METACOGNITION IN PSYCHOTIC DISORDERS

STEVEN DE JONG

RIJKSUNIVERSITEIT GRONINGEN

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by

Steven de Jong

born on 19 September 1985
in Apeldoorn

Supervisors

Prof. G.H.M. Pijnenborg
Prof. A. Aleman
Prof. M. van der Gaag

Assessment Committee

Prof. R.A. Schoevers
Prof. L. de Haan
Prof. M. Brüne

TABLE OF CONTENTS

CHAPTER 1

Metacognition in psychotic disorders: from concept to interventions

de Jong, S., van Donkersgoed, R.J.M., Arends, J., Lysaker, P.H., Wunderink, L., van der Gaag, M., Aleman, A., Pijnenborg, G.H.M.

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ABSTRACT

Persons with a psychotic disorder commonly experience difficulties in metacognitive capacity or the ability to form and reflect upon ideas about themselves and others. This article reviews several definitions of metacognition, its role in psychopathology, as well as measurement strategies. This literature suggests that although definitions and instruments vary considerably, metacognition and related concepts are measurable. Clinical interventions intended to enhance metacognition are discussed along with the development of new forms of psychotherapy that aim to help patients suffering from psychotic disorders to improve metacognitive capacity.

INTRODUCTION

While research efforts over the last century have improved our understanding of psychotic disorders significantly, it is remarkable to what degree observations by key figures such as Bleuler and Kraepelin, have held up under scientific scrutiny (Moskowitz & Heim, 2011). Bleuler, for instance, introduced the 'four a's of schizophrenia' in 1911: [loosening of] association, [inadequacy of] affect, ambivalence and autism (the latter referring to disruptions in emotional contact with others). Various authors (Aleman & Kahn, 2005; Moskowitz & Heim, 2011) have pointed out that Bleuler is frequently inaccurately viewed as denoting schizophrenia as an illness of thinking while he, in fact, emphasized the strong influence of affect on loosened associations. While terminology has changed significantly, observations such as these are consistent with calls to consider psychotic disorders as disorders in the ability to form mental representations of others (C. D. Frith, 1992), disorders in the adaptation to a social context (van Os, Kenis, & Rutten, 2010) or recently as neurologically rooted in disrupted communication between networks concerning the intrinsic and extrinsic self (Ebisch & Aleman, 2016). The ability to reflect on representations of the self (in which affect and cognition and their interactions are understood) and the representations of others, along with the ability to respond adequately to these reflections, possibly has a strong influence on the degree to which psychological symptoms influence daily life functioning. Some authors are using the term 'metacognition' to describe this capacity (Lysaker & Dimaggio, 2014). Terminology regarding 'metacognition' and related constructs (social cognition, Theory of Mind, mentalizing) is inconsistent, however, which may lead to confusion. Most, if not all, definitions refer to 'thinking about

thinking', but specifics differ significantly. In this introduction, we will first discuss several different conceptualizations of metacognition and related concepts. Subsequently, relevant measurement instruments will be discussed which may find use in clinical practice and research. Finally, different interventions intended to target metacognitive capacity in persons with a psychotic disorder will be discussed.

CURRENT DEFINITIONS OF METACOGNITION APPLIED TO PSYCHOPATHOLOGY

The term 'metacognition' was originally used in educational psychology, and defined as knowledge and cognitions about cognitive phenomena (Flavell, 1979). In the following decades the term came to be used in several different ways. Wells (2009) utilized a similarly cognitive-oriented definition: metacognition plays a role in the interpretation of thoughts, and the reaction following these interpretations (Wells & Cartwright-Hatton, 2004). Psychological difficulties, according to this definition, will generally develop when the content of the metacognition beliefs is dysfunctional, such as the belief that rumination causes one to be well-prepared. Moritz and colleagues (2011), who developed a metacognitive training for persons with psychotic disorders, follow an extension of this definition. While Wells *et al.* mainly emphasized the content of metacognitions such as the rumination about the own thought-content, Moritz *et al.* focus on the process of evaluation of thought processes, and identified several cognitive biases which appear more prevalent among persons with a psychotic disorder. They considered metacognition as the awareness of these biases, such as the jumping to conclusions bias, which causes one to draw conclusions and make decisions based on these conclusions before sufficient information has been gathered. Through an intervention in which participants are exposed to examples of these

biases, attempts are made to reduce the influence of these biases on behavior. In this conceptualization, metacognition takes the form of a control-process used to detect and potentially adjust a certain way of thinking. In the literature, metacognition is more frequently used as a control-process, using it to describe the post-facto confidence in decisions and error-detection (Cella, Swan, Medin, Reeder, & Wykes, 2014; Koren, Seidman, Goldsmith, & Harvey, 2006) or the sense of correctness of an answer (feeling of rightness, FOR; Thompson, Prowse Turner, & Pennycook, 2011). These conceptualizations share the common denominator that they refer in particular to thoughts about the own cognitive system, either by way of understanding the own thoughts, the own cognitive biases or exerting control over these processes.

Wells (2009), however, also focuses on affective experience; one example of difficulties in metacognition concerns a patient who is wondering specifically why she is feeling the way that she is feeling, and whether she should not be feeling differently. Similarly, the Metacognitive Training (MCT; Moritz *et al.*, 2011) attempts to address the impact of cognitive biases on Theory of Mind, by informing trainees of the impact of mood on the judgment of social cues. This connection with affect is unsurprising, since interactions between affect and cognition are constantly taking place (Clore & Huntsinger, 2007). One could argue that any complete definition of metacognition should also span emotional processes: thinking about thinking and feeling, sometimes also referred to as 'mental states'.

There is significant support for the assumption that the ability to accurately interpret the mental states of others is at least related to the ability to accurately interpret one's own mental states, both on theoretical grounds, as well as meta-analysis of fMRI results which confirm an overlap in regions of the brain activated when reflecting on oneself and reasoning about others (van Veluw & Chance,

2014). Furthermore, meta-analysis has established differences in brain activation between self- and other-reflection and it has been hypothesized that such differences are less pronounced in schizophrenia patients (van der Meer, Costafreda, Aleman, & David, 2010). There is also significant evidence for claims that these skills play a central role in social functioning (Roncone *et al.*, 2002).

There are several concepts which are, more or less, synonymous to (elements of) metacognition. Empathy refers to the ability to proverbially put yourself in another's shoes, and is generally split up into a cognitive and an affective component. The cognitive component refers to the ability to form a working model of the emotional states of others, while the affective component describes the ability to be sensitive to and vicariously experience the emotions of others (Reniers, Corcoran, Drake, Shryane, & Völlm, 2011). Inferring the mental states of others is also commonly referred to as Theory of Mind (Brüne, 2005) or as a component of mentalizing (C. D. Frith, 1999), with each of these concepts often divided up into a cognitive and an affective component. The concepts are related to such a degree that authors frequently use the terms interchangeably (e.g. Fonagy, Bateman, & Bateman, 2011).

AN INTEGRATIVE DEFINITION OF METACOGNITION

While many definitions of metacognition have emphasized disturbances or errors in discrete thoughts leading to the perturbation of affect, Semerari *et al.* (2003) and Lysaker *et al.* (2005) have described metacognition as a spectrum of activities, which also involves the integration of information into more complex senses of self and other. This conceptualization frames metacognitive processes as playing a central role in how human beings understand themselves and others from a larger frame. Specifically, this integrative model uses metacognition as an umbrella term, consisting of four semi-independent

subdomains originally defined by Semerari *et al.* (2003): self-reflectivity, understanding the other's mind, decentration and mastery (Table 1). Each of these domains includes a range of activities which include more discrete activities (e.g. recognizing a thought) to more synthetic activities (integrating information into a complex self-representation). Applying this model to psychosis, Lysaker *et al.,* (2005) have proposed that

"Self Reflectivity": Refers to the awareness of one's own thoughts, intentions and emotions, and the ability to form a complex and integrated sense of self on the basis of that information. Lower levels of self-reflectivity involve the recognition of different forms of basic mental states while higher levels of self-reflectivity reflect the ability to recognize psychological patterns across their life, synthesizing multiple narrative episodes into a coherent and complex narrative which integrates different modes of cognitive and/or emotional functioning.

"Understanding the Other's Mind": Refers to awareness of the mental states of others including their thoughts, intentions and emotions and the ability to form a complex and integrated sense of another person on the basis of that information. Lower levels of understanding the other's mind involve the recognition of different forms of basic mental states while higher levels of this function involve the ability to form an integrated idea of another person's mental states across multiple narrative episodes into a coherent narration.

"Decentration": Refers to the ability to see the world as perceivable from multiple valid perspectives. Lower levels of decentration involve being able to understand that events in the world can take place for reasons which are unrelated to the person. Higher levels of decentration reflect the ability to recognize that the events that occur in regular life are often the result of complex emotional, cognitive, social, and environmental factors which vary according to the individuals involved.

"Mastery": Refers to the ability to use metacognitive knowledge to respond to psychosocial challenges. Lower levels of mastery involve the ability to name a plausible psychosocial challenge. Moderate levels involve the ability to change thoughts or behaviors in response to psychosocial challenge while higher levels involve the ability to use unique knowledge of oneself, others and the larger community to respond to psychosocial challenges and live with the realities of the human condition.

metacognitive functions have a hierarchical nature such that specific functions are required for higher level functions to be performed. For example, one is presumed unable to consider the interaction between an emotion (feeling hopeless) and accompanying thoughts ("I am worthless") without both a basic understanding of one's own cognitive processes and the ability to differentiate between emotions.

Applied to psychosis, disruptions in metacognition are proposed to leave persons unable to form complex ideas about themselves and others on the basis of discrete information. As a result, people may find it difficult to understand the world around them and to see themselves as active agents who can effect changes in their own lives, ultimately compromising social function. Additionally, persons may also be relatively unable to use knowledge of themselves and others when responding to psychosocial challenges leading to increased levels of prolonged distress, demoralization and withdrawal.

The integrative conceptualization of metacognition does not deny the importance of the content of discrete cognitions or abilities to correctly perceive elements of social exchange. It does add, however, a larger issue which concerns the integration of discrete data into larger-scale representations of oneself, others and the world. Inherently, this synthesizing of information is not in itself correct or incorrect, but is an ongoing system of meaning making, in which metacognitive capacity is considered both an automatic and effortful process. Discrete and synthetic forms of metacognition are believed to mutually influence one another, as more complex ideas require constituent parts and discrete pieces of information are generally interpreted on the basis of our later ideas of ourselves and the world. This process may be compromised in different ways and to different degrees, leading to different forms of difficulties of adaptation and thus, potentially, either producing psychopathology or making it difficult to manage different forms of psychopathology.

MEASUREMENT INSTRUMENTS

Metacognition can be measured in several different ways. What follows is a small selection of instruments which, while not comprehensive, offers some notion of the variety of tools available to clinicians to measure different aspects of metacognition. The first type of measurement instruments consists of self-report questionnaires, positioned mainly at the cognitive, discrete side of these domains. One oft-used instrument of this type is the Meta-Cognitions Questionnaire (MCQ; Wells & Cartwright-Hatton, 2004), consisting of 65 or 30 items answered on a 4-point Likert-scale. The items of the MCQ are intended to identify the beliefs about one's own cognitions, with questions such as: "Worrying helps me to get things sorted out in my mind". Both the MCQ and MCQ-30 have sufficient psychometric qualities and correlate, among others, with the severity of auditory hallucinations (Morrison & Wells, 2003) and anxiety and depressive symptoms in schizophrenia (van Oosterhout, Krabbendam, Smeets, & van der Gaag, 2013).

Pertaining cognitive biases, the Davos Assessment of Cognitive Biases (DACOBS; Bastiaens *et al.*, 2013) uses 70 items to measure four cognitive biases (jumping to conclusions, confirmation bias, attention to threat and external attribution bias) as well as subjective cognitive difficulties, social-cognitive difficulties and avoidance behavior. The DACOBS has good psychometric qualities and can accurately differentiate between persons with a diagnosis in the psychosis spectrum and controls (van der Gaag *et al.*, 2013). Questionnaires such as these may form a solid basis to guide cognitive (behavioral) interventions intended to target metacognitions, or group training (discussed later).

Questionnaires mostly aimed towards metacognitive capacity pertaining the mental states of others frequently intend to measure the construct of empathy, such as the Interpersonal Reactivity Index (IRI; Davis, 1983). This questionnaire measures the construct of

empathy on four subscales, using 28 items. The IRI has demonstrated sufficient psychometric qualities, and has seen ample use in research, but is exclusively focused on empathy. An instrument with a solid basis of correlations with behavioral and physiological measures is the Measure of Emotional Empathy (Mehrabian & Epstein, 1972). This questionnaire consists of 33 items to be answered on a 4-point Likert Scale. Correlations have been found between this measure and reduced insight in psychosis (Pijnenborg, Spikman, Jeronimus, & Aleman, 2013).

The Toronto Empathy Questionnaire (Spreng, McKinnon, Mar, & Levine, 2009) was constructed based on factor analysis of other frequently-used measures of empathy, resulting in 16 items with excellent psychometric qualities. Crucially, during its development, the authors forced items to load onto a single factor so as to create a scale to measure empathy as a unidimensional construct. Clinicians or researchers seeking to investigate cognitive and affective empathy as separate constructs could use the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers *et al.*, 2011) which was recently developed from items of other instruments, and validated.

The broader construct of 'social cognition' and 'Theory of Mind' are generally not measured using questionnaires, but make use of behavioral tasks. On the more discrete side of activity, emotion recognition is generally measured by asking participants to interpret photographs of facial expressions or photos (e.g. the Ekman 60-faces) or of eyes alone (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001), and indicate which emotion or word best relates to what the person is feeling. More synthetic tasks consist of stories in which the participant is asked whether a character committed a socially-undesirable act, or 'faux pas' (Baron-Cohen, O'Riordan, Stone, Jones, & Plaisted, 1999), tests in which participants are asked to infer the intentions

of others (Corcoran, Mercer, & Frith, 1995) and tasks in which the participant has to determine whether one character has a false belief about the location of a ball, or has to put images of a story in the most logical order. Particularly relevant, in this context, are the recent results of the Social Cognition Psychometric Evaluation (SCOPE) study, in which several measures of social cognition were entered into a confirmatory factor analysis (Browne *et al.*, 2016). Data analysis in which results from control participants without a psychiatric diagnosis (n=104) are compared to scores of a sample of persons with a diagnosis of schizophrenia (n=179) indicates the existence of a single-factor social-cognitive ability. The authors note, however, that the measures investigated are only those with answers that can be classified as correct or incorrect, and as such measure social-cognitive skill (discrete abilities), and that future work is needed on individuals' abilities to synthesize such information into complex representations which help a person function in the world around them.

One avenue in which these abilities may be studied is through the construct of metacognition as operationalized by Semerari *et al.* (2003), who developed the Metacognition Assessment Scale (MAS) to measure the more synthetic metacognitive activities. This instrument was adapted by Lysaker *et al.* (2005) to be used with persons with a diagnosis in the psychosis spectrum, assuming a hierarchical structure to metacognitive functions. The MAS-A is based on the original four domains proposed by Semerari et al: self-reflectivity, understanding the other's mind, decentration and mastery. Each scale is hierarchical, and consists of multiple levels, each with anchor points. Using the MAS-A, transcripts of conversations with a person may be scored on metacognitive activity, and as such, the instrument lends itself for scientific research as well as a form of routine outcome monitoring, monitoring progress within a therapeutic context (Buck & Lysaker, 2009). The instrument has

demonstrated sufficient psychometric qualities, and can differentiate between patients with a diagnosis in the psychosis spectrum and controls, given sufficiently-trained raters (Lysaker *et al.*, 2014). The measure has a rather unique level of ecological validity: metacognitive capacity is rated on what the participant actually demonstrates in the moment, when discussing their own lives, although the measure in its current form has severe limitations in application. Most saliently, the measure requires the speech samples (interview, or therapy session) to be fully transcribed – a time investment most healthcare professionals (and researchers) will be hard-pressed to be able to commit to. Of note, the original authors of the MAS have developed a new method, the MAS-R, which does not assume a hierarchical structure and which has been applied to at least one first episode sample (MacBeth *et al.*, 2016).

METACOGNITION AS A TARGET FOR THERAPY

Several interventions based on the different conceptualizations of the construct have been developed. Perhaps most well-known is the method developed by Wells and colleagues (Wells, 2009), which was initially aimed at anxiety and depression, but has demonstrated transdiagnostic utility, making it suited for application with other disorders such as PTSD (Wells & Colbear, 2012) and psychotic disorders (Morrison *et al.*, 2014). Although the therapy is grounded in a cognitive model, and is commonly considered a variant of Cognitive Behavioral Therapy, it has a distinct feature: more attention is spent on the process of thinking than on the content of thoughts. For instance, when the therapy pertains rumination, earlier sessions will generally be focused on measuring thmetacognitive beliefs. Only in later sessions are thought experiments (ruminating in the moment) and behavioral experiments conducted in a way common to CBT. Meta-analysis shows promising results for anxiety and depression (Normann, van Emmerik, & Morina, 2014),

though the authors themselves note that their analysis is conducted on a small sample. As such, interpretation of the results should be undertaken with the necessary caution. A preliminary trial with ten patients with a psychotic disorder showed a reduction of experienced symptoms, and a randomized controlled trial seems desirable (Morrison *et al.*, 2014).

To adjust (meta)cognitive biases persons with a psychotic disorder frequently suffer from, a metacognitive training (MCT) was developed (Moritz *et al.*, 2011). This training consists of eight modules and is freely available in different languages. The developers themselves consider the training as a combination of CBT and cognitive remediation, which targets symptoms by addressing underlying processes. Meta-analysis, however, does not find any influence of MCT on positive symptoms, delusions or the jumping-to-conclusions bias (Oosterhout *et al.*, 2015).

Cognitive Behavioral Therapy (CBT) has been undergoing a small, but significant, paradigm-shift: although it has always contained elements of metacognition in that cognitions are jointly evaluated, these elements are starting to move more towards the foreground (Dobson, 2013). Metacognition is a central element in so-called third-wave therapies. Perhaps most widely known is Acceptance and Commitment Therapy (ACT). The basis of this therapy is the hypothesis that human suffering is generally not an expression of psychiatric disorder, but is part of life in general. It is the response to suffering which is addressed in therapy, by adjusting how one thinks about the suffering by addressing value judgements ("I may not have these feelings") or intentions of will ("I have to get rid of these problems as quickly as possible") (Yovel, Mor, & Shakarov, 2014). A recent meta-analysis of 60 RCT's investigating ACT as a method, shows a small to medium effect size. Due to the heterogeneity – unexplained variance between studies – the data currently available can only attest that ACT possibly has an effect on psychotic symptoms, but the quality of studies is low and better trials are desired (Öst, 2014).

Finally, there has been an increase in psychotherapeutic approaches which are based on the synthetic conceptualization of metacognition, and the recovery movement. Generally, such approaches are based on either the model of metacognition depicted in Table 1, developed by Semerari *et al.* and Lysaker *et al.*, (Semerari *et al.*, 2003) or the comparable, though more psychodynamic-oriented model of mentalization (Bateman, Fonagy, & Allen, 2009). Several such interventions exist, with as common factors the narrative – the (re) construction or evaluation of the story of the patient's life, and activities in which the therapist and patient think together about the experiences of the patient and the therapeutic relationship, so as to stimulate metacognitive capacity (Hamm, Hasson-Ohayon, Kukla, & Lysaker, 2013). Where CBT generally has a focus on discrete elements such as specific symptoms or the interpretation of problematic states, these psychotherapies focus on the more synthetic activities such as forming representations of the 'self' , and the metacognitive activities required for a person to place themselves in time, the social context and the world (Lysaker & Roe, 2012). Evidence for the effectiveness of such activities is relatively sparse and comes mainly in the form of case studies (e.g. Lysaker, Buck, & Ringer, 2007; Salvatore, Russo, Russo, Popolo, & Dimaggio, 2012). More recently, one method was investigated in a pilot study with 18 participants, in which participants improved on measures of subjective recovery and received increased scores on the self-reflectivity subscale of the MAS-A (Bargenquast & Schweitzer, 2013). Our own research team has recently added two case studies with positive results (de Jong, S., van Donkersgoed, R.J.M., Pijnenborg, G.H.M., & Lysaker, 2016; van Donkersgoed, de Jong, & Pijnenborg, 2016). Both of these cases concern patients with symptoms generally considered difficult to treat – severe disorganization and heavy negative symptoms, respectively. The latter case study can be found in

this dissertation in Chapter 4. The protocol used in these case studies is the so-called Metacognitive Reflection and Insight Therapy (MERIT) treatment manual, developed in English by Lysaker *et al.* One major component of our research team's efforts have been to evaluate this novel method, and in order to do so the manual was not only translated, but also heavily adapted to suit the Dutch context and therapists. The protocol was first tested in a pilot study, in which only two therapists (SJ and RvD) worked under supervision from PL and MP in the treatment of 12 participants with a psychotic disorder. The positive findings, reported in Chapter 5, informed the design of the randomized controlled trial reported in Chapter 6.

It is relevant to note that interventions such as these put a (high) cognitive demand on clients. As such, it may prove difficult to attain therapy success with those patients that suffer from (comorbid) disorders in cognitive or neurobiological functioning.

CONCLUSION

There are different ways in which metacognition may be conceptualized and defined. Each conceptualization and accompanying methods of measurement have a solid foundation in scientific evidence and psychometric qualities. One integrative definition of metacognition can be found in the works of Semerari *et al.* (2003) and Lysaker *et al.* (e.g. 2005). This model divides metacognition into four domains, and places processes on a spectrum, from more discrete activities (e.g. recognizing a thought in one's own head, or identifying the presence of any kind of intrapsychological stress) to more synthetic activities (such as forming complex representations of self and others, or one's own psychological coping). This model should not be considered a replacement of other, previous models, but may prove useful to place the different concepts into a larger whole. Using this model of

metacognition is particularly useful when the object of study is the more synthetic component of metacognitive capacity, which is under-researched at the moment due to a lack of instruments of measurement. This does, however, come at a trade-off: where more discrete-oriented instruments offer great detail regarding a singular process (e.g. the recognition of negative-affect facial expressions), the MAS-A offers a broader, less detailed view of the process as a whole.

Metacognitive capacity appears impaired in persons with a psychotic disorder. Several measurement instruments have been developed which pertain some form of metacognitive capacity, which have demonstrated good clinical utility. In addition, different therapies have been developed in an effort to assist persons (re)gain metacognitive capacity (Hamm *et al.*, 2013). Most of these interventions require more research, in the form of randomized controlled trials and meta-analyses which bundle these findings, before one may speak of an evidence base robust enough to be entered into international guidelines. Several such studies are underway: one randomized trial being conducted investigates mentalization-based therapy (Weijers *et al.*, 2016), another one explores an approach based on the MAS-A model (Van Donkersgoed *et al.*, 2014) or a version of the metacognitive training adapted for individual use (Vitzthum, Veckenstedt, & Moritz, 2014).

OVERVIEW OF THIS THESIS

The introduction of this thesis explores a relatively novel conceptualization of the term 'metacognition', broadly within the field of 'social cognition'. Terminology in the field has, as it would seem, become rather muddied, with different terms and conceptualizations overlapping in certain areas, and not in others. Different conceptualizations also vary in resolution, with terminology ranging from very broad sets of capacities involved ('theory of mind') versus far more concrete, detailed expressions ('second-order Theory of Mind'). Or, as the model under discussion would put it: discrete activities versus more synthetic activities.

Using a model with a larger scope inherently reduces its resolution, opting to specify a larger whole rather than taking a narrow view of its component parts. The current thesis takes a pragmatic approach to the topic, and seeks to investigate in which ways such a model can find clinical and research applications, but also to investigate its inverse: what its limitations are. In order to do so, the second chapter approaches metacognition as a correlate for relevant outcome measures, investigating the influence of metacognitive deficits on the experience of work and how these interact with different adjunctive treatment.

The third chapter investigates the possible influence of metacognitive deficits on the risk of violence in psychosis. By including scores from a control population, an effort is made to determine whether metacognition has a unique contribution to the risk of violence over and above deficits commonly found in participants with a diagnosis in the psychosis spectrum.

In part two of this thesis (Chapters 4 – 6), metacognition is studied as the basis for a psychosocial intervention, in the form of an individual psychotherapy manual. Chapter four will discuss the case of Abraham; a case study demonstrating promising results with a participant with

such severe symptoms of disorganization that they may pose a severe obstacle in the application of current treatments listed in international guidelines.

The fifth chapter will discuss a pilot study conducted in preparation for the multicenter, randomized controlled trial we performed to investigate the effects of this same treatment manual. Our findings from this trial are reported in Chapter 6 of this thesis.

The seventh and final chapter will consist of a general discussion in which the findings of all aforementioned studies are combined. Strengths and weaknesses of this conceptualization of metacognition will be discussed, and suggestions for further research will be made.

REFERENCES

Aleman, A., & Kahn, R. S. (2005). Strange feelings: do amygdala abnormalities dysregulate the emotional brain in schizophrenia? Progress in Neurobiology, 77(5), 283–98. http://doi.org/10.1016/j.pneurobio.2005.11.005

Bargenquast, R., & Schweitzer, R. D. (2013). Enhancing sense of recovery and self-reflectivity in people with schizophrenia: A pilot study of Metacognitive Narrative Psychotherapy. Psychology and Psychotherapy. http://doi.org/10.1111/papt.12019

Baron-Cohen, S., O'Riordan, M., Stone, V., Jones, R., & Plaisted, K. (1999). Recognition of faux pas by normally developing children and children with Asperger syndrome or high-functioning autism. Journal of Autism and Developmental Disorders, 29(5), 407–18. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10587887

Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The "Reading the Mind in the Eyes" Test revised version: a study with normal adults, and adults with Asperger syndrome or high-functioning autism. Journal of Child Psychology and Psychiatry, and Allied Disciplines, 42(2), 241–51. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11280420

Bastiaens, T., Claes, L., Smits, D., De Wachter, D., van der Gaag, M., & De Hert, M. (2013). The Cognitive Biases Questionnaire for Psychosis (CBQ-P) and the Davos Assessment of Cognitive Biases (DACOBS): validation in a Flemish sample of psychotic patients and healthy controls. Schizophrenia Research, 147(2–3), 310–4. http://doi.org/10.1016/j.schres.2013.04.037

Bateman, A., Fonagy, P., & Allen, J. G. (2009). Theory and practice of mentalization-based therapy. In Textbook of psychotherapeutic treatments (pp. 757–780). Arlington, VA, USA: American Psychiatric Publishing.

Browne, J., Penn, D. L., Raykov, T., Pinkham, A. E., Kelsven, S., Buck, B., & Harvey, P. D. (2016). Social cognition in schizophrenia: Factor structure of emotion processing and theory of mind. Psychiatry Research, 242, 150–156. http://doi.org/10.1016/j.psychres.2016.05.034

Brüne, M. (2005). "Theory of mind" in schizophrenia: a review of the literature. Schizophrenia Bulletin, 31(1), 21–42. http://doi.org/10.1093/schbul/sbi002

Buck, K. D., & Lysaker, P. H. (2009). Addressing Metacognitive Capacity in the Psychotherapy for Schizophrenia: A Case Study. Clinical Case Studies, 8(6), 463–472. http://doi.org/10.1177/1534650109352005

Cella, M., Swan, S., Medin, E., Reeder, C., & Wykes, T. (2014). Metacognitive awareness of cognitive problems in schizophrenia: exploring the role of symptoms and self-esteem. Psychological Medicine, 44(3), 469–76. http://doi.org/10.1017/S0033291713001189

Clore, G. L., & Huntsinger, J. R. (2007). How emotions inform judgment and regulate thought. Trends in Cognitive Sciences, 11(9), 393–9. http://doi.org/10.1016/j.tics.2007.08.005

Corcoran, R., Mercer, G., & Frith, C. D. (1995). Schizophrenia, symptomatology and social inference: investigating "theory of mind" in people with schizophrenia. Schizophrenia Research, 17(1), 5–13. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8541250

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. Journal of Personality and Social Psychology, 44(1), 113–126. http://doi.org/10.1037/0022-3514.44.1.113

de Jong, S., van Donkersgoed, R. J. M., Arends, J., Lysaker, P. H., Wunderink, L., van der Gaag, M., … Pijnenborg, G. H. M. (2016). Metacognitie bij psychotische stoornissen : van concept naar interventie. Tijdschrift Voor Psychiatrie, (6), 455–462.

Dobson, K. S. (2013). The science of CBT: toward a metacognitive model of change? Behavior Therapy, 44(2), 224–7. http://doi.org/10.1016/j.beth.2009.08.003

Ebisch, S. J. H., & Aleman, A. (2016). The fragmented self: imbalance between intrinsic and extrinsic self-networks in psychotic disorders. The Lancet Psychiatry, 3(8), 784–790. http://doi.org/10.1016/S2215-0366(16)00045-6

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. American Psychologist, 34(10), 906–911. http://doi.org/10.1037//0003-066X.34.10.906

Fonagy, P., Bateman, A. A., & Bateman, A. A. (2011). The widening scope of mentalizing: A discussion. Psychology and Psychotherapy: Theory, Research and Practice, 84(1), 98–110. http://doi.org/10.1111/j.2044-8341.2010.02005.x

Frith, C. D. (1992). The Cognitive Neuropsychology of Schizophrenia. Hove: Lawrence Erlbaum Associates Ltd.

Frith, C. D. (1999). Interacting Minds--A Biological Basis. Science, 286(5445), 1692–1695. http://doi.org/10.1126/science.286.5445.1692

Gaag, M. van der, Schütz, C., Ten Napel, A., Landa, Y., Delespaul, P., Bak, M., … de Hert, M. (2013). Development of the Davos assessment of cognitive biases scale (DACOBS). Schizophrenia Research, 144(1–3), 63–71. http://doi.org/10.1016/j.schres.2012.12.010

Hamm, J. A., Hasson-Ohayon, I., Kukla, M., & Lysaker, P. H. (2013). Individual psychotherapy for schizophrenia: trends and developments in the wake of the recovery movement. Psychology Research and Behavior Management, 6, 45–54. http://doi.org/10.2147/PRBM.S47891

Koren, D., Seidman, L. J., Goldsmith, M., & Harvey, P. D. (2006). Real-world cognitive- and metacognitive-dysfunction in schizophrenia: a new approach for measuring (and remediating) more "right stuff". Schizophrenia Bulletin, 32(2), 310–26. http://doi.org/10.1093/schbul/sbj035

Lysaker, P. H., Buck, K. D., & Ringer, J. (2007). The recovery of metacognitive capacity in schizophrenia across 32 months of individual psychotherapy: A case study. Psychotherapy Research, 17(6), 713–720. http://doi.org/10.1080/10503300701255932

Lysaker, P. H., Carcione, A., Dimaggio, G., Johannesen, J. K., Nicolò, G., Procacci, M., & Semerari, A. (2005). Metacognition amidst narratives of self and illness in schizophrenia: associations with neurocognition, symptoms, insight and quality of life. Acta Psychiatrica Scandinavica, 112(1), 64–71. http://doi.org/10.1111/j.1600-0447.2005.00514.x

Lysaker, P. H., & Dimaggio, G. (2014). Metacognitive Capacities for Reflection in Schizophrenia: Implications for Developing Treatments. Schizophrenia Bulletin, 40(3), 487–491. http://doi.org/10.1093/schbul/sbu038

Lysaker, P. H., & Roe, D. (2012). The processes of recovery from schizophrenia: The emergent role of integrative psychotherapy, recent developments, and new directions. Journal of Psychotherapy Integration, 22(4), 287–297. http://doi.org/10.1037/a0029581

Lysaker, P. H., Vohs, J., Hamm, J. A., Kukla, M., Minor, K. S., de Jong, S., … Dimaggio, G. (2014). Deficits in metacognitive capacity distinguish patients with schizophrenia from those with prolonged medical adversity. Journal of Psychiatric Research, 1–7. http://doi.org/10.1016/j.jpsychires.2014.04.011

MacBeth, A., Gumley, A., Schwannauer, M., Carcione, A., McLeod, H. J., & Dimaggio, G. (2016). Metacognition in First Episode Psychosis: Item Level Analysis of Associations with Symptoms and Engagement. Clinical Psychology and Psychotherapy, 23(4), 329–339. http://doi.org/10.1002/cpp.1959

Mehrabian, a, & Epstein, N. (1972). A measure of emotional empathy. Journal of Personality, 40(4), 525–43. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/4642390

Moritz, S., Kerstan, A., Veckenstedt, R., Randjbar, S., Vitzthum, F., Schmidt, C., … Woodward, T. S. (2011). Further evidence for the efficacy of a metacognitive group training in schizophrenia. Behaviour Research and Therapy, 49(3), 151–7. http://doi.org/10.1016/j.brat.2010.11.010

Morrison, A. P., Pyle, M., Chapman, N., French, P., Parker, S. K., & Wells, A. (2014). Metacognitive therapy in people with a schizophrenia spectrum diagnosis and medication resistant symptoms: a feasibility study. Journal of Behavior Therapy and Experimental Psychiatry, 45(2), 280–4. http://doi.org/10.1016/j.jbtep.2013.11.003

Morrison, A. P., & Wells, A. (2003). A comparison of metacognitions in patients with hallucinations, delusions, panic disorder, and non-patient controls. Behaviour Research and Therapy, 41(2), 251–256. http://doi.org/10.1016/S0005-7967(02)00095-5

Moskowitz, A., & Heim, G. (2011). Eugen Bleuler's Dementia Praecox or the Group of Schizophrenias (1911): A centenary appreciation and reconsideration. Schizophrenia Bulletin, 37(3), 471–479. http://doi.org/10.1093/schbul/sbr016

Normann, N., van Emmerik, A. a P., & Morina, N. (2014). The efficacy of metacognitive therapy for anxiety and depression: a meta-analytic review. Depression and Anxiety, 31(5), 402–11. http://doi.org/10.1002/da.22273

Oosterhout, B. van, Smit, F., Krabbendam, L., Castelein, S., Staring, T., Gaag, M. van der, … van der Gaag, M. (2015). Metacognitive training for schizophrenia spectrum patients: A meta-analysis on outcome studies. Psychological Medicine, 8, 1–11. http://doi.org/10.1017/S0033291715001105

Öst, L.-G. (2014). The efficacy of Acceptance and Commitment Therapy: An updated systematic review and meta-analysis. Behaviour Research and Therapy, 61. http://doi.org/10.1016/j.brat.2014.07.018

Pijnenborg, G. H. M., Spikman, J. M., Jeronimus, B. F., & Aleman, A. (2013). Insight in schizophrenia: associations with empathy. European Archives of Psychiatry and Clinical Neuroscience, 263(4), 299–307. http://doi.org/10.1007/s00406-012-0373-0

Reniers, R. L. E. P., Corcoran, R., Drake, R., Shryane, N. M., & Völlm, B. a. (2011). The QCAE: a Questionnaire of Cognitive and Affective Empathy. Journal of Personality Assessment, 93(1), 84–95. http://doi.org/10.1080/00223891.2010.528484 Roncone, R., Falloon, I. R. H., Mazza, M., De Risio, A., Pollice, R., Necozione, S., …

Casacchia, M. (2002). Is Theory of Mind in Schizophrenia More Strongly Associated with Clinical and Social Functioning than with Neurocognitive Deficits? Psychopathology, 35(5), 280–288. http://doi.org/10.1159/000067062

Salvatore, G., Russo, B., Russo, M., Popolo, R., & Dimaggio, G. (2012). Metacognition-Oriented Therapy for Psychosis: The Case of a Woman With Delusional Disorder and Paranoid Personality Disorder. Journal of Psychotherapy Integration, 22(4), 314–329. http://doi.org/10.1037/a0029577

Semerari, A., Carcione, A., Dimaggio, G., Falcone, M., Nicolò, G., Procacci, M., & Alleva, G. (2003). How to evaluate metacognitive functioning in psychotherapy? The metacognition assessment scale and its applications. Clinical Psychology & Psychotherapy, 10(4), 238–261. http://doi.org/10.1002/cpp.362

Spreng, R. N., McKinnon, M. C. M., Mar, R. a, & Levine, B. (2009). The Toronto Empathy Questionnaire: scale development and initial validation of a factor-analytic solution to multiple empathy measures. Journal of Personality …, 91(1), 62–71. http://doi.org/10.1080/00223890802484381.The

Thompson, V. a, Prowse Turner, J. a, & Pennycook, G. (2011). Intuition, reason, and metacognition. Cognitive Psychology, 63(3), 107–40. http://doi.org/10.1016/j.cogpsych.2011.06.001

van der Meer, L., Costafreda, S., Aleman, A., & David, A. S. (2010). Self-reflection and the brain: A theoretical review and meta-analysis of neuroimaging studies with implications for schizophrenia. Neuroscience and Biobehavioral Reviews, 34(6), 935–946. http://doi.org/10.1016/j.neubiorev.2009.12.004

van Donkersgoed, R. J. M., de Jong, S., & Pijnenborg, G. H. M. (2016a). Metacognitive Reflection and Insight Therapy (MERIT) with a Patient with Persistent Negative Symptoms. Journal of Contemporary Psychotherapy, 46(4), 245–253. http://doi.org/10.1007/s10879-016-9333-8

van Donkersgoed, R. J. M., de Jong, S., & Pijnenborg, G. H. M. (2016b). Metacognitive Reflection and Insight Therapy (MERIT) with a Patient with Persistent Negative Symptoms. Journal of Contemporary Psychotherapy, 46(4), 245–253. http://doi.org/10.1007/s10879-016-9333-8

Van Donkersgoed, R. J. M., De Jong, S., Van der Gaag, M., Aleman, A., Lysaker, P. H., Wunderink, L., & Pijnenborg, G. (2014). A manual-based individual therapy to improve metacognition in schizophrenia: protocol of a multi-center RCT. BMC Psychiatry, 14(1), 27. http://doi.org/10.1186/1471-244X-14-27

van Oosterhout, B., Krabbendam, L., Smeets, G., & van der Gaag, M. (2013). Metacognitive beliefs, beliefs about voices and affective symptoms in patients with severe auditory verbal hallucinations. The British Journal of Clinical Psychology / the British Psychological Society, 52(3), 235–48. http://doi.org/10.1111/bjc.12011

van Os, J., Kenis, G., & Rutten, B. P. F. (2010). The environment and schizophrenia. Nature, 468(7321), 203–12. http://doi.org/10.1038/nature09563

van Veluw, S. J., & Chance, S. a. (2014). Differentiating between self and others: an ALE meta-analysis of fMRI studies of self-recognition and theory of mind. Brain Imaging and Behavior, 8(1), 24–38. http://doi.org/10.1007/s11682-013-9266-8

Vitzthum, F. B., Veckenstedt, R., & Moritz, S. (2014). Individualized metacognitive therapy program for patients with psychosis (MCT+): introduction of a novel approach for psychotic symptoms. Behavioural and Cognitive Psychotherapy, 42(1), 105–10. http://doi.org/10.1017/S1352465813000246

Weijers, J., Ten Kate, C., Eurelings-Bontekoe, E., Viechtbauer, W., Rampaart, R., Bateman, A., & Selten, J.-P. (2016). Mentalization-based treatment for psychotic disorder: protocol of a randomized controlled trial. BMC Psychiatry, 16, 191. http://doi.org/10.1186/s12888-016-0902-x

Wells, A. (2009). Metacognitive Therapy for Anxiety and Depression. New York: The Guilford Press.

