracted: Depression (PS, ES), psychopathology (PS, ES), functioning (PS, ES), quality of life (PS, ES), self-esteem (PS, ES), perceived stigma-experienced stigma.

Appendix 3

Table B1. List of stigma scales included.

Stigma scale	Authors	Description	Personal stigma aspect(s) extracted from measure:		
			Perceived	Experienced	Internalised
Internalized Stigma of Mental Illness Inventory (ISMI)	Ritsher et al. (2003)	29-item questionnaire. Includes five subscales: Alienation (6 items) Stereotype endorsement (7 items), Social withdrawal (6 items), Discrimination experience (5 items) and Stigma resistance (5 items). The scale total score is used to assess internalised stigma. However, based on findings that the Stigma resistance subscale is a separate construct to internalised stigma (e.g. Lysaker et al., 2007), several studies choose to exclude this subscale and base the total score on the remaining 24-items. Each item is rated on a four-point Likert scale ranging from 1 = strongly disagree to 4 = strongly agree. Internal consistency of the 29 and 24-item ISMI scale were excellent (α = .90 & .91). Internal consistency of the subscales were good: Alienation α = 0.79, Stereotype endorsement α = 0.72, Discrimination experience α = 0.75, Social Withdrawal α = 0.80, whereas the Stigma Resistance subscale showed poor internal consistency: α = 0.58 (Ritsher et al., 2003).		✓ n = 64	✓ n = 139
Perceived Devaluation and Discrimination Scale (PDD)	Link (1987)	12-item questionnaire. Measures perceived discrimination (6 items) and perceived devaluation (6 items). Each item is scored on a six-point Likert scale, ranging from 1 = strongly disagree to 6 = strongly agree. Internal consistency of the PDD is good: α = 0.86 - α = 0.88 (Link 1987; Link et al., 2001).	✓ n = 25		

Self-Stigma of Mental Illness Scale (SSMIS)	Corrigan et al. (2006)	40-item questionnaire. Includes four subscales: Stereotype awareness (10 items), Stereotype agreement (10 items), Self-concurrence (10 items), Self-esteem decrement (10 items). The stereotype awareness subscale is used to measure perceived stigma, whereas the remaining subscales represent self-stigma aspects. Most studies using the SSMIS report correlates of each subscale separately. Correlates on internalised stigma were obtained by averaging the self-concurrence and self-esteem decrement subscales as these represent the change in self-concept due to internalisation of stereotypes (Corrigan et al. 2011). Each item is rated on a 9-point Likert scale ranging from 0 = strongly disagree to 9 = strongly agree). Internal consistency of the subscales was good to excellent: Stereotype Awareness α = 0.91, Stereotype Agreement α = 0.72, Self-concurrence α = 0.81, Self-esteem decrement α = 0.88 (Corrigan et al., 2006).	✓ n = 5		✓ n = 16
Mental Health Consumer's Experience of Stigma (CESQ)	Wahl (1999)	21-item questionnaire measuring experiences of stigma. Includes questions about stigma (9 items) and discrimination (12 items) experiences. The questionnaire was adapted by Dickerson et al. (2002) by changing the original term "mental health consumers" to "persons with mental illness". Items are rated on a 5-point Likert scale ranging from never to very often and then summed for each subscale score. Whilst psychometric properties were not reported by Wahl (1999), the scale has been validated by other studies, generally showing an acceptable to good internal consistency of the total scale (α = 0.635 – 0.861 (Lv et al., 2013; Treichler & Lucksted, 2018). Since the discrimination subscale has been shown to have low internal consistency (e.g see Switaj et al., 2013), several studies included in the current review only reported the stigma experiences subscale (α = 0.70 - 0.81; Jahn et al., 2020; Markiewicz & Hintze, 2016; Switaj et al., 2009; Switaj		✓ n = 10	

		et al., 2021). For this reason, in the two instances where studies reported both subscales, data was extracted from the stigma experiences subscale only (Dickerson et al., 2002; Lu & Wang, 2012).			
The Discrimination and Stigma Scale (DISC)	Brohan et al. (2013)	The DISC scale (latest version: DISC-12) is an interview based measure used to collect quantitative and qualitative information on experiences of discrimination (Brohan et al., 2013). It has four subscales; Unfair treatment (Items 1-21) assessing discrimination experiences in a range of areas, Stopping self (items 22-25) due to anticipated stigma, Overcoming stigma (items 26-27) and Positive treatment (items 28.32). For the current meta-analysis data from the Unfair treatment subscale was extracted based on recommendations from Brohan, Clement et al. (2013). The Stopping self subscale was not extracted as a measure of perceived stigma, as even though it could be seen as a proxy measure for perceived stigmatisation, it has been established that reactions to perceived stigma can vary, where not everyone react by withdrawing or limiting themselves in their every-day lives (e.g. Corrigan & Watson, 2002). Items are scored as 0 = no difference, 1 = a little, 2 = moderately or 3 = a lot (or A = not applicable). The unfair treatment DISC scale has shown acceptable internal consistency: $\alpha = 0.78$ (Brohan, Clement et al., 2013).		✓ n = 9	
Self-Stigma Scale -Short form (SSS-S)	Mak and Cheung (2010)	9-item questionnaire. Includes three subscales all measuring aspects of internalised stigma including: Self-stigmatising cognitions (SSC, 3 items), Self-stigmatising affect (SSA, 3 items) Self-stigmatising behaviours (SSB, 3 items). The scale is rated on a 4-point Likert scale ranging from 1 = strongly disagree to 4 = strongly agree. The total scale has been shown to have excellent internal consistency ($\alpha = 0.91$). Internal consistency of the			✓ n = 8

