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Metacognitive Changes in Individuals with Severe Mental Illness in Response to Psychoanalytic Therapy

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Metacognitive Changes in Individuals with Severe Mental Illness

in Response to Psychoanalytic Therapy

by

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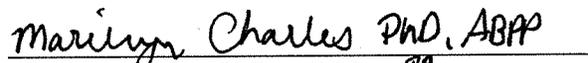
in Response to Psychoanalytic Therapy

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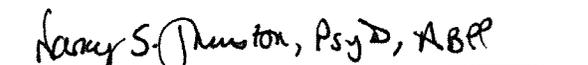
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Metacognitive Changes in Individuals with Severe Mental Illness

in Response to Psychoanalytic Therapy

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Abstract

Objectives. Metacognitive deficits are thought to be closely related to functional impairment in a variety of mental health disorders. Understanding metacognitive differences between groups may provide insight into etiology and treatment of mental illness. This study sought to investigate group differences in metacognition and metacognitive changes over time in response to long-term psychodynamic psychotherapy amidst a population with severe mental illness diagnoses, specifically borderline personality disorder (BPD), narcissistic personality disorder (NPD), and schizoid personality disorder (SPD).

Methods. Twenty-eight participants meeting inclusion criteria were selected from amongst participants in the Austen Riggs Center's (ARC) 11-year Follow-Along Study (FAS). For each participant, two archived transcripts of Dynamic Interviews administered at least six months apart were rated using the abbreviated Metacognitive Assessment Scale (MAS-a), which provides scores for metacognitive functioning across four separate but interdependent domains

of functioning. Raters had experience and training on the MAS-a and were blinded to personality disorder group assignment of the FAS participants. Group differences and change over time were assessed using a general linear model regression with metacognitive scores for occasion one as a covariate and scores for occasion two as the dependent variable.

Results. Metacognitive scores improved over time in response to treatment for the sample as a whole. Treatment effect sizes were medium to large. However, group differences were negligible. Effect sizes for individual groups indicate possible differences in the way that groups change over time. NPD group exhibited no change in *Awareness of Others*, but had a large effect size in the category of *Mastery*. Large effect sizes in the category of *Self-Reflectivity* were found for SPD and BPD groups. BPD demonstrated lower *Mastery* scores than NPD or SPD.

Conclusions. Evidence for metacognitive improvement over time for the sample as a whole suggests treatment at ARC is effective. Differences in effect sizes in change over time between groups may suggest that personality disorder diagnosis influences treatment outcomes, a hypothesis that may be more readily testable with a larger sample. Generalizability of results is limited by the relatively small size of sample subgroups and by the unique patient population and unique treatment setting of ARC.

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Chapter 1

Introduction

Treating individuals with severe mental illness—specifically severe personality disorders—has always been a complicated endeavor. Those who meet criteria for diagnosis seldom respond well to medication, they find it difficult to access services, and are often stigmatized and socially rejected. Their lives are marked by a poorly integrated sense of self, a lack of ego strength, and chronically tumultuous interpersonal relationships. Individuals with personality disorders, in general, have difficulty problem solving; communicating and advocating for their needs and desires; accessing social support; finding satisfaction in work, love, and play; and even understanding the nature of their illness. From a treatment perspective, personality disorders create unique problems for therapists, who must learn to connect with and build a strong therapeutic alliance with individuals who struggle to do just that. Personality disorders also exhibit higher comorbidity than traditional Axis I disorders (Clark, 2005; Clark, 2007), complicating treatment all the more.