Wells, A., & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: properties of the MCQ-30. Behaviour Research and Therapy, 42(4), 385–96. http://doi.org/10.1016/S0005-7967(03)00147-5

Wells, A., & Colbear, J. S. (2012). Treating posttraumatic stress disorder with metacognitive therapy: a preliminary controlled trial. Journal of Clinical Psychology, 68(4), 373–81. http://doi.org/10.1002/jclp.20871

Yovel, I., Mor, N., & Shakarov, H. (2014). Examination of the core cognitive components of cognitive behavioral therapy and acceptance and commitment therapy: An analogue investigation. Behavior Therapy, 45(4), 482–494. http://doi.org/10.1016/j.beth.2014.02.007

CHAPTER 2

The influence of adjunctive treatment and metacognitive deficits in schizophrenia on the experience of work

S. de Jong, S.B. Renard, R.J.M. van Donkersgoed, M. van der Gaag, L. Wunderink, G.H.M. Pijnenborg, P.H. Lysaker

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ABSTRACT

Enhancing work function is now widely considered a core element of comprehensive schizophrenia treatment. While research efforts have illuminated factors that influence how well patients perform at work, less is known about the factors influencing the subjective experience of work. It is not known how, and to what extent, symptoms, cognitive deficits or metacognitive capacities impact job satisfaction and whether treatment can have an effect on job satisfaction. To explore this issue, data from a trial in which participants in a six-month vocational program were assigned to either a standard support group or a cognitive behavioral group therapy, and asked to fill in weekly self-reports of job satisfaction was analyzed. Work satisfaction and the consistency of these ratings were compared between the two groups and the moderating influence of metacognitive capacity was analyzed. A significant interaction effect revealed that higher metacognitive capacity predicted higher average job satisfaction only in the CBT group. Additionally, higher metacognitive capacity led to a more varied appraisal of work satisfaction only in the support group.

INTRODUCTION

In stark contrast to older views of schizophrenia as a disease characterized by progressive deterioration, medicine is now seeking to embrace the view that many with schizophrenia can recover substantially if not fully over time (Liberman and Kopelowicz, 2005). Furthermore, recovery is defined as composed of multiple components including symptom remission, a return to acceptable levels of psychosocial function as well changes in individual's subjective experiences of themselves as beings in the world (Silverstein and Bellack, 2008; Buck *et al.*, 2013). As a result many comprehensive treatments interested in recovery from schizophrenia focus on obtained psychosocial outcomes including enhanced work function (e.g. McGurk *et al.*, 2009; NICE, 2009). It is widely held that returning to work may in turn lead to other beneficial effects including improvements in quality of life (Bryson *et al.*, 2002), cognitive functioning (Bio and Gattaz, 2011), and reductions in symptoms (Bell *et al.*, 1996; Bond *et al.*, 2001).

While work performance has been often studied (e.g. Lysaker *et al.*, 2005a; Yanos *et al.*, 2010; Horan *et al.*, 2012), another element of work function, work satisfaction remains largely unexplored. It is not known how, and to what extent, symptoms, cognitive deficits or metacognitive capacities impact job satisfaction and whether treatment can have an effect on job satisfaction. It has long been noted that job satisfaction should be included in investigations of work rehabilitation (Twamley *et al.*, 2003; Bond *et al.*, 2012). The motivation to work is more than obtaining income and mastering work tasks. This is, for example, seen in people without psychosis leaving their jobs when they are no longer a source of satisfaction (Shields and Ward, 2001). Indeed, studies of work discontinuation suggest that people often quit their jobs when

the experience of working takes on a generally negative or unsatisfying quality (Federici and Skaalvik, 2012; Bouckenooghe *et al.*, 2013). This issue seems especially important in schizophrenia as persons with this condition may struggle to find meaning in commonplace activities, given deficits in intrinsic motivation (Saperstein *et al.*, 2011; Vohs *et al.*, 2013) which are strongly related to psychosocial functioning (Nakagami *et al.*, 2010).

To explore the concept of work satisfaction in persons diagnosed with schizophrenia, data were used from a study examining the benefits of a CBT intervention aimed to stimulate job performance (Lysaker *et al.*, 2009). During this study, participants were enrolled in a six-month psychosocial intervention that offered paid work placements and randomly assigned to either a standard support group or a specialized form of cognitive behavioral therapy (CBT). During the trial they filled out weekly self-report of job satisfaction.

Metacognition refers to a spectrum of activities which involve thinking about one's thinking about oneself and others (Semerari *et al.*, 2003; Lysaker and Dimaggio, 2014) involving the integration of information into complex representations of self and others. It has been conceptualized as a capacity which allows for persons to make personalized meaning of life events and ultimately to use that knowledge to respond to psychological and social challenges (Gumley, 2011). The capacity for metacognition has been found relatively impaired in persons with schizophrenia (Lysaker *et al.*, 2005b) and has been linked to a range of functional indices of recovery (Lysaker *et al.*, 2011) including intrinsic motivation (Tas *et al.*, 2012). Metacognition might affect job satisfaction when the ability to form complex representations of self and others prevents isolated negative or positive experiences at work from drastically altering one's appraisal of the overall quality of one's experience of work. For instance, with limited

metacognition, single events could determine one's sense of satisfaction from week to week. The current study examined whether treatment condition and metacognition might exert an additional influence on the experience of job satisfaction.

Our first hypothesis concerned differences in work satisfaction between the two treatment conditions. We anticipated that receiving CBT would be related to generally higher and more consistent ratings of job satisfaction than in the support condition, as CBT is expected to help persons reframe negative experiences in a positive light, preventing episodic experiences of low work satisfaction due to isolated events. Our second hypothesis was that higher levels of baseline metacognition would be related to higher and more consistent levels of job satisfaction. Finally, we examined whether there was an interaction between these variables. We anticipated that the effect of the intervention on job satisfaction and the consistency in job satisfaction would be moderated by metacognition. Since CBT requires persons to form ideas about their own thinking, we specifically expect that having higher levels of metacognition would leave persons in a better position to benefit from CBT.

METHODS

PARTICIPANTS

One hundred participants with a SCID (Spitzer *et al.*, 1994) confirmed diagnosis of either schizophrenia or schizoaffective disorder were recruited from the outpatient service of a Veterans Affairs (VA) medical center and a community mental health center. All patients were receiving medication management, and were in a post-acute phase of illness (having had no changes in psychotropic medication, housing or hospitalizations in the month prior to the study). Exclusion criteria were the presence of a comorbid neurological disorder or mental retardation.

To ensure that only meaningful data entered the analysis, persons who attended fewer than four weekly group sessions were excluded from the analysis. This resulted in 78 participants. For demographic variables see Table 1.

TABLE 1: *Demographics*	
Proportion schizophrenia – schizoaffective disorder	Sz: 52 - Sa: 26
Mean age	45.96 (SD=8.93)
Mean years of education	12.73 (SD=2.3)
Mean age of first hospitalization	28.12 (SD=10.6)
Proportion Male - Female	M: 67 – F: 11
Proportion Caucasian – African American	C: 32 - AA: 45

MATERIALS

The Metacognition Assessment Scale (MAS-A) is an instrument adapted for use with patients with psychotic disorders by Lysaker *et al.* It consists of four hierarchical scales: Self-reflectivity, Understanding the Other's Mind, Decentration (the ability to detach from one's own viewpoint) and Mastery (the ability to define psychological problems and find adaptive ways of coping). It has consistently demonstrated good psychometric properties (Lysaker *et al.*, 2010; Davis *et al.*, 2011; Lysaker *et al.*, 2011). The MAS-A was used to score transcripts obtained via the Indianapolis Psychiatric Illness Interview (IPII).

The Indianapolis Psychiatric Illness Interview is a semi-structured interview intended to elicit a spontaneous speech sample. It consists of five sections that span a free narrative of one's life, an illness narrative, perceived changes due to mental illness, the degree to which the participant feels the illness controls their life and to which they control

the illness, and what the participant sees for himself in the future. Interviews typically last 30–60 minutes.

The Weekly Self-Evaluation Form is a seven item self-report questionnaire answered on a Likert scale ranging from 1 through 5, with an optional score of "6" indicating that the participant did not work that week. The first question of this form ("How much did you enjoy your job this week") was analyzed. In this study, we examined the average job satisfaction and the consistency in job satisfaction over the study period. The consistency in job satisfaction was computed as the average difference between two consecutive weeks.

The Positive and Negative Syndrome Scale (PANSS; Kay *et al.*, 1987) is intended to measure positive, negative and cognitive symptoms. The PANSS is a 30 item rating scale based on chart review and a semi-structured interview. In this study only the positive and negative subscales are used.

PROCEDURE

Following written informed consent, participants were randomized to receive either the IVIP CBT intervention or support services. There were no statistically significant differences between the groups regarding age, gender, education, diagnosis, lifetime hospitalization, or treatment site. Comparisons on measures such as symptoms and assessment of change (Change Assessment Scale; McConnaughy, 1983) are presented elsewhere (Lysaker *et al.*, 2009), but were not statistically significant.

All participants were enrolled into a 26-week job placement program. The positions offered were entry-level medical center positions, supervised by regular job site supervisors. Participants received compensation ($3.50) per hour, up to a maximum of 20 hours per week. Mimicking real-world situations, participants could be terminated for failure to follow work rules, or substandard performance. These job

placements all consisted of working regular hours at VA Medical Center work sites. Based on the participant's interests and skills, they were offered tasks such as assisting patients in wheelchairs in the hospital, janitorial, laundry or administrative work such as filing paperwork and answering phones.

The IVIP intervention follows common themes of CBT in that it attempts to help patients recognize basic cognitive processes and identify and challenge dysfunctional beliefs, with an emphasis on work-related beliefs ("I am useless and could never hold a job"). This intervention is delivered via weekly group and individual sessions. It consists of four modules, each of which spans two weeks. The manual to the IVIP intervention is available from the authors, and described in detail elsewhere (Davis and Lysaker, 2005).

Support services were considered a control condition in the original study, and modeled on services as generally provided by VA Medical Centers. They included a weekly group session of 1 hour, during which participants were urged to support and help one another. Therapists offered empathic statements and advice, but explicitly did not teach CBT principles. To ensure intensity of treatment was similar between IVIP and support service conditions, participants were offered weekly individual meetings. The support service condition featured no pre-set curriculum, lacked specific work feedback and relied solely on material brought up by participants themselves. At the start of their weekly sessions, participants were asked to fill in the Weekly Self-Evaluation Form.

ANALYSIS

The data were analyzed with IBM SPSS Statistics, version 20. After descriptive analysis, two separate regression analyses were performed. The first regression analysis aimed to examine whether metacognition,

treatment and the interaction between metacognition and treatment could predict the average job satisfaction over and above positive symptoms, negative symptoms and demographic variables. The second regression analysis examined whether metacognition, treatment and their interaction significantly predicted the consistency in job satisfaction over and above symptoms and demographic variables. Significant interactions were explored in additional analyses.

RESULTS

Table 2 shows the means and standard deviations of the independent and dependent variables divided by treatment group. There were no significant differences between the two groups ($p > 0.05$) on the baseline measures. There were also no significant differences in the average job satisfaction and the consistency in job satisfaction over the study period.

The first regression analysis examined whether metacognition, treatment and the interaction between metacognition and treatment predicted the average job satisfaction over and above positive symptoms, negative symptoms and demographic variables. There were no significant main effects of treatment ($t = -0.59$, $p = .588$), metacognition ($t = 1.40$, $p = .165$), or any of the control variables. There was, however, a significant interaction effect between treatment and metacognition ($t = 2.21$, $p = .03$). This interaction indicates that the main effects of treatment and

TABLE 2: *Means and standard deviations of the independent and dependent variables*

	Support-group Mean (sd)	**CBT-group Mean (sd)**
Positive symptoms	15.19 (4.28)	15.88 (4.76)
Negative symptoms	19.64 (4.90)	19.38 (5.35)
Metacognition	11.43 (4.05)	11.60 (4.15)
Average job satisfaction	4.05 (0.69)	3.95 (0.69)
Consistency in job satisfaction	-0.46 (0.32)	-0.50 (0.38)

metacognition should not be interpreted in isolation as metacognition might have the expected moderator effect on treatment.

To explore the interaction effect, further regression analyses were performed to examine the relationship between metacognition and job satisfaction in the two groups. As shown in Fig. 1 metacognition did not predict job satisfaction in the support group (t = –0.96, p = .344). However, in the CBT group it did significantly predict job satisfaction (t = 2.62, p = .013). In this group metacognition predicted 15% of the variance in job satisfaction as shown by an R^2 = 0.15.

The second regression analysis examined whether metacognition, treatment, and the interaction between treatment and metacognition significantly predicted the consistency in job satisfaction over and above positive symptoms, negative symptoms and demographic variables. There were no significant main effects of treatment (t = –0.22, p = .827) or metacognition (t = –0.71, p = .482). Except for sex (t = –2.88, p = .005, *men* > *women*), none of the control variables had a significant effect. The interaction effect between metacognition and treatment was significant (t = 2.56, p = .013) which suggests metacognition might moderate the effect of treatment.

Separate regression analyses were performed to examine the interaction effect between treatment and metacognition on the consistency in job satisfaction. In addition, sex was entered as a control variable because of its significant effect on the consistency in job satisfaction. In the support group, the consistency in job satisfaction was significantly predicted by metacognition (t = –2.90, p = .006) but not by sex. Higher metacognition scores predicted less consistency (see Fig. 2). Examining R^2's showed that in the support group metacognition predicted 20% of the variance in the consistency in job satisfaction. In the CBT group the consistency in job satisfaction was not significantly predicted by metacognition (t = 1.05, p = .299).

FIGURE 1. *The interaction of group * metacognition for average work satisfaction.*

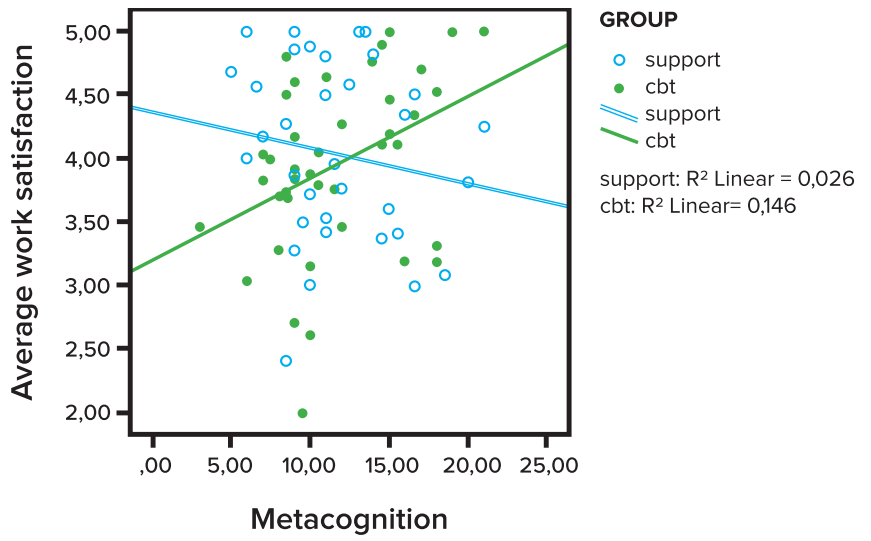
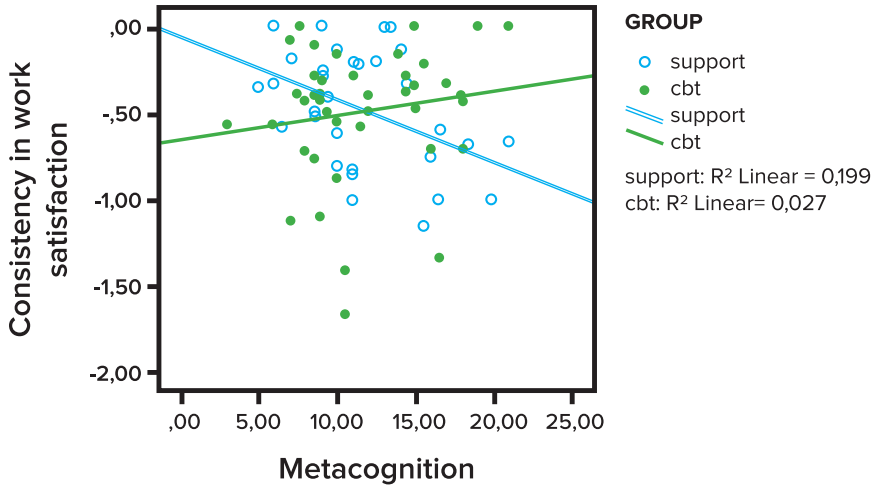


FIGURE 2. *The interaction of group * metacognition for consistency in work satisfaction.*



DISCUSSION

This study evaluated whether adjunctive treatment with CBT and metacognitive capacity influence the average work satisfaction and consistency in work satisfaction of patients enrolled in a vocational rehabilitation program. Regarding average work satisfaction, there was no main effect of treatment, or metacognitive capacity. However, a significant interaction was found between metacognitive capacity and treatment, where in the CBT group, but not in the support group, higher metacognitive capacity predicted higher average job satisfaction.

This may suggest that within the confines of CBT, greater abilities to form complex ideas about oneself and others allow for the construction of ideas about the meaning of work which may underlie work satisfaction. It is also consistent with our hypothesis that CBT allows persons to interpret negative experiences in novel ways such that single negative events do not taint larger judgments about experiences as perhaps happened in the support group. This finding is clinically relevant, as it has been shown that metacognitive capacity can be targeted with psychotherapy (Lysaker *et al.*, 2005c; Bateman *et al.*, 2009), some of which are currently under study in randomized controlled trials (Jakobsen *et al.*, 2012; Van Donkersgoed *et al.*, 2014). The ability to understand oneself and meaningfully interact with one's environment has previously been noted as an indicator of 'rehabilitation readiness' (Cohen *et al.*, 1997). Future clinical interventions may take the form of a program where patients are first assisted to raise metacognitive capacity before enrollment in a work placement program and adjunctive CBT program. Aside from other benefits patients receive from these interventions, the addition of a metacognition-oriented psychotherapy may significantly reduce drop-out in work placement programs.

We also examined whether treatment and metacognitive capacity would be related to more consistency in job satisfaction. While we found no main effect of treatment or metacognition, there was again a significant interaction effect. Surprisingly, higher metacognitive capacity led to more varied appraisal of work satisfaction in the non-CBT group.

We cautiously hypothesize that participants with lesser metacognitive capacity may be unable to form a nuanced sense of their experience at work and so maintain a vague and global appraisal of work experience. In contrast, those with higher metacognitive capacity may experience work in a more nuanced way, having some weeks which are more satisfying than others, the capacity to discriminate between various types of (dis)satisfaction perhaps sufficiently aided by verbalizing them in non-directive group therapy. These hypotheses, however, certainly go beyond our data and should be considered at best as fodder for future work, as a baseline for consistency in work satisfaction is yet to be established. For those who do receive CBT, metacognitive capacity no longer significantly predicted the consistency of work satisfaction. These results are congruent with the hypothesis that in CBT treatment (and potentially also other psychotherapies), the therapist assists patients to formulate and answer questions regarding their own cognitions, and to help the patient to reframe the appraisal of events and experience less negative emotions. Without external prompting, a patient may not think beyond "I had a lousy day at work." Exploration of thoughts, a common element of CBT, may have taken the form of questions such as: "But what exactly was so awful?" and "You say coworker X does not like you. What makes you think so? Last week you said you two got along so well?" which challenge clients to consider their experience in a deeper sense.

The limitations of this study pose interesting questions for future research. One question pertains to the measurement of work experience. In our study we used a single item intended to measure job satisfaction.

Such a single measurement point may lack nuance and fail to capture different things which go into whether persons feel satisfied with their work experience, which doubtlessly spans multiple components. Future research efforts are needed, for instance, which include questions pertaining feelings of productivity and self-efficacy to better understand which factors play a role in subjective work experience. An instrument developed for and validated with our population may find application in the assessment of various work placement programs and adjunctive interventions, to determine to what extent clients report their experiences as positive. Elements contributing to positive experiences could be integrated into such programs.

Our findings demonstrate that persons with higher versus lower metacognitive capacity benefit in different ways from CBT treatment. Given the popularity of CBT, future research should seek to determine the exact influence metacognitive capacity has on outcome of CBT treatment in all its facets. It seems altogether possible that those currently found not to benefit from CBT simply lack the metacognitive capacity. In such cases, metacognitively oriented psychotherapy (Lysaker and Dimaggio, 2014) may be a useful avenue, prior to (re)attempting CBT.

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CONTRIBUTORS

De Jong, Renard, van Donkersgoed, Pijnenborg and Lysaker, were involved in literature searches. De Jong and Renard undertook the statistical analyses. De Jong, Renard, van Donkersgoed and Lysaker wrote the complete first draft and van der Gaag, Wunderink and Pijnenborg subsequently made meaningful contributions to the writing. All authors contributed to and have approved the final manuscript.

CONFLICTS OF INTEREST

There are no conflicts of interest or disclosures.

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REFERENCES

Bateman, A., Fonagy, P., Allen, J.G., 2009. Theory and practice of mentalization-based therapy. Textbook of Psychotherapeutic Treatments. American Psychiatric Publishing, Arlington, VA, USA, pp. 757–780.

Bell, M.D., Lysaker, P.H., Milstein, R.M., 1996. Clinical benefits of paid work activity in schizophrenia. Schizophr. Bull. 22 (1), 51–67 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9165640). Bio, D.S., Gattaz, W.F., 2011.

Vocational rehabilitation improves cognition and negative symptoms in schizophrenia. Schizophr. Res. 126 (1–3), 265–269. http://dx.doi.org/ 10.1016/j.schres.2010.08.003.

Bond, G.R., Resnick, S.G., Drake, R.E., Xie, H., McHugo, G.J., Bebout, R.R., 2001. Does competitive employment improve nonvocational outcomes for people with severe mental illness? J. Consult. Clin. Psychol. 69 (3), 489–501. http://dx.doi.org/10.1037//0022-006X.69.3.489.

Bond, G.R., Campbell, K., Drake, R.E., 2012. Standardizing measures in four domains of employment outcomes for individual placement and support. Psychiatr. Serv. 63 (8), 751–757. http://dx.doi.org/10.1176/appi.ps.201100270.

Bouckenooghe, D., Raja, U., Butt, A.N., 2013. Combined effects of positive and negative affectivity and job satisfaction on job performance and turnover intentions. J. Psychol. 147 (2), 105–123. http://dx.doi.org/10.1080/00223980.2012.678411.

Bryson, G.J., Lysaker, P.H., Bell, M.D., 2002. Quality of life benefits of paid work activity in schizophrenia. Schizophr. Bull. 28 (2), 249–257 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12693431).

Buck, K.D., Roe, D., Yanos, P.T., Buck, B., Fogley, R.L., Grant, M., Lysaker, P.H., 2013. Challenges to assisting with the recovery of personal identity and wellness for persons with serious mental illness: considerations for mental health professionals. Psychosis 5 (2), 134–143. http://dx.doi.org/10.1080/17522439.2012.699544.

Cohen, M.R., Anthony, W.A., Farkas, M.D., 1997. Assessing and developing readiness for psychiatric rehabilitation. Psychiatr. Serv. 48 (5), 644–646 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9144818).

Davis, L.W., Lysaker, P.H., 2005. Cognitive behavioral therapy and functional and metacognitive outcomes in schizophrenia: a single case study. Cogn. Behav. Pract. 468–478 (Retrieved from http://www.sciencedirect.com/science/article/ pii/S1077722905800744).

Davis, L.W., Eicher, A.C., Lysaker, P.H., 2011. Metacognition as a predictor of therapeutic alliance over 26 weeks of psychotherapy in schizophrenia. Schizophr. Res. 129 (1), 85–90. http://dx.doi.org/10.1016/j.schres.2011.02.026.

Federici, R.A., Skaalvik, E.M., 2012. Principal self-efficacy: relations with burnout, job satisfaction and motivation to quit. Soc. Psychol. Educ. 15 (3), 295–320. http://dx.doi.org/10.1007/s11218-012-9183-5.

Gumley, A., 2011. Metacognition, affect regulation and symptom expression: a transdiagnostic perspective. Psychiatry Res. 190 (1), 72–78. http://dx.doi.org/10.1016/j.psychres.2011.09.025.

Horan, W.P., Green, M.F., DeGroot, M., Fiske, A., Hellemann, G., Kee, K., Nuechterlein, K.H., 2012. Social cognition in schizophrenia, part 2: 12-month stability and prediction of functional outcome in first-episode patients. Schizophr. Bull. 38 (4), 865–872. http://dx.doi.org/10.1093/schbul/sbr001.

Jakobsen, J.C., Gluud, C., Kongerslev, M., Larsen, K.A., Sørensen, P., Winkel, P., Simonsen, E., 2012. "Third wave" cognitive therapy versus mentalization-based therapy for major depressive disorder. A protocol for a randomised clinical trial. BMC Psychiatry 12, 232. http://dx.doi.org/10.1186/1471-244X-12-232.

Kay, S.R., Fiszbein, A., Opler, L.A., 1987. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr. Bull. 13 (2), 261–276. http://dx.doi.org/10.1093/schbul/ 13.2.261.

Liberman, R.P., Kopelowicz, A., 2005. Recovery from schizophrenia: a concept in search of research. Psychiatr. Serv. 56 (6), 735–742. http://dx.doi.org/10.1176/appi.ps.56.6.735.

Lysaker, P.H., Dimaggio, G., 2014. Metacognitive capacities for reflection in schizophrenia: implications for Developing Treatments. Schizophr. Bull. 40 (3), 487–491. http://dx. doi.org/10.1093/schbul/sbu038.

Lysaker, P.H., Bryson, G.J., Davis, L.W., Bell, M.D., 2005a. Relationship of impaired processing speed and flexibility of abstract thought to improvements in work performance over time in schizophrenia. Schizophr. Res. 75 (2–3), 211–218. http://dx.doi.org/ 10.1016/j.schres.2004.09.014.

Lysaker, P.H., Carcione, A., Dimaggio, G., Johannesen, J.K., Nicolò, G., Procacci, M., Semerari, A., 2005b. Metacognition amidst narratives of self and illness in schizophrenia: associations with neurocognition, symptoms, insight and quality of life. Acta Psychiatr. Scand. 112 (1), 64–71. http://dx.doi.org/10.1111/j.1600-0447.2005.00514.x.

Lysaker, P.H., Davis, L.W., Eckert, G.J., Strasburger, A., Hunter, N., Buck, K.D., 2005c. Changes in narrative structure and content in schizophrenia in long term individual psychotherapy: a single case study. Clin. Psychol. Psychother. 12, 406–416.

Lysaker, P.H., Davis, L.W., Bryson, G.J., Bell, M.D., 2009. Effects of cognitive behavioral therapy on work outcomes in vocational rehabilitation for participants with schizophrenia spectrum disorders. Schizophr. Res. 107 (2–3), 186–191. http://dx.doi.org/ 10.1016/j.schres.2008.10.018.

Lysaker, P.H., Dimaggio, G., Daroyanni, P., Buck, K.D., LaRocco, V.A., Carcione, A., Nicolò, G., 2010. Assessing metacognition in schizophrenia with the Metacognition Assessment Scale: associations with the Social Cognition and Object Relations Scale. Psychol. Psychother. 83 (Pt 3), 303–315. http://dx.doi.org/10.1348/147608309X481117.

Lysaker, P.H., Erickson, M., Ringer, J., Buck, K.D., Semerari, A., Carcione, A., Dimaggio, G., 2011. Metacognition in schizophrenia: the relationship of mastery to coping, insight, self-esteem, social anxiety, and various facets of neurocognition. Br. J. Clin. Psychol. 50 (4), 412–424. http://dx.doi.org/10.1111/j.2044-8260.2010.02003.x.

McConnaughy, E., 1983. Stages of change in psychotherapy: measurement and sample profiles. Psychother. Theory Res. Pract. Train. 20, 368–375 (Retrieved from http://psycnet.apa.org/journals/pst/20/3/368/).

McGurk, S.R., Mueser, K.T., DeRosa, T.J., Wolfe, R., 2009. Work, recovery, and comorbidity in schizophrenia: a randomized controlled trial of cognitive remediation. Schizophr. Bull. 35 (2), 319–335. http://dx.doi.org/10.1093/schbul/sbn182.

Nakagami, E., Hoe, M., Brekke, J.S., 2010. The prospective relationships among intrinsic motivation, neurocognition, and psychosocial functioning in schizophrenia. Schizophr. Bull. 36 (5), 935–948. http://dx.doi.org/10.1093/schbul/sbq043.

NICE, 2009. Schizophrenia: Core Interventions in the Treatment and Management of Schizophrenia in Adults in Primary and Secondary Care. NICE Clinical Guideline ((March). Retrieved from http://scholar.google.com/r?hl=en&btnG=Search&q=intitle:Core+interventions+in+the+treatment+and+management+of+schizophrenia+in+adults+in+primary+and+secondary+care#0).

Saperstein, A.M., Fiszdon, J.M., Bell, M.D., 2011. Intrinsic motivation as a predictor of work outcome after vocational rehabilitation in schizophrenia. J. Nerv. Ment. Dis. 199(9), 672–677. http://dx.doi.org/10.1097/NMD.0b013e318229d0eb.

Semerari, A., Carcione, A., Dimaggio, G., Falcone, M., Nicolò, G., Procacci, M., Alleva, G., 2003. How to evaluate metacognitive functioning in psychotherapy? The metacognition assessment scale and its applications. Clin. Psychol. Psychother. 10 (4), 238–261. http://dx.doi.org/10.1002/cpp.362.

Shields, M.A., Ward, M., 2001. Improving nurse retention in the National Health Service in England: the impact of job satisfaction on intentions to quit. J. Health Econ. 20 (5), 677–701 (Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11558644).

Silverstein, S.M., Bellack, A.S., 2008. A scientific agenda for the concept of recovery as it applies to schizophrenia. Clin. Psychol. Rev. 28 (7), 1108–1124. http://dx.doi.org/10.1016/j.cpr.2008.03.004.

Spitzer, R., Williams, J., Gibbon, M., First, M., 1994. Structured Clinical Interview for DSMIV. Biometrics Research, New York.

Tas, C., Brown, E.C., Esen-Danaci, A., Lysaker, P.H., Brüne, M., 2012. Intrinsic motivation and metacognition as predictors of learning potential in patients with remitted schizophrenia. J. Psychiatr. Res. 46 (8), 1086–1092. http://dx.doi.org/10.1016/j.jpsychires.2012.04.027.

Twamley, E.W., Jeste, D.V., Lehman, A.F., 2003. Vocational rehabilitation in schizophrenia and other psychotic disorders: a literature review and meta-analysis of randomized controlled trials. J. Nerv. Ment. Dis. 191 (8), 515–523. http://dx.doi.org/10.1097/01.nmd.0000082213.42509.69.

Van Donkersgoed, R.J., De Jong, S., Van der Gaag, M., Aleman, A., Lysaker, P.H., Wunderink, L., Pijnenborg, G., 2014. A manual-based individual therapy to improve metacognition in schizophrenia: protocol of a multi-center RCT. BMC Psychiatry 14 (1), 27. http://dx.doi.org/10.1186/1471-244X-14-27.

Vohs, J.L., Lysaker, P.H., Nabors, L., 2013. Associations of personality with intrinsic motivation in schizophrenia. Psychiatry Res. 208 (1), 78–80. http://dx.doi.org/10.1016/j.psychres.2013.03.008.

Yanos, P.T., Lysaker, P.H., Roe, D., 2010. Internalized stigma as a barrier to improvement in vocational functioning among people with schizophrenia-spectrum disorders. Psychiatry Res. 178 (1), 211–213. http://dx.doi.org/10.1016/j.psychres.2010.01.003.

CHAPTER 3

Metacognitive deficits as a risk factor for violence in psychosis: a discriminant function analysis

de Jong, S., van Donkersgoed, R.J.M., Renard, S.B., Carter, S.A., Bokern, H., Lysaker, P.H., van der Gaag, M., Aleman, A., Pijnenborg, G.H.M.

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ABSTRACT

Background: Although most patients with a psychotic disorder are not violent, recent meta-analyses acknowledge a small, but significant relationship between psychosis and violence. Investigations of social cognition as a risk factor for violence in psychosis have turned up mixed results, with authors suggesting this may be due to different processes being measured, ranging from more basic processes such as facial affect recognition to more synthetic processes such as mentalizing or metacognition. The current study sought to investigate which measures of social cognition and metacognition are related to a violent history over and above the deficits commonly associated with psychotic disorders.

Methods: Data were gathered from control participants, patients with a psychotic disorder and no violent history, and patients with a psychotic disorder in treatment at a forensic clinic due to a violent crime. Discriminant analysis is utilized.

Results: Across all three groups, metacognition and associative learning as measured by the Digit Symbol Test emerge as significant factors. In a follow-up analysis between only the patient groups, self-reflectivity and empathic accuracy emerged as significant factors. The control group presented with a higher level of metacognitive capacity than the patient groups, and the forensic patient group had lower levels than the non-forensic patient group.

Conclusions: Our findings support previous research findings implying impaired metacognitive Self-Reflectivity in particular as a risk factor for violence. Interpretations and limitations of these findings are discussed in light of the current literature.

INTRODUCTION

There is considerable debate whether psychotic disorders are a risk factor for violent behavior, and if so, which specific processes contribute to this risk. Based on meta-analyses, there is a "small, but significant relationship between psychosis and aggressive behavior" (Douglas *et al.* 2009; Volavka 2013; van Dongen *et al.* 2016). The relationship between psychosis and violence may be mediated by impaired 'social cognition' (Green *et al.* 2008). Social cognition refers to mental operations underlying social interactions (National Institute of Mental Health (NIMH), 2017).