		subscales is good: SSC α = 0.81, SSA α = 0.84, SSB α = 0.80 (Mak & Cheung, 2010).			
King Stigma Scale (KSS)	King et al. (2007)	28-item questionnaire. The questionnaire has three subscales addressing experienced discrimination (12 items), disclosure* (11 items) and positive aspects of mental illness (5 items). In most instances, correlates of the subscales were reported separately whereby data from the discrimination subscale was extracted. The KSS is rater on a 5-point Likert scale ranging from 0 = strongly disagree to 4 = strongly agree. Internal consistency of the total scale is good α = 0.87, with internal consistency of the subscales being α = 0.87 for the discrimination subscale, α = 0.85 for the disclosure subscale, with questionable internal consistency (α = 0.64) for the positive aspects subscale (King et al., 2007).		✓ n = 7	
Stigma Inventory for Mental Illness (SIMI)	Karidi et al. (2014)	12-item questionnaire including two subscales: Perceived stigmatisation (8 items) and self-image assessing self-stigma (4 items). The scale is rated on a 5-point Likert scale ranging from 1 = no never to 5 = always. Internal consistency of the total scale is excellent (α = 0.90), with internal consistency of the subscales	✓ n = 2		✓ n = 2

		being α = 0.85 for the perceived stigma subscale, α = 0.75 for the self-image subscale (Karidi et al., 2014).			
Devaluation of Consumers Scale (DCS)	Struening et al. (2001)	8-item questionnaire similar to the PDD (Link, 1987), the DCS assesses perceived devaluation including 3 factors: Status reduction (5 items), Role restriction (2 items) and friendship refusal (1 item) all assessing aspects of perceived stigmatisation. All items are rated on a 4-point Likert scale from 1 = strongly disagree to 4 = strongly disagree . Internal consistency of the DCS was shown to be good α = 0.82 (Struening et al., 2001).	✓ n = 3		
Inventory of Stigmatising Experiences (ISE)	Stuart, Milev & Koller (2005)	17-items stigma questionnaire, used to assess people's experiences of stigma and its impact in a range of areas. The scale has two subscales: The Stigma Experiences Scale (SES, 10 items) and the Stigma Impact Scale (SIS, 7 items). For the current meta-analysis the SES subscale was used to extract data on experienced stigma. Items in the SES are coded into binary variables: 0 = absence of stigma experience and 1 = presence of stigma, with a total score ranging from 0-10. The reliability coefficient for the SES scale is good: KR-20 = 0.83 (Stuart et al., 2005).		✓ n = 3	
Internalised Stigma Scale	Link, Wells, Phelan & Yang (2015)	8-item questionnaire assessing aspects of internalised stigma including items capturing feelings of shame, embarrassment and feeling very different from others based on having a mental illness. The first five items are rated on a 7-point Likert scale ranging from 0 = Not at all to 6 = Very strongly, whereas the latter three are rated on a 4-point scale rating from 0 = never to 4 = very often. However, as the scale includes items scored both 0-6 and 0-4, when summing the scale, the latter items are recoded so that never equals 0, almost never 1.5, sometimes 3, fairly often 4.5,			✓ n = 3

		very often 6. The scale has shown good internal consistency: α = 0.89 (Link et al., 2015).			
Self-Esteem and Stigma Questionnaire (SE/SQ):	Hayward, Wong, Bright & Lam (2002)	14-item questionnaire. Includes eight items on perceived stigmatisation (SQ) which are based on Link (1987) PDD scale, and six items on self-esteem (SE). The stigma scale items (SQ) on perceived stigma were extracted for the current meta-analysis. All items are rated on 6-point Likert scale ranging from 1 = strongly agree to 6 = strongly disagree. Internal consistency is good: α = 0.80 (Hayward et al., 2002).	✓ n = 2		
Self-Stigma Questionnaire (SSQ)	Ochoa et al. (2015)	14-item questionnaire addressing self-stigma. This measure includes items relating to negative self-image due to illness, perceived capabilities, and concealment of one's mental health condition. Items are rated on a 7-point Likert scale ranging from 1 = strongly agree to 7 = strongly disagree. Internal consistency for the SSQ is strong, ranging between α = 0.88 to α = 0.90 (Ochoa et al., 2015).			✓ n = 3
Semi-structured Interview Measure of Stigma (SIMS)	Wood et al. (2016)	11-item semi-structured interview (10 scored items), that assesses elements of perceived, experienced and internalised stigma. The interview sections are rated on 5-point Likert scale, ranging from 0 = no impact/experience to 4 = severe impact/experience. When rating, the interviewer must take into consideration the frequency, duration, amount of distress, intensity of distress, and impacts on day to day functioning. All items are rated on the interviewees experiences in the past month. The scale has been shown to have good internal consistency: α = 0.87 (Wood et al., 2016).	✓ n = 1	✓ n = 1	**
Multidimensional Scale of Perceived Discrimination (MSPD)	Molero, Recio, García-Ael, Fuster and	20-item questionnaire including four subscales two measuring perceived stigmatisation: Blatant group discrimination (BGD; 7 items) and Subtle Group Discrimination (SGD; 3 items), and two subscales measuring discrimination experiences: Blatant Individual Discrimination (BID; 7 items) and Subtle Individual	✓ n = 1		

	Sanjuán (2013)	Discrimination (SID; 3 items). Participants indicate on a 5-point Likert scale the extent to which they agree with each statement. For the current meta-analysis, the one study using this questionnaire only used the first two subscales measuring perceived stigma. Internal consistency for the full scale is excellent: α = 0.94, and good for each of the subscales: BGD α = 0.88, SGD α = 0.79, BID α = 0.89, SID α = 0.84).			

Illness Related Stress Scale	Shahar, Weinberg, McGlashan and Davidson (2010)	14-item measure, seven items asking about exposure to community violence and seven items asking about exposure to stigma experiences. The exposure to stigma questions are based in Link's (1987) PDD but is reformulated to refer to actual discrimination experiences. Correlates of the exposure to stigma subscale were extracted for the meta-analysis. The items are rated on a 4-point Likert ranging from 0 = did not occur to 3 = Occurred many times. The seven-item exposure to stigma subscale had good internal consistency α = 0.73 - 0.84 (Noyman-Veksler et al., 2013).		✓ n = 1	
Burden due to Stigma Experiences (B-STE)	Zäske et al (2016)	5-item questionnaire rating frequency of stigma and discrimination experiences in a range of areas. Items are rated on a 5-point Likert scale ranging from 1 = never to 5 = very often. The scale was found to have good internal consistency: α = 0.796 (Zäske et al., 2016).		✓ n = 1	
Self-Stigma Inventory for Patients (SSI-P)	Yildiz et al (2018)	17-item questionnaire measure of self-stigma. Includes three subscales: Perceived devaluation (mainly in regards to a devalued self-image closer to the construct of self-stigma; 8 items), Internalised stereotypes & social withdrawal (7 items) and concealment of the illness (2 items). The scale's total score was			✓ n = 1

	used to extract data on internalised stigma. Items are rated on a 5-point Likert scale ranging from 1 = do not agree to 5 = totally agree. The total scale was found to have excellent internal consistency: α = 0.93, with subscale alpha coefficients being α = 0.91 for perceived devaluation, α = 0.87 for the internalised stereotypes & social withdrawal and α = 0.60 for the concealment of the illness.			

Notes: *Whilst the lack of disclosure/withdrawal or avoidance can reflect self-stigma, these subscales were not included as measures of self-stigma in accordance with the opinion of the scale authors of the King Stigma Scale (King et al., 2007) highlighting that reluctance to disclose ones mental health status can arise, not exclusively from internalising a negative self-image, but also as a means to cope with experienced discrimination or to cope with fear of prejudice or rejection. ** In the study where this measure was used to examine internalised stigma (Wood et al 2016), the ISMI was also used and therefore this was extracted instead due to being a more common measure.

One included study (Kao et al., 2016) used both the ISMI scale to assess internalised stigma and the total score of the Perceived Psychiatric Stigma Scale (PPSS; Han & Chen, 2008) to assess perceived psychiatric stigmatisation. However, since the PPSS includes items on perceived/experienced stigma as well as items regarding self-depreciation (similar to self-stigma), where the measure has been used to assess self-stigma in other studies (Han, Chen & Li, 2016), only the ISMI scale was extracted from this record.

Appendix 4a

Lothian NHS Board

South East Scotland Research Ethics Committee 01

Waverley Gate
2-4 Waterloo Place
Edinburgh
EH1 3EG
Telephone 0131 536 9000

www.nhslothian.scot.nhs.uk

Date 20 March 2017
Your Ref
Our Ref

Enquiries to: Sandra Wyllie
Extension: 35473
Direct Line: 0131 465 5473
Email: Sandra.Wyllie@nhslothian.scot.nhs.uk

20 March 2017

Miss Emma Eliasson
PhD student
University of Edinburgh
School of Health in Social Science.
Medical School (Doorway 6) Teviot Place
EH8 9AG

Dear Miss Eliasson

Study title: **Metacognitive training in Cognitive Behavioural Therapy for psychosis: A case series**
REC reference: **17/SS/0011**
IRAS project ID: **203489**

Thank you for your letter of 15 March 2017, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Vice-Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact hra.studyregistration@nhs.net outlining the reasons for your request.