Investigations of social cognition as a risk factor for violence in schizophrenia by comparing violent and non-violent patients are relatively sparse, with methodological difficulties hampering the interpretation of mixed results (Bragado-Jimenez & Taylor 2012; Malone *et al.* 2012). In recent years, it has been suggested that these mixed findings may be due to the variety of processes being examined, ranging from basic processes, such as facial affect recognition, to higher order processes that facilitate the integration of such information into a representation of mental states, with some support in fMRI evidence for such a distinction (Beauchamp & Anderson 2010; van der Meer *et al.* 2010; Dimaggio *et al.* 2013; van Veluw & Chance 2014; O'Reilly *et al.* 2015). For instance, relatively preserved social-perceptive abilities have been found in high functioning patients when compared to low functioning patients, but deficits in such higher-order processes (here called mentalizing) are similarly impaired in both groups (Karpouzian *et al.* 2016). Different theoretical frameworks led to a variety of terms for these higher order processes, such as Theory of Mind (Baron-Cohen *et al.* 2001; Majorek *et al.* 2009), mentalizing (Levinson & Fonagy

2004) and metacognition (Mitchell *et al.* 2012). There is currently no consensus on which theoretical framework is superior to others, leading to authors using the terms interchangeably (Brüne 2005).

To avoid confusion, we therefore specify that in this paper, the term 'social cognition' refers to scores on instruments such as those recommended by the NIMH Research Domain Criteria (RDoC) Matrix (National Institute of Mental Health (NIMH) 2017). In these tasks, participants are prompted to perform socio-cognitive activities such as self-report questionnaires (e.g. the Interpersonal Reactivity Index; Davis, 1983), short tests of understanding social 'hints' in stories (Hinting Task; Corcoran, Mercer, & Frith, 1995) or emotion recognition (Reading the Mind in the Eyes; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001).

Measured in this way, patients with psychotic disorders display marked deficiencies in performance (Vohs *et al.* 2014; Weijers *et al.* 2016) on scores of emotion recognition tasks (Kohler *et al.* 2010), understanding social 'hints', including patients in remission (Bora *et al.* 2009) and measurements of self-reported empathy (Montag *et al.* 2007) which appear stable over time (Haker *et al.* 2012). Literature reviews on risk of violence in patients with a psychotic disorder indicate social cognition as a fruitful avenue for further exploration, but a paucity of (large) studies and mixed evidence preclude firm conclusions (Bo *et al.* 2011; Bragado-Jimenez & Taylor 2012; Malone *et al.* 2012).

Though various definitions of the concept of metacognition exist (Wells 2009; Moritz *et al.* 2011; de Jong *et al.* 2016b), the current paper utilizes a conceptualization of metacognition as the way people make sense of their own, and other people's thoughts and emotions. Metacognition is seen as a range of semi-independent mental activities to 'think about thinking and feeling' along four domains: Self-Reflectivity, Understanding the Other's Mind, Decentration, or the

ability to abandon one's own personal perspective and Mastery, which refers to the ability to use representations of oneself, others and the social world to address psychological distress (Semerari *et al.* 2003; Lysaker *et al.* 2014). Metacognition from this perspective refers to the dynamic processes that synthesize information into complex representations, measured by scoring speech samples in which no socio-cognitive prompts are introduced. In so doing, it is important to acknowledge that the presented Metacognition Assessment Scale – A scores may be interpreted as measuring a similar phenomenon as mentalizing (Fonagy *et al.* 2011).

Metacognition has consistently been found to be impaired in persons with psychotic disorders (Lysaker *et al.* 2008; Vohs *et al.* 2014; Bo *et al.* 2015; Dimaggio & Lysaker 2015; Weijers *et al.* 2016). Associations were found between impaired metacognition and violent behavior (Abu-akel *et al.* 2015), though not in all studies (Mitchell *et al.* 2012). In a review on violence and psychotic disorders, it was noted that research into the association between metacognition and violence is sparse and that further research on paradigms involving both cognitive and affective aspects is warranted (Bo *et al.* 2011).

The current study was constructed to investigate which measures of social cognition and metacognition are related to a violent history over and above the deficits commonly associated with psychotic disorders. Scores on measures of social cognition and metacognition were collected and compared from a group of persons with a psychotic disorder in care at a forensic clinic for a violent crime (forensic and psychotic: F-P), a group of persons with a psychotic disorder without a forensic history (psychotic: P) and a control group with no known diagnosis of a mental disorder (control: C).

Based on previous research (Abu-Akel & Abushua'leh 2004; Majorek *et al.* 2009; Abu-akel *et al.* 2015), we hypothesized that both patients

groups would perform worse than controls on measures of social cognition and metacognition, but that metacognition would be a better predictor of a violent history. Secondly, if differences in metacognition between F-P and P would prove significant, we were interested in which of the four specific domains of metacognition are particularly indicative of a violent history. Due to limited research and theory on the topic, this relationship was examined in an explorative way.

METHODS

PARTICIPANTS

For this study we compared male outpatients diagnosed with a psychotic disorder without a forensic history (psychosis group, n = 27), male patients diagnosed with a psychotic disorder in treatment at a forensic clinic for highly violent crime (forensic psychosis group, n = 23), and male participants without a known history of mental disorder or violent crime (control group, n = 33). Inclusion criteria for the patient groups were: 1) a primary diagnosis of schizophrenia or schizoaffective disorder (DSM-IV-TR), 2) age > 18 and 3) not having had a significant change in medication in the 30 days prior to assessment. Exclusion criteria were: 1) a florid psychosis (PANSS positive avg. ≥4) at the time of assessment, 2) comorbid neurological disorder, 3) an inability to read / write or 4) an estimated IQ lower than 70. All three groups were similar with regard to age, mean level of education, ratio of diagnoses of schizophrenia vs. schizoaffective disorder and the median number of admissions into a mental healthcare institute.

The psychosis group was recruited from GGZ Friesland, a Dutch mental health care center, as an extension of a multicenter randomized controlled trial investigating the effects of a new metacognitive psychotherapy (Van Donkersgoed *et al.* 2014). For this clinical trial, inclusion criteria involved difficulties in metacognitive capacity, sixteen

participants met these criteria. To ensure a representative sample, all participants from this institute who were excluded from the randomized controlled trial on these grounds were approached for participation in the current study by a research assistant, and added to the baseline assessment data pool from the randomized controlled trial, adding eleven participants for a final sample of 27.

The forensic psychosis group was recruited from forensic clinics: FPC Dr. S. van Mesdag, FPA Franeker, FPK Assen and FPA Zuidlaren. In addition, for the forensic psychosis group, inclusion was only possible if they were in forensic care for serious violence from criminal court proceeding. The control group was recruited using social media and posters spread in the Netherlands.

INSTRUMENTS

Mini International Neuropsychiatric Interview (M.I.N.I. Plus; Sheehan *et al.*, 1998). This structured interview was used to confirm a diagnosis of schizophrenia or schizoaffective disorder according to the DSM-IV-TR criteria.

Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987). The PANSS is a 30-item interviewer-rating scale, intended to measure symptoms along three domains (positive, negative and general psychopathology). Interviews and scoring were performed by students enrolled in a master's degree program of Psychology, who had completed a 2-day PANSS training.

Trailmaking Test A&B (TMT; Reitan & Wolfson, 1985). As a part of the Halstead-Reitan Battery, the TMT provides information on the neurocognitive functioning of participants. During part A of the test, the participant is asked to draw lines sequentially, connecting 25 encircled numbers on a page. During part B, the participant is asked to do the same, though this time alternating between numbers and letters (1-A-2-B etc.). The final score is the time used (seconds) of part B minus the time used (seconds) on Part A.

Digit Symbol Test (Wechsler, 1995). This task evaluates neurocognitive function. Participants are presented with a row of boxes, pairing numbers with a symbol followed by several rows of paired boxes, where the symbol is omitted. Participants are asked to fill in the missing symbols. The final score of the test is the amount of symbols the participant has filled in 90 seconds.

Interpersonal Reactivity Index (IRI; M. H. Davis, 1983). The IRI is a questionnaire intended to measure self-reported empathy, using 28 items on a 5-point Likert scale, resulting in a total score.

Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, Corcoran, Drake, Shryane, & Völlm, 2011). The QCAE is a self-report questionnaire developed to measure cognitive and affective empathy using 31 items on a 4-point Likert-scale. The questionnaire was developed based on factor analysis of items from other well-known empathy questionnaires (including the IRI, causing some overlap in items). The total score of all items was used for analysis.

Faux-Pas Task (Baron-Cohen *et al.,* 1999). This task intends to measure 'Theory of Mind'. During the task, ten stories are read aloud to the participant. In five of these, a character in the story commits a 'faux pas'. Scoring consists of the amount of faux pas the participant correctly identified, and the amount of 'empathy questions' (e.g. 'how does person X in the story feel?') answered correctly.

Empathic Accuracy Test (EAT, Zaki, Bolger, & Ochsner, 2008). The Dutch version of this task (aan het Rot & Hogenelst, 2014) was used to measure empathic accuracy. Participants are required to watch four videos in which someone tells a personal story, and provide continuous ratings of valence (happy – sad). Participants are asked to continuously rate 'how the target person in the video is feeling'. Scores are correlated with the speaker's own ratings, leading to an index of empathic accuracy.

Indiana Psychiatric Illness Interview (IPII; Lysaker, Clements, Plascak-Hallberg, Knipscheer, & Wright, 2002). This open interview is intended to elicit a spontaneous speech sample, specifically developed for use with the MAS-A (see following instrument). Through five questions, the participant is asked to speak freely about their life story and their illness narrative (in the case of patients) or a significant adverse event in their lives (controls). All interviews were transcribed before receiving ratings on metacognition using the Abbreviated Metacognition Assessment Scale (MAS-A).

Metacognition Assessment Scale – Abbreviated (Lysaker *et al.*, 2005). The MAS-A relies on trained raters to score transcripts of spontaneous speech samples along the domains of Self-Reflectivity, Understanding the Other's Mind, Decentration and Mastery. Raters completed a training session and participated in three consensus meetings with experienced raters before their ratings were used. All MAS-A ratings were first performed individually before a joint score was constructed in a consensus meeting with a minimum of three raters.

Dutch Adult reading test (Schmand *et al.,* 1991). This test, in which participants are asked to pronounce uncommon Dutch words, serves as an indicator of premorbid intellectual functioning.

PROCEDURES

The protocol for this study was approved by the University Medical Center Groningen (NL47493.042.13) and is registered in the Dutch Trial Register (NTR4501) in 2014. Recruitment procedures for the patient group without a forensic history are described elsewhere (Van Donkersgoed *et al.,* 2014). All clients which fit the in- and exclusion criteria in the participating therapist's caseloads were informed of the study. In the first meeting participants signed informed consent, if applicable the diagnoses were confirmed using the MINI PLUS, and

the PANSS and IPII interviews were administered. The rest of the test battery was administered during a second sitting or more if there were symptoms of fatigue. All measurements were performed by persons enrolled in a Master's degree program of psychology.

ANALYSES

The analyses were conducted using IBM SPSS Statistics version 24. Groups were compared on demographic variables using *Fisher's* Exact-*z* (education level, # of admissions), chi-square test (diagnosis) or ANOVA (age).

After verification that groups did not differ significantly on demographic variables, a stepwise Discriminant Function Analysis (Field, 2013) was conducted in order to determine which variables constitute a statistically significant predictor of group membership (control, psychosis, forensic psychosis). Due to an issue with one research assistant, there were some missing values on particularly the neurocognitive measures in the control group (Table 1). To account for this, missing values were replaced by group means as these were highly similar to those obtained in other studies (Joy *et al.,* 2004; Tombaugh 2004; Mahurin *et al.,* 2006).

Follow-up analysis was conducted to determine which specific elements of metacognition (Self-Reflectivity, Understanding the Other's Mind, Decentration and Mastery) predict being in forensic care amongst persons with psychosis. This was tested using a second stepwise Discriminant Function Analysis, omitting the control group, and substituting MAS-total scores for its subscales.

Discriminant Function Analysis (DFA) relies on several assumptions: the data must represent a sample from a multivariate normal distribution, homogeneity of variances/covariances and non-multicollinearity. DFA is known to be relatively robust against violations

of multivariate normality, but has been documented as being sensitive to outliers. As such, multivariate outliers were assessed first by calculating squared Mahalanobis distances for each case, per group and testing these against the chi-square distribution using the number of predictors (9) for degrees of freedom, p=.001 (Tabachnick & Fidell 2007). Second, to ensure the resulting model is reliable, cross-validation (also called leave-one-out or 'jack-knife' classification) was applied in which each case is classified by the functions derived from all cases other than that case, resulting in a more conservative estimate.

RESULTS

Not all variables are normally distributed in all 3 groups according to Shapiro-Wilk tests (Faux Pas Test, IRI, EAT, Trailmaking and QCAE); transformations of the data could not resolve this in all groups simultaneously. A per-case test of Mahalanobis distances revealed no significant multivariate outliers. Box's M test (Field, 2013) revealed the assumption of homogeneity of variance/covariance was met. To test hypothesis one, a discriminant function analysis was conducted to uncover the dimensions which differentiate control participants, persons diagnosed with a psychotic disorder and persons with a psychotic disorder in forensic care for a violent crime. Variables entered were MAS-Total scores, Trailmaking total scores, Digit Symbol scores, DART scores, Faux Pas # correctly identified, Faux Pas # Empathy questions wrong, QCAE total scores, IRI total scores and EAT scores.

Two discriminant functions emerged (Table 3): the first function explained 92.8% of the variance, canonical R^2 = .34, whereas the second

TABLE 1 *Demographics*

	Controls (N=33)	Psychosis (N=27)	Forensic (N=23)	F (df) / z / χ^2	*p*
Age min – max	22 – 74	20 – 67	21 – 56		
Age mean (SD)	38.61 (11.02)	35.41 (11.27)	37.26 (9.11)	6.75 (2)	.51
Education mean[1]	5.15	4.89	4.65[2]	2.37	.69
Schizophrenia Schizoaffective disorder Psychotic disorder NOS		19 (70%) 8 (30%) 0	19 (83%) 3 (13%) 1 (4%)	2.83	.24
Age first psychosis, mean (SD)		24.30 (6.89)	24.09 (6.67)[3]	0.11 (1)	.92
Illness duration in years, mean (SD)		11.11 (9.58)	12.81 (5.95) [3]	.53	.47
Mode no. of admissions		2-4 (44%)	2-4 (39%)	3.120	.59

[1] Education classification system of Verhage, 1983
[2] Data missing (n=6)
[3] Missing data for 1 participant

TABLE 2 *Average scores, mean (SD)*

	Trailmaking	Dig. Symb.	DART	FP-Rec.	FP-Emp.	QCAE	IRI	EAT	MAS-A
Control	94.78 (39.70)[1]	72.44 (16.38)[1]	78.47 (12.57)[2]	4.28 (.80)	2.62 (1.21)	89.48 (8.67)	63.33 (14.38)	1.24 (0.47)	14.53 (2.83)
Psychosis	149.56 (76.77)	56.89 (16.89)	78.96 (8.57)	3.81 (1.18)	2.63 (1.62)	89.56 (12.00)	53.37 (9.68)	1.07 (0.52)	11.44 (3.38)
For. Psychosis	151.56 (57.92)[3]	53.78 (11.58)[3]	71.81 (15.69)[4]	3.22 (1.51)	2.43 (1.31)	88.70 (9.11)	55.57 (14.04)	0.88 (0.64)	9.00 (2.80)

[1] Data is only available for 18 / 33 participants.
[2] Data available for 17/33 participants
[3] Data available for 18/23 participants
[4] Data available for 16/23 participants

TABLE 3 *Structure Matrixes*

Analysis 1: Control – Psychosis – Forensic Psychosis					**Analysis 2: Psychosis – Forensic Psychosis**		
	Function		**SCDFC**[1]			**Function**	**SDFC**
Entered	Fn 1	Fn 2	Fn. 1	Fn 2	**Entered**	Fn. 1	Fn. 1
MAS-A: Total	.792	-.610	.741	-.677	MAS-A: Self Reflectivity	.743	1.106
Digit Symbol	.675	.738	.612	.795	EAT	.234	.762
Not in the model					**Not in the model**		
Faux Pas Empathy	-.168	-.163			MAS-A: Understanding Other	.584	
QCAE	-.123	-.077			MAS-A: Mastery	.443	
IRI	-.100	.008			Faux Pas – Empathy	-.295	
Trailmaking	-.215	-.385			Faux Pas Recognized	.254	
EAT	-.086	.315			MAS-A: Decentration	.234	
Faux Pas Recognized	.091	.290			Trailmaking	-.168	
DART	.056	.086			IRI	-.046	
					Digit Symbol	.029	
					DART	-.021	
[1] Standardized Canonical Discriminant Function Coefficient							

TABLE 4 *Functions at Group Centroids*

Analysis 1: Control – Psychosis – Forensic Psychosis			**Analysis 2: P - FP**
	Function		**Function**
Group	**Fn.1**	**Fn.2**	**Fn. 1**
Control (C)	.902	.107	
Psychosis (P)	-.172	-.236	.646
Forensic (F-P)	-.849	.207	-.923

TABLE 5 *Classification tables*

Analysis 1: Control – Psychosis – Forensic Psychosis					Analysis 2: Psychosis – Forensic Psychosis	
		Predicted Group Membership			Predicted Group Membership	
Actual group	***n***	**Control**	**Psychosis (P)**	**Forensic (F-P)**	**Psychosis**	**Forensic**
Control (C)	33	23 (70%)	10 (30%)	0 (0%)		
Psychosis (P)	27	6 (22%)	12 (44.4%)	9 (33%)	23 (85.2%)	4 (14.8%)
Forensic (F-P)	23	2 (9%)	8 (35%)	13 (57%)	6 (26.1%)	17 (73.9%)
Percentage of cases correctly classified: 57.8% Cross-validation correct classification: 54.2%					Percentage of cases correctly classified: 80% Cross-validation correct classification: 78%	

function explained only 7.2%, canonical R^2= .04. As such, only the first significantly differentiated between the groups, Wilks' Λ = .636, $\chi^2(4)$ = 21.462, p < .001. The second function did not reach significance, Wilks' Λ = .962 $\chi^2(1)$ = 1.854, p= .17. Interpretation of functions at group centroids confirms that a structural hierarchy exists in the order of scores (Table 4), with the forensic group scoring worse than the psychosis group, and both patient groups scoring worse than controls. Correlations between the group membership and the discriminant function (Table 3) revealed that only two variables loaded onto this first function, namely metacognition total scores (r= .792), and the Digit Symbol Test (r= .675). The combination of functions 1 and 2 correctly classify 57.8% of the cases in their respective groups (Table 5). The more conservative cross-validated model correctly classified 54.2%.

As a second question, we were interested to see whether specific domains of metacognition are particularly indicative of a violent history. A per-case test of Mahalanobis distances revealed no significant

multivariate outliers. As such, another discriminant analysis was performed, omitting the control group and substituting MAS-total scores for scores on its subscales. This resulting model consisted of only one function explaining 100% of the variation, canonical $R^2 = .38$. This function significantly differentiated between the groups, Wilks' $\Lambda = .612$, $\chi^2 (2) = 15.206$, $p < .001$. Once more, two variables loaded onto this function (Table 5): scores on Self-Reflectivity (r=.743), and scores on the EAT (r=.234). Group centroids revealed the same hierarchy, with lower scores associated with membership to the forensic group (Table 4). This model correctly classified 80% of the cases between the psychosis and forensic psychosis group; the more conservative cross-validated model correctly classified 78% (Table 5).

DISCUSSION

The current study investigated the relationship between social cognition and metacognition and forensic history in patients with psychotic disorders. As a secondary aim, we sought to investigate which specific domains of metacognition were particularly indicative of a violent history. Our results revealed that metacognitive capacity as measured by the MAS-A, and associative learning scores on the Digit Symbol test, were the only variables that significantly differentiated between all three groups, with controls scoring higher than both patient groups, and patients without a forensic history outperforming those in treatment at a forensic clinic. Additionally, an explorative analysis in which the MAS-A total scores were substituted for its subscales, revealed differences in scores between the forensic and not-forensic patient groups stem mainly from functioning on Self-Reflectivity and scores of empathic accuracy.

This is the first study which includes both measures of social cognition and metacognition in samples with a psychotic disorder, with a

psychotic disorder in forensic care and healthy controls. Thus, results of the current study cannot be directly compared to prior research. Given how well-established the findings are that people with a psychotic disorder underperform on measures of neurocognition, metacognition and social cognition, we shall only discuss our findings in terms of forensic and non-forensic group in-depth.

Scores on metacognition, in particular self-reflectivity, differentiated between forensic and non-forensic participants. In addition, empathic accuracy differentiated, but scores on social cognition (such as ToM) did not. It has been noted that people with schizophrenia and a forensic history do not appear to differ from their non-forensic counterparts on first-order Theory of Mind tasks (Harris & Picchioni, 2013), and that evidence of more basic processes such as Facial Affect Recognition as a predictor for violence in schizophrenia is limited and mixed (Malone *et al.,* 2012; Harris & Picchioni, 2013). Our data fail to support a link between Theory of Mind and violent behavior in schizophrenia, instead implicating synthetic metacognition, i.e. higher order processes that involve integration of different cognitive functions, as previously proposed by several authors (Abu-Akel & Abushua'leh 2004; Bo *et al.,* 2011; Mitchell *et al.,* 2012).

Abu-Akel and Abushua'leh (2004) compared forensic patients with a psychotic disorder to non-forensic psychosis patients on Theory of Mind tests, and performance on the Faux Pas Test. Their results revealed near-significant differences on Faux Pas recognition and empathic inferences, with nonviolent patients outperforming violent patients. They suggest that lack of statistical significance was due to low statistical power. Entering these variables into a regression model, however, did improve the model fit. Majorek et al (2009), using a slightly different ToM task, did not replicate this finding. Our results are in line with the latter: scores on these measures between our groups do not approach

significance, nor do scores on the Faux Pas test improve discriminant power when entered into a discriminant analysis.

In our samples, metacognitive deficits proved to discriminate best between all three groups (i.e. including controls), but also between the two patient groups, implicating particularly scores on the self-reflectivity subscale as a risk factor for violence. Using a similar instrument (MAS-R), Mitchell *et al.* (2012) did not find a forensic sample (N=18) to differ significantly from a patient group without a forensic history, but included only 11 patients in the group of participants with a psychotic disorder. It is therefore difficult to formulate a definitive conclusion based on our results, when taking extant literature into account. What can be ascertained is that self-report questionnaires of empathic abilities are unlikely to be a viable instrument to determine relative violence risk of patients. Self-reflective capacities in this group may be insufficient to obtain accurate scores, and social desirability may play a significant role. Although somewhat less certain, it also appears that faux pas recognition or empathic inferencing ability as measured via questions about characters in a story do not provide information on a construct related to violence-proneness in patients.

Instrument choice appears to play a significant role: the empathic accuracy task, in which participants continuously rate how a person in a video is feeling (sad – happy) provides a different type of information than tests such as Faux Pas recognition or empathy questions: it is a much more synthetic measure with ecologically valid stimuli in which the participant has to integrate information from multiple media (facial expressions, intonation, content of the personal story). Importantly, these scores can be correlated to a 'true' score obtained from the person who told the story. Additionally, the task is much less cognitively/insight oriented and much more affect-driven, and is less susceptible to social desirability, given how difficult it is to discern what would be 'socially

desirable'. Between forensic and non-forensic patients, this score differentiated, while the MAS-A score of "Understanding the Other's Mind did not differentiate in the same manner. This subscale, however, measures complexity of representations of others, rather than accuracy of social cognition. Our data provides further evidence that these are different (although perhaps related) constructs, as some authors suggest (e.g. Dimaggio *et al.,* 2013).

We see three interpretations of these results as viable: the first is based on fMRI evidence that, neurologically, self-relevance determines the amount of emotional processing that takes place in reflecting about others: the more self-relevance, the more emotional processing takes place in the ventromedial prefrontal cortex (van der Meer *et al.,* 2010). It is possible that persons with a psychotic history and a violent history are equally able to, but less inclined to, form complex representations of others. This would be in part explained by the diminished scores on self-reflectivity: a less complex, less stable representation of oneself may make it more difficult to determine that another person is important to oneself. This would lead to a somewhat solipsistic world-view in which other persons, except for the most intimately known or familiar, are more akin to a 'faceless group' than persons just like oneself with whom experiences can be shared. Such a conception of the world may share similarities with a more 'psychopathic' or a fear-based view of the world.

The second explanation regards the mode of measurement. The MAS-A, importantly, does not in any way measure accuracy of inferences and has a relatively cognitive character. A person may represent their mother as a person with cognitions and emotions during the IPII interview, and plausibly infers the intentions of her actions. This representation is not tested: the MAS-A raters can only determine plausibility and complexity of representation, not accuracy as they do not know the mother. The empathic accuracy test, however, does

measure accuracy and has a more affective character. At first glance, this may seem similar to Facial Affect Recognition tasks, which have mixed findings in regards their connection to violence. It could be that these mixed findings are best explained in terms of complexity of processing: at the basic level, emotion recognition is impaired in persons with a psychotic disorder but are not in themselves a risk for violence. Understanding others is not, however, limited to only recognition of facial affect but an integration of all this information into an understanding of the other person's mental state. It could be that difficulties in this ability are the risk factor for violence.

Finally, our findings suggest that those with diminished Self-Reflective capacities could find themselves more overwhelmed by emotions, as demonstrated by the average self-reflectivity scores between the groups. In both control condition and the non-forensic group, averages are above S4, with only 9% in the control group scoring below S4, and 33% in the non-forensic group. In the forensic group, however, 74% of the participants score below S4, which is reflected in a group average of S3.2. It is at precisely this level of metacognition (S4) where a person demonstrates the ability to differentiate between emotions and integrate these into their self-representation. The average score of S3 in the forensic group indicates only the ability to differentiate between cognitive operations, but not emotions. However, alternative interpretations cannot be ruled out, including that the commission of violent crime or incarceration diminishes metacognitive capacity or that some factor not measured here accounts for the observed relationship.

The present study has several limitations: while the total sample size is acceptable, the number of participants per group is modest. Furthermore, our study did not include any data on comorbid substance abuse or personality pathology in either the psychosis group, nor the control groups. Additionally, the current set of instruments

pertaining social cognition is only a small sample of the instruments available to measure the construct(s); for instance, the current study did not incorporate the 'Managing Emotions' subtest of the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), which has also demonstrated an association with violence (O'Reilly *et al.,* 2015). Future research should be designed as prospective studies in which risk assessment batteries are conducted in conjunction with measures of social cognition (particularly metacognition) to determine whether metacognitive capacity demonstrates predictive validity over and above information acquired from comprehensive risk assessment. The further development of instruments targeting more synthetic metacognitive abilities may prove highly informative and useful, in this context. In addition, more investigations into metacognitive capacity in those with personality disorders could potentially further disentangle the complex relationship between psychosis and (comorbid) personality pathology as a risk factor for violence.

One final limitation pertains to symptomatology: our forensic sample can be assumed to be under adequate medication management due to the forced character of treatment, which consisted of both in- and outpatients. Such assumptions cannot be made for our patient non-forensic group, which consisted only of outpatients; it is a common finding that medication adherence is rather poor among patients with a psychotic disorder (e.g. Colizzi *et al.*, 2016). Symptom scores at the time of assessment between groups are virtually identical, but are perhaps not the most relevant information to enter into a statistical model. After all, no information could be entered into the model pertaining to medication use or symptom severity at the time of the index crime.

IN CONCLUSION, our findings support previous research findings implying impaired metacognitive self-reflectivity and empathic accuracy as risk factors for violence. As evidence is beginning to mount that synthetic metacognitive capacity may add unique information to statistical models of violence risk, there may be some urgency to direct research efforts into more measures of these abilities and, perhaps more importantly, interventions aimed at these abilities for both treatment of violent offenders but also prevention of violence. To date, several such methods have been developed and are under investigation for their efficacy, based on either the mentalization framework, the notion of metacognition as awareness of susceptibility to one's own biases, or synthetic metacognition. (Bateman *et al.,* 2009; Wells, 2009; Moritz *et al.,* 2011; Hamm *et al.,* 2013; Van Donkersgoed *et al.,* 2014; de Jong *et al.,* 2016a), and future research is warranted to determine effectiveness within the field of psychosis, including whether they may prove similarly useful in forensic care. Given the considerable implications for the patient, victim and society at large, further research is needed.

REFERENCES

Aan Het Rot M, & Hogenelst K (2014). The influence of affective empathy and autism spectrum traits on empathic accuracy. *PLoS ONE* 9

Abu-Akel A, & Abushua'leh K (2004). "Theory of mind" in violent and nonviolent patients with paranoid schizophrenia. *Schizophrenia research 69*, 45–53.

Abu-akel A, Heinke D, Gillespie SM, Mitchell IJ, Bo S, Abu-akel A, Heinke D, Gillespie SM, Mitchell IJ, & Bo S (2015). Metacognitive Impairments in Schizophrenia Are Arrested at Extreme Levels of Psychopathy : The Cut-Off Effect. *Journal of Abnormal Psychology 124,* 1102–1109.

Baron-Cohen S, O'Riordan M, Stone V, Jones R, & Plaisted K (1999). Recognition of faux pas by normally developing children and children with Asperger syndrome or high-functioning autism. *Journal of autism and developmental disorders 29*, 407–18.

Baron-Cohen S, Wheelwright S, Hill J, Raste Y, & Plumb I (2001). The 'Reading the Mind in the Eyes' Test revised version: a study with normal adults, and adults with Asperger syndrome or high-functioning autism. *Journal of child psychology and psychiatry, and allied disciplines 42*, 241–51.

Bateman A, Fonagy P, & Allen JG (2009). Theory and practice of mentalization-based therapy. *In Textbook of psychotherapeutic treatments*, pp757–780. American Psychiatric Publishing: Arlington, VA, USA.

Beauchamp MH, & Anderson V (2010). SOCIAL: an integrative framework for the development of social skills. *Psychological bulletin 136*, 39–64.

Bo S, Abu-Akel A, Kongerslev M, Haahr UH, & Simonsen E (2011). Risk factors for violence among patients with schizophrenia. . *Elsevier Ltd Clinical psychology review 31*, 711–26.

Bo S, Kongerslev M, Dimaggio G, Lysaker PH, & Abu-Akel A (2015). Metacognition and general functioning in patients with schizophrenia and a history of criminal behavior. *Elsevier Psychiatry Research 225*, 247–253.

Bora E, Yucel M, & Pantelis C (2009). Theory of mind impairment in schizophrenia: meta-analysis. *Elsevier B.V. Schizophrenia research 109*, 1–9.

Bragado-Jimenez MD, & Taylor PJ (2012). Empathy, schizophrenia and violence: a systematic review. *Elsevier B.V. Schizophrenia research 141*, 83–90.

Brüne M (2005). Emotion recognition, "theory of mind," and social behavior in schizophrenia. *Psychiatry research 133*, 135–47.

Colizzi M, Carra E, Fraietta S, Lally J, Quattrone D, Bonaccorso S, Mondelli V, Ajnakina O, Dazzan P, Trotta A, Sideli L, Kolliakou A, Gaughran F, Khondoker M, David AS, Murray RM, MacCabe JH, & Di Forti M (2016). Substance use, medication adherence and outcome one year following a first episode of psychosis. *Elsevier B.V. Schizophrenia Research 170*, 311–317.

Corcoran R, Mercer G, & Frith CD (1995). Schizophrenia, symptomatology and social inference: investigating 'theory of mind' in people with schizophrenia. *Schizophrenia research 17*, 5–13.

Davis MH (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology 44*, 113–126.

Dimaggio G, & Lysaker PH (2015). Metacognition and mentalizing in the psychotherapy of patients with psychosis and personality disorders. *Journal of Clinical Psychology 71*, 117–124.

Dimaggio G, Popolo R, Salvatore G, & Lysaker PH (2013). Mentalizing in schizophrenia is more than just solving theory of mind tasks. *Frontiers in psychology 4*, 83.

van Dongen JDM, Buck NML, & van Marle HJC (2016). Positive symptoms, substance use, and psychopathic traits as predictors of aggression in persons with a schizophrenia disorder. *Elsevier Psychiatry research 237*, 109–113.

Van Donkersgoed RJM, De Jong S, Van der Gaag M, Aleman A, Lysaker PH, Wunderink L, & Pijnenborg G (2014). A manual-based individual therapy to improve metacognition in schizophrenia: protocol of a multi-center RCT. *BMC psychiatry 14*, 27.

Douglas KS, Guy LS, & Hart SD (2009). Psychosis as a risk factor for violence to others: a meta-analysis. *Psychological bulletin 135*, 679–706.

Field A (2013). *Discovering Statistics Using IBM SPSS Statistics. 4th edn*. Sage Publications Ltd.

Fonagy P, Bateman AA, & Bateman AA (2011). The widening scope of mentalizing: A discussion. *Psychology and Psychotherapy: Theory, Research and Practice 84*, 98–110.

Green MF, Penn DL, Bentall R, Carpenter WT, Gaebel W, Gur RC, Kring AM, Park S, Silverstein SM, & Heinssen R (2008). Social cognition in schizophrenia: An NIMH workshop on definitions, assessment, and research opportunities. *Schizophrenia Bulletin 34*, 1211–1220.

Haker H, Schimansky J, Jann S, & Rössler W (2012). Self-reported empathic abilities in schizophrenia: A longitudinal perspective. *Psychiatry Research 200*, 1028–1031.

Hamm JA, Hasson-Ohayon I, Kukla M, & Lysaker PH (2013). Individual psychotherapy for schizophrenia: trends and developments in the wake of the recovery movement. *Psychology research and behavior management 6*, 45–54.

Harris ST, & Picchioni MM (2013). A review of the role of empathy in violence risk in mental disorders. *Elsevier Ltd Aggression and Violent Behavior 18*, 335–342.

de Jong S, van Donkersgoed RJM, Aleman A, van der Gaag M, Wunderink L, Arends J, Lysaker PH, & Pijnenborg M (2016a). Practical Implications of Metacognitively Oriented Psychotherapy in Psychosis. *The Journal of Nervous and Mental Disease 204*, 713–716.

de Jong S, van Donkersgoed RJM, Arends J, Lysaker PH, Wunderink L, van der Gaag M, Aleman A, & Pijnenborg GHM (2016b). Metacognitie bij psychotische stoornissen: van concept naar interventie. *Tijdschrift voor psychiatrie*, 455–462.

Joy S, Kaplan E, & Fein D (2004). Speed and memory in the WAIS-III Digit Symbol - Coding subtest across the adult lifespan. *Archives of Clinical Neuropsychology 19*, 759–767.

Karpouzian TM, Alden EC, Reilly JL, & Smith MJ (2016). High functioning individuals with schizophrenia have preserved social perception but not mentalizing abilities.*Elsevier B.V. Schizophrenia Research 171*, 137–139.

Kay SR, Fiszbein a., & Opler L a. (1987). The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophrenia Bulletin 13*, 261–276.

Kohler CG, Walker JB, Martin EA, Healey KM, & Moberg PJ (2010). Facial emotion perception in schizophrenia: A meta-analytic review. *Schizophrenia Bulletin 36*, 1009–1019.

Levinson A, & Fonagy P (2004). Offending and Attachment: The Relationship between Interpersonal Awareness and Offending in a Prison Population with Psychiatric Disorder. *Canadian Journal of Psychoanalysis 12*, 225–251.

Lysaker PH, Carcione A, Dimaggio G, Johannesen JK, Nicolò G, Procacci M, & Semerari A (2005). Metacognition amidst narratives of self and illness in schizophrenia: associations with neurocognition, symptoms, insight and quality of life. *Acta psychiatrica Scandinavica 112*, 64–71.

Lysaker PH, Clements C a., Plascak-Hallberg CD, Knipscheer SJ, & Wright DE (2002). Insight and Personal Narratives of Illness in Schizophrenia. *Psychiatry: Interpersonal and Biological Processes 65*, 197–206.

Lysaker PH, Vohs J, Hamm JA, Kukla M, Minor KS, de Jong S, van Donkersgoed RJM, Pijnenborg MHM, Kent JS, Matthews SC, Ringer JM, Leonhardt BL, Francis MM, Buck KD, & Dimaggio G (2014). Deficits in metacognitive capacity distinguish patients with schizophrenia from those with prolonged medical adversity. *Elsevier Ltd Journal of Psychiatric Research*, 1–7.

Lysaker PH, Warman DM, Dimaggio G, Procacci M, Larocco V a, Clark LK, Dike C a, & Nicolò G (2008). Metacognition in schizophrenia: associations with multiple assessments of executive function. *The Journal of nervous and mental disease 196*, 384–9.

Mahurin RK, Velligan DI, Hazleton B, Mark Davis J, Eckert S, & Miller AL (2006). Trail Making Test Errors and Executive Function in Schizophrenia and Depression. *The Clinical Neuropsychologist 20*, 271–288.

Majorek K, Wolfkühler W, Küper C, Saimeh N, Juckel G, & Brüne M (2009). 'Theory of mind' and executive functioning in forensic patients with schizophrenia. *Journal of Forensic Sciences 54*, 469–473.

Malone A, Carroll A, & Murphy BP (2012). Facial affect recognition deficits: A potential contributor to aggression in psychotic illness. *Elsevier Ltd Aggression and Violent Behavior 17*, 27–35.

van der Meer L, Costafreda S, Aleman A, & David AS (2010). Self-reflection and the brain: A theoretical review and meta-analysis of neuroimaging studies with implications for schizophrenia. *Neuroscience and Biobehavioral Reviews 34*, 935–946.

Mitchell LJ, Gumley A, Reilly ES, Macbeth A, Lysaker PH, Carcione A, & Dimaggio G (2012). Metacognition in forensic patients with schizophrenia and a past history of interpersonal violence: an exploratory study. *Psychosis 4*, 42–51.

Montag C, Heinz A, Kunz D, & Gallinat J (2007). Self-reported empathic abilities in schizophrenia. *Schizophrenia Research 92*, 85–89.

Moritz S, Kerstan A, Veckenstedt R, Randjbar S, Vitzthum F, Schmidt C, Heise M, & Woodward TS (2011). Further evidence for the efficacy of a metacognitive group training in schizophrenia. *Elsevier Ltd Behaviour research and therapy 49*, 151–7.

National Institute of Mental Health (NIMH) (2017). *Research Domain Criteria (RDoC).* Research Domain Criteria (RDoC)

O'Reilly K, Donohoe G, Coyle C, O'Sullivan D, Rowe A, Losty M, McDonagh T, McGuinness L, Ennis Y, Watts E, Brennan L, Owens E, Davoren M, Mullaney R, Abidin Z, Kennedy HG, O'Reilly K, Donohoe G, Coyle C, O'Sullivan D, Rowe A, Losty M, McDonagh T, McGuinness L, Ennis Y, Watts E, Brennan L, Owens E, Davoren M, Mullaney R, Abidin Z, & Kennedy HG (2015). Prospective cohort study of the relationship between neuro-cognition, social cognition and violence in forensic patients with schizophrenia and schizoaffective disorder. . *BMC Psychiatry 15*, 155.

Reitan RM, & Wolfson D (1985). *The Halstead-Reitan Neuropsychological Test Battery: Therapy and clinical interpretation.* Neuropsychological Press: Tucson.

Reniers RLEP, Corcoran R, Drake R, Shryane NM, & Völlm B a (2011). The QCAE: a Questionnaire of Cognitive and Affective Empathy. *Journal of personality assessment 93*, 84–95.

Schmand B, Bakker D, Saan R, & Louman J (1991). The Dutch Reading Test for Adults: a measure of premorbid intelligence level. *Tijdschrift voor gerontologie en geriatrie 22*, 15–19.

Semerari A, Carcione A, Dimaggio G, Falcone M, Nicolò G, Procacci M, & Alleva G (2003). How to evaluate metacognitive functioning in psychotherapy? The metacognition assessment scale and its applications. *Clinical Psychology & Psychotherapy 10*, 238–261.

Sheehan D V., Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, & Dunbar GC (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry 59*, 22–33.

Tabachnick GB, & Fidell SR (2007). *Using Multivariate Statistics.* 5th edn. Pearson: Boston.

Tombaugh TN (2004). Trail Making Test A and B: normative data stratified by age and education. *Archives of clinical neuropsychology : the official journal of the National Academy of Neuropsychologists 19,* 203–14.

van Veluw SJ, & Chance S a (2014). Differentiating between self and others: an ALE meta-analysis of fMRI studies of self-recognition and theory of mind. *Brain imaging and behavior 8*, 24–38.

Vohs JL, Lysaker PH, Francis MM, Hamm J, Buck KD, Olesek K, Outcalt J, Dimaggio G, Leonhardt B, Liffick E, Mehdiyoun N, & Breier A (2014). Metacognition, social cognition, and symptoms in patients with first episode and prolonged psychoses. *Schizophrenia Research 153*, 54–59.

Volavka J (2013). Violence in schizophrenia and bipolar disorder. *Psychiatria Danubina 25*, 24–33.

Wechsler D (1995). *Manual for the Wechsler Adult Intelligence Scale.* Psychological Corp: Oxford.

Weijers J, Ten Kate C, Eurelings-Bontekoe E, Viechtbauer W, Rampaart R, Bateman A, & Selten J-P (2016). Mentalization-based treatment for psychotic disorder: protocol of a randomized controlled trial. *BMC psychiatry 16*, 191.

Wells A (2009). *Metacognitive Therapy for Anxiety and Depression.* The Guilford Press: New York.

Zaki J, Bolger N, & Ochsner K (2008). *The Interpersonal Nature of Empathic Accuracy.* 19, 399–405.

CHAPTER 4

Metacognitive reflection and insight therapy (MERIT) with a patient with severe symptoms of disorganization

de Jong, S., van Donkersgoed, R.J.M., Pijnenborg, G.H.M., and Lysaker, P.H.

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ABSTRACT

One recent development within the realm of psychotherapeutic interventions for schizophrenia has been a shift in focus from symptom management to consideration of metacognition, or the processes by which people synthesize information about themselves and others in an integrated manner. One such approach, metacognitive reflection and insight therapy (MERIT) offers a description of 8 therapeutic activities that should occur in each session, resulting in the stimulation and growth of metacognitive capacity. In this report, we present a description of 12 sessions with a patient suffering from schizophrenia manifesting significantly disorganized symptoms. Each MERIT element is described along with observed clinical and metacognitive gains. As illustrated in this report, these procedures helped the patient move from a state of having no complex ideas about himself or others, to one in which he could begin to develop integrated and realistic ideas about himself and others and use that capacity to think about life challenges.

INTRODUCTION

In her first person account of schizophrenia, Kean (2009) made the following notes: "The clinical symptoms come and go, but this nothingness of the self is permanently there. Not a single drug or therapy has ever helped with such nothingness. By nothingness, I mean a sense of emptiness, a painful void of existence that only I can feel" (p. 1034). Consistent with this, integrative forms of psychotherapy for schizophrenia increasingly focus less on symptom reduction and more on aspects of self-experience (Hamm, Hasson-Ohayon, Kukla, & Lysaker, 2013).

One specific form of integrative psychotherapy emphasizes subjective experience and focuses on metacognition–the ability to form integrative representations of self and others (Lysaker, Glynn, Wilkniss, & Silverstein, 2010). Metacognition is a psychological function encompassing a spectrum of mental activities that involve thinking about thinking. It refers to psychological functions ranging from discrete acts in which people recognize specific thoughts and feelings to more synthetic acts in which an array of intentions, thoughts, feelings, and connections between events are integrated into larger complex representations (Semerari *et al.*, 2003).

In particular, it has been proposed that loss of metacognitive capacity may underpin many of the most distressing subjective elements of schizophrenia (Lysaker *et al.*, 2015). It may, for example, leave people without the larger sense of themselves as unique beings in the world, a quality needed to discern meaning in past and current events and make decisions about how to respond to life challenges. As reviewed in Lysaker *et al.* (2015), multiple studies have demonstrated the presence of relatively greater levels of metacognitive deficits among people with

schizophrenia relative to others with different medical and psychiatric challenges and linked those deficits with a range of functional impairments.

Building on these findings, case studies (Hillis *et al.*, 2015; Lysaker, Buck, & Ringer, 2007; Salvatore, Russo, Russo, Popolo, & Dimaggio, 2012), a pilot study (Bargenquast & Schweitzer, 2014), and one qualitative study (Lysaker *et al.*, in press) have reported that metacognitive therapy can be delivered and accepted by people with schizophrenia and that it may be linked with positive effects. A more recent development has been to manualize this work. This procedure, metacognitive reflective insight therapy (MERIT; van Donkersgoed *et al.*, 2014), seeks to promote synthetic metacognitive capacity and requires a focus on reflection itself, as opposed to correcting beliefs or teaching skills.

MERIT specifies eight interrelated processes that should occur within every session. The first six elements include a focus on the patient's agenda, the sharing of therapists' thoughts without disrupting dialogue, eliciting a narrative episode, defining a psychological problem, discussing interpersonal processes in session, and discussing progress. Each is intended to offer an opportunity to promote increasingly complex reflection of different phenomena, specifically patients' experience of their needs and wishes, their reactions to the presence of the therapist's mind, their sense of themselves in the midst of historical events, their challenges, and their awareness of the therapeutic relationship and of the session itself. The last two elements of MERIT call for interventions that are consonant with patients' metacognitive abilities and stimulate reflective activities about the self and others and thoughts about how best to understand and respond to psychological and social challenges.

Of note, MERIT is considered to be an integrative form of psychotherapy guided by a theoretical understanding of the

metacognitive processes that underpin any disability and recovery from schizophrenia. Thus, it can entail the use of cognitive behavioral, humanistic, or psychodynamic techniques; however, these are used or interlaced in accord with their relevance for promoting the synthesis of an integrated sense of the self and others.

In this report, we will describe the application of each of the elements of MERIT in the case of a man with prolonged schizophrenia with significantly disorganized symptoms. Although MERIT is intended to be a potentially long-term treatment, the therapy in this case was offered as part of a pilot trial of the feasibility of MERIT (de Jong *et al.*, 2015) as a specific 12-session treatment. In contrast to previous reports of long-term therapies, it offers a unique opportunity to assess what kinds of outcomes may occur in the short term.

CASE ILLUSTRATION

Abraham is a never-married male in his early 50s with prolonged schizophrenia. He reports being bullied in school but did graduate from high school. In his late teens, Abraham was drafted into the army and there he was diagnosed as suffering from a psychotic episode; consequently, he withdrew from service. Since leaving, he has never worked steadily for any period of time. Both of his parents are living and play an active role in Abraham's life. He is currently living alone, with the support of a community healthcare worker. At the time of entry into psychotherapy, he was receiving a standard dose of an atypical antipsychotic medication.

Clinically, at the time of entry into psychotherapy, Abraham presented with severe positive and disorganized symptoms. For example, he believed he had been conducting secret experiments and was going to be awarded a Nobel prize. There was considerable evidence of conceptual disorganization, including utterances containing loose associations to

Bible figures and musical styles. Moreover, he appeared relatively unable to think about his life with any temporal continuity. In the following excerpt, Abraham attempts to talk about the story of his life:

> **A:** *When I was born, my family was very poor. They couldn't help that. That was the economy then. They were in expenditure control–I don't know what that is, exactly. I was very young then. My father was alright but he opened a savings account with two guilders fifty. When I was born, they received a [inaudible]. That is normal when you are born. They were happy, then, that it was a boy. On my birth photo I don't look too happy. It could be I was cold. It could be that I . . . had my umbilical cord cut and that I felt that then. When you get older you don't feel that pain anymore.*

Regarding self-reflection–the first metacognitive capacity MERIT is based on–at the outset of psychotherapy, Abraham appeared generally aware that he experienced different forms of cognitive operations (thoughts, beliefs, dreams, desires) but appeared to lack a fully nuanced sense of his own emotions: "I became more sensitive. Less thinkable than then. I have a problem with frowns in my forehead, that is all old thinking work." As to the second capacity, understanding the other's mind, Abraham was unable to recognize the affective states of others, and struggled to describe the mental states of others–for example, explaining how others are "low-frequency sensitive" versus his own "high-frequency sensitivity."

As to mastery, the ability to conceptualize psychological problems and find adequate coping strategies, Abraham was unable to formulate a coherent psychological problem: "It's because I was intelligent and those dendrites were too close together . . . . When that short-circuits it's like an electric chair, but that is only three hours and then it is gone."

ELEMENT 1:

THE PREEMINENT ROLE OF THE AGENDA OF THE PATIENT

The first element of MERIT requires the therapist to remain aware that the patient has entered the session with a purpose or agenda and reflect with the patient about that agenda. In this sense, the agenda refers to the hopes and wishes of the patient and these can involve items that are initially unknown, contradictory, and/or changing. Attention to the agenda is said to stimulate metacognitive activity, as it continuously trains patients' attention to what they hope and want and helps to frame that experience as a subject for reflection. To discern the true agenda(s) of the patient, the therapist must pay attention to patient utterances from the first moment, distinguishing casual comments from others with deeper meaning embedded within them.

In the initial sessions, it was frequently difficult to ascertain Abraham's agenda, though there were clues in the form of props brought to the session. For example, in the first session he brought a painting to the session: "[I wanted to bring] something from my house that is positive. With respect to use of color, uh . . . holly branch or whatever it may be. But to be honest, I'm a little worried about my neighbors. My neighbor has soon or already had a birthday. I don't know what is wrong with them–one moment the car is there, then not, and would they have the flu . . . all variants are possible."

Trying to understand the agenda, the therapist explored whether Abraham was worried about something. Abraham responded that "there are old people that die from flu," explaining that he saw on the news that a man died when his car hit the water and that "that man has a family. They all have a family." In response, the therapist formed the idea that perhaps Abraham's agenda concerned worries about his parents passing away. Abraham confirmed that this bothers him sometimes and connected the death one day to his being at "a breaking point".

Continuing to try to track Abraham's agenda, the therapist found themes around health, life, and death.

As therapy progressed, Abraham began to open each session with an utterance or action that seemed to contain an increasingly clearer idea of his agenda. For example, in the fourth session, he immediately stated that he had an unpleasant birthday. He received a gift that he broke the same evening. His father made a joke about World War II, which he found offensive, and he did not feel taken seriously. Although Abraham was not able, on his own, to say what he was seeking in the session, together with the therapist it was discovered that he had come to session to deal with the distress of his feeling that he was not taken seriously by others, couldn't communicate his thoughts, and was unsure what the behavior of others meant. In the eighth session, Abraham continued to wish to be understood, freely revealing fears and concerns mostly related to loss as they occurred to him.

Session 12 was marked by Abraham appearing better kept and shaven and with his hair trimmed. When the therapist asked about this, he remarked, "You have to remain calm in these wild, uh, wild times with all sorts of excesses." The therapist asked, "You have to remain calm in these wild times?" He replied in a manner indicating he had a clear purpose today: "Yes. With all sorts of mental or physical excesses. Physically, I mean more that people all worry so much about their appearance, wondering, 'Am I attractive enough for another, physically?' But it's also about the mind and ability to think." This led to the therapist and Abraham agreeing that he wanted others to see him as a person.

Considered as a whole, attention to his agenda allowed Abraham to voice his wishes and needs, recognize that he had wishes and needs, and develop a deeper and richer sense of what those were.

ELEMENT 2:

THE INTRODUCTION OF THE THERAPIST'S MIND

Central to MERIT is the understanding that metacognition occurs in an intersubjective space or context. Intersubjectivity refers to shared meanings constructed by people in their interactions with each other; furthermore, it is assumed that understandings of the self and others are formed in the context of real or imagined interactions with other people (Stern, 1985). As such, it is important that the therapist insert his or her own mind—that is, share thoughts or observations with the client—as a means to facilitate dialogue, promote the client's awareness of the therapist's mind, and communicate to the client that the therapist is making a genuine effort to understand. This element not only positions the therapist's mind so that intersubjectivity is possible but also promotes reflection about intersubjectivity itself. Thus, as the first element allows reflection upon a patient's wishes and desires, the second allows reflection about the experience of the presence of another mind.

In the beginning, to meet this element, the therapist frequently asked for clarification, remarking that he couldn't follow Abraham's thoughts. As mentioned above, it became clear that one of Abraham's agendas was purely to have someone attempt to understand him. The therapist thus had to introduce, carefully and respectfully, his experience of being confused, expressing interest in understanding, thereby meeting that agenda. At other times, the therapist shared his thoughts about the matters he could understand, for example, feelings of frustration when borrowed items are not returned. Such utterances–along with reflections such as "But you thought [person] a little cruel at that moment?" and self-disclosures such as "I have been frustrated with my mother at times, as well"–were accepted by Abraham and established that the therapist was a thinking person who could reflect with Abraham about the issues he brought up.

Abraham did not, however, always welcome the thoughts of his therapist, no matter how benign. They were often experienced as interrupting his personal meaning making. This led to discussion about how disorganizing it was when the therapist had an idea that Abraham did not share. This trend continued until the end of the 12 sessions; however, it should be noted that the goal of this element is not problem solving, but reflection upon the patient's experience of the presence of the therapist's mind. Evidence of this can be found in the following exchange:

T: *Intimacy is very difficult.*

A: *Yes. But that's enough about that. We've spoken for half an hour. I want to get out of this seat, get some feeling back.*

By the end of the trial, there was a shared reflection that the therapist had changed roles, moving from someone who passively accepted Abraham's thoughts to one who was entrusted to experience, and at times influence, those thoughts. As such, Abraham developed a beginning awareness of his experience of the therapist and developed the ability to see how that changed over time.

ELEMENT 3:
THE NARRATIVE EPISODE

To promote reflection upon the client's actual experiences, the third element of MERIT is a focus on personal narratives. These narratives may pertain to any moment of the client's life, as long as he or she is the main actor in the story told. Whereas the first element promotes reflection about wishes or desires in the moment and the second

promotes reflection upon the presence of the therapist's mind, the third offers an opportunity to reflect upon personal experiences in detail.

Here, disorganized thought posed a consistent difficulty: The flow of Abraham's thoughts was such that details were difficult to connect in any coherent or temporal manner. Furthermore, his thoughts were frequently of an abstract manner and did not offer narrative episodes from his own life. He appeared frankly unable to readily offer narratives on his own. This required careful consideration of his utterances to find events that he (the therapist) could think about:

A: *A few days ago. It's close by, but also already a week ago or something. I heard on the radio, and I thought . . . oh . . . and sometimes also music that I–that played at funerals–that I thought . . . oh . . . Where I was present at times, but I also keep distance because I have to know my boundaries in that. Suicide is serious.*

T: *Is that what you'd like to discuss?*

A: *I've had suicide in my social environment, yes. And that was the first one. The first experience with a human being's death.*

T: *Do you want to talk about death or suicide?*

A: *I also want to discuss life.*

T: *So you don't want to die?*

A: *Who doesn't? Nobody. But every person has his breaking point.*

Although Abraham's thoughts began to appear less disorganized as therapy progressed in the first four sessions, his narrative episodes continued to lack sufficient detail and were occasionally fictional. There was a sense that Abraham was not always aware that when he referred to a singular event, the therapist did not already know the full story. The therapist addressed this issue in the third session to see if it was possible to produce a narrative that could be the basis for joint understanding, and Abraham seemed to understand:

A: *We go from topic to topic, all little bits and piece . . . . It's not like a puzzle you put together or anything.*

T: *It's difficult for you as well, to . . . in this moment . . . .*

A: *Get a clear overview*

In the fourth through eighth sessions Abraham appeared to take more initiative to produce narrative, which, though still brief and abstract could be reflected upon:

T: *What kind of feeling does that give you?*

A: *Awkward. When I like people that are threatened. I've had it once myself at the supermarket. I was buying some tobacco–and what else was I buying?–and suddenly a young man acted very aggressive towards me. Verbally aggressive, like, "I'm going to beat you to a pulp." I–I was perplexed. I didn't know what to do.*

Abraham seemed, in such situations, to be more comfortable discussing abstract (e.g., "Why does someone respond like that?") rather than concrete situations. In such situations, the therapist attempted to relate the concern about events Abraham had told him about in past sessions, which underlay the same abstract concern, and offering these pieces back to Abraham. An example of this can be found in a poignant moment from a later session when Abraham and the therapist jointly reconstructed the events in which Abraham was flooded with a feeling of terror while in a group of people and he was ultimately hospitalized. He thus appeared increasingly able to think about himself as a being who existed within a complex web of life events.

ELEMENT 4:

THE PSYCHOLOGICAL PROBLEM

The fourth element requires the joint elucidation of a specific psychological problem that the patient is experiencing in his or her life. Here, the aim is mutual reflection upon the patient as a being experiencing a common human dilemma (e.g., fear for one's safety or a sense of rejection). Again, the disorganized nature of Abraham's thoughts made it difficult to see him as grappling with a difficulty and the therapist was aware of the danger of manufacturing a problem as he might construct a percept on the basis of a Rorschach ink blot. This required the therapist to continuously wonder what Abraham was confronting and then carefully see if Abraham agreed:

T: *Yes, because you seem to think a lot about persons who die in very unpleasant ways . . . and a factor I see returning frequently is that it was almost never their fault or a mistake they made.*

A: *And die without it being their fault.*

T: *And then I think, Is Abraham worrying all the time?*

A: *Well, not at the moment. I just got my [depot medication], right? That puts you more into reality, too.*

T: *So it's a nice time, after you receive the medication?*

A: *It's a bit of a relief.*

T: *Because normally it's too busy in your head.*

A: *Oh, it can become too much for any person . . . .*

Paralleling growth in the ability to generate narratives, Abraham began to notice that he indeed confronted things as a unique being. He was thus increasingly able to see himself as a person who existed within historical events, and someone who not only has needs and wants but also confronts recognizable psychological and social obstacles. His psychological problems became more nuanced accordingly.

A: *It's been a while since I played cards.*

T: *So you miss the contact with other people, a little?*

A: *What's a king without a queen, and what's a man without a woman?*

T: *Yes. So maybe that's why you look so charming today?*

A: *Yes. Maybe I'm looking for a little lady*

ELEMENT 5:

REFLECTING ON INTERPERSONAL PROCESSES WITHIN THE SESSION

The fifth element of MERIT involves reflecting on the interpersonal processes inherent in the session. Here the goal is to stimulate increasingly complex reflections about the kind of relationship that exists between the patient and therapist, which is the basis for any developing shared understanding. In the case of Abraham, there was little space to reflect on these processes during the first three sessions. Abraham didn't appear to relate to the therapist as a unique person. The therapist instead appeared as a generic other who was there to listen to him, perhaps in the manner of the audience of a radio show who could sometimes ask questions. By the fourth session, the therapist was able to stimulate some reflection about the relationship as involving their mutual confusion:

T: *You're going fast today, Abraham.*

A: *Am I going too fast?*

T: *Yes. I find it hard to follow you.*

A: *I'm on the fence myself, as well . . . Oh, I'm going too fast. Sorry.*

In session nine, Abraham seemed more cognizant of the therapist and the therapist carefully attempted to stimulate joint thought about their relationship:

T: *Hey, what I'm noticing . . . and that's happened a few times, during our conversations. Then you say something which could be a joke, or could not be a joke–I don't know at such moments. Then you laugh, yourself, then I laugh along . . . but then it seems to frustrate you that I laugh along. You respond, saying something like, "Yes, you laugh about that, but . . . ."*

A: *Yes! yes! yes!*

T: *That confuses me.*

A: *Yes, sorry, sorry.*

T: *No, that's fine, don't worry about it. But I was wondering if you'd noticed that.*

A: *Yes, no . . . I just smile because I want to say something friendly.*

T: *Ah, I see. As in, you don't mean anything wrong . . . .*

A: *No, not hilarious or cynical or anything.*

ELEMENT 6:

REFLECTION ON PROGRESS WITHIN THE SESSION

The sixth element of MERIT seeks to stimulate joint reflection about how sessions are progressing and whether the results are positive and/or as expected. In contrast to the fifth element, the idea here is not to reflect upon the therapeutic relationship, but on how the session is affecting the patient. Just as Abraham struggled to reflect on how he

related to the therapist, he also seemed to struggle to think about how the session had progressed. At best, he appeared able to note that it was helpful but he was unable to say much about how the session went other than comments such as, "It was impressive." Though frequently asked how the session had gone or was going, Abraham seemed unable to truly master a sense of being able to form his own ideas about the session and provided little feedback to the therapist.

Certainly, the therapy changed how Abraham thought about himself. It would have been helpful, in hindsight, for the therapist to have offered exactly that reflection or to have commented on how difficult it was for Abraham to think about the therapeutic relationship, to better stimulate his abilities to think about himself and others. What follows is a brief exchange that could have served as a basis for such a reflection:

T: *So, Abraham . . . is it possible for you to let me come close then? Or . . . ?*

A: *Well, we haven't known each other very long.*

ELEMENT 7:

STIMULATING SELF-REFLECTIVITY AND UNDERSTANDING THE OTHER'S MIND

The seventh element of MERIT requires the therapist to reflect with patients about themselves and others at levels that do not exceed patients' capacities. In other words, if patients struggle to form complex integrated sense of themselves as being in the world, or if therapists do not reflect about patients' agenda, experience of the therapist, or narrative episodes at levels that patients are capable of comprehending, then those reflections will not stimulate the development of

metacognitive capacity. To operationalize the levels of metacognitive functioning a patient is capable of comprehending, MERIT therapists employ the Metacognitive Assessment Scale-Abbreviated (MAS-A). More detailed information about the MAS-A including psychometrics and scale descriptions are described in detail elsewhere (Lysaker *et al.*, 2014).

After Abraham's struggles to track even his own mental activities, the therapist accordingly offered an open space in which Abraham could express what was happening in his mind, no matter the degree of disorganization, and then sought to merely reflect with Abraham that he (Abraham) was having was having those mental experiences:

A: *I felt free then, there. Really. And that second trip, that was in a different year . . . then my sister joined. Then there was unrest in the country. It really wasn't pleasant there then. First trip, fine, really.*

T: *Do you maybe mean a little bit that your parents were a little on your case?*

A: *They're bothered with my dinner times. That what I mentioned earlier, with my structure. I've had that, and it was so strict in the [closed ward] that I got dazed.*

T: *In truth you'd want to be a little bit more free.*

A: *Yes, who doesn't? I'm kind of a freedom-loving person.*

Similarly, Abraham struggled to form more than elemental ideas about the mental activities of others. For instance, although he thought others had ideas and intentions— "He noticed I was over-stressed"— these statements were lacking detail or even plausibility. The therapist's task then was to simply offer Abraham opportunities to notice he was thinking about others.

However, as sessions progressed, Abraham began to create more integrated ideas about himself and others, not only noticing his own mental activities but also forming more integrated ideas about others, with the therapist himself offering more complex reflections to match the growth in Abraham's metacognitive capacity:

T: *Could you describe to me how someone feels when they are sad?*

A: *Some express it in a group . . . discuss it with a group . . . and others lock themselves off, build sort of a witches' circle with candles around themselves and, uh . . . . starts crying.*

T: *Emotions. You don't describe those often. About that situation in the supermarket, right?*

A: *Yes.*

T: *I asked, "Were you afraid?" and you said, "No."*

A: *No, wait. That was different. I felt unpleasant and wanted to get out of the store.*

T: *But then . . . I kept asking questions, and you said you felt unpleasant, that you couldn't help, then you felt insecure, you wanted to leave, you stayed quiet, you even referred to fleeing behavior. And then I thought that sounds like fear.*

A: *Yes. How would you feel if someone suddenly gets aggressive with you?*

T: *I would feel exactly like that. That's why I asked, "Were you afraid?"–because I thought I'd be half scared to death.*

A: *Well, uh, I thought . . . I'll keep quiet because you don't know what he'll do.*

ELEMENT 8:

STIMULATING MASTERY

The eighth element of MERIT calls for the therapist to stimulate mastery– the ability to use metacognitive information about the self, others, and one's place in the world, to identify and cope with inter- and intrapersonal psychological difficulties. As in the case of element seven,the therapist seeks to stimulate mastery at a level consonant with the patient's current capacity. Also, as in element seven, the MAS-A is used to conceptualize and guide the therapist to offer interventions. Returning to Abraham, early in therapy with little sense of himself or others as unique beings, he struggled to even frame a challenge that could call for mastery:

A: *Yes, but maybe they're a bit troubled by the neighborhood–could be. Look, I'm, uh . . . high-frequency sensitive. She is low-frequency sensitive. That's also difficult.*

T: *What do you mean by that?*

A: *With sounds and such. She can't handle a motorcycle that's standing there, but I can handle that. But screeching of those girls in the neighborhood–maybe she sleeps through that–and that's what bothers me in turn. That I'm working on something and that I then hear that screeching of those girls and then I'm out of my concentration.*

As noted above, as sessions progressed Abraham began to notice discrete problems and the therapist intervened by merely noticing this and an absence of response on Abraham's part to these problems. This led Abraham to realize he was responding to difficulties, which made it possible to consider the use of metacognitive knowledge:

A: *Yeah, look, it can have an influence. But the reverend used to say, "Don't let what is on television bother you," but . . . you can't close your eyes for everything.*

T: *You can . . . you can worry heavily, I know.*

A: *Yes . . . very.*

T: *When you worry, you don't just worry, you really really worry. [Abraham makes a noise of agreement.] What do you do to get rid of it?*

A: *Games, maybe. Yes. That's the only solution.*

T: *I can see on you that it doesn't work well.*

A: *It does work well, but then . . . [sighs] . . . people say, "Damn it, why don't you go have fun at [winter games location] again?" I say, "Yeah" . . . but my health is failing me more this year, because last year I was more mobile in that period.*

This led to frank discussions of how hard it was to cope with distress and challenge:

T: *It went from bad to worse. Before, you worried and then you could leave and go do things. But now your health doesn't allow that anymore.*

A: *Yes. And physically too.*

T: *And that's causing you to sit home more. You can't get rid of it anymore.*

A: *Yes. And it's hard to find distractions on your own.*

In this case report we have described interventions that were offered over an abbreviated period of 12 sessions for a pilot study of the feasibility of MERIT. Across these few sessions, Abraham began to become more aware of and able to notice his own mental activities. He further was able to distinguish cognitive operations. Although he began to spontaneously acknowledge that he felt distinct emotions, he struggled to form a nuanced lasting sense of the different emotions he experienced. At some moments, but not others, he demonstrated the ability to see his mental states as phenomena that were subjective and that changed over time in ways that were comprehensible. Regarding the thoughts of others, he was able to discern that others have their subjective experiences, though he similarly had difficulties understanding the emotional experience of others.

Some of the most striking changes concerned the emergence of clear psychological and social struggles that Abraham was facing. Whereas early in therapy the world around him appeared as something

metaphorically akin to a leaf storm, he was able to share his experiences of a range of painful dilemmas in a moving and genuine manner, assuming some sense of agency in terms of deciding how he might respond to them.

Outside of metacognition, Abraham appeared to create in the short time a more coherent account of his life, one with some temporal connections and populated by others to whom he could potentially relate. He continued to experience positive symptoms, though these occupied less and less of each session. He similarly continued to experience significant levels of conceptual disorganization, though expressions of disordered thought also slowly began to occur less frequently.

Regarding countertransference, early on the therapist struggled with doubts that Abraham could make sense of his own life and form the kinds of complex representations needed to take control in some sense of his own recovery. This was replaced with moments of wonder when Abraham was able to directly express painful emotions that the therapist could relate to, just as he could to the dilemmas of people who have never experienced psychosis. Of note, the therapist in this case had a history of comprehensive training in cognitive behavior therapy and a background in existential thought. His integrative use of MERIT may differ from how others will likely deploy this work.

Finally, regarding prognosis, Abraham sadly did not accept an offer of further therapy at the end of the trial, appearing demoralized that therapy was ending and noting he had taken a high dose of his medication, possibly in order to cope. It is unknown to what extent the gains observed over the 12 weeks have persisted, though case work previously has suggested that longer periods of intervention are needed for lasting gains (Lysaker, *et al.,* 2007).

CLINICAL PRACTICES AND SUMMARY

Concerning the implications of this methodology for clinical work with people with a psychotic disorder, the therapist made several observations. First, and most salient, was the absence of a specific problem Abraham sought to resolve: He entered therapy in the context of a scientific study into the efficacy of this methodology. The recruitment text specified that the therapy would involve thinking about the patient's life together with a therapist. Once rapport was established, mutual reflections could begin to occur. Although disorganization was a great obstacle, it surprised the therapist to find that with sufficient focus on simply listening and attempting to understand Abraham, puzzle pieces of his life started to come together. In searching for patterns, often together with Abraham, problems and therapy goals began to emerge. It appeared to the therapist that it would have been impossible to aid Abraham in finding these patterns if he (the therapist) did not spend considerable time and energy trying to understand the man underneath the problems.

As Abraham's life story emerged, so did traumatic memories, which Abraham was hesitant to delve into. It was difficult for the therapist to maintain a balance between being open to discussing these traumatic events and simultaneously allowing Abraham full agency in the choice of whether or not to speak about them. Abraham appeared concerned about the therapist's well-being at being confronted with such traumatic details, and in hindsight the therapist has often wondered if he perhaps erred on the side of caution and unintentionally came across as reluctant to discuss trauma. Not all pain that emerged, however, stemmed from these traumatic experiences. There were also common human dilemmas such as social isolation and the lack of intimate contact, which is consistent with other work that finds that with reflection comes a great deal of pain (Leonhardt *et al.*, in press).

Although allowing Abraham the agency to determine which matters to reflect on in therapy, the therapist began to notice a pattern in which Abraham would frequently become more lucid before disorganizing once more, usually at times when the topics turned to matters that caused him psychological pain. Abraham himself commented on this, noting that children flee into fairytales and that he himself fled into psychosis. Such deep observations, infrequent as they were, surprised the therapist greatly; he is left with a sense that these insights would not have occurred if a more structured or "by the protocol" approach to therapy had occurred. It deserves mention that such insights from Abraham also served to strengthen the therapist's resolve and belief in the treatment; when faced with Abraham's heavy disorganization, the therapist struggled with moments of hopelessness and demoralization, wondering if sense making could occur at all.

LIMITATIONS

There are limitations to this case illustration. At best, it describes what happened initially and quickly when MERIT was used to treat a patient with prolonged schizophrenia. It is not clear how these principles apply to first episode patients or to patients who are further in their recovery. It was also delivered in an outpatient setting and is unclear how well these observations apply to people living in institutional settings. More work is needed with formal assessments of metacognition and psychopathology over time in both case studies and controlled trials of this treatment. Future studies might continue to explore the interplay of different forms of metacognition assessed in this work as well as the links between metacognitive gain and the emergence of pain that accompanies more complex reflections.

REFERENCES

Bargenquast, R., & Schweitzer, R. D. (2014). Enhancing sense of recovery and self-reflectivity in people with schizophrenia: A pilot study of Metacognitive Narrative Psychotherapy. *Psychology and Psychotherapy, 87,* 338–356.

de Jong, S., van Donkersgoed, R. J. M., Aleman, A., van der Gaag, M., Wunderink, L., Arends, J., Lysaker, P. H., & Pijnenborg, G. H. M. (2015). The practical implications of Metacognitive Psychotherapy in psychosis: a short report on findings from a pilot study. *Manuscript submitted for publication.*

Hamm, J. A., Hasson-Ohayon, I., Kukla, M., & Lysaker, P. H. (2013). Individual psychotherapy for schizophrenia: Trends and developments in the wake of the recovery movement. *Psychology Research and Behavior Management, 6*, 45–54. doi:10.2147/PRBM.S47891

Hillis, J. D., Leonhardt, B. L., Vohs, J. L., Buck, K. D., Salvatore, G., Popolo, R., . . . Lysaker, P. H. (2015). Metacognitive reflective and insight therapy for people in early phase of a schizophrenia spectrum disorder. *Journal of Clinical Psychology, 71*(2), 125–135. doi:10.1002/jclp22249.22148

Kean, C. (2009). Silencing the self: schizophrenia as a self-disturbance. *Schizophrenia Bulletin, 35*(6), 1034–1046. doi:10.1093/schbul/sbp043

Lysaker, P. H., Buck, K. D., & Ringer, J. (2007). The recovery of metacognitive capacity in schizophrenia across 32 months of individual psychotherapy: A case study. *Psychotherapy Research, 17*(6), 713–720. doi:10.1080/10503300701255932

Lysaker, P. H., Glynn, S. M., Wilkniss, S. M., & Silverstein, S. M. (2010). Psychotherapy and recovery from schizophrenia: A review of potential applications and need for future study. *Psychological Services, 7*(2), 75–91. doi:10.1037/a0019115

Lysaker, P. H., Hillis, J., Leonhardt, B. L., Kukla, M., & Buck, K. D. (2014). Metacognition in schizophrenia spectrum disorders: methods of assessment and associations with psychosocial function, neurocognition, symptoms, and cognitive style. In Lysaker P.H., Dimaggio G., Brune M., eds. (2014). *Metacognition and Social Cognition in Schizophrenia.* New York, NY: Elsevier Press

Lysaker, P. H., Kukla, M., Belanger, E., White, D. A., Buck, K. D., Luther, L., Firmin, R., & Leonhardt, B. (In press). Individual psychotherapy and changes in self-experience in schizophrenia: A qualitative comparison of patients in metacognitively focused and supportive psychotherapy. *Psychiatry.*

Lysaker, P. H., Vohs, J., Minor, K. S., Irarrazaval, L., Leonhardt, B., Hamm, J. A., . . . Dimaggio, G. (2015). Metacognitive deficits in schizophrenia: Presence and associations with psychosocial outcomes. *The Journal of Nervous and Mental Disease, 203*(7), 530–536. doi:10.1097/NMD.0000000000000323

Salvatore, G., Russo, B., Russo, M., Popolo, R., & Dimaggio, G. (2012). Metacognition-oriented therapy for psychosis: The case of a woman with delusional disorder and paranoid personality disorder. *Journal of Psychotherapy Integration.* doi:10.1037/a0029577

Semerari, A., Carcione, A., Dimaggio, G., Falcone, M., Nicolo, G., Procacci, M., & Alleva, G. (2003). How to evaluate metacognitive functioning in psychotherapy? The metacognition assessment scale and its applications. *Clinical Psychology & Psychotherapy, 10*(4), 238–261. doi:10.1002/cpp.362

Stern, D. N. (1985). *The interpersonal world of the infant.* New York: New York Basic.