Confirmation of ethical opinion

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

Conditions of the favourable opinion

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

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

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm

through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

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

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

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

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

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

Ethical review of research sites

NHS sites

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

Non-NHS sites

The Committee has not yet completed any site-specific assessment (SSA) for the non-NHS research site(s) taking part in this study. The favourable opinion does not therefore apply to any non-NHS site at present. We will write to you again as soon as an SSA application(s) has been reviewed. In the meantime no study procedures should be initiated at non-NHS sites.

NHS Lothian

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
GP/consultant information sheets or letters [GP letter]	V1	10 November 2016
Other [Demographic info.]	V1	15 November 2016
Other [Laura CV]		
Other [Linda CV]		
Other [Stephen Lawrie (2nd supervisor) CV]		
Other [Debrief Sheet V2.0]	v2.0	13 March 2017
Other [Computer task descriptions]		
Other [Response letter]		15 March 2017
Other [Study visits sheet]	V1.0	13 March 2017
Participant consent form [Consent form]	v2.0	15 March 2017
Participant information sheet (PIS) [Participant information sheet V2.0]	v2.0	13 March 2017
REC Application Form [REC_Form_03012017]		03 January 2017
Research protocol or project proposal [Protocol]	v2.0	13 March 2017
Summary CV for Chief Investigator (CI) [Emma Eliasson CV]	v1	20 October 2016
Summary CV for supervisor (student research) [Matthias Schwannauer CV]	V1	
Validated questionnaire [PSYRATS]	V1	
Validated questionnaire [DACOBS]	V1	
Validated questionnaire [MCQ-30]	V1	
Validated questionnaire [MCQ-30 Questionnaire]		
Validated questionnaire [PANSS]	V1	
Validated questionnaire [SCI-PANSS]	V1	
Validated questionnaire [CDSS]	V1	
Validated questionnaire [GAF]	V1	
Validated questionnaire [ISMI]		
Validated questionnaire [Q-LES-Q-18]	V1	

Statement of compliance

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

After ethical review

Reporting requirements

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

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

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

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

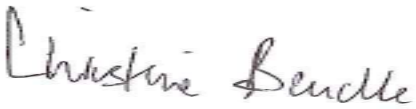
HRA Training

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

17/SS/0011	**Please quote this number on all correspondence**

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

Yours sincerely



Mrs Christine Beadle
Vice Chair

Email:sandra.wyllie@nhslothian.scot.nhs.uk

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Ms Charlotte Smith*
Mr Gavin Robertson, NHS Lothian Research & Development Office

Appendix 4b

University Hospitals Division

NHS Lothian

Queen's Medical Research Institute
47 Little France Crescent, Edinburgh, EH16 4TJ

FM/GM/Approval

12th May 2017

Miss Emma Eliasson
University of Edinburgh
School of Health in Social Science
Medical School (Doorway 6) Teviot Place
Edinburgh
EH8 9AG

Research & Development
Room E1.16
Tel: 0131 242 3330

Email:
accord@nhslothian.scot.nhs.uk

Director: Professor Tim Walsh

Dear Miss Eliasson,

Lothian R&D Project No: 2017/0114 **REC No:** 17/SS/0011

Title of Research: Metacognitive training in Cognitive Behavioural Therapy for psychosis: A case series

Participant Information Sheet:
Version 2 Dated 13th March 2017

Consent Form:
Version 2 Dated 15th March 2017

Protocol: Version 2.0 Dated 13th March 2017

I am pleased to inform you this letter provides Site Specific approval for NHS Lothian for the above study and you may proceed with your research, subject to the conditions below.

Please note that the NHS Lothian R&D Office must be informed of any changes to the study such as amendments to the protocol, funding, recruitment, personnel or resource input required of NHS Lothian.

Substantial amendments to the protocol will require approval from the ethics committee which approved your study and the MHRA where applicable.

Please keep this office informed of the following study information:

1. Date you are ready to begin recruitment, date of the recruitment of the first participant and the monthly recruitment figures thereafter.
2. Date the final participant is recruited and the final recruitment figures.
3. Date your study / trial is completed within NHS Lothian.

I wish you every success with your study.

Yours sincerely

Fiona McArdle.

Ms Fiona McArdle
Deputy R&D Director

cc: Tim Montgomery, Services Director, Royal Edinburgh Hospital and Associated Services

Appendix 5

Participant Information Sheet

Study Title: Improving Psychological Therapies for Psychosis

We would like to invite you to take part in a research project that is being done by the University of Edinburgh and NHS Lothian as part of a PhD project in Clinical Psychology. Before you decide if you would like to take part it is important that you understand why the research is being done and what it will involve. Please take time to read the following information carefully. If you are interested in taking part, there will be an opportunity to discuss the study with a researcher before you make your final decision.