Van Donkersgoed, R. J., De Jong, S., Van der Gaag, M., Aleman, A., Lysaker, P. H., Wunderink, L., & Pijnenborg, G. (2014). A manual-based individual therapy to improve metacognition in schizophrenia: Protocol of a multi-center RCT. *BMC Psychiatry, 14*(1), 27. doi:10.1186/1471-244X-14-27

CHAPTER 5

Practical implications of metacognitively oriented psychotherapy in psychosis: findings from a pilot study

de Jong, S., van Donkersgoed, R.J.M., Aleman, A., van der Gaag, M., Wunderink, L., Arends, J., Lysaker, P.H., and Pijnenborg, G.H.M.

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ABSTRACT

In preparation for a multicenter randomized controlled trial, a pilot study was conducted investigating the feasibility and acceptance of a shortened version (12 vs. 40 sessions) of an individual metacognitive psychotherapy. Twelve participants with a diagnosis of schizophrenia were offered twelve sessions of Metacognitive Psychotherapy (MERIT). Effect sizes were calculated for changes from baseline to treatment end for metacognitive capacity measured by the Metacognition Assessment Scale–A. Nine out of twelve patients finished treatment. Though, non-significant moderate to large effect sizes were obtained on the primary outcome measure. This study is among the first to suggest patients with schizophrenia will accept metacognitive therapy and provide evidence for improvements in metacognitive capacity. Despite limitations typical to a pilot study, including small sample size and lack of a control group, sufficient evidence of efficacy was obtained to warrant further investigation.

INTRODUCTION

Metacognitive capacity is one set of psychological processes hypothesized to play a role in the how well persons are able to understand and respond to psychiatric challenges (Lysaker *et al.*, 2011a). Metacognition was originally used within the educational literature and since has been applied to numerous fields of study, including attachment, psychopathology, human development, and cognitive psychology. It can be understood as a spectrum of activities which range from reflection about discrete mental experiences, such as recognizing a specific thought or emotion, to the synthesis of those experiences into integrated representations of self and others as unique agents in the world (Lysaker *et al.*, 2014; 2015). Semerari *et al.*, (2003) suggest that metacognition activities can be distinguished from one another on the basis of their focus on the self, others, the larger world and the use of that knowledge to respond to psychosocial challenges. Stable deficits in metacognition have found in early and late phases of psychotic disorders (Hamm *et al.*, 2012; Vohs *et al.*, 2013) and negatively affect functional outcomes (c.f. Lysaker *et al.*, 2015).

Accordingly, several interventions have been developed to assist persons with schizophrenia to develop or recapture metacognitive capacity. As these are all founded upon the same theoretical basis, there is methodological overlap between methodologies including concern with narrative and intersubjective processes (c.f. Hamm *et al.,* 2013). Examples of these interventions can be found in case studies (e.g. Lysaker and Buck, 2006; Lysaker and Daroyanni, 2006; Lysaker and Gumley, 2010; Lysaker *et al.*, 2007a,b; Salvatore *et al.*, 2009, 2012), and include a group approach focused on social skills training (Ottavi *et al.*, 2014). An open trial of a comparable metacognitive approach

has also been published (Bargenquast and Schweitzer, 2013). Based on these studies, a protocol-based intervention was developed by Lysaker and colleagues, named Metacognitive Reflection and Insight Therapy (MERIT; Van Donkersgoed *et al.*, 2014). MERIT distinguishes itself from comparable interventions such as Metacognitive Interpersonal Therapy for Personality Disorder (Dimaggio *et al.*, 2015) by its explicit recovery orientation, including its emphasis on avoiding stigma, and focus on processes rather than detailed procedures that should be present in each session.

As a precursor to a randomized controlled trial for MERIT (van Donkersgoed *et al.*, 2014), we have conducted a pilot study to answer four questions in order to prepare for an RCT. Specifically, we sought to investigate 1) whether new therapists could be trained in MERIT and what the required level of post-training supervision would be. Secondary, data was gathered in order to 2) estimate the magnitude of clinical gains and so determine the needed sample size for an RCT, 3) determine what the acceptance rate of the therapy would be, and 4) determine whether the intended test battery and its administration was feasible.

Case study work (Lysaker *et al.*, 2007a), along with clinical experience with the methodology, indicated that the first fluctuations in metacognitive capacity should not be expected in a shorter timeframe than three months. As such, the therapy length for the purpose of this pilot study was reduced from 40 to 12 sessions.

METHODS

THERAPISTS AND TRAINING

In order to answer our first question, regarding the feasibility of training therapists in MERIT, three Dutch therapists (SJ, RD, MP) were trained by the author of the treatment manual (PL) in a five-

day training program. Training consisted of one day of theoretical work, focused on the construct of metacognition and the use of the Metacognition Assessment Scale –A (MAS-A; Semerari *et al.*, 2003). This knowledge was tested during a MAS-A consensus meeting the second day, using "gold-standard" transcripts developed specifically for the training and which are included in both the English MAS-A manual as well as the Dutch translation. Third, fourth and fifth days consisted of an expansive discussion of each of the eight MERIT elements, basic casework and roleplay. Sufficient grasp of the therapy method was assessed by performance during this roleplay. Throughout the study, two therapists (SJ and RD) conducted therapy sessions under supervision of MP. Additionally, weekly supervision was conducted via (internet) telephony with PL.

THERAPY PROTOCOL: METACOGNITIVE REFLECTION AND INSIGHT THERAPY (MERIT)

Developed specifically for psychotic disorders, MERIT seeks to assist persons in raising metacognitive capacity through mutual reflection on patient narratives of life events. Concretely, each session therapists follow eight basic elements. The first element is the therapists' constant awareness of the agenda of the patient. Agenda here refers to the hopes, wishes, desires plans and purpose the patient brings to the session, both in the longer and shorter term. Patients may have multiple agendas which may continuously evolve during and between sessions (Hillis *et al.*, 2015). The second element involves the therapists respectfully offering their reflections on patient's thoughts at appropriate moments during the session by offering to provide the participant with their thoughts, without falling into the pitfall of adopting a role or attitude that negates the patient's position. The third element involves eliciting a narrative episode and the fourth element involves arriving at a mutually

agreed upon psychological problem that the patient is facing. The fifth element of MERIT is reflection on interpersonal processes that occur in session. Element six is reflection on the progress occurring within and between sessions, with the therapist asking the participant about their experience of the session. The seventh element prescribed that interventions that stimulate reflections about the self and other are tailored to the participant's level of metacognitive functioning, as measured by the Metacognition Assessment Scale-A. The eighth element prescribed that interventions that stimulate reflections about Mastery are tailored to the participant's level of metacognitive functioning, as measured by the Metacognition Assessment Scale-A. The eight elements, their theoretical basis (Lysaker *et al.*, 2014a) and the study protocol for the randomized controlled trial (Van Donkersgoed *et al.*, 2014) are discussed elsewhere. The method includes the T-MAS, a method for ongoing therapist self-assessment of their adherence for all of the eight elements.

PARTICIPANTS

In order to answer research question two regarding clinical gains so as to inform the sample size required for a randomized controlled trial, and research question three pertaining the acceptance rate of the therapy, twelve participants were recruited at two mental healthcare institutes in the Netherlands: GGZ Friesland and GGZ Drenthe.

Caseloads were screened for persons with a DSM-IV-TR diagnosis of schizophrenia, the ability to give informed consent, age≥18 and no change in medication in the past thirty days. Participants were excluded if there was the presence of acute, severe psychotic symptoms, defined as an average score of 4 or higher on items of the Positive Symptoms scale of the Positive and Negative Syndrome Scale (PANSS; Kay *et al.*, 1987), and if there was mention in the electronic patient file of a co-

morbid neurological disorder, severe substance dependence or an IQ of 70 or below. The case managers of the resulting patients were then asked to answer four screening questions on metacognition. These screening questions were primarily intended as a general indicator of low metacognitive function, and consisted simply of a re-wording of the Metacognition Assessment Scale –Abbreviated (MAS-A; Lysaker *et al.*, 2005) into a self report using a 10 point scale (e.g. "Indicate to what extent the client is able to think about his / her thoughts"). Participants who presented with impaired metacognitive abilities were invited to participate. The sample was predominantly male (n = 9 vs. n = 3), with a mean age of 40.8 (SD = 13.8), a median education level of vocational education and an average estimated pre-morbid IQ of 105.7 (SD = 4.6).

MATERIALS

In order to assess clinical gains, as per research question two, metacognition was assessed using the Metacognition Assessment Scale – Abbreviated (MAS-A). The MAS-A is an adaptation of the original Metacognition Assessment Scale (Semerari *et al.*, 2003) created in collaboration with that scale's authors in order to assess metacognition within personal narratives. The MAS-A contains four subscales: Self-Reflectivity, Understanding the Other's Mind, Decentration and Mastery. For each subscale, higher ratings reflect the presence of greater capacities for the formation of complex representations of self and others. The MAS-A has consistently demonstrated good psychometric properties (Lysaker *et al.*, 2005a, 2014b). For this study, MAS-A ratings were made pre- and post-therapy on the basis of the Indiana Psychiatric Illness Interview (IPII; Lysaker *et al.*, 2002). IPII interviews conducted prior to and following therapy. MAS-A assessments were performed by independent raters blind to condition (pre- or post-therapy). All raters held at minimum a bachelor's degree in Psychology (BSc.) and had

successfully completed a 4-hour MAS-A training session delivered by SJ and subsequently attended three consensus meetings as part of the training.

In line with our final question regarding the feasibility of the battery, additional secondary outcome measures were included: symptoms (PANSS; Kay *et al.*, 1987), Theory of Mind (Faux Pas Task; Baron-Cohen *et al.*, 1999) insight (Beck Cognitive Insight Scale; Beck *et al.*, 2004), empathy (Interpersonal Reactivity Index; Davis, 1983), depression (Quick Inventory of Depressive Symptomatology; Rush *et al.*, 2003), internalized stigma (Internalized Stigma of Mental Illness; Boyd Ritsher *et al.*, 2003), quality of life (Manchester Short Assessment of Quality of Life; Priebe *et al.*, 1999) and social functioning (Personal and Social Performance Scale; Nasrallah *et al.*, 2008). Furthermore, the therapist offered a general impression of functioning (Clinical Global Impression – Schizophrenia; Haro *et al.*, 2003). No analysis of this data will be conducted, however, given the limited sample size.

ANALYSIS

Statistical analyses were performed using SPSS version 22 and G*Power 3.0. Following guidelines for a pilot study as specified by Arain, Campbell, Cooper, and Lancaster (2010), data gathering was performed mainly in order to test the study design and gain clinical impressions of the methodology and process of the trial. As such, only an effect size calculation (Cohen's d) was performed on the main outcome measure. Results on secondary outcome measures are made available on request.

RESULTS AND DISCUSSION

This pilot study sought to examine the feasibility of a multicenter randomized controlled trial to investigate the effects of a newly

developed metacognitive psychotherapy: MERIT. Our first question was to determine whether new therapists could be trained in MERIT and what levels of post-training supervision are required. Both supervisors and therapists felt that the method had been transferred successfully. Use of the adherence measure (T-MAS) was helpful, both as a fidelity check and to guide therapists in identifying which elements of the therapy they had difficulty with and could subsequently discuss in supervision. Pertaining to the required levels of supervision, therapists found active participation in supervision essential to their successful application of MERIT. While weekly supervision would be an ideal, this may not be feasible in many public healthcare settings. A pragmatic consensus between supervisors and therapists was reached that biweekly supervision either face to face or virtually appears to be the minimum requirement.

Our second goal was to estimate the magnitude of clinical gains and determine the needed sample size for an RCT. The following (non-statistically significant) effect sizes were obtained: Self-Reflectivity: 0.65, Understanding the Other's Mind: 0, Decentration: 0.23, Mastery: 0.58 and Total: 0.85. The effect size for the total score (0.85) was entered in the program G*Power, resulting in a required sample size of 50 when α=0.05 and 81 when α=0.01 (two-sided).

In spite of the reduced length of therapy (12 vs. 40 sessions), our data suggest a pattern of improvement which is consistent with previous case studies which documented similar improvement in metacognition (e.g. Lysaker *et al.*, 2005b, 2007a) as well as a pilot study with a comparable protocol (Bargenquast and Schweitzer, 2013). Participants' metacognitive capacity for Self-Reflectivity and Mastery specifically appeared to improve rather swiftly, while Understanding the Other's Mind and Decentration lagged behind; with the latter hypothesized to only improve following improvement in the other domains. Gains in

Self-Reflectivity indicated that, on average, participants developed the ability to distinguish between different cognitive operations and to start to name emotional experience in a nuanced manner. Gains in Mastery suggest participants moved from a state in which they had virtually no ability to think about how to respond to psychological challenges other than by gross avoidance to a position in which they could use metacognitive knowledge to either seek support or selectively avoid situations which were distressing.

TABLE 1: *Relevant Outcomes*

	T0: Mean (SD) N=12	T1: Mean (SD) N=9	t	p	d
Primary outcomes					
Metacognition: Self	3,375 (0.829)	3,778 (0,441)	-1,455	0,184	-0.647
Metacognition: Other	2,333 (1,030)	2,333 (0,791)	0,000	1,000	0,000
Metacognition: Decentration	1,2083 (0,689)	1,0556 (0,682)	,603	,563	0,225
Metacognition: Mastery	2,792 (1,196)	3,444 (1,722)	-1,313	,226	-0,575
Metacognition: Total	9,409 (2,528)	10.611 (3,190)	-1,104	0,302	-0,853

It is a common finding that randomized controlled trials tend to yield a smaller effect size than pilot studies preceding them. As such, for the randomized controlled trial only an effect size of 0.5 was used (alpha=0.05, power= 0.80), instead of our obtained effect size of 0.85. Meta-analysis of 74 studies involving participants with psychotic disorders who had agreed to participate in psychosocial interventions found that with 25.58 weeks of intervention on average, 13% of participants drop out (Villeneuve *et al.*, 2010). Combining our more

conservative estimate of an effect size of 0.5, and setting the expected drop-out rate at 25%, a final sample size of 120 is set for the planned multicenter randomized controlled trial. Given the limited sample size, no further interpretation of these data was ventured.

We thirdly sought to determine at what rates patients would accept and participate in MERIT and whether the intended test battery and its administration was feasible. Here we found drop-out was 3/12 (25%); comparable to a pilot study into metacognitive training (8 sessions, drop-out 28%; Favrod *et al.*, 2011). Reasons for drop-out were relocating out of the treatment area, clinical deterioration, and a patient's decision that he did not need the treatment. For most patients it proved an initial challenge to understand the deviation from their experience in therapies which were often directive and did not actively position them to direct their own recovery. Patients reported having experienced the contact as demanding, but empowering. The fourth goal was to test the feasibility of the test battery. Computer administration of questionnaires proved efficient, particularly in ensuring there to be no missing data. On both the Faux Pas Test as well as the Dutch National Adult Reading Test (NLV) difficulties were encountered in ensuring sufficiently similar scoring between administrators. For the randomized controlled trial, additional documentation was developed and distributed to ensure (student) raters would produce reliable scores.

IN SUMMARY results gathered from this pilot study are positive: both the methodology of the therapy protocol and data gathering appear promising. This study, though pilot in nature, is among the first to suggest patients with schizophrenia will accept metacognitive therapy and evidence improvements in metacognitive capacity. As such, a randomized controlled trial is currently being performed (Van Donkersgoed *et al.*, 2014). Of note there were limitations. Most

notably the sample size is insufficient and no control group was used. The duration of the treatment was brief and results are needed from the ongoing trial to assess issues of dose and response. Finally we did not assess relevant formal objective and subjective outcomes outside of metacognition and thus future work is needed, such as the ongoing trial to better understand whether changes in metacognition translate readily into improved outcomes in general.

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CONFLICTS OF INTEREST

None of the authors have any conflicts of interest.

REFERENCES

Arain M, Campbell MJ, Cooper CL and Lancaster G a (2010) What is a pilot or feasibility study? A review of current practice and editorial policy. *BMC Med. Res. Methodol.* 10: 67.

Bargenquast R and Schweitzer RD (2013) Enhancing sense of recovery and self-reflectivity in people with schizophrenia: A pilot study of Metacognitive Narrative Psychotherapy. *Psychol. Psychother.*

Baron-Cohen S, O'Riordan M, Stone V, Jones R and Plaisted K (1999) Recognition of faux pas by normally developing children and children with Asperger syndrome or high-functioning autism. *J. Autism Dev. Disord. 29*(5): 407–418.

Beck AT, Baruch E, Balter JM, Steer R a and Warman DM (2004) A new instrument for measuring insight: the Beck Cognitive Insight Scale. *Schizophr. Res. 68*(2-3): 319–329.

Boyd Ritsher J, Otilingam PG and Grajales M (2003) Internalized stigma of mental illness: psychometric properties of a new measure. *Psychiatry Res. 121*(1): 31–49.

Davis MH (1983) Measuring individual differences in empathy: Evidence for a multidimensional approach. J. *Pers. Soc. Psychol.* 44(1): 113–126.

Dimaggio G, Montano A, Popolo R and Salvator G (2015) *Metacognitive Interpersonal Therapy for Personality Disorders: A Treatment Manual.* East Sussex: Routledge.

Favrod J, Maire A, Bardy S, Pernier S and Bonsack C (2011) Improving insight into delusions: a pilot study of metacognitive training for patients with schizophrenia. *J. Adv. Nurs.* 67(2): 401–407.

Hamm J a, Renard SB, Fogley RL, Leonhardt BL, Dimaggio G, Buck KD and Lysaker PH (2012) Metacognition and social cognition in schizophrenia: stability and relationship to concurrent and prospective symptom assessments. *J. Clin. Psychol.* 68(12): 1303–1312.

Hamm JA, Hasson-Ohayon I, Kukla M and Lysaker PH (2013) Individual psychotherapy for schizophrenia: trends and developments in the wake of the recovery movement. *Psychol. Res. Behav. Manag.* 6: 45–54.

Haro JM, Kamath S a, Ochoa S, Novick D, Rele K, Fargas a, Rodríguez MJ, Rele R, Orta J, Kharbeng a, Araya S, Gervin M, Alonso J, Mavreas V, Lavrentzou E, Liontos N, Gregor K and Jones PB (2003) The Clinical Global Impression-Schizophrenia scale: a simple instrument to measure the diversity of symptoms present in schizophrenia. *Acta Psychiatr. Scand. Suppl. 107*(416): 16–23.

Hillis JD, Leonhardt BL, Vohs JL, Buck KD, Salvatore G, Popolo R, Dimaggio G and Lysaker PH (2015) Metacognitive Reflective and Insight Therapy for People in Early Phase of a Schizophrenia Spectrum Disorder. *J. Clin. Psychol. 71*(2): 125–135.

Kay SR, Fiszbein a. and Opler L a. (1987) The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophr. Bull. 13*(2): 261–276.

Lysaker PH and Buck KD (2006) Narrative enrichment in the psychotherapy for persons with schizophrenia: a single case study. Issues *Ment. Health Nurs. 27*(3): 233–247.

Lysaker PH, Buck KD, Carcione A, Procacci M, Salvatore G, Nicolò GG and Dimaggio G (2011) (a) Addressing metacognitive capacity for self reflection in the psychotherapy for schizophrenia: A conceptual model of the key tasks and processes. *Psychol. Psychother. 84*(1): 58–69.

Lysaker PH, Buck KD, Leonhardt BL, Buck B, Hamm J, Hasson-Ohayon I, Vohs JL and Dimaggio G (2014) (a) Metacognitively focused psychotherapy for people with schizophrenia: Eight core elements that define practice. In Lysaker PH Dimaggio G Brüne M Lysaker PH (Ed) Dimaggio G (Ed) and Brüne M (Ed) (eds) *Social Cognition and Metacognition in Schizophrenia: Psychpathology and Treatment Approaches.* San Diego, CA, US: Elsevier Academic Press, 195–213.

Lysaker PH, Buck KD and Ringer J (2007) (a) The recovery of metacognitive capacity in schizophrenia across 32 months of individual psychotherapy: A case study. *Psychother. Res. 17*(6): 713–720.

Lysaker PH, Carcione A, Dimaggio G, Johannesen JK, Nicolò G, Procacci M and Semerari A (2005) (a) Metacognition amidst narratives of self and illness in schizophrenia: associations with neurocognition, symptoms, insight and quality of life. *Acta Psychiatr. Scand. 112*(1): 64–71.

Lysaker PH, Clements C a., Plascak-Hallberg CD, Knipscheer SJ and Wright DE (2002) Insight and Personal Narratives of Illness in Schizophrenia. *Psychiatry Interpers. Biol. Process. 65*(3): 197–206.

Lysaker PH and Daroyanni P (2006) Facilitating the emergence of interpersonal relatedness in individual psychotherapy of schizophrenia: a case study. *Bull. Menninger Clin. 70*(1): 53–67.

Lysaker PH, Davis LW, Eckert GJ, Strasburger AM, Hunter NL and Buck KD (2005) (b) Changes in narrative structure and content in schizophrenia in long term individual psychotherapy: a single case study. *Clin. Psychol. Psychother. 12*(5): 406–416.

Lysaker PH, Davis LW, Jones AM, Strasburger AM and Beattie NL (2007) (b) Relationship and technique in the long-term integrative psychotherapy of schizophrenia: A single case study. *Couns. Psychother. Res. 7*(2): 79–85.

Lysaker PH and Dimaggio G (2014) Metacognitive Capacities for Reflection in Schizophrenia: Implications for Developing Treatments. *Schizophr. Bull. 40*(3): 487–491.

Lysaker PH and Gumley A (2010) Psychotherapeutic and relational processes and the development of metacognitive capacity following five years of individual psychotherapy: A case study of a person with psychotic symptoms. *Psychosis 2*(1): 70–78.

Lysaker PH, McCormick BP, Snethen G, Buck KD, Hamm JA, Grant M, Nicolò G and Dimaggio G (2011) (b) Metacognition and social function in schizophrenia: associations of mastery with functional skills competence. *Schizophr. Res. 131*(1-3): 214–218.

Lysaker PH, Vohs J, Hamm JA, Kukla M, Minor KS, de Jong S, van Donkersgoed RJM, Pijnenborg MHM, Kent JS, Matthews SC, Ringer JM, Leonhardt BL, Francis MM, Buck KD and Dimaggio G (2014) (b) Deficits in metacognitive capacity distinguish patients with schizophrenia from those with prolonged medical adversity. *J. Psychiatr. Res.*: 1–7.

Nasrallah H, Morosini P and Gagnon DD (2008) Reliability, validity and ability to detect change of the Personal and Social Performance scale in patients with stable schizophrenia. *Psychiatry Res. 161*(2): 213–224.

Ottavi P, D'Alia D, Lysaker P, Kent J, Popolo R, Salvatore G and Dimaggio G (2014) Metacognition-Oriented Social Skills Training for Individuals with Long-Term Schizophrenia: Methodology and Clinical Illustration. *Clin. Psychol. Psychother. 21*(5): 465–473.

Priebe S, Huxley P, Knight S and Evans S (1999) Application and Results of the Manchester Short Assessment of Quality of Life (Mansa). *Int. J. Soc. Psychiatry 45*(1): 7–12.

Rush JA, Trivedi MH, Ibrahim HM, Carmody TJ, Arnow B, Klein DN, Markowitz JC, Ninan PT, Kornstein S, Manber R, Thase ME, Kocsis JH and Keller MB (2003) The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), Clinician Rating (QIDS-C), and Self-Report (QIDS-SR): A Psychometric Evaluation in Patients with Chronic Major Depression. *Depression 54*(5): 573–583.

Salvatore G, Procacci M, Popolo R, Nicolò G, Carcione A, Semerari A and Dimaggio G (2009) *Adapted Metacognitive Interpersonal Therapy for Improving Adherence to Intersubjective Contexts in a Person With Schizophrenia*. Clin. Case Stud.

Salvatore G, Russo B, Russo M, Popolo R and Dimaggio G (2012) Metacognition-Oriented Therapy for Psychosis: The Case of a Woman With Delusional Disorder and Paranoid Personality Disorder. *J. Psychother. Integr.*

Semerari A, Carcione A, Dimaggio G, Falcone M, Nicolò G, Procacci M and Alleva G (2003) How to evaluate metacognitive functioning in psychotherapy? The metacognition assessment scale and its applications. *Clin. Psychol. Psychother. 10*(4): 238–261.

Van Donkersgoed RJ, De Jong S, Van der Gaag M, Aleman A, Lysaker PH, Wunderink L and Pijnenborg G (2014) A manual-based individual therapy to improve metacognition in schizophrenia: protocol of a multi-center RCT. *BMC Psychiatry 14*(1): 27.

Villeneuve K, Potvin S, Lesage a. and Nicole L (2010) Meta-analysis of rates of drop-out from psychosocial treatment among persons with schizophrenia spectrum disorder. *Schizophr. Res. 121*(1-3): 266–270.

Vohs JL, Lysaker PH and Nabors L (2013) Associations of personality with intrinsic motivation in schizophrenia. *Psychiatry Res. 208*(1): 78–80.

CHAPTER 6

Metacognitive Reflection and insight therapy (MERIT) for patients with schizophrenia

de Jong, S., van Donkersgoed*, R.J.M., Timmerman, M.E., aan het Rot, M., Wunderink, L.J. Arendsa, van der Gaag, M. Aleman, A. Lysaker, P.H., Pijnenborg, G.H.M.*

*authors contributed equally to the study and manuscript

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ABSTRACT

Objective: Impaired metacognition is associated with difficulties in daily life functioning of people with psychosis. Metacognition can be divided into four domains: Self-Reflection, Understanding the Other's Mind, Decentration and Mastery. This study investigated whether Metacognitive Reflection and Insight Therapy (MERIT) can be used to improve metacognition.

Methods: This study is a randomized controlled trial. Patients in the active condition (n=35) received MERIT, the control group (n=35) received treatment as usual. Multilevel intention-to-treat analysis and sensitivity analysis were performed for metacognition and secondary outcomes (empathy, depression, stigma, social functioning and quality of life).

Results: Intention-to-treat analysis demonstrated that in both groups metacognition improved between pre- and post-measurements, with no significant differences between the groups. Patients who received MERIT continued to improve, while performance of the control group dipped back down, leading to significant differences at follow-up. Sensitivity analysis of completers (18/35) showed improvements on Self Reflectivity and metacognitive Mastery at follow-up.

Conclusion: On average, participants in the MERIT group were at follow-up more likely to recognize their thoughts as changeable rather than as facts. MERIT might be a useful treatment for patients whose self-reflection is too limited to benefit from other therapies. Limitations and suggestions for future research are discussed.

INTRODUCTION

Many persons with schizophrenia have impaired metacognitive capacity; i.e. a limited ability to reflect on thoughts and feelings and to integrate these reflections into detailed representations of oneself and others (Frith, 1992; Lysaker *et al.*, 2011; Hamm *et al.*, 2012; Lysaker *et al.*, 2014). Metacognition can be divided into four semi-independent domains: Self-Reflectivity, Understanding the Other's Mind, Decentration - the ability to understand that one is not at the center of all meaningful activity, and Mastery - the ability to use metacognitive information to deal with stressors (Lysaker, Erickson, *et al.*, 2011; Semerari *et al.*, 2003).

Metacognitive dysfunction is associated with problems in daily life functioning of people with schizophrenia in several ways. Lower levels of metacognition have been correlated with lower levels of functional competence (Lysaker, McCormick, *et al.*, 2011), less subjectively experienced recovery (Kukla, Lysaker, & Salyers, 2013), more severe negative symptoms (Hamm *et al.*, 2012; Lysaker, Carcione, *et al.*, 2005; Macbeth *et al.*, 2014; Nicolò *et al.*, 2012) and lower quality of the therapeutic alliance between patient and therapist (L. W. Davis, Eicher, & Lysaker, 2011). Social cognition and insight have been positively associated with metacognitive mastery (Lysaker, Erickson, *et al.*, 2011). Furthermore, metacognition has been found to mediate the impact of neurocognitive deficits on social function, even after controlling for symptoms (Lysaker, Shea, *et al.*, 2010).

Several forms of individual therapy have successfully improved metacognition in patients with various mental disorders other than psychosis (Choi-Kain & Gunderson, 2008; Dimaggio, Semerari, Carcione, Nicolò, & Procacci, 2007; Fonagy, Gergely, & Jurist, 2002). Additionally, several case studies (Brent, 2009; Buck & Lysaker, 2009; de Jong, van Donkersgoed, Pijnenborg, & Lysaker, 2016; Lysaker, Davis,

et al., 2005; Lysaker, Buck, & Ringer, 2007; Salvatore *et al.*, 2009; Salvatore, Russo, Russo, Popolo, & Dimaggio, 2012; van Donkersgoed, de Jong, & Pijnenborg, 2016) and two pilot studies (Bargenquast & Schweitzer, 2013; de Jong, van Donkersgoed, Aleman, *et al.*, 2016) have reported improvement of metacognition after individual therapy in people with psychosis.

Lysaker, Buck *et al.* (2010) proposed a manualized procedure to improve metacognition in people with schizophrenia. The current paper presents the results of a randomized controlled trial investigating the effectiveness of this Metacognitive Reflection and Insight Therapy (MERIT). The protocol was previously described by Van Donkersgoed *et al.* (2014), and developed after conducting a pilot study (de Jong, van Donkersgoed, Aleman, *et al.*, 2016).

METHODS

The protocol for this study was registered (ISRCTN16659871) and published (Van Donkersgoed *et al.*, 2014) and approved by the Medical-Ethics Committee of the University Medical Centre Groningen (METc2013.124). All research was conducted in accordance to the principles of the Declaration of Helsinki.

THERAPY

MERIT aims to stimulate the four elements of metacognition: Self-Reflectivity, Understanding the Other's Mind, Decentration, and Mastery. The treatment protocol is not a step-by-step program, but is guided by the level of metacognition demonstrated by the patient during the session. The therapist elicits a personal story of the patient. In this narrative, the therapist looks for signs of metacognition. Is the patient aware of his/her thoughts? Can s/he reflect on those thoughts and on the thoughts of others? Does s/he identify and frame psychological

distress? The scales of the Metacognitive Assessment Scale (MAS-A, see materials) are used to classify the level of metacognitive functioning. The therapist adjusts his or her interventions according to the level of metacognition of the patient and stimulates the patient to perform more complex metacognitive tasks, using eight specific treatment elements (T-MAS, see appendix A). The therapy consists of forty individual therapy sessions. The treatment protocol was translated into Dutch by the research team.

THERAPISTS

Thirteen therapists across seven mental healthcare institutes in the Netherlands were recruited. All therapists had at least a master degree in Clinical Psychology and practical experience in the field, and 85% held the post-master health-care-license required for clinical practice in the Netherlands. Therapists received a three-day training program in MERIT, delivered by its first author, P.H. Lysaker. Once every two weeks a group supervision session by Lysaker was organized for all therapists via internet telephony, in which the therapists received feedback on how they applied the method.

PARTICIPANTS

Patients in the participating treatment facilities were screened on metacognitive difficulties using four screening questions, developed based on the four domains of metacognition mentioned above (e.g. “To what extent is the patient able to think about his/her own thoughts?”). Answers were given on a Likert scale 0-10, with higher scores reflecting better functioning. These questions were completed by the case manager or by the staff member most familiar with the patient. Patients who scored <6 on two or more of the screening questions, were subsequently approached in person and received basic information and an information letter regarding the study.

Inclusion criteria:
Impaired metacognitive abilities (determined using the MAS-A, see instruments)
Diagnosis of Schizophrenia or Schizoaffective Disorder according to DSM-IV-TR (MINI-PLUS)
Being able to give informed consent
18 years or older
No change in medication in the thirty days before first assessment

Exclusion criteria:
Acute psychosis at the moment of assessment (PANSS Positive symptoms >4)
Co-morbid neurological disorder in patient file
Diagnosis of severe substance dependence, but not abuse
Impaired intellectual functioning (IQ<70) (patient file)

Interested participants were administered a baseline assessment composed of two meetings with a research assistant. In the first meeting the inclusion and exclusion criteria were verified with the MINI-Plus, IPII, MAS-A and PANSS interview (for materials see below). After inclusion, participants were administered the remainder of the test battery in a second meeting. To ensure blind randomization, an independent third party performed block randomization procedures (Kazdin, 2010) to ensure groups equivalent in size. See Figure 1 for a CONSORT diagram detailing participant flow.

ASSESSMENT

All research assistants held at least a bachelor's degree in psychology, were enrolled in a master's program in clinical psychology, and were blinded to participant condition. Assessment occurred at three moments: T0 (baseline), T1 (directly following treatment) and T2 (6-month follow-up).

PRIMARY OUTCOME: METACOGNITION

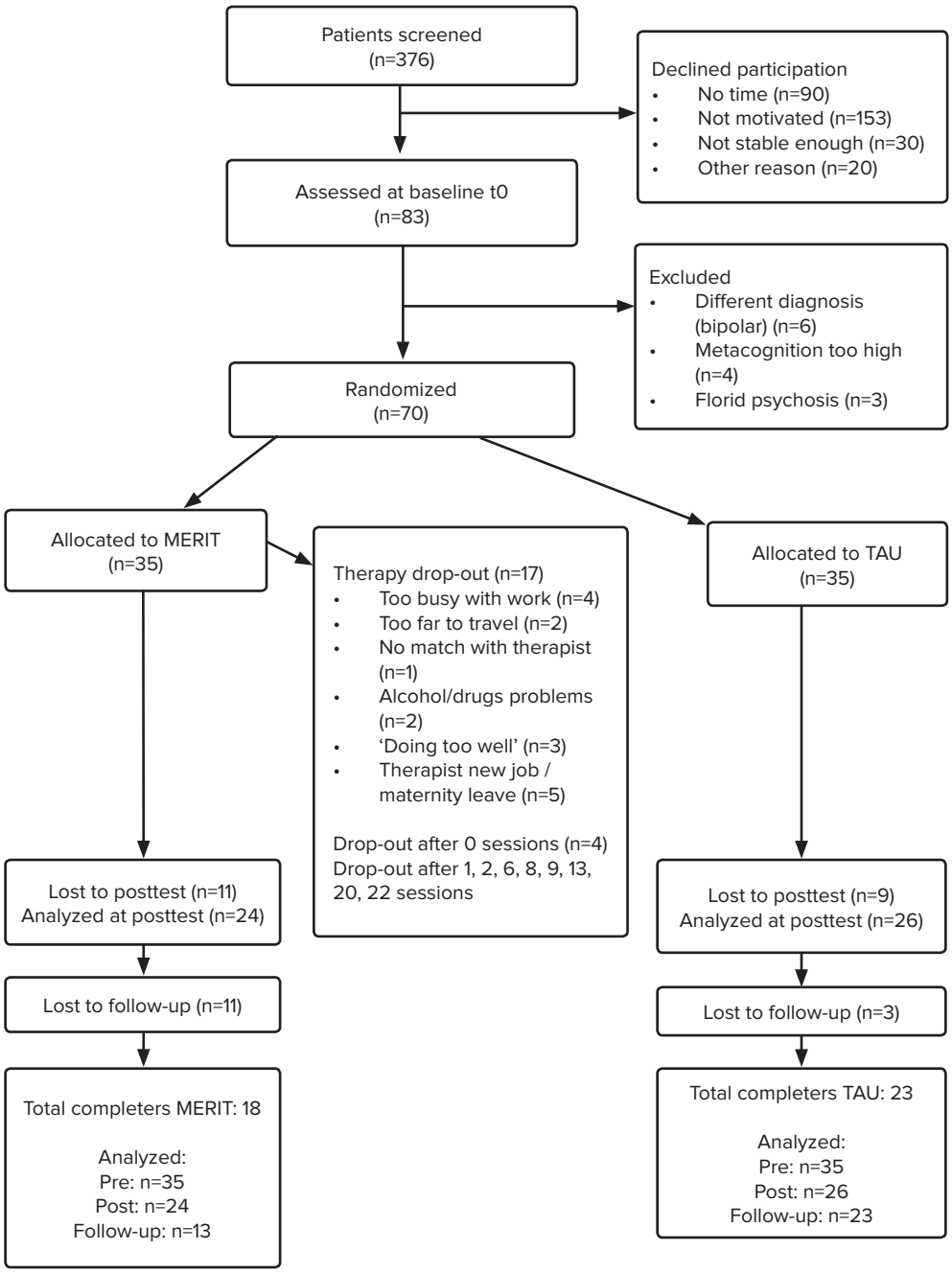
Metacognition Assessment Scale – A (MAS-A; Lysaker, Carcione, *et al.*, 2005). To assess metacognitive functioning, the Indiana Psychiatric Illness Interview (see below) was conducted and transcribed. Three raters blind to condition and trained in the MAS-A during a 4-hour training, scored this transcript on metacognitive capacity along four axes: Self-Reflectivity (scores 0 (low) – 9) (high)), Understanding the Other's Mind (scores 0 (low) -7 (high)), Decentration (scores 0 (low) -3 (high)) and Mastery (scores 0 (low) -9 (high)). During consensus meetings, final scores on each of the four domains were established. Total scores are analyzed, followed by analyses to determine on which specific domains improvements were found.

Indiana Psychiatric Illness Interview (IPII; Lysaker, Carcione, *et al.*, 2005). The IPII is a semi-structured interview developed to elicit a speech sample during which participants can demonstrate metacognitive capacity. Interviews last between 20 and 60 minutes, and consist of five sections: life narrative, illness narrative, experience of mental illness, the influence of illness on one's life, and the future. The interview is converted into a transcript, which is used to score the level of metacognition of the participant using the MAS-A (see above).

SECONDARY OUTCOMES

Beck Cognitive Insight Scale (BCIS; Beck, Baruch, Balter, Steer, & Warman, 2004). This 15-item questionnaire measures cognitive insight along the subscales of self-reflectiveness (9 items) and certainty (6 items) using a 4-point Likert scale. A total score is obtained by subtracting the Self Certainty score from the Self-Reflectiveness score, resulting in an index of cognitive insight (with higher scores indicating better insight), which has demonstrated promising psychometric qualities, including convergent and criterion validity (Riggs, Grant, Perivoliotis, & Beck, 2012).

FIGURE 1. CONSORT diagram of participant flow



Clinical Global Impression (CGI; Haro *et al*., 2003). This rating scale allows for the assessment of the participant's current functioning, along the domains of positive symptoms, negative symptoms and general symptoms using 7 anchor points per scale, ranging from "Not ill" to "Among the most severely ill".

Empathic Accuracy Task (EAT): To measure empathic accuracy we used a Dutch language task described by aan het Rot & Hogenelst (2014). A shorter version was used, this was necessary to keep the total assessment battery under two hours. The original task was shortened by selecting four out of the ten original videos. Participants were required to continuously rate the valence (positive-negative) of the videos in which a target tells a personal story, using a dial. Scores of the participants are correlated with the target's own ratings (provided during task development), leading to an index of empathic accuracy. Level of expressivity of the targets is based on their score on the Berkeley Expressivity Questionnaire (BEQ; Gross & John, 1995). Correlations underwent a Fisher z transformation for statistical purposes.

Faux-Pas Test (FPT; Baron-Cohen, O'Riordan, Stone, Jones, & Plaisted, 1999). During this test of Theory of Mind, ten stories are read aloud to the participant, who can read along using a printed-out version of the story. The participant is asked whether a socially undesirable action was taken by one of the participants, or not, and how the participant in the story must have felt, resulting in 2 scores: the number of faux pas correctly identified (min. 0-max. 5) and empathy questions ('How does person X in the story feel') answered correctly (min. 0 - max. 5).

Interpersonal Reactivity Index (IRI; M. H. Davis, 1983). Using 28 items to be answered on a six-point Likert Scale, this questionnaire measures subjective empathy, with a higher score indicating greater self-reported empathy.

Internalized Stigma of Mental Illness Scale (ISMI; Boyd Ritsher, Otilingam, & Grajales, 2003). The ISMIS measures self-reported internalized stigma of mental illness using 29-items on a 4-point Likert scale. Higher scores are indicative of a greater experience of self stigma.

Mini-International Neuropsychiatric Interview (MINI; Sheehan *et al.*, 1998). This well-validated structured interview is designed to measure the presence of neuropsychiatric disorders. Sections A through D (mood disorders), K through L (substance abuse) and M (psychotic disorders) were administered to verify in- and exclusion criteria for the study.

Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987). This semi-structured interview was employed by trained raters to indicate the severity of 30 symptoms using a 7-point Likert Scale, ranging from "Absent" to "Extreme", resulting in a total score between 30 and 210, with higher scores indicating more severe symptomatology.

Personal and Social Performance scale (PSP; Nasrallah, Morosini, & Gagnon, 2008). Using this rating scale, interviewers rate the impact of the disorder on four domains of social functioning on a 6-point Likert Scale ranging from "absent" to "very severe". Results are converted in a 1 – 100 score of severity, with higher scores indicating more severe impact of the disorder on functioning.

Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, Corcoran, Drake, Shryane, & Völlm, 2011). Based on factor analysis of several common self-report measures (including the IRI), the QCAE measures self-reported empathy. It consists of 31 items, answered on a 4-point Likert scale, with higher scores indicating greater self-reported empathy.

Quick Inventory of Depressive Symptomatology – Self Report (QIDS-SR; Rush *et al.*, 2003). The QIDS-SR measures depressive

symptoms during the last week, using 16-items based on the DSM-IV-TR criteria for Major Depressive Disorder, answered on a 4-point Likert scale. A higher total score indicates greater severity of depressive symptoms.

Self-Rated Manchester Short Assessment of Quality of Life (MANSA; Priebe, Huxley, Knight, & Evans, 1999). Using twelve subjective and four objective questions answered on a 7-point Likert scale, this questionnaire allows the participant to indicate general life satisfaction along several domains, with higher scores indicating greater satisfaction.

COGNITION MEASURES

Dutch Adult Reading Test (DART; Schmand *et al*., 1991). The DART tests the pronunciation of irregularly spelled words and is used to estimate premorbid intelligence.

Trailmaking test A&B (TMT; Reitan & Wolfson, 1985). The TMT provides information on visual search, scanning, mental flexibility speed of processing and executive functions. It is part of the Halstead–Reitan Battery. The TMT consists of two parts. Part A requires an individual to draw lines sequentially connecting 25 encircled numbers distributed on a sheet of paper. Task requirements are similar for Part B except the person must alternate between numbers and letters (e.g., 1, A, 2, B, 3, C, etc.). The final score is determined by subtracting the time to complete task A from the time it took to complete task B, with higher scores indicating lower cognition (Tombaugh, 2004).

Digit Symbol Test (part of the Wechsler Adult Intelligence Scale; Wechsler 1995). This test evaluates the recognition and recoding of visual information. The test consists of several rows of paired boxes with a digit in the top box and an empty space in the box below. At the top of the page is shown which symbols are paired to the digits. The

participant has to fill in as many symbols in the empty boxes within 90 seconds. The final score consists of the amount of symbols that is filled in correctly within the time, with a higher score indicating better cognition.

STATISTICAL ANALYSES

The study is a multicenter randomized controlled trial with a treatment condition in which participants received MERIT, and a control condition in which participants received treatment as usual. Patients in the control group and in the MERIT group met once a month on average with their psychiatrist for medication monitoring and received practical guidance (for example with finances or work related problems) from a social worker. Two out of 35 participants in the control group met with a psychologist during the period between pre and post measurements. Four participants met with a psychologist in the period between post and follow-up measurements. Patients in the treatment group did not receive any additional psychosocial interventions apart from the MERIT therapy. Participants and their psychiatrists were asked to keep medication changes limited to only crucial adjustments until study end. Data were collected at baseline (T0), post-treatment (T1) and after 6 months at follow-up (T2). Participants received €20 for each completed assessment.

Demographic differences between groups were tested using SPSS Statistics 24 with independent-samples t-tests (age, age at onset of first psychosis, number of psychotic episodes, duration of illness, estimated premorbid IQ, cognition and symptoms) or Pearson's Chi-Square test (gender, diagnosis, education level). These were conducted two-tailed, with significance level set at $\alpha=0.05$.

The effects of the treatment on outcome measures were assessed with multilevel analysis, using MLWiN (Charlton, Rasbash, Browne, Healy,

& Cameron, 2017). A separate 3-level model was constructed for each of the outcome variables: Therapists were modelled at level 3, participants at level 2, and time of assessment at level 1. The following predictors were entered as fixed effects: a) dummy variables representing time (T0, T1, T2); and b) the interactions T1*condition and T2*condition. The random effects were the intercepts at levels 2 and 3, and residual at level 1. To assess whether the MERIT group had improved more than the control group at T1 and T2, significance testing was conducted using deviance tests (e.g. Snijders & Bosker, 2000) between the models with the interaction between the time of assessment under investigation (T1 or T2) and condition (MERIT/TAU), and a model without the interaction terms, with significance level set at $\alpha=0.05$. The deviance test is based on the difference between the deviance statistics (defined as -2 ln likelihood function value) of two nested models, which has a chi-square distribution with degrees of freedom equal to the difference in the number of parameters estimated in the models being compared. An intention-to-treat analysis was conducted on the entire sample, followed by a sensitivity analysis in which only the results were modeled of those participants who had completed the therapy.

RESULTS

DEMOGRAPHICS

In total, 70 participants were included in the study (Figure 1), distributed evenly among the two conditions. None of the demographic variables differed significantly between the groups (Table 1). As reported in Table 1, none of the demographic variables demonstrated statistically significant differences between the groups, and as such none were entered into subsequent analyses. Antipsychotic medication changes between pre- and post-measures as reported by the patient indicate no differences between the groups: in both groups, 1 participant quit

TABLE 1 *Comparison of demographic variables between the control and MERIT conditions*

Variable	Control	N	MERIT	N	*p* T-Test / χ^2
Age in years, mean (SD)	38 (10.61)	35	42 (12.02)	35	.14
Gender		35		35	.43
Male, #	26		23		
Female, #	9		12		
Education		35		35	.42
Low	14		11		
Middle	8		13		
High	13		11		
Diagnosis		35		35	.80
Schizophrenia, #	23		24		
Schizoaffective, #	12		11		
Age of onset in years, mean (SD)	23.18 (6.26)	34	25.97 (9.31)	33	.15
# of episodes, mean (SD)	2.83 (3.04)	30	3.16 (3.07)	31	.68
Years of illness, mean (SD)	12 (9.54)	31	15.53 (11.47)	31	.19
DART*, mean (SD)	77.94 (14.01)	34	78.5 (13.32)	32	.87
Trailmaking, mean (SD)	174.38 (88.88)	34	156.29 (66.19)	35	.34
Digit Symbol, mean (SD)	52.53 (17.51)	34	52.17 (18.28)	35	.93
PANSS* total, mean (SD)	66.29 (17.87)	34	66.17 (15.02)	35	.98

*DART=Dutch Adult Reading Test; PANSS=Positive and Negative Symptom Scale

antipsychotic medication with permission from the psychiatrist. In the control condition, 5 patients reduced their antipsychotic medication with any amount, 2 in the MERIT condition. In both conditions, one participant received an increase in antipsychotic medication. In the control condition, one participant quit antipsychotic medication without permission from the psychiatrist. No change in medication was observed in 27/35 (77%) in control, 31/35 (89%) in MERIT.

PRIMARY OUTCOME

Intention-to-treat analysis (Table 2) revealed that in both groups metacognition total scores had improved from baseline to post-treatment. Directly after treatment, differences in growth of metacognition were non-significant between the two groups, with the deviance test between a model with and a model without the time (pre-post)*condition (MERIT-TAU) interaction yielding χ^2 (1)=0.435, p=.51. While the total metacognition scores in the control condition dipped back down between post-treatment and 6-month follow-up, the MERIT group continued to improve. At follow-up, differences between the two groups were significant for the MAS-A total score. The addition of the interaction term of time (follow-up)*condition(MERIT / TAU) led to a significant improvement of the model, with deviance tests yielding χ^2 (1)=3.763, p=.05. Analyses using the MAS-A subscales as outcome revealed that gains were only significant on the subscale self-reflectivity, with the deviance test yielding χ^2 (1)=10.295, p=.001 .

Sensitivity analyses (Table 3) amplify these findings. When only taking into account those who had completed all 40 sessions of the therapy, differences between the groups in improvements on Self-Reflectivity were significant at post-measurement, with the deviance test between a model with and a model without the time (pre-post)*condition (MERIT-TAU) interaction yielding χ^2 (1)=4.219, p=.04. At follow-up,

differences between groups were significant for the MAS Total score, as the addition of the interaction term of time (follow-up)*condition (MERIT-TAU) led to a significant improvement of the model, with the deviance test yielding χ^2 (1)=8.182, p=.004. Analyses using the subscales of the MAS-A indicated that scores on Self-Reflectivity χ^2 (1)=12.784, p<.01 and Mastery χ^2 (1)=4.793, p=.02 had improved at follow-up more for the MERIT group than the TAU group.

SECONDARY OUTCOMES

No sustaining significant differences were found on the secondary outcome measures. In the MERIT condition, at post-measurement, symptoms significantly increased, with deviance tests yielding χ^2 (1)=4.278, p=.04, but returned to baseline at follow-up, χ^2 (1)=.025, p=.87. Tables presenting these results are included as supplemental materials.

DROP-OUT

Participants were invited for post-measurement and follow-up assessments irrespective of completing all forty sessions of therapy or not. Drop-out in the control condition, as defined by a refusal to take part in the post-measurement and/or follow-up measurement, was 9/35, compared to 11/35 in the MERIT condition for post treatment, and 12/35 compared to 22/35 in the MERIT condition for follow-up.

THERAPY COMPLETION

The study had a relatively high attrition rate of 51% (17/35). However, four participants dropped out before receiving even the first session of therapy, and another five participants did not complete therapy due to therapist attrition (e.g. maternity leave). As such, only eight out of 35 participants (23%) possibly dropped out of the study due to the method

TABLE 2 *Fixed and random effects on the subscales of the Metacognition Assessment Scale – intention to treat*

	Self	Other	Decentr.	Mastery	MAS-Total
Parameter	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)
Fixed effects					
Time factor					
Baseline	4.23 (0.19)	2.60 (0.10))	1.04 (0.07)	3.18 (0.20)	11.11 (0.50)
Post effect[a]	0.15 (0.23)	0.02 (0.16)	0.06 (0.11)	0.83 (0.24)	1.08 (0.56)
Post effect MERIT[a]	0.42 (0.30)	0.30 (0.22)	0.08 (0.15)	-0.04 (0.33)	0.76 (0.75)
Follow-up effect[b]	-0.06 (0.24)	-0.04 (0.17)	0.16 (0.12)	0.83 (0.26)	0.92 (0.59)
Follow-up MERIT[b]	1.22** (0.37)	0.31 (0.26)	-0.05 (0.18)	0.36 (0.37)	1.81* (0.91)
Random effects *Variances of*					
Level 3 – therapist	0.19 (0.14)	0.00 (0.00)	0.00 (0.00)	0.16 (0.16)	1.40 (1.05)
Level 2 – intercept	0.35 (0.15)	0.22 (0.08)	0.10 (0.04)	0.66 (0.22)	3.10 (1.09)
Level 1 – residual	0.87 (0.13)	0.44 (0.07)	0.21 (0.03)	0.94 (0.14)	5.10 (0.77)

[a] Post effect: Difference between T0 and T1 (TAU is reference category)

[b] Follow–up effect: Difference between T0 and T2 (TAU is reference category)

** = significant at p<.01, one-tailed

* = significant at p<.05, one-tailed

TABLE 3 *Fixed and random effects on the subscales of the Metacognition Assessment Scale – sensitivity analysis*

	Self	**Other**	**Decentr.**	**Mastery**	**MAS-Total**
Parameter	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)
Fixed effects					
Time factor					
Baseline	4.04 (0.22)	2.61 (0.14)	1.06 (0.09)	3.35 (0.20)	11.07 (0.56)
Post effect[a]	0.26 (0.23)	0.00 (0.18)	0.05 (0.11)	0.73 (0.23)	1.05 (0.57)
Post effect MERIT[a]	0.67* (0.32)	0.35 (0.25)	0.23 (0.15)	0.11 (0.33)	1.31 (0.79)
Follow-up effect[b]	0.06 (0.25)	-0.04 (0.19)	0.17 (0.12)	0.72 (0.25)	0.92 (0.61)
Follow-up MERIT[b]	1.42*** (0.38)	0.49 (0.29)	0.08 (0.18)	0.87* (0.39)	2.81** (0.95)
Random effects *Variances of*					
Level 3 – therapist	0.24 (0.18)	0.03 (0.06)	0.02 (0.03)	0.10 (0.15)	1.49 (1.23)
Level 2 – intercept	0.28 (0.15)	0.24 (0.10)	0.09 (0.04)	0.55 (0.21)	2.85 (1.18)
Level 1 – residual	0.84 (0.14)	0.48 (0.08)	0.19 (0.03)	0.81 (0.13)	4.83 (0.78)

[a] Post effect: Difference between T0 and T1 (TAU is reference category)

[b] Follow–up effect: Difference between T0 and T2 (TAU is reference category)

*** = significant at p<.001, one-tailed

** = significant at p<.01, one-tailed

* = significant at p<.05, one-tailed

under investigation, although none of the participants themselves reported this as the reason for dropping out. No significant differences between drop-out and completers were found on either primary measures or secondary measures.

THERAPIST EFFECT

Multilevel analysis did not reveal a significant contribution of the therapist variable as a level to the model, indicating no significant differences between therapists regarding the improvement of metacognition.

DISCUSSION

The current multicenter randomized controlled trial investigated the effectivity of the Metacognitive Reflection and Insight Therapy in improving metacognition. Intention-to-treat analyses indicated an improvement in metacognition in both groups, with no significant differences between groups directly post-treatment. Differences between the groups did become evident at follow-up, however, with the MERIT group demonstrating a continued improvement on Self-Reflectivity, whereas the control condition dipped back down. Sensitivity analyses, which only included the patients that finished the therapy, demonstrated significant differences on Self-Reflection between groups already at post-treatment, with better scores in the treatment condition.

Self-Reflectivity is an important element of metacognition as it is correlated with daily life factors such as subjective sense of recovery (Kukla *et al.*, 2013) and work performance (Lysaker, Dimaggio, *et al.*, 2010). Group averages indicate that patients at baseline were able to recognize and distinguish between their different thoughts and emotions, but did not perceive their thoughts are subjective and changeable. In other words: thoughts were accepted as facts. After

MERIT, group average scores indicated having moved past being able to recognize that the ideas about oneself and the world are subjective and changeable. This is particularly relevant in light of Cognitive Behavioral Therapy, a widely used treatment in people with a psychotic disorder, which focuses on the modification of maladaptive cognitions (Wykes, Steel, Everitt, & Tarrier, 2008). Some patients may not have the necessary level of self-reflection to be able to engage in CBT techniques. Challenging or changing your thoughts is difficult when you are not aware of them or when you are not aware that they can change over time. MERIT may be useful for patients that do not respond (well) to CBT. It can serve as a way to improve self-reflection after which the patient might be able to benefit from CBT methods. Future studies are needed to verify this hypothesis.

Sensitivity analyses, which only included the patients that finished the therapy, additionally found significant improvements on Mastery at six month follow-up. At baseline patients' scores indicated that patients in both conditions on average responded to psychological challenges through gross avoidance and passive activities, such as following other's directions. At follow-up, in the MERIT condition, patients' scores indicated that 9/11 (82%) of participants who completed therapy were able to respond to psychological challenges by actively choosing and engaging in specific activities and behaviors such as medication use, or seeking therapeutic interventions, compared to 2/18 (.1%) at baseline. In the control condition, some participants had also improved to this level (from 3/27=11% at baseline to 8/22=36% at follow-up), but most only reached a level where avoidance behaviors were either more specific (i.e. avoiding supermarkets instead of staying indoors completely) or seeking social support , 4/22=18%). Again it must be noted that this represents the average group score. There was considerable variance between participants, some patients in the MERIT group still weren't

able to actively choose solutions for their psychological problems after therapy, whereas others were not only able to change their thoughts to deal with problems, but were also able to use knowledge about their own and other's cognitions and emotions to come to solutions. General group scores may suggest that MERIT empowered patients to face their challenges in a more active manner, which may make them less dependent on people around them and may allow them to take a more active role in their treatment.

Differences between conditions only became evident at follow-up in the intention-to-treat analyses. One explanation for this effect is that metacognitive gains take some time to develop, even after therapy has been concluded. Such findings are not uncommon; a meta-analysis of cognitive therapy (Gould, Mueser, Bolton, Mays, & Goff, 2001) has shown continued improvements after therapy was concluded. Improvements in the control condition are not likely to be caused by psychological interventions in this group, as at post assessment two out of 35 patients in the control condition indicated having had any contact with a psychologist. Between post- and follow-up, this number increased to four. It is therefore unlikely that interventions in the control group had significant effects on our findings. Possibly, the finding of the control group's raised performance at post measurement reflect a natural fluctuation in metacognitive capacity.

Understanding the Other's Mind and Decentration, two other components of metacognition, appeared less sensitive to change, as no significant effects on these scales were found. This is consistent with results from our pilot study (de Jong, van Donkersgoed, Aleman, *et al.*, 2016) and from long-term case studies (Lysaker *et al.*, 2007). It is possible that it is necessary to be able to think about your own thoughts and feelings before you can understand and think about what is occurring in the other's mind (Dimaggio, Lysaker, Carcione, Nicolò, &

Semerari, 2008). Meta-analyses of fMRI findings support this, having found that perception of the self and others share higher-order neural pathways in which these processes are combined (van der Meer *et al.* 2010; van Veluw & Chance, 2014). From a clinical perspective, it seems logical that Self-Reflection has to improve before someone can start to reflect on the mind of others. When someone is not aware of his own thoughts and feelings, how can he understand those of others? One long-term case study has found the first improvements to Understanding the Other's Mind to occur after about 16 months (Lysaker *et al.*, 2007). In designing future studies, it would be recommended to consider the possibility of more than 40 sessions.

A significant increase of symptoms between baseline and post measurement was found in the MERIT group. This difference was no longer present at follow-up. This is likely not due to drop-out at follow-up, as no significant differences were found on post treatment symptoms between follow-up drop-outs and follow-up completers. It is possible that increased self-reflectivity at post-measurement allowed participants to report more symptomatology, although the inverse is just as likely: increased symptoms at post-treatment may have obfuscated metacognitive gains. Future should studies address this question.

No other significant group differences on secondary outcomes were found. It is possible that an improvement in metacognition has no effect on the other variables. However, as multiple studies have shown relationships between metacognition and our secondary outcomes (e.g. Hamm *et al.*, 2012; Lysaker, Shea, *et al.*, 2010; Macbeth *et al.*, 2014), including self-reflectivity specifically (Nicolò *et al.*, 2012), another explanation may entail that more time needs to pass for improved metacognition to positively impact secondary outcomes. For example, it may take a while for someone with improved self-reflection to slowly adjust stigmatic views of oneself to a less stigmatic one. It also may take

a while for someone with improved Mastery to find a better job or get to know more friends. Another viable explanation is that our sample had demonstrated impaired metacognitive capacity, but had relatively modest scores of, for instance, symptomatology, and as such there was little room for improvement.

Only about half of patients completed all forty sessions of MERIT. No significant differences on the four scales of metacognition were found between the drop-out group and the group that completed the therapy. The long duration of the therapy played a role particularly in study attrition, with several therapists finding other work or going on maternity leave, causing attrition of five participants. Four more participants dropped out before receiving even a single session of therapy. Eight participants actually dropped out from the study during therapy, giving reasons such as "no connection with the therapist" and being too busy with work. As such, it is possible that the therapy was not acceptable to them (23%).

In post-treatment interviews conducted with the patients who completed the therapy, all respondents indicated that they had found the therapy useful ("My wife also noticed I was doing better", "More good things about yourself come to the surface. It isn't just your bad sides. I learned to see myself more positively"), and would recommend it to others. The only negative effect mentioned was the intensive nature of the therapy ("After sessions, I often needed rest"), by two out of fifteen participants (13%). As no significant contribution of the therapist variable as a level in the multilevel model was found, improvement of metacognition does not seem to depend on specific therapist characteristics.

Our study has several limitations. We investigated the effect of precisely 40 sessions of psychotherapy. A psychosocial intervention such as the one used in this study may not lend itself well for studies with a

fixed amount of sessions. Namely, several of our participants indicated their motivation for drop-out as 'doing too well', an observation supported by their therapist. In a clinical setting, ending therapy this way is obviously appropriate, and may improve results. Future studies could account for this issue by setting a minimum and maximum amount of sessions. Furthermore, while an effect was found, power analysis for our study indicated a required 120 participants. However, only 70 could be included (see Figure 1). Future studies with larger sample sizes should be conducted to support or reject our findings. Finally, the control condition in the current study received treatment as usual. Future studies should compare metacognitive therapy with other active treatments to determine the efficacy of MERIT vis a vis extant interventions.

CONCLUSION

Metacognitive Reflection and Insight Therapy did not improve metacognition immediately post treatment. At follow-up however, self-reflection of participants was improved significantly more in the MERIT condition than in the control condition. That is, participants (on average) changed from seeing their thoughts as facts to recognizing their thoughts as subjective and changeable. MERIT might therefore be a useful treatment approach for patients whose self-reflection is too limited to benefit from other therapies such as CBT.

Sensitivity analyses also showed improvement of Mastery at follow-up, suggesting that MERIT may potentially empower patients to face their challenges in a more active manner, which will ultimately give them more control over problems in daily life. These outcomes warrant further research into the efficacy of the method.

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REFERENCES

Aan Het Rot, M., & Hogenelst, K. (2014). The influence of affective empathy and autism spectrum traits on empathic accuracy. *PLoS ONE*, 9(6). http://doi.org/10.1371/journal.pone.0098436

Bargenquast, R., & Schweitzer, R. D. (2013). Enhancing sense of recovery and self-reflectivity in people with schizophrenia: A pilot study of Metacognitive Narrative Psychotherapy. *Psychology and Psychotherapy.* http://doi.org/10.1111/papt.12019

Baron-Cohen, S., O'Riordan, M., Stone, V., Jones, R., & Plaisted, K. (1999). Recognition of faux pas by normally developing children and children with Asperger syndrome or high-functioning autism. *Journal of Autism and Developmental Disorders, 29(5)*, 407–18. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10587887

Beck, A. T., Baruch, E., Balter, J. M., Steer, R. a, & Warman, D. M. (2004). A new instrument for measuring insight: the Beck Cognitive Insight Scale. *Schizophrenia Research, 68(2–3)*, 319–29. http://doi.org/10.1016/S0920-9964(03)00189-0

Boyd Ritsher, J., Otilingam, P. G., & Grajales, M. (2003). Internalized stigma of mental illness: psychometric properties of a new measure. *Psychiatry Research, 121(1)*, 31–49. http://doi.org/10.1016/j.psychres.2003.08.008

Brent, B. (2009). Mentalization-based psychodynamic psychotherapy for psychosis. *Journal of Clinical Psychology, 65(8)*, 803–814. http://doi.org/10.1002/jclp.20615

Buck, K. D., & Lysaker, P. H. (2009). Addressing Metacognitive Capacity in the Psychotherapy for Schizophrenia: A Case Study. *Clinical Case Studies, 8(6)*, 463–472. http://doi.org/10.1177/1534650109352005

Charlton, C., Rasbash, J., Browne, W. J., Healy, M., & Cameron, B. (2017). *MLwiN*. Bristol: Centre for Multilevel Modelling, University of Bristol.

Choi-Kain, L. W., & Gunderson, J. G. (2008). Mentalization: ontogeny, assessment, and application in the treatment of borderline personality disorder. *Am J Psychiatry, 165(9)*, 1127–1135. http://doi.org/10.1176/appi.ajp.2008.07081360

Davis, L. W., Eicher, A. C., & Lysaker, P. H. (2011). Metacognition as a predictor of therapeutic alliance over 26 weeks of psychotherapy in schizophrenia. *Schizophrenia Research, 129(1)*, 85–90. http://doi.org/10.1016/j.schres.2011.02.026

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44(1)*, 113–126. http://doi.org/10.1037/0022-3514.44.1.113

de Jong, S., van Donkersgoed, R. J. M., Aleman, A., van der Gaag, M., Wunderink, L., Arends, J., … Pijnenborg, M. (2016). Practical Implications of Metacognitively Oriented Psychotherapy in Psychosis. *The Journal of Nervous and Mental Disease, 204(9),* 713–716. http://doi.org/10.1097/NMD.0000000000000564

de Jong, S., van Donkersgoed, R. J. M., Pijnenborg, G. H. M., & Lysaker, P. H. (2016). Metacognitive Reflection and Insight Therapy (MERIT) With a Patient With Severe Symptoms of Disorganization. *Journal of Clinical Psychology, 72(2)*, 164–174. http://doi.org/10.1002/jclp.22249

Dimaggio, G., Lysaker, P. H., Carcione, A., Nicolò, G., & Semerari, A. (2008). Know yourself and you shall know the other... to a certain extent: Multiple paths of influence of self-reflection on mindreading. *Consciousness and Cognition, 17(3)*, 778–789. http://doi.org/10.1016/j.concog.2008.02.005

Dimaggio, G., Semerari, A., Carcione, A., Nicolò, G., & Procacci, M. (2007). *Psychotherapy of Personality Disorders.* London: Routledge.

Fonagy, P., Gergely, G., & Jurist, E. L. (2002). *Affect Regulation, Mentalization and the Development of the Self.* New York: Other Press.

Gould, R. A., Mueser, K. T., Bolton, E., Mays, V., & Goff, D. (2001). Cognitive therapy for psychosis in schizophrenia: An effect size analysis. *Schizophrenia Research, 48(2–3)*, 335–342. http://doi.org/10.1016/S0920-9964(00)00145-6

Hamm, J. a, Renard, S. B., Fogley, R. L., Leonhardt, B. L., Dimaggio, G., Buck, K. D., & Lysaker, P. H. (2012). Metacognition and social cognition in schizophrenia: stability and relationship to concurrent and prospective symptom assessments. Journal of *Clinical Psychology, 68(12)*, 1303–12. http://doi.org/10.1002/jclp.21906

Haro, J. M., Kamath, S. a, Ochoa, S., Novick, D., Rele, K., Fargas, a, … Jones, P. B. (2003). The Clinical Global Impression-Schizophrenia scale: a simple instrument to measure the diversity of symptoms present in schizophrenia. *Acta Psychiatrica Scandinavica. Supplementum, 107(416)*, 16–23. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12755850

Kay, S. R., Fiszbein, a., & Opler, L. a. (1987). The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophrenia Bulletin, 13(2)*, 261–276. http://doi.org/10.1093/schbul/13.2.261

Kazdin, A. E. (2010). *Research Design in Clinical Psychology (Fourth)*. Boston: Allyn & Bacon.

Kukla, M., Lysaker, P. H., & Salyers, M. P. (2013). Do persons with schizophrenia who have better metacognitive capacity also have a stronger subjective experience of recovery? *Psychiatry Research, 209(3)*, 381–385. http://doi.org/10.1016/j.psychres.2013.04.014

Lysaker, P. H., Buck, K. D., & Ringer, J. (2007). The recovery of metacognitive capacity in schizophrenia across 32 months of individual psychotherapy: A case study. *Psychotherapy Research, 17(6)*, 713–720. http://doi.org/10.1080/10503300701255932

Lysaker, P. H., Carcione, A., Dimaggio, G., Johannesen, J. K., Nicolò, G., Procacci, M., & Semerari, A. (2005). Metacognition amidst narratives of self and illness in schizophrenia: associations with neurocognition, symptoms, insight and quality of life. *Acta Psychiatrica Scandinavica, 112(1)*, 64–71. http://doi.org/10.1111/j.1600-0447.2005.00514.x

Lysaker, P. H., Davis, L. W., Eckert, G. J., Strasburger, A. M., Hunter, N. L., & Buck, K. D. (2005). Changes in narrative structure and content in schizophrenia in long term individual psychotherapy: a single case study. *Clinical Psychology & Psychotherapy, 12(5)*, 406–416. http://doi.org/10.1002/cpp.457

Lysaker, P. H., Dimaggio, G., Carcione, A., Procacci, M., Buck, K. D., Davis, L. W., & Nicolò, G. (2010). Metacognition and schizophrenia: the capacity for self-reflectivity as a predictor for prospective assessments of work performance over six months. *Schizophrenia Research, 122(1–3)*, 124–30. http://doi.org/10.1016/j.schres.2009.04.024

Lysaker, P. H., Erickson, M., Ringer, J., Buck, K. D., Semerari, A., Carcione, A., & Dimaggio, G. (2011). Metacognition in schizophrenia: the relationship of mastery to coping, insight, self-esteem, social anxiety, and various facets of neurocognition. *The British Journal of Clinical Psychology / the British Psychological Society, 50(4)*, 412–24. http://doi.org/10.1111/j.2044-8260.2010.02003.x

Lysaker, P. H., McCormick, B. P., Snethen, G., Buck, K. D., Hamm, J. A., Grant, M., … Dimaggio, G. (2011). Metacognition and social function in schizophrenia: associations of mastery with functional skills competence. *Schizophrenia Research, 131(1–3)*, 214–8. http://doi.org/10.1016/j.schres.2011.06.011

Lysaker, P. H., Shea, a M., Buck, K. D., Dimaggio, G., Nicolò, G., Procacci, M., … Rand, K. L. (2010). Metacognition as a mediator of the effects of impairments in neurocognition on social function in schizophrenia spectrum disorders. *Acta Psychiatrica Scandinavica, 122(5)*, 405–13. http://doi.org/10.1111/j.1600-0447.2010.01554.x

Lysaker, P. H., Vohs, J., Hamm, J. A., Kukla, M., Minor, K. S., de Jong, S., … Dimaggio, G. (2014). Deficits in metacognitive capacity distinguish patients with schizophrenia from those with prolonged medical adversity. *Journal of Psychiatric Research*, 1–7. http://doi.org/10.1016/j.jpsychires.2014.04.011

Macbeth, A., Gumley, A., Schwannauer, M., Carcione, A., Fisher, R., McLeod, H. J., & Dimaggio, G. (2014). Metacognition, symptoms and premorbid functioning in a First Episode Psychosis sample. *Comprehensive Psychiatry, 55(2)*, 268–273. http://doi.org/10.1016/j.comppsych.2013.08.027

Nasrallah, H., Morosini, P., & Gagnon, D. D. (2008). Reliability, validity and ability to detect change of the Personal and Social Performance scale in patients with stable schizophrenia. *Psychiatry Research, 161(2)*, 213–24. http://doi.org/10.1016/j.psychres.2007.11.012

Nicolò, G., Dimaggio, G., Popolo, R., Carcione, A., Procacci, M., Hamm, J. A., … Lysaker, P. H. (2012). Associations of metacognition with symptoms, insight, and neurocognition in clinically stable outpatients with schizophrenia. *The Journal of Nervous and Mental Disease, 200(7)*, 644–7. http://doi.org/10.1097NMD.0b013e31825bfb10

Priebe, S., Huxley, P., Knight, S., & Evans, S. (1999). Application and Results of the Manchester Short Assessment of Quality of Life (Mansa). *International Journal of Social Psychiatry, 45(1)*, 7–12. http://doi.org/10.1177/002076409904500102

Reniers, R. L. E. P., Corcoran, R., Drake, R., Shryane, N. M., & Völlm, B. a. (2011). The QCAE: a Questionnaire of Cognitive and Affective Empathy. *Journal of Personality Assessment, 93(1)*, 84–95. http://doi.org/10.1080/00223891.2010.528484

Riggs, S. E., Grant, P. M., Perivoliotis, D., & Beck, A. T. (2012). Assessment of cognitive insight: A qualitative review. *Schizophrenia Bulletin, 38(2)*, 338–350. http://doi.org/10.1093/schbul/sbq085

Rush, J. A., Trivedi, M. H., Ibrahim, H. M., Carmody, T. J., Arnow, B., Klein, D. N., … Keller, M. B. (2003). The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), Clinician Rating (QIDS-C), and Self-Report (QIDS-SR): A Psychometric Evaluation in Patients with Chronic Major Depression. *Depression, 54(5)*, 573–583. http://doi.org/10.1016/S0006-3223(03)01866-8

Salvatore, G., Procacci, M., Popolo, R., Nicolò, G., Carcione, A., Semerari, A., … Dimaggio, G. (2009). Adapted Metacognitive Interpersonal Therapy for Improving Adherence to Intersubjective Contexts in a Person With Schizophrenia. *Clinical Case Studies, 8(6)*, 473–488. http://doi.org/10.1177/1534650109354916

Salvatore, G., Russo, B., Russo, M., Popolo, R., & Dimaggio, G. (2012). Metacognition-Oriented Therapy for Psychosis: The Case of a Woman With Delusional Disorder and Paranoid Personality Disorder. *Journal of Psychotherapy Integration, 22(4)*, 314–329. http://doi.org/10.1037/a0029577

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., … Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry, 59(SUPPL. 20)*, 22–33. http://doi.org/10.1016/S0924-9338(99)80239-9

Snijders, T. A. B., & Bosker, R. J. (2000). *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling Second Edition.* London: Sage.

van Donkersgoed, R. J. M., de Jong, S., & Pijnenborg, G. H. M. (2016). Metacognitive Reflection and Insight Therapy (MERIT) with a Patient with Persistent Negative Symptoms. *Journal of Contemporary Psychotherapy, 46(4)*, 245–253. http://doi.org/10.1007/s10879-016-9333-8

van Donkersgoed, R. J. M., de Jong, S., van der Gaag, M., Aleman, A., Lysaker, P. H., Wunderink, L., & Pijnenborg, G. (2014). A manual-based individual therapy to improve metacognition in schizophrenia: protocol of a multi-center RCT. *BMC Psychiatry, 14(1)*, 27. http://doi.org/10.1186/1471-244X-14-27

van Veluw, S. J., & Chance, S. a. (2014). Differentiating between self and others: an ALE meta-analysis of fMRI studies of self-recognition and theory of mind. *Brain Imaging and Behavior, 8(1)*, 24–38. http://doi.org/10.1007/s11682-013-9266-8

Wykes, T., Steel, C., Everitt, B., & Tarrier, N. (2008). Cognitive behavior therapy for schizophrenia: Effect sizes, clinical models, and methodological rigor. *Schizophrenia Bulletin, 34(3)*, 523–537. http://doi.org/10.1093/schbul/sbm114

APPENDIX A: T-MAS

1. Openness to the patient's agenda at the session outset and throughout the session.

1…..…2……..3…..….4……5

2. Offer of the therapist's thoughts/perceptions regarding the patient's behavior in the session.

1……2……..3……4……5

3. Details of a narrative episode are elicited.

1…..…2…..…..3……4……5

4. A psychological problem or dilemma is framed as something to be discussed

1…..…2…..…..3……4……5

5. Reflection on the interpersonal processes during the session is elicited.

1…..…2…..…..3……4……5

6. Reflection on progress/ course of the session is elicited at various times during the session or at session's end.

1…..…2…..…..3……4……5

7. The patient is stimulated to engage in metacognitive acts with interventions that are appropriate to patient's capacity for self-reflectivity and/or awareness of the mind of the other.