What is the purpose of the study?
Standard psychological therapy for psychosis (Cognitive Behavioural Therapy) is made up of many different 'ingredients', or components. These different treatment components can be included or excluded depending on the needs of the individual. In this study, we want to find out if psychological care can be improved by including some new treatment components. In order to test this, we need to make comparisons. Therefore, if you decide to take part you will either be offered psychological therapy for psychosis with new treatment components included or standard psychological therapy without new treatment components. Which of these options you are offered can decided by chance, but may also be based on what your clinician thinks might suit you, or be based on what therapy your clinician can offer. Researchers call this a quazi-randomised study. During the study neither you nor the researcher will know which of these variations of psychological therapy you are being given. This is called a 'blinded' study, and helps avoid researcher attitudes to unintentionally influence the results. It is important to note that this study is in addition to your standard care. This means that any care you are already receiving will continue as normal.

Why have I been asked to take part?
We are asking people that are either on the waiting list to receive standard psychological support, or that are already receiving psychological support, within NHS Lothian to take part in this study.

What do I have to do?
If you are interested and want to know more about the study you can contact Emma Eliasson on 07857247146. You can also let your care-team know and with your permission, a researcher will contact you to arrange a meeting. If you are not interested in the study, your contact details will not be given to the researcher.

If you decide to meet with a researcher, you will have the opportunity to ask any questions you might have about the study. If you want to take part you will sign a consent form. Following this the researcher will ask you some questions to make sure you are suitable for the study. This meeting will last for about 20-30 minutes. If you are not suitable to take part in the study you will not be included. Instead you will continue to receive your standard care as usual.

What will happen during the study?
If you are suitable to take part in the study, you will meet with the researcher weekly during the trial. These meetings will begin 4 weeks before your support sessions starts as well as during your support sessions. Most of these meetings will be brief and last for about 15 minutes, however some will be a bit longer lasting for about 60 minutes. Study meetings will usually take place in the same location as your regular sessions, and usually around the same time in order to minimise travel for you. However, if you prefer, the researcher can also come and see you in your home or a place that is convenient to you, but this depends on regulations in place due to COVID-19. Study sessions can also be conducted over the phone. Any study visit that you travel to in addition to your regular meetings with your clinician will be reimbursed. After the therapy you will also have the option to take part in a semi-structured interview to give us your feedback of the therapy.

Below is a detailed outline of the study schedule:

Before:

You will meet the researcher once weekly for 4 weeks before you are due to start the support sessions. The first meeting will last for about 60 minutes. Then during the next weekly sessions, you will be asked to complete some brief self-report questionnaires and a brief interview. These once-weekly meetings will last for about 10-15 minutes each.

Following this, before you start the sessions you will meet with the researcher to do some more measures. This is called a baseline assessment. This meeting will last for about 60 minutes and will include some questionnaires, interviews and brief computer tasks.

During:

After the initial meetings with the researcher, you will start the regular sessions with your clinician.
Before each psychological support session you will meet with the researcher to complete a quick interview and some brief questionnaires. This will take around 10-15 minutes.

When you have completed about 8 sessions of support (mid-treatment) your meeting with the researcher will also include some computer tasks and will last around 25 minutes.

After:

After completing your final session, you will be asked to complete some questionnaires, interviews and computer tasks. This meeting will last approximately 60 minutes in total. Then you will meet the researcher weekly for 4 weeks where you will complete some brief self-report questionnaires and a brief interview. These once-weekly meetings will last for about 15 minutes each. You will also have the option to take part in an interview asking about your experiences and feedback of the therapy. This interview will take around 10-20 minutes to complete.

A final follow-up meeting will be arranged 12 weeks later and will involve the same questionnaires, interviews and computer tasks. This meeting will last approximately 60 minutes in total.

What are the possible benefits of taking part?
Standard psychological support for psychosis (for instance Cognitive Behavioural based therapy) as well as other types of psychological support has been shown to help individuals with psychosis. Therefore, we hope that both the treatment and assessments will be helpful to you. However, this cannot be guaranteed.

What are the possible disadvantages of taking part?
It is possible that talking about your mental health issues may be upsetting. You will have the opportunity to discuss any concerns you have with the researcher and you are free to withdraw from the study at any point. You can also talk to your mental health clinician about participation in this study and any concerns you may have. During assessments, regular breaks will be given at your convenience. If you prefer, longer study visits can be spread out over several days.

Do I have to take part?
No, it is up to you whether you take part or not. If you do decide to take part you will be given this information sheet to keep and you will be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. Deciding not to take part or withdrawing from the study will not affect the healthcare that you receive.

What if there is a problem?
In the unlikely event that something goes wrong and you are harmed during the research and this is due to negligence then you may have grounds for legal action against NHS Lothian but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you (if appropriate).

If you have any concerns about aspects of the study please contact Emma Eliasson (PhD student in Clinical Psychology) on 07857247146 who will do her best to answer your questions**.**

What happens to the information collected about me in the study?
When the study is complete, your information will be anonymised and kept on a research database at the University of Edinburgh for 10 years. After those 10 years have elapsed all the information will be destroyed. Personal information gathered during the study will be held for a period of 6-12 months after the study is completed and will then be destroyed. During the study and for the 6-12 month storage period your personal data will be treated in the same confidential manner as your medical records. Digital audio recordings will be encrypted, and stored in locked filing cabinets in NHS Lothian. Once your audio recordings have been transcribed (written up) they will be permanently deleted. The transcripts of the interviews will be anonymous and not contain any identifiable information.

With your consent we will inform your GP that you are taking part.

To make sure that the study is being run correctly, we will ask for your consent for responsible representatives from the Sponsor and NHS Lothian to access your medical records and data collected during the study, where it is relevant to you taking part in this research. The Sponsor is responsible for overall management of the study and providing insurance and indemnity.

In publications, participants will not be identified in any way.

Is the information collected about me confidential?
The information that you provide (such as research data from questionnaires, interviews and audio-recordings) is strictly confidential and will not be shared with other people (i.e. medical staff or people involved in your care) unless you consent. The only instance in which information you provide may be shared is if you provide us with information that indicates that either yourself or another person is at risk of danger or in cases of criminal disclosures that may require further action. Your safety and that of others is very important to us so we would need to share this information. This would normally be shared with somebody already involved in your care such as your mental health clinician or your GP. However, we will always discuss this with you beforehand.
If you lose your capacity to consent whilst participating in the study, you will be withdrawn (but still receive psychological therapy as that is part of your standard care); identifiable data already collected with your consent would be kept and used in the study. However, no further data would be collected and no further research procedures would be carried out from that point.

Where will my data be stored?
The questionnaires you complete will be kept in locked filing cabinets, to which only the researchers will have access. Anonymous paper copies of study data (such as questionnaires) will be kept for a minimum of 3 years. Following completion of the study, anonymous data will be stored electronically at the University of Edinburgh. It will not be possible to link you to this data in any way. It is possible that the anonymised data will be used in future ethically approved studies. Consent forms will be stored in locked filing cabinets only accessible to the research team. Consent forms will be stored separately from the study data.

What will happen to the results of the research study?
We are happy to provide you with a summary of the results of the study. The final results and conclusions of the study will be published as a university thesis and will be shared at conferences and in peer reviewed scientific journals. You will not be identified in any publication.

Who is organising the research?
This study is being organised and sponsored by The University of Edinburgh and NHS Lothian.

Who has reviewed the study proposal?
The University of Edinburgh and NHS Lothian have reviewed the study proposal. All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee. A favourable ethical opinion has been obtained from South East Scotland REC. NHS management approval has also been obtained.

If you are interested in taking part in the study and/or have any further questions please contact Emma Eliasson (PhD student in Clinical Psychology) by phone on: 07857247146

If you would like to discuss this study with an independent researcher please contact:

Emily Newman (Lecturer in Clinical Psychology)
School of Health in Social Science
Doorway 6, Medial Quad, Room 2.1, Teviot Place,
Edinburgh
EH8 9AG
Tel: 0131 651 3945

If you wish to make a complaint about the study please contact NHS Lothian:
NHS Lothian Complaints Team
2nd Floor
Waverley Gate
2-4 Waterloo Place
Edinburgh
EH1 3EG
Tel: 0131 536 3370
Email: feedback@nhslothian.scot.nhs.uk

Thank you very much for reading this and for any further involvement with this study.

Appendix 6

Participant Consent Form

Study Title: Improving Psychological Therapies for Psychosis

Participant ID: ……

Name of Researcher: ……...

Please initial box

1. I confirm that I have read and understand the Patient Information Sheet (Version 7, 16.11.20) for the above study and have had the opportunity to consider the information and ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason, without my medical care or legal rights being affected. ☐
3. I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from the regulatory authorities and from the Sponsor(s) (NHS Lothian and the University of Edinburgh) where it is relevant to my taking part in this research. I give permission for those individuals to have access to my records. ☐
4. I understand that my data will be anonymised and transferred from NHS Lothian facilities to a research database at the University of Edinburgh. ☐
5. I consent to my anonymised data kept in the research database at the University of Edinburgh being used in future ethically approved studies ☐
6. I agree to my General Practitioner being informed of my participation in this study. ☐
7. I agree to members of the research team having access to my medical notes to collect information such as age, gender, medication, diagnosis and previous psychological treatment. ☐
8. I agree to the feed-back interview after the therapy being audio recorded and that the audio recording will be anonymously transcribed and then deleted (optional item) ☐
9. I agree to take part in the above study. ☐

Name of Participant	Date	Signature
Name of Person taking consent	Date	Signature

 Original (x1) to be retained in site file. Copy (x1) to be included in patient notes. Copy (x1) to be retained by the participant.

Appendix 7

Post-session survey for clinicians

Page 1: Page 1

1. Session number:

2. Date:

Dates need to be in the format 'DD/MM/YYYY', for example 27/03/1980.