1…..…2…..…..3……4……5

8. The patient is stimulated to engage in metacognitive acts with

interventions that are appropriate to patients' capacity for metacognitive mastery.

1……2……3……4……5

Total score: _____

Key: 1. absent; 2. intermittent moments in which basic competency is present; 3. fully adequate or competent throughout; 4. fully adequate with some periods of exceptional performance; 5. consistently exceptional performance.

TABLE 4 (SUPPLEMENT) *Fixed and random effects on the secondary outcomes – Intention to Treat*

	BCIS	CGI	EAT	FP-Emp	FP-Rec-og	IRI	ISMI	MANSA	PANSS	PSP	QCAE	QIDS-SR
Parameter	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)
Fixed effects												
Time factor												
Baseline	7.99 (0.66)	14.02 (0.54)	1.22 (0.10)	2.60 (0.25)	3.98 (0.14)	54.67 (1.41)	2.31 (0.05)	52.37 (1.21)	67.59 (2.36)	58.71 (2.09)	87.67 (1.24)	9.56 (0.65)
Post effect[a]	-0.55 (0.91)	-2.57 (0.77)	0.06 (0.20)	0.95 (0.40)	0.16 (0.25)	-1.76 (1.85)	-0.02 (0.06)	3.09 (1.38)	-11.29 (3.16)	2.93 (3.15)	-0.67 (1.63)	-0.07 (0.93)
Post effect MERIT[a]	-1.41 (1.27)	0.70 (1.00)	-0.28 (0.25)	-0.40 (0.50)	-0.03 (0.33)	1.69 (2.58)	-0.15 (0.09)	-0.71 (1.97)	8.65 (4.15)	-1.81 (4.15)	1.56 (2.31)	-0.31 (1.30)
Follow-up effect[b]	-0.18 (0.92)	-2.63 (0.80)	-0.16 (0.22)	0.09 (0.42)	0.50 (0.25)	-0.60 (1.88)	-0.10 (0.06)	3.73 (1.40)	-1.29 (3.26)	4.50 (3.26)	1.24 (1.66)	-0.06 (0.94)
Follow-up MERIT[b]	0.07 (1.43)	-0.97 (1.25)	0.145 (0.31)	0.10 (0.62)	-0.69 (0.40)	0.02 (2.89)	-0.10 (0.10)	-0.91 (2.19)	0.82 (5.15)	-0.69 (5.14)	-1.50 (2.58)	0.40 (1.46)
Random effects *Variances of*												
Level 3 – therapist	0.30 (1.61)	1.17 (1.07)	0.00 (0.00)	0.27 (0.22)	0.00 (0.00)	3.91 (7.71)	0.00 (0.00)	0.93 (5.66)	25.67 (22.12)	12.31 (15.78)	0.00 (0.00)	0.00 (0.00)
Level 2 – intercept	16.80 (4.22)	2.73 (1.48)	0.05 (0.07)	0.00 (0.00)	0.52 (0.18)	61.03 (16.10)	0.10 (0.02)	68.37 (14.96)	63.09 (27.73)	64.24 (27.72)	70.59 (15.41)	17.30 (4.09)
Level 1 – residual	11.57 (1.80)	9.04 (1.43)	0.47 (0.09)	2.52 (0.32)	0.85 (0.137)	48.33 (7.49)	0.05 (0.01)	25.53 (3.98)	147.76 (23.46)	147.76 (23.43)	36.57 (5.70)	12.11 (1.88)

BCIS=Beck Cognitive Insight Scale; CGI=Clinical Global Impression; EAT = Empathic Accuracy Task; FP-Emp = Faux Pas Test – empathy errors; FP-Recog= Faux Pas Test - # of faux pas accurately detected; IRI = Interpersonal Reactivity Index; ISMI = Internalized Stigma of Mental Illness Inventory; MANSA = Manchester Short Assessment of Quality of Life; PANSS = Positive and Negative Syndrome Scale; PSP = Personal and Social Performance Scale; QCAE = Questionnaire of Cognitive and Affective Empathy; QIDS-SR = Quick Inventory of Depressive Symptoms – Self Report.

[a] Post effect: Difference between T0 and T1 (TAU is reference category)

[b] Follow–up effect: Difference between T0 and T2 (TAU is reference category)

TABLE 5 (SUPPLEMENT) *Fixed and random effects on the secondary outcomes – Sensitivity*

	BCIS	CGI	EAT	FP-Emp	FP-Recog	IRI	ISMI	MANSA	PANSS	PSP	QCAE	QIDS-SR
Parameter	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)
Fixed effects												
Time factor												
Baseline	7.96 (0.80)	14.10 (0.67)	1.18 (0.12)	2.53 (0.29)	4.03 (0.19)	54.13 (2.04)	2.36 (0.06)	50.24 (1.48)	68.86 (2.69)	58.33 (2.63)	86.89 (1.51)	10.07 (0.84)
Post effect[a]	-0.50 (0.97)	-2.55 (0.84)	0.08 (0.22)	1.04 (0.42)	0.11 (0.27)	-1.78 (1.80)	-0.04 (0.06)	3.72 (1.40)	-12.24 (3.36)	3.60 (3.26)	-0.43 (1.63)	-0.28 (0.964)
Post effect MERIT[a]	-1.11 (1.44)	1.35 (1.13)	-0.35 (0.27)	-0.73 (0.55)	0.03 (0.38)	0.25 (2.71)	-0.10 (0.10)	-1.75 (2.17)	10.92 (4.59)	-6.24 (4.40)	4.15 (2.49)	-0.34 (1.46)
Follow-up effect[b]	0.02 (0.10)	-2.76 (0.89)	0.00 (0.24)	-0.00 (0.45)	0.44 (0.28)	-0.71 (1.86)	-0.13 (0.06)	4.49 (1.45)	-2.56 (3.53)	6.05 (3.43)	1.41 (1.69)	-0.25 (0.10)
Follow-up MERIT[b]	0.21 (1.59)	-0.53 (1.45)	0.12 (0.35)	0.26 (0.68)	-0.92 (0.47)	-3.10 (3.01)	-0.02 (0.11)	-2.75 (2.40)	2.82 (5.86)	-2.14 (5.64)	0.51 (2.75)	1.32 (1.62)
Random effects *Variances of*												
Level 3 – therapist	0.60 (2.21)	1.81 (1.58)	0.00 (0.00)	0.27 (0.24)	0.00 (0.00)	20.33 (17.94)	0.00 (0.00)	0.00 (0.00)	24.43 (25.34)	26.82 (24.31)	0.00 (0.00)	0.00 (0.00)
Level 2 – intercept	13.16 (4.39)	2.20 (1.68)	0.03 (0.08)	0.00 (0.00)	0.60 (0.22)	55.85 (18.10)	0.10 (0.03)	73.33 (17.72)	54.96 (30.88)	39.68 (26.61)	67.46 (17.27)	19.00 (5.11)
Level 1 – residual	12.72 (2.12)	10.00 (1.72)	0.51 (0.11)	2.49 (0.36)	0.94 (0.16)	43.55 (7.26)	0.05 (0.01)	25.51 (4.25)	156.07 (26.96)	149.13 (25.73)	34.97 (5.84)	12.40 (2.07)

BCIS=Beck Cognitive Insight Scale; CGI=Clinical Global Impression; EAT = Empathic Accuracy Task; FP-Emp = Faux Pas Test – empathy errors; FP-Recog= Faux Pas Test - # of faux pas accurately detected; IRI = Interpersonal Reactivity Index; ISMI = Internalized Stigma of Mental Illness Inventory; MANSA = Manchester Short Assessment of Quality of Life; PANSS = Positive and Negative Syndrome Scale; PSP = Personal and Social Performance Scale; QCAE = Questionnaire of Cognitive and Affective Empathy; QIDS-SR = Quick Inventory of Depressive Symptoms – Self Report.

[a]Post effect: Difference between T0 and T1 (TAU is reference category)

[b]Follow–up effect: Difference between T0 and T2 (TAU is reference category)

CHAPTER 7

Summary and general discussion

SUMMARY OF FINDINGS

It was recently noted that metacognition in psychotic disorders is 'a concept coming of age' (Brune, 2014), aptly summarizing that metacognition as a construct is very promising, but difficult to capture fully in terms of definition and measurement. The work described in this thesis started in 2012, as an attempt to investigate whether the metacognitive framework can offer more insights into the nature and treatment of psychotic disorders.

In the first, introductory chapter, we discussed this model – and related constructs - in light of the broader term 'social cognition'. It would appear as though terminology in the field is rather unclear, with different theoretical frameworks having produced related, though different, interpretations of the processes at play within social cognition. While it is unclear how, precisely, each construct (e.g. 'Theory of Mind' , 'Empathy') interrelates, several validated instruments exist.

The construct of metacognition as proposed by Semerari *et al.* (2003) and expanded upon by Lysaker *et al.* (2005) offers several contributions to the field of social cognition. This definition of metacognition first divides metacognition up into four domains: self-reflectivity, understanding the other's mind, decentration and mastery (the ability to identify and find possible solutions for psychological difficulties). It furthermore explicates a spectrum along which metacognitive activities may be organized, ranging from 'discrete' activities (singular mental events or observations, such as noting a thought within one's own head) to more 'synthetic' activities (the integration of all this information into complex representations).Utilizing this hierarchy, existing measurement

instruments may be classified along this axis, offering the first basis for an organization or larger-scale conceptualization of the complex spectrum of social-cognitive or metacognitive domain.

In Chapter 2 we present an investigation of the relationship between metacognition and outcome using data from a clinical trial. More specifically, we investigated whether metacognitive capacity (as measured by the MAS-A) influenced average work satisfaction and consistency of ratings of work satisfaction enrolled in a vocational rehabilitation program, while receiving either adjunctive CBT or a support group (de Jong *et al.*, 2014). We found that, in the CBT group, but not in the support group, higher metacognitive capacity predicted higher average job satisfaction. In the 'Discussion' section of the article, we frame these findings in terms of the aims of treatment: (re-)interpretation of negative events in such a way that they do not taint the larger judgment of work satisfaction. In the support (non-CBT) group, we found that participants with higher metacognitive capacity had a more varied appraisal of their work experience. Cautiously, we interpreted these findings in light of the ability to form a nuanced sense of experience at work ('That fight with my coworker was lousy, but overall, I had a good day at work' vs. 'I had a lousy day at work').

In Chapter 3 we investigated whether metacognitive deficits may pose a risk factor for violence. Our results suggest that while various instruments can differentiate between the two patient groups and the control group, only scores on the MAS-A and Empathic Accuracy Task differentiate between the forensic and non-forensic patient groups, suggesting a unique contribution of these measures to the statistical model of risk for violence.

In Chapters 4, 5 and 6, the effectiveness of a therapy that was developed to stimulate metacognition is discussed. This intervention is not so much a session-by-session protocol, but is rather based on 8 elements which therapists should attend to during each session. The first element is the patient's agenda: what is the client seeking from the therapist in the session? As per the second element, the therapist should share his or her own thoughts and reactions on the patient's behavior. The third element is centered around eliciting a narrative from the patient, so as to ensure the conversation does not derail into abstraction but rather discusses the concrete experiences of the patient. Combined, these elements naturally flow into the fourth element, namely for the dyad together to find out what the psychological difficulties are that the patient experiences. The fifth element puts forth the notion that the therapist should, at all times, keep a keen eye out for the interpersonal processes that are occurring between therapist and client, as they speak. As an extension of this element, the sixth element specifies that the therapist should ensure to ask the patient about their experience of the session itself, either during the session, at the end of the session, or both. These six elements are specified in order to optimize the seventh element (stimulating self-reflectivity and understanding others) and the eighth element (stimulating mastery), by asking questions congruent with or slightly above the participant's current metacognitive functioning. Chapter 4 discusses the case of Abraham, a chronic patient with severe symptoms of disorganization. Using the eight elements of Metacognitive Reflection and Insight Therapy (MERIT) as a guide for each session, and utilizing the MAS-A to guide specific interventions, twelve weeks of psychotherapy were undertaken and evaluated. The results were encouraging; using the reflective, narrative methodology appeared very suitable for a patient who would likely not benefit (much) from the current evidence-based methodology of CBT. On the other hand, the

case aptly illustrated that the process of improvement is a slow one: twelve sessions were not sufficient: only small metacognitive gains were observed at the lower end of the spectrum, and it could not be verified whether these gains would last. This is unlikely, given findings from previous case work with the method (Lysaker, Buck, & Ringer, 2007).

The case study was drawn from a pilot study reported in Chapter 5. This pilot study aimed to determine whether MERIT is a therapy that could be transferred from the author of the protocol to therapists in a time-efficient manner, what level of post-training supervision would be required, to what extent participants would accept the therapy or drop-out, and of course to collect some data on efficacy to guide power-analysis for the multicenter randomized controlled trial reported in Chapter 6. Our data provided an encouraging picture: although it cannot be verified conclusively whether a particular method is transferred, the findings underlined the appraisals from both trainer, supervisor and two trainees. Post-training supervision appeared to ideally consist of weekly supervision, but a bare minimum of once per two weeks was established as feasible. Similarly, participants appeared to accept the therapy, with nine out of twelve participants finishing treatment.

The pattern of improvement found in the pilot study, though not statistically significant, demonstrated the same pattern of improvement as had been found in previous case studies and small clinical trials. Participants appear to rather swiftly gain self-reflective capacity, and metacognitive mastery. The domains of understanding the other's mind and decentration proved more difficult to change, and no results were found on those scales.

These studies culminated in the multicenter, randomized controlled trial reported in Chapter 6. Seven therapists were trained by the first author of the therapy manual during a 3-day training meeting. While, similar to the pilot study, it is difficult to assess whether a method of psychotherapy was adequately transferred, both trainer and trainees felt that the training had been successful. Finding participants proved somewhat more difficult: While our initial protocol specified the desired inclusion of 120 participants, only 70 participants could be included, despite the multicenter nature of the study.

During the study, group sessions of supervision were held bi-weekly via Skype for all therapists who were still treating participants. The format of these sessions varied somewhat, although the general agenda for each session specified one of the therapists as the contributor, who was given the opportunity to describe one of their cases and discuss difficulties or obstacles they encountered. With our study design it is impossible to draw any conclusions regarding the importance or efficacy of supervision, but it was generally well-attended by all the therapists and the general impression is that these sessions helped therapists, who felt rather isolated using novel techniques with an inherently smaller evidence base for efficacy.

The main question of this trial was, of course, to determine whether participants would improve as a function of the therapy (Metacognitive Reflection and Insight Therapy, MERIT). When compared to a control group who received Treatment as Usual, participants did not appear to improve significantly more than the control group between the baseline and post-therapy assessment on metacognitive functioning as measured with the MAS-A. At a 6-month follow-up, however, it appeared that the control group had dipped back down on metacognitive functioning

, nearing baseline functioning, while participants in the MERIT condition had continued to improve on metacognitve Self-Reflectivity even beyond their functioning at the post-measurement. Notably, the same pattern of improvement was observed that has also been shown in case studies, pilot studies (including our own) and small trials, namely an improvement on self-reflectivity and to a lesser extent mastery, and no improvement on understanding the other's mind and decentration. No benefits of MERIT were found on any of the secondary outcome measures (e.g. depression, stigma, quality of life).

The most relevant in the clinical context may be the scores on self-reflectivity. Average scores on this scale indicate that participants made significant progress towards achieving level S5, or the ability to see one's own thoughts and perspectives as changeable and / or fallible. These results should be interpreted carefully, though, as scores fluctuated significantly. This level (S5) is particularly relevant, however, since this level can theoretically be seen as a requirement for the successful application of CBT, which may mean that MERIT is a suitable 'pre-therapy' for persons with a severe mental illness who may not benefit from CBT. This is a hypothetical; future work should establish much more firmly that S5 is, in fact, a precondition for successful application of CBT.

This thesis set out to determine whether there is merit to the metacognitive approach. Taken as a whole, our results appear encouraging. However, at this stage, it is important to consider the differences between testing an outcome measure (which we did test), and the underlying theoretical model such as the hierarchical nature of metacognition as per the MAS-A (which we did not test). Metacognition is a broad construct, and in our designs one

operationalization was tested: the Metacognition Assessment Scale -A. As such, what can be concluded is that there is encouraging evidence for the notion that metacognition, *when defined as a person's scores on the MAS-A*, may be associated with some outcome measures (such as work satisfaction, Chapter 2; and risk of violence; Chapter 3), and may constitute a suitable target for a psychotherapy *developed specifically to enhance functioning on the domains as defined by and measured using the MAS-A.*"

CLINICAL APPLICATION OF METACOGNITION: WHICH INTERVENTION SHOULD BE USED?

The results of the studies described in this thesis point to metacognition as a relevant variable pertaining outcome in experience of work (Chapter 3) and as a potential risk factor for violence (Chapter 4). It is particularly relevant in this context to highlight that, while all studies detailed in this thesis concern psychosis in particular, the concept of metacognition has an important transdiagnostic character (Gumley, 2011). In other words: metacognition does not refer to a specific deficit or symptom cluster only found in persons with a psychotic disorder or even persons with psychopathology. Rather, metacognition refers to a natural process occurring in all human beings, which can be disrupted in different ways. This transdiagnostic view is not limited to the framework of metacognition alone; all related frameworks share this view to some extent. Mentalization Based Therapy, for instance, was specifically developed to bridge a gap that remains in explaining Borderline Personality Disorder from a pure framework of attachment theory (Fonagy, Luyten, & Bateman, 2015), and Theory of Mind has been heavily linked to research on empathy, drawing on findings with, for instance, Autism Spectrum Disorders and psychopathy (Blair, 2005). Each of these frameworks

have, to some extent independent from one another and to some extent relying on research of related concepts, noted that there appears to be sufficient evidence for neural substrates of reflecting on the self and others as partly independent, but also partly overlapping (van der Meer, Costafreda, Aleman, & David, 2010).

Similarly, each theoretical framework has in some way or another demonstrated clinical utility, despite large differences both in protocols but also underlying frameworks. It may, therefore, be difficult to compare one 'metacognitive' treatment to the next, and to other therapeutic interventions altogether. Or, in the most practical terms, the question that remains to be answered is the pragmatic: 'which intervention should clinicians choose?'. While a definitive answer is yet to be found, there are some practical considerations which researchers and clinicians may use when choosing which framework to apply. These considerations are mainly drawn from the gradual shift that has been occurring from *pathology profiles* such as those found in the DSM-V and ICD-10 (i.e. 'the optimal treatment for disorder X is treatment Y') towards a more patient-centered, symptom-centered approach also dubbed 'transdiagnostic', 'unified' treatment, or 'individualized mental healthcare' (Dudley, Kuyken, & Padesky, 2011; McEvoy, Nathan, & Norton, 2009; van Os, 2014). Treatment selection should take into account which treatment has the best evidence for effectiveness in regards to a) symptom and distress profiles, and b) whether the patient can challenge their own thinking. For instance, consider a patient who is able to, in conversation with a therapist, give an indication that they can question their own thinking ("I thought my friend was angry with me, but I was wrong"), and who 'feels like the FBI is watching me, this fear will drive me mad'. In such a patient, the difficulties primarily appear to stem from an *interpretation* of or *coping with* particular

difficulties related to or caused by symptoms of psychosis but are not psychotic symptoms themselves, and the person has the capacity to challenge their own thoughts (though may not necessarily engage in it). In cases such as these, the metacognitive framework provided by Wells *et al.* appears particularly promising. The Self-Regulatory Executive Function (S-REF) model on which this approach is based, differentiates between two different types of metacognitive beliefs about one's own cognitive apparatus: positive beliefs ("if I ruminate more, it will help me find a solution") and negative beliefs ("I cannot control my worrying").

To illustrate the value of this intervention within the context of psychosis, two areas of symptomatology appear particularly relevant: generalized anxiety disorder and obsessive/compulsive disorder. Despite high prevalence rates of both disorders in schizophrenia (13% OCD, 12% GAD), interventions focused on these symptoms specifically are rather rare as treatments efforts are centered around psychotic symptomatology (Cosoff & Hafner, 1998). Functionally, however, there may be ample reason to turn to metacognitive-oriented interventions as research findings within those clinical populations (OCD and GAD) are very encouraging. One trial of Wells' metacognitive therapy in a population of GAD-patients (n=126) reports a staggering 91% of patients no longer fulfilling the diagnostic criteria for GAD after 14 sessions, and gains were stable at 6-month follow-up (van der Heiden, Muris, & van der Molen, 2012).

Similarly, obsessive-compulsive symptoms are rather common in persons with a psychotic disorder, although some debate remains about the overlapping diagnostic criteria and prevalent co-occurrence of obsessive-compulsive symptoms and psychosis (M. Poyurovsky & Koran, 2005; Michael Poyurovsky, Weizman, & Weizman, 2004;

Schirmbeck *et al.*, 2016; Van Dael *et al.*, 2011). The first-line treatment for these symptoms in non-psychosis populations is Exposure and Response Prevention (ERP). Several obstacles present themselves, such as a difficulty in distinguishing OCD-symptoms from those of psychosis (Zink, 2014), or limited insight (Rodriguez, Corcoran, & Simpson, 2010), leading to OCD symptoms within the psychosis population being either left untreated or intervened on with psychopharmacology such as adjunctive SSRI's (De Haan, Sterk, Wouters, & Linszen, 2013). It has been noted that there is a surprising sparsity on research on treatment of OCD symptoms within this population (Zink, 2014), despite evidence that pharmacological intervention on psychotic symptoms may induce or exacerbate obsessive symptomatology (Michael Poyurovsky *et al.*, 2004).

One trial (van der Heiden, van Rossen, Dekker, Damstra, & Deen, 2016) of Metacognitive Therapy (Wells, 2009) within a non-psychosis population of persons with OCD has found promising results with between half and two thirds of those who finished treatment meeting criteria for being symptom free (van der Heiden *et al.*, 2016). Most importantly, these gains were obtained in less than fifteen sessions. Given how metacognitive therapy has already been successfully applied in samples of patients with schizophrenia (Hutton, Morrison, Wardle, & Wells, 2014; Morrison *et al.*, 2014), it may be relevant to consider studying this methodology for patients with a psychotic disorder who are struggling with (symptoms of) GAD or OCD, and whose struggles are not with the *content* of their symptomatology ("I am being watched by the FBI") but with the effects of their symptomatology in terms of rumination and worry ("This worrying will drive me mad" or "Worrying all day keeps me safe"). This methodology requires to look inward, to study their own cognitions regarding symptoms of anxiety

("ruminating keeps me safe"). This requires a relatively high level of metacognitive functioning (S5), and as such may only be effective for patients who have reached this level of self-reflectivity.

Not all patients, however, struggle mainly with metacognitive beliefs about fear and anxiety, as symptoms may be fear-provoking in themselves. For instance, while a patient may have begun to doubt whether his belief that he is being spied on is true (indicating S5), the fearful feeling may persist even if the patient does not believe his worrying about being watched are useful in keeping him safe. In a case like this, a more fruitful approach may take the form of a more traditional cognitive-behavioral approach. It should be noted that these CBT-approaches in general have begun to include either references to, or outright chapters on, Wells' metacognitive therapy.

Along those same lines, metacognitive training as initially developed by Moritz *et al.*, is another educational approach with cognitive-behavioral elements, though this one specifically targeting cognitive biases and their awareness of them, in an attempt to diminish their effects. To put this into practical terms: if a patient appears particularly vulnerable to a, for instance, jumping-to-conclusions bias, Moritz' metacognitive training may be a valuable option. For the practical purpose of differentiation this training, we shall refer to this training as MCTraining for the group training, and MCTraining+ to refer to the individualized variant.

It is important to note that these trainings have been developed relatively recently, and that studies on their efficacy are more sparse and less convincing. While initial reports were encouraging (Aghotor, Pfueller, Moritz, Weisbrod, & Roesch-Ely, 2010; Steffen Moritz *et al.*, 2011, 2013), a meta-analysis conducted in 2015 concluded that

the studies up to that point had methodological flaws, and did not establish a positive effect from the training (van Oosterhout *et al.*, 2015). Findings from this meta-analysis were contested by the developers in a letter to the editor (S. Moritz, Werner, Menon, Balzan, & Woodward, 2015), and another meta-analysis was published a year later, citing methodological flaws in the original meta-analysis and selecting another sample of studies (Eichner & Berna, 2016). Recently, a larger study (n=126) in persons with recent-onset psychosis, was conducted in which MCTraining was compared to psycho-education (Ochoa *et al.*, 2017). The study found no between group effects but there were within-group effects on the Beck Cognitive Insight Scale, Jumping to Conclusions and Theory of Mind when compared to the control group. Though the clinical relevance of the effects found may be questioned, it may be that the modest gains are offset by the relatively low costs of execution of the program which in itself is available for free.

The methods discussed so far have their roots in the cognitive-behavioral framework, and are generally regarded as variations on cognitive-behavioral therapy for psychosis (CBTp). In most clinical guidelines, 'regular' CBTp is considered an appropriate first-line intervention (Trimbos, 2012; NICE, 2014). However, critical voices have noted that the evidence base for CBT has been deteriorating rather than expanding in the period between 2009 and 2017: in 2012, a Cochrane review was published demonstrating no advantages for cognitive behavioral therapy over other therapies such as family therapy in treating the symptoms of schizophrenia (Christopher, David, Irene, Alan, & Claire, 2012). Noting an absence of meta-analyses between the publication of the NICE guidelines and their own publication in 2014, Jauhar et al (2014) performed a meta-analysis and found effect sizes only in the 'small' ranges.

These findings have stirred up some debate surrounding the question whether effects of CBTp have been overestimated (McKenna & Kingdon, 2014). The oldest meta-analyses came up with large effect-sizes of 0.91 on positive symptoms (Rector & Beck, 2012) , and effect-sizes of 0.65 at the end of treatment and 0.93 at follow-up (Gould, Mueser, Bolton, Mays, & Goff, 2001). Another meta-analysis on 33 RCTs showed an effect-size of 0.40 (Wykes, Steel, Everitt, & Tarrier, 2008). Recently several other meta-analyses have been published. Burns *et al.*, found an effect-size of 0.47 for positive symptoms in medication-resistant psychosis in 16 studies (Burns, Erickson, & Brenner, 2014). The meta-analysis of Jauhar *et al.* found a small effect-size of 0.25 in positive symptoms (Jauhar *et al.*, 2014). This meta-analysis was criticized for excluding a large number of important studies, for instance studies in auditory verbal hallucinations (Wykes, 2014). The meta-analysis by Turner *et al.* (2014) is the largest and used 44 studies that compare six psychosocial interventions for schizophrenia, comparing the effect-sizes of a therapy above the combined effects of pharmacotherapy plus an active comparison treatment. CBT added to antipsychotic medication was more effective (g=0.16) than any other psychosocial treatment added to antipsychotic medication in the treatment of positive psychotic symptoms. This result was robust in all sensitivitity analyses with different levels of "risk of bias". In comparison with "befriending" the effect-size was 0.42 and in comparison with supported counseling 0.23 (D. T. Turner *et al.*, 2014).

Van der Gaag *et al.* (2014) selected studies with CBT using individually tailored case-formulation that aimed to reduce hallucinations and delusions. They found effect-sizes were 0.36 on delusions and 0.44 with hallucinations. Contrasting with active treatment caused CBT for delusions to lose statistical significance (0.33), but increased the effect-size for CBT for hallucinations (0.49). They

concluded that CBT is effective in treating auditory hallucinations, and note that CBT for delusions is also effective, but urge caution when interpreting the results as there is significant heterogeneity, and non-significant effect-sizes when comparing with active treatment (van der Gaag *et al.*, 2014). In sum, despite small to moderate effect sizes, CBT appears a valid choice of therapy in psychosis, considering that recent studies of all antipsychotic medication against placebo have found an effect-size of 0.25 (Leucht, Pitschel-Walz, Abraham, & Kissling, 1999). The second generation medication taken individually is slightly better (0.16 amisulpiride; 0.36 aripiprazole; haloperidol 0.54; olanzapine 0.56; quetiapine 0.41; risperidone 0.83; serindole 0.38; ziprasidone 0.52; Zotpine 0.27), although the authors note their finding of an NNT of six as 'striking' when compared to earlier studies (Leucht, Arbter, Engel, Kissling, & Davis, 2009).

From this data, it is clear that by no means all patients benefit (equally) from CBT. Discussed above is but one interpretation of the data, centered around the view that early studies show an *inflated* effect size and that more current studies demonstrate a more *true* effect size. Dropping effect sizes have also occurred in studies of SSRIs (Mathew & Charney, 2009; Moncrieff & Kirsch, 2005; E. H. Turner, Matthews, Linardatos, Tell, & Rosenthal, 2008), antipsychotic medication (Leucht *et al.*, 2009) and metacognitive training (van Oosterhout *et al.*, 2015). Although stringent studies following high quality research standards in general have lower effect-sizes, in auditory hallucinations the effect-sizes are higher if the quality of the study is higher. Publication bias and heterogeneity among the studies may not be the causes, as they appear absent in meta-analysis of studies on auditory hallucinations (van der Gaag *et al.*, 2014). While I certainly do not dispute that methodological issues may have played a role in inflation of effect sizes in early studies,

I propose that the data presented in this thesis offer an alternative explanation for studies which find smaller to no effect sizes when comparing CBT to other psychosocial interventions (e.g. Christopher *et al.*, 2012). Aforementioned interventions have all stemmed from the cognitive-behavioral framework, in which psychopathology is seen as dysfunctional thought, emotion and behaviours. Through careful challenging by thought experiments and behavioural experiments, psychopathology may be ameliorated. Underlying these interventions lies the foundational assumption that all persons are, in fact, self-aware or conscious enough to adequately mentally represent themselves and their inner workings, and thus are able to be aware of the fact that thoughts can be falsified. Within the field of personality disorders, this assumption is not always made in the same way. For instance, using the framework of Mentalization Based Therapy for Borderline Personality Disorder, it has been noted that "particularly in severely disturbed BPD patients, treatments that strongly rely on reflective capacities may actually become iatrogenic (Fonagy *et al.*, 2015)".

Our data aligns with many findings of impaired metacognitive capacity in persons with a psychotic disorder. For our study, we have included 70 participants with impaired metacognitive capacity. Their scores on self-reflectivity as measured by the MAS-A were 3.84 and 4.46 in the control group versus the treatment condition respectively. Both groups therefore, on average, had self-reflectivity scores which indicate they are unable to perceive their own cognitions as fallible, namely 5. For our study in which we compared a forensic group of patients with a non-forensic group of patients (Chapter 3), we took a subsample of participants from one regular mental healthcare institute, and included participants which were excluded from the main trial reported in Chapter 6 based on metacognition scores that were too

high. Even adding these patients with higher metacognitive functioning, the average in the group rose only to 4.3 on self-reflectivity, and the forensic group scored only an average of 3.1 – both well below the level of 5. In this respect it is also noteworthy that metacognition scores of self-reflectivity were one of only two variables which discriminated between a forensic group of patients and a non-forensic group. This certainly demonstrates that a large proportion of patients lack the capacity to question their own thinking. It is entirely possible that in earlier (smaller) trials , when CBTp was not as commonly known and accessible as it is now, most patients included in trials were those who had the metacognitive capacity to doubt their own thinking. Now, however, CBTp is a very well-known intervention that has become much more accessible to all patients, including those patients who have not yet attained S5. Inclusion of these patients, who are unlikely to benefit from CBTp, in treatment groups is, to my mind, a possible contributor to the dropping effect sizes. In this light, our finding that metacognitively oriented psychotherapy such as MERIT (Chapters 4 - 6) may improve metacognitive capacity is particularly encouraging as it may be an option for those who may not otherwise benefit from CBT (yet).

LIMITATIONS

THE CONSTRUCT OF METACOGNITION AND DIFFERENT METHODS OF MEASUREMENT

While we have included a discussion of limitations in each article presented in this thesis, there is one over-arching limitation which fell outside the scope of each individual article to discuss, but which deserves mentioning. This pertains to the fact that metacognition was measured utilizing only one instrument, namely the Metacognition Assessment Scale -A. This stands in direct contrast to what is considered best practice in terms of construct validity: in order to measure

hypothetical constructs, multiple methods should be used to measure the construct, after which the measures can be independently assessed on validity using, for instance, the multitrait, multimethod matrix (Smith, 2005). Across the spectrum of the work presented in this thesis, the construct validity of metacognition is not tested, and only *assumed*, both in terms of the construct as a whole existing, but also its subdivision into four components (Self-Reflectivity, Understanding the Other's Mind, Decentration and Mastery).

It is important to note that the MAS-A is not the only instrument which intends to measure metacognitive capacity from the theoretical framework the MAS-A relies upon, and not every instrument is constructed following these four domains. For example, the Metacognition Assessment Interview (MAI; Semerari *et al.*, 2012) and the Metacognition Assessment Scale – Revised (Mitchell *et al.*, 2012) have also been developed from the same framework. In fact, not every study utilizing the MAS-A or related instruments make use of all four scales: the original Metacognition Assessment Scale (MAS), for instance was constructed along only three domains, with the domain of 'Decentration' as a component of the 'Other' scale). A thorough analysis of findings with these alternative instruments may yield useful information in regards to the (construct) validity of each of the four domains.

These four components (Self-Reflectivity, Understanding the Other's Mind, Decentration and Mastery) are by no means based on a consensus in the field. Quite the contrary: within the metacognitive field, several instruments have been developed which show marked differences in the way metacognition is subdivided into different domains. In recent years, a tentative consensus appears to have been

reached that metacognitive capacity contains at the very least two different subdomains: one pertaining the self, and one pertaining the other. For instance, in 2012, a first study was presented utilizing the Metacognition Assessment Interview (MAI), mainly developed in an effort to measure metacognition more directly and in a less time-consuming manner than with the original MAS-A (Semerari *et al.*, 2012). Like the original MAS-A , the MAI uses a relatively spontaneous speech sample to score metacognitive capacity. It is scored, however, along two functional skill domains ('Self' and 'Other'), each split up into two domains ('monitoring' and 'integration') and a total of sixteen basic 'facets'. The two-factor solution (Self – Other) was generally confirmed in a community sample using factor analysis, though authors note that certain parts of self-reflectivity appeared heavily intertwined with reflection on the minds of others. The sixteen basic facets could not be confirmed. In a follow-up study, the authors collected data from a treatment-seeking population of outpatients (n=306). The sixteen basic facets were abandoned, retaining only the scales Self and Other, each split up into two subdomains (Self; monitoring & integration – Other ; differentiation & decentration). Once more, the MAI demonstrated good psychometric properties in the sense of inter-rater reliability, internal consistency and a two-factor structure. Once more, a few items from the Self scale loaded onto the Other scale and vice-versa, indicating the overlap between self-reflectivity and reflecting on others. Notably, the fit of three models was assessed: two models which included the domains of Self and Other, and one assessing the fit of only one model with only the global factor of metacognition. Both models in which Self – Other were split up proved a better fit than the one factor solution. Additionally, alexithymia was associated with both domains, though stronger related to Self than Other. Difficulties in social interactions were most strongly related to Other, though also related to Self.