(dd/mm/yyyy)

3. Therapist:

4. Client ID:

5. What was on the agenda?

Page 2: Between session tasks (relevant to both CBTp and CBTp+MCT)

6. Previous participant between session task reviewed? (please also state whether it was done or not)

7. New participant between session task collaboratively set?

8. Previous therapist between session task reviewed? (please also state whether it was done or not)

9. New therapist between session tasks set?

10. Briefly describe the main rationale for the new between session task set:

Page 3: Therapeutic components

11. Intervention components used (tick all that apply to a reasonble dose - ideally no more than 3 or 4 per session; often 1 or 2 will be appropriate)

- ☐ Engagement / relationship building / telling their story (specify/justify if it is the only one)
- ☐ Work on problem and goals / motivational work / increase self-expectations
- ☐ Maintenance (mini-) formulation / recent incident analysis (attach if done)
- ☐ Longitudinal formulation / timeline
- ☐ Examining attributions for psychotic phenomena
- ☐ Normalisation (including personal disclosure)
- ☐ Examining advantages and disadvantages
- ☐ Coping strategies / rational responding / sleep hygiene
- ☐ Role play/skills practice
- ☐ Evidential analysis / peripheral questioning
- ☐ Generating alternative explanations
- ☐ Survey planning / review
- ☐ Safety Behaviours / behavioural experiments in-session/therapist-assisted/ exposure
- ☐ Metacognitive beliefs (e.g. positive/negative beliefs about paranoia/rumination/worry)
- ☐ Metacognitive strategies (e.g. postponing perseverative processing; detached mindfulness)
- ☐ Attentional strategies (e.g. external focus)
- ☐ Imagery modification / enhancement / correcting memory biases
- ☐ Core beliefs / schema change / interpersonal schema – power/origins of voices
- ☐ Beliefs/expectations about success and pleasure
- ☐ Reducing social isolation / graded activity scheduling / mastery and pleasure / schedule success
- ☐ Relapse prevention

Page 4: Metacognitive training units used in the CBTp+MCT condition.

12. Metacognitive trianing components used in the CBTp+MCT condition. Tick which one applies to this session (one module can span over several sessions if necessary, but try to avoid mixing two modules into the same session). After each session, please indicate nr of in-session worksheets completed.

- ☐ Introduction of the training and explanation of metacognition (to be used as part of the assessment and engagement phase, see above)
- ☐ Yellow and red card introduced
- ☐ Attributional style
- ☐ Decision-making
- ☐ Changing beliefs
- ☐ Empathising
- ☐ Memory and overconfidence
- ☐ Depression and thinking
- ☐ Self-esteem
- ☐ Self-stigma and relapse prevention
- ☐ Other

13. Nr of in session worksheets completed (please also specify which worksheet(s) were completed, e.g. attribution worksheet 4.1, 4.2 and 4.3)

14. Additional notes about this session if relevant: (e.g session shorter than intended, MCT done on iPad or printed versions etc).

Page 5: Thank you!

Appendix 8

Participant Information Sheet

Study Title: Improving Psychological Therapies for Psychosis

We would like to invite you to take part in a research project that is being done by the University of Edinburgh and NHS Lothian as part of a PhD project in Clinical Psychology. Before you decide if you would like to take part it is important that you understand why the research is being done and what it will involve. If you are interested in taking part, there will be an opportunity to discuss the study with a researcher before you make your decision.

What is the purpose of the study?
The purpose of this study is to improve standard psychological therapy for psychosis in NHS Lothian. We are therefore conducting a case-series where we are comparing different ingredients of CBTp, whereby some participants are receiving standard therapy and some participants are receiving Metacognitive Training (MCT) modules. In order to further assess feasibility and utility of including MCT in NHS Lothian we would also like to conduct a qualitative sub-study where we will ask clinicians of their experiences of delivering CBTp and MCT. Therefore, as a clinician, if you decide to take part you will be invited to an interview session whereby you will give your feedback on delivering therapy for psychosis in NHS Lothian.

Why have I been asked to take part?
We are asking clinicians involved as trial therapists to take part in this study.

What do I have to do?
If you are interested and want to know more about the study, you can contact Emma Eliasson (e.eliasson@nhs.net).

What will happen during the study?
If you decide to take part in the study, we will arrange an interview session at your convenience. The interview is expected to last between 20-45 minutes.

What are the possible benefits of taking part?
There are no direct benefits of taking part in this study. However, we are hoping that your feedback will help inform how psychological treatment practices for psychosis can be improved in NHS Lothian.

What are the possible disadvantages of taking part?
There are no expected disadvantages to taking part in this study.

Do I have to take part?
No, it is up to you whether you take part or not. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

What if there is a problem?
In the unlikely event that something goes wrong and you are harmed during the research and this is due to negligence then you may have grounds for legal action against NHS Lothian, but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you (if appropriate).

If you have any concerns about aspects of the study, please contact Emma Eliasson (PhD student in Clinical Psychology) on 07857247146 who will do her best to answer your questions**.**

What happens to the information collected about me in the study?
When the study is complete, your information will be anonymised and kept on a research database at the University of Edinburgh for 10 years. After those 10 years have elapsed all the information will be destroyed. Digital audio recordings will be encrypted, and stored in locked filing cabinets in NHS Lothian. Once your audio recordings have been transcribed they will be permanently deleted. The transcripts of the interviews will be anonymous and not contain any identifiable information.

In publications, participants will not be identified in any way.

Is the information collected about me confidential?
The information that you provide (audio-recordings) is strictly confidential and will not be shared with people outside of the research team. Audio-recordings will be transcribed anonymously and kept on secure data bases. Audio-recordings will be deleted after they have been transcribed.

Where will my data be stored?
Completed interviews will be kept in locked filing cabinets, to which only the researchers will have access. Anonymous interview transcripts will be kept for a minimum of 3 years. Following completion of the study, anonymous data will be stored electronically at the University of Edinburgh. It will not be possible to link you to this data in any way. It is possible that the anonymised data will be used in future ethically approved studies. Consent forms will be stored in locked filing cabinets only accessible to the research team. Consent forms will be stored separately from the study data.

What will happen to the results of the research study?
We will provide you with a summary of the results of the study. The final results and conclusions of the study will be published as a university thesis and will be shared at conferences and in peer reviewed scientific journals. Your interview responses will not be identified in any publication.

Who is organising the research?
This study is being organised and sponsored by The University of Edinburgh and NHS Lothian.

Who has reviewed the study proposal?
The University of Edinburgh and NHS Lothian have reviewed the study proposal. All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee. A favourable ethical opinion has been obtained from South East Scotland REC. NHS management approval has also been obtained.

If you are interested in taking part in the study and/or have any further questions please contact Emma Eliasson (PhD student in Clinical Psychology) by phone on: 07857247146 or email: e.eliasson@nhs.net.

If you would like to discuss this study with an independent researcher please contact:

Emily Newman (Lecturer in Clinical Psychology)
School of Health in Social Science
Doorway 6, Medial Quad, Room 2.1, Teviot Place,
Edinburgh
EH8 9AG
Tel: 0131 651 3945

If you wish to make a complaint about the study please contact NHS Lothian:
NHS Lothian Complaints Team
2nd Floor
Waverley Gate
2-4 Waterloo Place
Edinburgh
EH1 3EG
Tel: 0131 536 3370
Email: feedback@nhslothian.scot.nhs.uk

Thank you very much for reading this and for any further involvement with this study.

Appendix 9

Participant Consent Form

Study Title: Improving Psychological Therapies for Psychosis

Participant ID: ……

Name of Researcher: …

Please initial box

1. I confirm that I have read the Participant Information Sheet (Version 2, 09.01.19) for the above study and have had the opportunity to consider the information and ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason. ☐
3. I understand that my data will be anonymised and transferred from NHS Lothian facilities to a research database at the University of Edinburgh. ☐
4. I consent to my anonymised data kept in the research database at the University of Edinburgh being used in future ethically approved studies ☐
5. I agree to the interviews being audio-recorded and that the audio recording will be anonymously transcribed and then deleted. ☐
6. I agree to take part in the above study. ☐

Name of Participant	Date	Signature
Name of Person taking consent	Date	Signature

 Original (x1) to be retained in site file. Copy (x1) to be retained by the participant.

Appendix 10

Improving Psychological Therapies for Psychosis. Topic theme guide for semi-structured interviews V1.0. 12.12.18. Emma Eliasson

Topic guide themes for semi-structured interview for patients:

1) General experience of the therapy:
(How did you find the therapy / Did you enjoy the therapy sessions? / / How did you find the material? / How was the timing of the therapy (e.g. timing of sessions/the whole course of therapy, weekly sessions etc)?

2) Experiences of change after therapy:
(Did you notice any changes in your everyday life after the therapy? / Did your behaviour change as a result of therapy? / Did you experience less distress in everyday life as a result of therapy?)

3) Subjective experiences of proposed mechanisms of change:
(What specific changes did you notice after taking part in the therapy? / What do you think changed after therapy?)

4**) Useful versus less useful aspects of therapy?**
(What aspects did you find most useful with the therapy? / What aspects did you find least useful? / What factors did you feel promoted positive change? / Suggestions for improvements?)

Appendix 11

Improving Psychological Therapies for Psychosis. Topic theme guide for semi-structured interviews V1.0. 12.12.18. Emma Eliasson

Topic guide themes for semi-structured interview for therapists:

1) General experience of delivering MCT:

(What was your over-all experience of delivering MCT? / How did you find the material? / Did you find that the material was appropriate for your client group? / Did you feel that your client group found it beneficial?) *if they did not deliver MCT, ask about their perceptions after having received the training & material?*

2) Amount of material and timing of delivery:

(Was there enough time to get through the material? / Was the amount of material appropriate for your client group? / How long did your sessions normally last?)

3) Perceived benefit of client after therapy:

(Did you notice any changes/benefits from therapy in your client(s)?)

4) Suggestions for improvements:

(What aspect of MCT did you find useful? / What aspects did you not find useful? / Do not appear useful? / Would any changes to the therapy to make it more beneficial for your client group?) *If they did not deliver MCT, ask about perceived benefits based on training, and the material*

5) Feasibility of conducting a trial within psychological services for psychosis in NHS Lothian?

(Did you find conducting a randomized trial within your services feasible? Were there any challenges to this? / Do you have any suggestions to make future trials more efficient?)