The Metacognition Assessment Scale – Revised returns to the three domains specified by the original MAS, and abandons the hierarchical conceptualization of each domain. Instead, specific metacognitive acts are coded on a scale of 1 (Sporadic – poorly articulated, not spontaneous) to 5 (Sophisticated, sustained talk about mental states, rich descriptions). When a specific metacognitive activity does not appear in the context of the interview, raters can opt to score 'Not Engaged' , which does not contribute to the final scoring. In an initial study with the MAS-R (Mitchell *et al.*, 2012), in which scores were compared of a group of persons with a psychotic disorder with a history of interpersonal violence (n=18) to those who did not have a history of violence (n=11), the MAS-R demonstrated a high level of inter-rater reliability. No significant differences were found between the two groups. Interestingly, later investigations on risk of violence (Abu-akel *et al.*, 2015) and metacognition using the MAS-A, including our own, have demonstrated significant associations between metacognitive capacity and a forensic history. Furthermore important to note is that the authors refer to a 'hierarchical pattern of metacognitive ability' not in the sense of more discrete activities towards more synthetic activities, but to a hierarchical pattern in which one first needs to be able to understand one's own mental states before being able to solve problems using mental state information (mastery) and understanding the mind of others. This assertion is founded on this study's (Mitchell *et al.*, 2012) finding that both groups (forensic and not forensic) scored higher on Self reflectivity than Understanding the Other's Mind and Mastery. Our own study, detailed in Chapter 3 of this thesis, finds a significant association between Self-Reflection and a forensic history. We have found no evidence for an association between the Other or Decentration scales and a forensic history, giving some evidence for the notion that reflecting on the Self and Others involve (partly) different capacities.

In a First Episode Psychosis (FEP) sample, a different research group using the MAS-R found associations between the Other scale and negative symptoms, Other and premorbid social functioning and Other – help seeking behavior (Macbeth *et al.*, 2014). Few associations were found with the Self and Mastery scales. In sum: at the moment, ample evidence exists for some form of higher-order socio-cognitive process (and which is thus distinct from more basic capacities such as facial affect recognition or detecting sarcasm). Various theoretical frameworks have made attempts to define the construct and measure it (Dimaggio, Popolo, Salvatore, & Lysaker, 2013). However, at the current stage, it cannot be stated with absolute certainty which of the different constructs (e.g. mentalizing, theory of mind, metacognition) is correct, and by extension which (measurable) factors make up this construct. However, there appears to be considerable evidence for at least separate processes in term of self- and other reflections, including on a neurological level (van der Meer *et al.*, 2010), but the precise mechanism is unknown. Future work will have to demonstrate to what degree the current conceptualization and measurement of metacognition holds. One fruitful avenue for such investigation could be found in a more fundamental approach.

DIRECTIONS FOR FUTURE RESEARCH

Much of the work on metacognition, including the work presented in this thesis, is drawn heavily from clinical observations. In other words: the work is performed with patients, is typically correlational, and is deeply rooted within observations made by clinicians surrounding the difficulties that patients encounter. This has led to a wealth of literature and findings which are subject to interpretation.

What is most lacking, at this stage, is a fundamental approach to the construct of metacognition. If metacognition is, indeed, a human ability which is affected by severe mental disorders such as schizophrenia, then future work should be centered around disentangling metacognition from a perspective in which *deficits* are investigated, so that an overarching theory surrounding the processes underlying this capacity can be formulated and tested. It is perhaps ironic that implicit in this recommendation is the notion that future work surrounding metacognition could (and perhaps should) take place in the much-criticized practice of studying processes within 'healthy' participants often drawn from university campuses. That is, however, precisely what I am suggesting.

Metacognition is closely related to mentalizing and theory of mind, and all three of these constructs appear to have a transdiagnostic character. To demonstrate this transdiagnostic character, however, models need to be generated concerning the way in which these processes a) function in the absence of disorder, b) take place in the brain, and c) how disturbances in metacognition can cause different types of psychopathology, or its inverse: how different types of psychopathology may cause disturbances in metacognition.

Future work regarding psychosocial intervention for psychotic disorders should furthermore be conducted to identify variables predictive of success on existing psychosocial interventions. For instance, to determine whether levels of metacognitive functioning greater than self-reflectivity 5 on the Metacognition Assessment Scale – A (the ability to question one's own thinking) are in fact associated with greater benefit from cognitive behavioral therapy, and which factors influence outcome in metacognitively oriented psychotherapies.

SAMENVATTING

SAMENVATTING (SUMMARY IN DUTCH)

Relatief recentelijk werd opgemerkt dat metacognitie bij psychotische stoornissen een concept is dat de kinderschoenen aan het ontgroeien is ('a concept coming of age'; Brune, 2014). Deze stelling vat op adequate wijze samen dat metacognitie als construct veelbelovend is, maar moeilijk blijft om volledig te vatten in termen van definities en meetinstrumenten. Precies om deze reden is het onderzoek beschreven in dit proefschrift in 2012 gestart: om te onderzoeken of het metacognitieve kader (nieuwe) inzichten kan verschaffen in de aard en behandeling van psychotische stoornissen.

In het eerste hoofdstuk, de introductie, wordt dit construct– en gerelateerde constructen – beschreven in het kader van de bredere term 'sociale cognitie'. De terminologie in het veld is verwarrend, mogelijk doordat verschillende theoretische achtergronden gerelateerde, doch verschillende, interpretaties hebben geproduceerd van de processen die een rol spelen binnen sociale cognitie. Alhoewel het onduidelijk is hoe de verschillende constructen (bijv. Theory of Mind, Empathie) zich tot elkaar verhouden, bestaan er wel verscheidene zeer nuttige en goed-gevalideerde instrumenten die een belangrijke bijdrage kunnen leveren aan klinische en wetenschappelijke testbatterijen.

Het construct metacognitie zoals het werd voorgesteld door Semerari *et al.* (2003), en is uitgebreid door Lysaker *et al.* (2005) levert een belangrijke bijdrage aan het veld van sociale cognitie. Allereerst wordt

metacognitie opgedeeld in vier domeinen: zelfreflectie, begrijpen wat er in de ander omgaat, decentratie en metacognitieve coping (de vaardigheid om psychische problemen te identificeren en hier passende coping bij te vinden). Daarnaast levert het de notie dat metacognitieve vaardigheden een dimensie vormen, van meer 'discrete' activiteiten (enkelvoudige mentale gebeurtenissen of observaties zoals een gedachte opmerkingen in het eigen hoofd) tot meer synthetische activiteiten (het integreren van al deze informatie tot complexe representaties). Deze hierarchie kan worden gebruikt om bestaande meetinstrumenten langs deze as te classificeren, en legt de eerste basis voor een organisatiestructuur of bredere conceptualisatie van het complexe spectrum van het sociaal-cognitieve of metacognitieve domein.

In hoofdstuk twee presenteren wij een onderzoek naar de relatie tussen metacognitie en uitkomsten, dat was gebaseerd op bestaande klinische data. Om precies te zijn onderzochten wij of metacognitieve capaciteit (zoals gemeten met de MAS-A) een invloed had op de gemiddelde arbeidstevredenheid en consistentie van deze beoordelingen bij mensen met een psychotische stoornis die een arbeidsrehabilitietraject volgden (de Jong *et al.*, 2014). Wij vonden dat in de groep die Cognitieve Gedragstherapie (CGT) ontving, betere metacognitieve capaciteit een hogere werktevredenheid voorspelde – een relatie die wij niet vonden in de groep die enkel ondersteunende gesprekken (support) ontving. In de 'Discussie' van dat artikel kaderen wij deze bevindingen in termen van het doel van de behandeling: het (her-)interpreteren van negatieve gebeurtenissen op zo'n manier dat deze het meer globale oordeel over werktevredenheid niet verstoren. In de controlegroep vonden wij dat participanten met hogere metacognitieve capaciteit minder consistent waren in hun beoordelingen van hun werkervaring. Deze gegevens interpreteren wij, met alle voorzichtigheid, in het kader van de

vaardigheid om een genuanceerd beeld te vormen van de werkervaring ('die ruzie met mijn collega was rot, maar over het algemeen heb ik een prima dag op het werk gehad' versus 'ik had een rotdag op het werk').

In hoofdstuk drie onderzochten wij of metacognitieve tekorten bij psychotische stoornissen een risicofactor vormen voor geweld. Onze resultaten suggereren dat alhoewel verscheidene instrumenten onderscheid kunnen maken tussen twee patientgroepen en een controlegroep, enkel de MAS-A en Empathic Accuracy Task differentieren tussen de forensische en niet-forensische patiengroepen. Dit suggereert een unieke bijdrage van deze maten aan het statistisch model van risico op geweld bij psychotische stoornissen.

In hoofdstukken vier, vijf en zes bespreken wij de effectiviteit van een therapie die is ontwikkeld om metacognitie te stimuleren bij psychotische stoornissen. Deze interventie betreft niet zozeer een sessie-voor-sessie protocol, maar is gebaseerd op acht elementen die therapeuten tijdens elke sessie proberen aan te houden. Het eerste element betreft de agenda van de patient: wat zoekt de patient van de therapeut gedurende de sessie? Het tweede element stelt dat de therapeut zijn of haar gedachten over en reacties op de gedragingen van de patient deelt met de patient. Het derde element richt zich op het stimuleren van een narratief van de patient, om er zorg voor te dragen dat het gesprek niet afdwaalt naar abstractie maar juist draait om de concrete ervaringen van de patient. Gecombineerd vloeien deze elementen uit in het vierde element, de notie dat de dyade therapeut-client samen op zoek gaat naar de psychologische problemen die de patient ervaart. Het vijfde element suggereert dat therapeuten continu in de gaten houden wat er gebeurt in het interpersoonlijke proces tussen therapeut en client, terwijl zij met elkaar praten. In het verlengde daarvan ligt het zesde element: er zorg voor dragen dat de therapeut vraagt naar de ervaring van de patient

binnen de sessie, wat kan plaatsvinden aan het eind van de sessie, op verscheidene momenten tijdens de sessie, of beide. Deze zes elementen vormen samen de basis voor de zevende (het stimuleren van zelfreflectie en begrijpen wat er in de ander omgaat) en achtste elementen (stimuleren van metacognitieve coping) door vragen te stellen congruent met, of vlak boven, het niveau van metacognitief functioneren van de client in het moment zelf. In hoofdstuk vier wordt de casus van Abraham besproken; een chronische patient met ernstige symptomen van desorganisatie. De acht elementen van Metacognitive Reflection and Insight Therapy (MERIT) worden gebruikt om sessies te leiden, en de MAS-A wordt gebruikt om specifieke interventies binnen de sessie af te stemmen op de patient. Evaluatie van de twaalf sessies die de client ontving was bemoedigend: het gebruik van de reflectieve, narratieve methode leek erg geschikt voor een patient die waarschijnlijk weinig of geen baat zou hebben bij de huidige evidence-based methodologie van CGT. Aan de andere kant maakt deze casus wel duidelijk dat het proces van verbetering langzaam is. Twaalf sessies waren niet voldoende: er werden maar kleine metacognitieve verbeteringen geobserveerd aan het lagere eind van het spectrum, en het kon niet worden vastgesteld of deze verbeteringen blijvend zouden zijn. Dit is onwaarschijnlijk, gezien bevindingen uit eerdere casussen behandeld middels deze methode (Lysaker *et al.*, 2007).

Deze case study maakte onderdeel uit van een pilotonderzoek gerapporteerd in hoofdstuk vijf. Dit onderzoek was erop gericht om te bepalen of MERIT een therapie is die op tijdsefficiente wijze kan worden overgedragen van de auteur van het protocol op therapeuten, welk niveau van post-training supervisie nodig zou zijn, in hoeverre participanten de therapie zouden accepteren of zouden stoppen met de behandeling, en natuurlijk om data te verzamelen rondom de effectiviteit

van de therapie om power-analyse te sturen voor de multicenter, randomized controlled trial die wij rapporteren in hoofdstuk zes. Onze indruk is bemoedigend: zowel de trainer, supervisor en trainees hadden allen het gevoel dat dit was geslaagd. Post-training supervisie bleek idealiter te bestaan uit wekelijkse supervisie, maar een minimum werd gesteld van eens per twee weken. Participanten leken de therapie te accepteren: negen van de twaalf participanten maakten de behandeling af.

Het patroon van verbetering dat in de pilotstudie werd gevonden, alhoewel niet statistisch significant, gaf blijk van hetzelfde patroon als eerder gevonden in case studies en kleine klinische trials. Participanten lijken relatief snel vooruit te gaan in de capaciteit tot zelf-reflectie en metacognitieve coping. De domeinen van *begrijpen wat er in de ander omgaat* en *decentratie* bleken weerbarstiger: er werden geen resultaten gevonden op deze schalen.

Deze onderzoeken culmineerden in de multicenter, randomized controlled trial die is beschreven in hoofdstuk zes. Zeven therapeuten werden getraind door de eerste auteur van het therapieprotocol gedurende een 3-daagse training. Alhoewel het, net als in de pilot study, moeilijk is om empirisch vast te stellen of een therapiemethode goed is overgedragen, waren ook in deze studie de trainer en trainees het er op basis van o.a. supervisiemomenten over eens dat dit leek te zijn gelukt. Het vinden van participanten bleek echter moeilijker; ons oorspronkelijke protocol specificeerde een gewenste 120 inclusies in het onderzoek, maar konden slechts 70 participanten includeren, ondanks het gegeven dat er verscheidene instellingen betrokken waren bij het onderzoek.

Tijdens het onderzoek werd supervisie uitgevoerd met alle therapeuten

die clienten aan het behandelen waren, tijdens twee-wekelijkse groepssessies via Skype. Het format van deze sessies varieerde enigszins, alhoewel over het algemeen de agenda inhield dat een van de therapeuten een casus inbracht, en moeilijkheden of obstakels kon voorleggen. Het design van dit onderzoek stelt ons niet in staat om enige conclusies te trekken rondom het belang of effectiviteit van deze supervisie, maar het werd over het algemeen goed 'bezocht' door de therapeuten, en de algemene indruk is dat deze sessies therapeuten hielpen, die zich wat geisoleerd voelden door het gebruik van nieuwe technieken met een inherent kleinere basis van evidentie van effectiviteit.

De overkoepelende vraag van deze studie was, natuurlijk, om vast te stellen of participanten zouden verbeteren ten gevolge van de therapie. Wanneer wij de resultaten in deze groep vergelijken met een controlegroep die *Treatment as Usual* ontving, leken participanten in de MERIT groep niet significant meer te verbeteren in metacognitieve vaardigheden zoals gemeten met de MAS-A dan de controlegroep tussen *baseline* en direct na het beeindigen van de 40 sessies therapie. Op 6-maanden follow-up, echter, bleek dat de controlegroep terug was gegaan naar ongeveer hun baseline functioneren, terwijl participanten in de MERIT conditie vooruit bleven gaan op metacognitieve zelfreflectie, zelfs ten opzichte van hun post-meting. Deze bevindingen worden verder versterkt door de bevinding dat het patroon van verbetering consistent is met eerdere case studies, pilot studies (inclusief de onze) en kleinere *trials:* een verbetering op *zelfreflectiviteit* en in kleinere mate *metacognitieve coping*, en geen verbeteringen op *begrijpen wat er in de ander omgaat* en *decentratie*. Er werden geen verbeteringen gevonden op secundaire uitkomstmaten zoals depressie, stigma of kwaliteit van leven.

Wellicht het meest relevant in de klinische context zijn de scores op

zelfreflectiviteit. Gemiddelde scores op deze schaal indiceerden dat participanten significante vooruitgang boekten naar niveau Z5, ofwel de vaardigheid om de eigen gedachten en perspectieven te ziens als veranderbaar en/of foutief. Deze resultaten moeten echter met de nodige voorzichtigheid worden geinterpreteerd, gezien aanzienlijke fluctiaties in scores. Dit niveau (Z5) is echter zeer relevant, aangezien dit theoretisch kan worden gezien als voorwaarde van een succesvolle behandeling middels Cognitieve Gedragstherapie (CGT). Het is mogelijk dat dit inhoudt dat MERIT een mogelijke 'pre-therapie' is voor personen met een ernstige psychiatrische aandoening die geen baat hebben bij CGT. Dit is echter hypothetisch; toekomstig werk zal beter moeten vaststellen dat Z5 inderdaad een preconditie is voor de toepassing van CGT.

Dit proefschrift had ten doel om te onderzoeken of de metacognitieve aanpak een waardevolle toevoeging is aan het veld. Als geheel genomen lijken onze resultaten bemoedigend. Echter is het op dit moment belangrijk om stil te staan bij het verschil tussen het toetsen van een uitkomstmaat (wat wij hebben gedaan) en het toetsen van het onderliggende theoretische model zoals de hierarchische opbouw van metacognitieve vaardigheden (wat wij niet hebben gedaan). Metacognitie is een breed construct, en in onze designs hebben wij één operationalisatie getoetst: de Metacognition Assessment Scale-A. Zodoende kan enkel worden geconcludeerd dat er bemoedigende evidentie is gevonden voor de notie dat metacognitie, *wanneer gedefinieerd als de scores van een persoon op de MAS-A*, gecorreleerd lijken te te zijn aan sommige uitkomstmaten (zoals werkervaring, hoofdstuk 2; en risico op geweld; hoofdstuk 3), en mogelijk een geschikt doel zijn voor psychotherapie *die specifiek is gericht op het verbeteren van functioneren op de domeinen zoals die zijn gedefinieerd door, en gemeten met, de MAS-A.*

REFERENCES

Abu-akel, A., Heinke, D., Gillespie, S. M., Mitchell, I. J., Bo, S., Abu-akel, A., … Bo, S. (2015). Metacognitive Impairments in Schizophrenia Are Arrested at Extreme Levels of Psychopathy : The Cut-Off Effect. *Journal of Abnormal Psychology, 124*(4), 1102–1109. http://doi.org/10.1037/abn0000096

Aghotor, J., Pfueller, U., Moritz, S., Weisbrod, M., & Roesch-Ely, D. (2010). Metacognitive training for patients with schizophrenia (MCT): feasibility and preliminary evidence for its efficacy. Journal of Behavior Therapy and Experimental *Psychiatry, 41*(3), 207–11. http://doi.org/10.1016/j.jbtep.2010.01.004

Blair, R. J. R. (2005). Responding to the emotions of others: dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition, 14*(4), 698–718. http://doi.org/10.1016/j.concog.2005.06.004

Brune, M. (2014). Metacognition in Schizophrenia : A Concept Coming of Age. Israel *Journal of Psychiatry, 51*(1).

Burns, A. M. N., Erickson, D. H., & Brenner, C. A. (2014). Cognitive-Behavioral Therapy for Medication-Resistant Psychosis: A Meta-Analytic Review. *Psychiatric Services, 65*(7), 874–880. http://doi.org/10.1176/appi.ps.201300213

Christopher, J., David, H., Irene, C., Alan, M., & Claire, B. I. (2012). Cognitive behavioural therapy versus other psychosocial treatments for schizophrenia. *Cochrane Database of Systematic Reviews*, (4). http://doi.org/10.1002/14651858.CD008712.pub2.www.cochranelibrary.com

Cosoff, S. J., & Hafner, R. J. (1998). The prevalence of comorbid anxiety in schizophrenia, schizoaffective disorder and bipolar disorder. *The Australian and New Zealand Journal of Psychiatry, 32*(1), 67–72. http://doi.org/10.3109/00048679809062708

De Haan, L., Sterk, B., Wouters, L., & Linszen, D. H. (2013). The 5-year course of obsessive-compulsive symptoms and obsessive-compulsive disorder in first-episode schizophrenia and related disorders. *Schizophrenia Bulletin, 39*(1), 151–160. http://doi.org/10.1093/schbul/sbr077

de Jong, S., Renard, S. B., van Donkersgoed, R. J. M. M., van der Gaag, M., Wunderink, L., Pijnenborg, G. H. M. H. M., & Lysaker, P. H. (2014). The influence of adjunctive treatment and metacognitive deficits in schizophrenia on the experience of work. *Schizophrenia Research, 157*(1–3), 107–11. http://doi.org/10.1016/j.schres.2014.04.017

Dimaggio, G., Popolo, R., Salvatore, G., & Lysaker, P. H. (2013). Mentalizing in schizophrenia is more than just solving theory of mind tasks. *Frontiers in Psychology, 4*(February), 83. http://doi.org/10.3389/fpsyg.2013.00083

Dudley, R., Kuyken, W., & Padesky, C. a. (2011). Disorder specific and trans-diagnostic case conceptualisation. *Clinical Psychology Review, 31*(2), 213–24. http://doi.org/10.1016/j.cpr.2010.07.005

Eichner, C., & Berna, F. (2016). Acceptance and efficacy of metacognitive training (mct) on positive symptoms and delusions in patients with schizophrenia: A meta-analysis taking into account important moderators. *Schizophrenia Bulletin, 42*(4), 952–962. http://doi.org/10.1093/schbul/sbv225

Fonagy, P., Luyten, P., & Bateman, A. (2015). Translation: Mentalizing as Treatment Target in Borderline Personality Disorder. *Personality Disorders: Theory, Research and Treatment, 6(*4), 380–392. http://doi.org/10.1037/per0000113

Gould, R. A., Mueser, K. T., Bolton, E., Mays, V., & Goff, D. (2001). Cognitive therapy for psychosis in schizophrenia: An effect size analysis. *Schizophrenia Research, 48*(2–3), 335–342. http://doi.org/10.1016/S0920-9964(00)00145-6

Gumley, A. (2011). Metacognition, affect regulation and symptom expression: a transdiagnostic perspective. *Psychiatry Research, 190*(1), 72–8. http://doi.org/10.1016/j.psychres.2011.09.025

Hutton, P., Morrison, A. P., Wardle, M., & Wells, A. (2014). Metacognitive Therapy in Treatment-Resistant Psychosis: A Multiple-Baseline Study. Behavioural and Cognitive Psychotherapy, 42(January 2013), 166–185. http://doi.org/10.1017/S1352465812001026

Instituut, Trimbos (2012). *MULTIDISCIPLINAIRE RICHTLIJN SCHIZOFRENIE 2012.* Retrieved February 15, 2017, from https://assets-sites.trimbos.nl/docs/06b5fc38-cf0b-4e43-bac9-7aef4b67a9c5.pdf

Jauhar, S., McKenna, P. J., Radua, J., Fung, E., Salvador, R., & Laws, K. R. (2014). Cognitive-behavioural therapy for the symptoms of schizophrenia: Systematic review and meta-analysis with examination of potential bias. The British Journal of Psychiatry: *The Journal of Mental Science, 204*(1), 20–29. http://doi.org/10.1192/bjp.bp.112.116285

Leucht, S., Arbter, D., Engel, R. R., Kissling, W., & Davis, J. M. (2009). How effective are second-generation antipsychotic drugs? A meta-analysis of placebo-controlled trials. *Molecular Psychiatry, 14*(4), 429–447. http://doi.org/10.1038/sj.mp.4002136

Leucht, S., Pitschel-Walz, G., Abraham, D., & Kissling, W. (1999). Efficacy and extrapyramidal side-effects of the new antipsychotics olanzapine, quetiapine, risperidone, and sertindole compared to conventional antipsychotics and placebo. A meta-analysis of randomized controlled trials. *Schizophrenia Research, 35*(1), 51–68. http://doi.org/10.1016/S0920-9964(98)00105-4

Lysaker, P. H., Buck, K. D., & Ringer, J. (2007). The recovery of metacognitive capacity in schizophrenia across 32 months of individual psychotherapy: A case study. *Psychotherapy Research, 17*(6), 713–720. http://doi.org/10.1080/10503300701255932

Macbeth, A., Gumley, A., Schwannauer, M., Carcione, A., Fisher, R., McLeod, H. J., & Dimaggio, G. (2014). Metacognition, symptoms and premorbid functioning in a First Episode Psychosis sample. *Comprehensive Psychiatry, 55*(2), 268–273. http://doi.org/10.1016/j.comppsych.2013.08.027

Mathew, S. J., & Charney, D. S. (2009). Publication bias and the efficacy of antidepressants. *American Journal of Psychiatry, 166*(2), 140–145. http://doi.org/10.1176/appi.ajp.2008.08071102

McEvoy, P. M., Nathan, P., & Norton, P. J. (2009). Efficacy of Transdiagnostic Treatments: A Review of Published Outcome Studies and Future Research Directions. *Journal of Cognitive Psychotherapy, 23*(1), 20–33. http://doi.org/10.1891/0889-8391.23.1.20

McKenna, P., & Kingdon, D. (2014). Has cognitive behavioural therapy for psychosis been oversold? *BMJ, 348*(mar25 2), g2295–g2295. http://doi.org/10.1136/bmj.g2295

Mitchell, L. J., Gumley, A., Reilly, E. S., Macbeth, A., Lysaker, P. H., Carcione, A., & Dimaggio, G. (2012). Metacognition in forensic patients with schizophrenia and a past history of interpersonal violence: an exploratory study. *Psychosis, 4*(1), 42–51. http://doi.org/10.1080/17522439.2011.630098

Moncrieff, J., & Kirsch, I. (2005). Efficacy of antidepressants in adults. *BMJ : British Medical Journal, 331*(7509), 155–157. http://doi.org/10.1136/bmj.331.7509.155

Moritz, S., Kerstan, A., Veckenstedt, R., Randjbar, S., Vitzthum, F., Schmidt, C., … Woodward, T. S. (2011). Further evidence for the efficacy of a metacognitive group training in schizophrenia. *Behaviour Research and Therapy, 49*(3), 151–7. http://doi.org/10.1016/j.brat.2010.11.010

Moritz, S., Veckenstedt, R., Bohn, F., Hottenrott, B., Scheu, F., Randjbar, S., … Roesch-Ely, D. (2013). Complementary group Metacognitive Training (MCT) reduces delusional ideation in schizophrenia. *Schizophrenia Research, 151*(1–3), 61–9. http://doi.org/10.1016/j.schres.2013.10.007

Moritz, S., Werner, D., Menon, M., Balzan, R. P., & Woodward, T. S. (2015). Jumping to negative conclusions – a case of study-gathering bias? *Psychological Medicine*, (February 2016), 1–3. http://doi.org/10.1017/S0033291715002068

Morrison, A. P., Pyle, M., Chapman, N., French, P., Parker, S. K., & Wells, A. (2014). Metacognitive therapy in people with a schizophrenia spectrum diagnosis and medication resistant symptoms: a feasibility study. *Journal of Behavior Therapy and Experimental Psychiatry, 45*(2), 280–4. http://doi.org/10.1016/j.jbtep.2013.11.003

NICE. (2014). *Psychosis and schizophrenia in adults: prevention and management.* Retrieved from nice.org.uk/guidance/cg178

Ochoa, S., López-Carrilero, R., Barrigón, M. L., Pousa, E., Barajas, A., Lorente-Rovira, E., … Moritz, S. (2017). Randomized control trial to assess the efficacy of metacognitive training compared with a psycho-educational group in people with a recent-onset psychosis. *Psychological Medicine, 1–12.* http://doi.org/10.1017/S0033291716003421

Poyurovsky, M., & Koran, L. M. (2005). Obsessive-compulsive disorder (OCD) with schizotypy vs. schizophrenia with OCD: Diagnostic dilemmas and therapeutic implications. *Journal of Psychiatric Research, 39*(4), 399–408. http://doi.org/10.1016/j.jpsychires.2004.09.004

Poyurovsky, M., Weizman, A., & Weizman, R. (2004). Obsessive-compulsive disorder in schizophrenia: Clinical characteristics and treatment. *CNS Drugs, 18*(14), 989–1010. http://doi.org/10.2165/00023210-200418140-00004

Rector, N. A., & Beck, A. T. (2012). Cognitive behavioral therapy for schizophrenia: an empirical review. *The Journal of Nervous and Mental Disease, 200*(10), 832–839. http://doi.org/10.1097/NMD.0b013e31826dd9af

Rodriguez, C. I., Corcoran, C., & Simpson, H. B. (2010). Diagnosis and Treatment of a Patient With Both Psychotic and Obsessive-Compulsive Symptoms. *American Journal of Psychiatry, 167*(7), 754–761. http://doi.org/10.1176/appi.ajp.2009.09070997

Schirmbeck, F., Swets, M., Meijer, C. J., Zink, M., de Haan, L., Kahn, R. S., … Bartels, A. (2016). Longitudinal association between cognitive performance and obsessive-compulsive symptoms in patients with psychosis and unaffected siblings. *Acta Psychiatrica Scandinavica, 133*(5), 399–409. http://doi.org/10.1111/acps.12558

Semerari, A., Cucchi, M., Dimaggio, G., Cavadini, D., Carcione, A., Battelli, V., … Smeraldi, E. (2012). The development of the Metacognition Assessment Interview: Instrument description, factor structure and reliability in a non-clinical sample. *Psychiatry Research, 200*(2–3), 890–895. http://doi.org/10.1016/j.psychres.2012.07.015

Smith, G. T. (2005). On construct validity: issues of method and measurement. *Psychological Assessment, 17*(4), 396–408. http://doi.org/10.1037/1040-3590.17.4.396

Turner, D. T., van der Gaag, M., Karyotaki, E., & Cuijpers, P. (2014). Psychological interventions for psychosis: A meta-analysis of comparative outcome studies. *American Journal of Psychiatry, 171*(5), 523–538. http://doi.org/10.1176/appi.ajp.2013.13081159

Turner, E. H., Matthews, A. M., Linardatos, E., Tell, R. A., & Rosenthal, R. (2008). Selective Publication of Antidepressant Trials and Its Influence on Apparent Efficacy. *The New England Journal of Medicine, 358*(20), 252–260.

van Dael, F., van Os, J., de Graaf, R., ten Have, M., Krabbendam, L., & Myin-Germeys, I. (2011). Can obsessions drive you mad? Longitudinal evidence that obsessive-compulsive symptoms worsen the outcome of early psychotic experiences. *Acta Psychiatrica Scandinavica, 123*(2), 136–146. http://doi.org/10.1111/j.1600-0447.2010.01609.x

van der Gaag, M., Valmaggia, L. R., & Smit, F. (2014). The effects of individually tailored formulation-based cognitive behavioural therapy in auditory hallucinations and delusions: A meta-analysis. *Schizophrenia Research, 156*(1), 30–37. http://doi.org/10.1016/j.schres.2014.03.016

van der Heiden, C., Muris, P., & van der Molen, H. T. (2012). Randomized controlled trial on the effectiveness of metacognitive therapy and intolerance-of-uncertainty therapy for generalized anxiety disorder. *Behaviour Research and Therapy, 50*(2), 100–109. http://doi.org/10.1016/j.brat.2011.12.005

van der Heiden, C., van Rossen, K., Dekker, A., Damstra, M., & Deen, M. (2016). Metacognitive therapy for obsessive-compulsive disorder: A pilot study. *Journal of Obsessive-Compulsive and Related Disorders, 9*, 24–29. http://doi.org/10.1016/j.jocrd.2016.02.002

van der Meer, L., Costafreda, S., Aleman, A., & David, A. S. (2010). Self-reflection and the brain: A theoretical review and meta-analysis of neuroimaging studies with implications for schizophrenia. *Neuroscience and Biobehavioral Reviews, 34*(6), 935–946. http://doi.org/10.1016/j.neubiorev.2009.12.004

van Oosterhout, B., Smit, F., Krabbendam, L., Castelein, S., Staring, a B. P., van der Gaag, M., … van der Gaag, M. (2015). Metacognitive training for schizophrenia spectrum patients: A meta-analysis on outcome studies. *Psychological Medicine, 8(*August 2016), 1–11. http://doi.org/10.1017/S0033291715001105

van Os, J. (2014). *De DSM-5 voorbij.* Leusden: Diagnosis Uitgevers.

Wells, A. (2009). *Metacognitive Therapy for Anxiety and Depression.* New York: The Guilford Press.

Wykes, T. (2014). Cognitive-behaviour therapy and schizophrenia. *Evidence Based Mental Health, 17*(3), 67–68. http://doi.org/10.1136/eb-2014-101887

Wykes, T., Steel, C., Everitt, B., & Tarrier, N. (2008). Cognitive behavior therapy for schizophrenia: Effect sizes, clinical models, and methodological rigor. *Schizophrenia Bulletin, 34*(3), 523–537. http://doi.org/10.1093/schbul/sbm114

Zink, M. (2014). Comorbid Obsessive-Compulsive Symptoms in Schizophrenia: Insight into Pathomechanisms Facilitates Treatment. *Adv Med,* 2014, 317980. http://doi.org/10.1155/2014/317980

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van Donkersgoed, R.J.M., **de Jong, S.**, aan het Rot, M., Wunderink, L., Lysaker, P.H., Hasson-Ohayon, I., Aleman, A., Pijnenborg, G.H.M. Measuring empathy in schizophrenia: the Empathic Accuracy Task and its correlation with other empathy measures. Under revision.

Arnon-Ribenfeld, N., Bloom, R., Atzil-Slonim, D., Peri, T., **de Jong, S.**, Hasson-Ohayon, I. (in press). Metacognitive Reflection and Insight Therapy (MERIT) among people with schizophrenia: lessons from two case studies. *American Journal of Psychotherapy.* (In press)

de Jong, S., van Donkersgoed, R. J. M., Arends, J., Lysaker, P. H., Wunderink, L., van der Gaag, M., Aleman, A., Pijnenborg, G. H. M. (2016). Metacognitie bij psychotische stoornissen : van concept naar interventie. *Tijdschrift Voor Psychiatrie,* (6), 455–462.

de Jong, S., van Donkersgoed, R. J. M., Aleman, A., van der Gaag, M., Wunderink, L., Arends, J., Lysaker, P.H., Pijnenborg, G. H. (2016). Practical Implications of Metacognitively Oriented Psychotherapy in Psychosis. *The Journal of Nervous and Mental Disease, 204*(9), 713–716. http://doi.org/10.1097/NMD.0000000000000564.

van Donkersgoed, R. J. M., **de Jong, S.**, & Pijnenborg, G. H. M. (2016). Metacognitive Reflection and Insight Therapy (MERIT) with a Patient with Persistent Negative Symptoms. *Journal of Contemporary Psychotherapy, 72*(2), 164–174. http://doi.org/10.1007/s10879-016-9333-8

de Jong, S., van Donkersgoed, R., Pijnenborg, G. H. M. (2016). Metacognitive Reflection and Insight Therapy (MERIT) With a Patient With Severe Symptoms of Disorganization. *Journal of Clinical Psychology, 72*(0). http://doi.org/10.1002/jclp.22249

van Kleef, R. S., van Donkersgoed, R. J. M., **de Jong, S.** (2015). Metacognition in Relation to Cognitive and Social Functioning in Schizophrenia. *Journal of European Psychology Students, 6*(3), 24–33, doi: http://dx.doi.org/10.5334/jeps.df

de Jong, S., Renard, S.B., van Donkersgoed, R., van der Gaag, M., Wunderink, L., Pijnenborg, G.H.M., Lysaker, P.H. (2014) The influence of adjunctive treatment and metacognitive deficits in schizophrenia on the experience of work. *Schizophrenia Research, 157*(1-3), 107–11. doi:10.1016/j.schres.2014.04.017

Lysaker, P. H., Vohs, J., Hamm, J. A., Kukla, M., Minor, K. S., **de Jong, S.**, van Donkersgoed, R.J., Pijnenborg, G.H.M., Kent, J.S., Matthews, S. C., Ringer, J.M., Leonhardt, B.L., Francis, M.M., Buck, K.D., Dimaggio, G. (2014). Deficits in metacognitive capacity distinguish patients with schizophrenia from those with prolonged medical adversity. *Journal of Psychiatric Research.*

Lysaker, P. H., Leonhardt, B. L., Pijnenborg, G.H.M., van Donkersgoed, R.J., **de Jong, S.,** & Dimaggio, G. (2014). Metacognition in Schizophrenia Spectrum Disorders: Methods of Assessment and Associations with Neurocognition , Symptoms, Cognitive Style and Function. *Israel Journal of Psychiatry and Related Sciences, 51*(1).

van Donkersgoed, R. J.M., **de Jong, S.**, Van der Gaag, M., Aleman, A., Lysaker, P. H., Wunderink, L., & Pijnenborg, G.H.M. (2014). A manual-based individual therapy to improve metacognition in schizophrenia: protocol of a multi-center RCT. *BMC Psychiatry, 14*(1), 27. doi:10.1186/1471-244X-14-27

de Jong, S., van der Krieke, L., Malda, A., & Boonstra, N. (2013). Serious Gaming: Een bestaande behandeling in een modern jasje. *Psychopraktijk, 3,* 34–37.

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