Numerous studies over the last several decades substantiate the efficacy of psychotherapy for personality disorders (Bateman, Campbell, Luyten, & Fonagy, 2018; Cristea et al., 2017; Dimaggio et al., 2017; Shedler, 2010). However, the majority of these studies (for notable exceptions, see Arnevik et al, 2009; Bamelis, Evers, Spinhoven, & Arntz, 2014; Budge et al., 2013; Kramer, Pascural-Leone, Rohde, & Sachse,, 2016; Muran, Safran, Samstag, & Winston, 2005) have focused primarily on treating borderline personality disorder (BPD; Gask, Evans, &

Kessler, 2013), and evidence suggests there are stark differences between BPD and other PDs. For example, in contrast to classic BPD symptoms of impulsivity, emotional dysregulation, chaotic interpersonal relations, and poor distress tolerance (MacKinnon, Michels, & Buckley, 2016), obsessive-compulsive, avoidant, paranoid, and dependent personality disorders are notable for overregulation of emotion (Lynch & Cheavens, 2008; Lynch, Hempel, & Clark, 2016), inhibition of affect (Popolo et al., 2014), and avoidance of social contact (Dimaggio et al., 2017).

While Narcissistic Personality Disorder (NPD) overlaps with BPD in terms of emotional dysregulation (Maples et al., 2010), such dysregulation is thought to arise for different reasons and from different core pathologies (Akhtar, 1987; Kernberg, 1967; Kernberg, 1970; Kernberg, 1975; Mitchell & Black, 1995). Elements of self-pathology are frequently expressed differently in NPD as well, with NPD individuals exhibiting perfectionistic standards, remaining interpersonally distant and aloof (Ronningstam & Weinberg, 2013), and eliciting different countertransference reactions from therapists than those with BPD (Colli, Tanzilli, Dimaggio, & Lingiardi, 2014; Dimaggio et al., 2017). Generalizability of the evidence-base for treatment of BPD is therefore limited, and there is a need for a greater understanding of what works for whom when it comes to treating personality disorders. Additionally, while the efficacy of treatment for BPD is now well substantiated, little is known about the mechanism of change in the course of therapy. Patients improve in specialized treatments such as Dialectical Behavioral Therapy (DBT), Mentalization-based Treatment (MBT), and Transference-focused Psychotherapy (TFP), but they also improve in treatment as usual comparison groups (Bateman et al., 2018). Further research is needed.

Psychoanalysis has a long history of treating personality-disordered individuals (Fonagy, 1991; Kernberg, 1975; Kohut, 1971) and has developed robust and useful theories for understanding such disorders and their differences. However, the use of psychoanalysis in cases of severe mental illness (SMI)—psychosis, more severe personality disorders—has remained controversial despite empirical support (Chiesa, Fonagy, & Holmes, 2003), with many questioning whether those with SMI have the capacity for insight and ego strength needed to tolerate the anxiety, intimacy, and intensity associated with psychoanalysis. Dialectical Behavioral Therapy (DBT; Linehan, 1993)—a behaviorally focused and highly regimented manualized treatment program also originally designed for BPD—is often recommended as the "gold standard" of personality disorder treatment in lieu of psychoanalysis. Additionally, the psychoanalytic mode of treatment—often individual therapy multiple times a week over the course of years—creates methodological problems for empirically studying the nature personality disorders and measuring outcomes, and is often thought to be cost-prohibitive for many individuals.

Diagnosis of personality disorders remains controversial as well. High comorbidity and within-diagnosis heterogeneity between disorders, marked temporal instability, the lack of clear boundaries between normal and pathological personality, and poor convergent and discriminant validity for diagnostic categories, all undermine diagnostic reliability with regard to both the 4th (American Psychiatric Association [APA], 2000) and 5th (APA, 2013) editions of the *Diagnostic and Statistical Manual of Mental Disorders* (Bateman et al., 2018; Skodol et al., 2011;). Within the psychoanalytic literature on personality disorders, matters are complicated in that the term borderline personality organization is a descriptor used to describe a level of functioning and

intrapsychic structure for multiple disorders (Kernberg, 1970; Kernberg, 1984), while Borderline

Personality Disorder now refers to a discrete personality disorder (Gunderson, 1982, Hamilton,

1996; Hamilton et al., 1984; Kernberg et al., 1981). Additionally, recent findings by Sharp et al.

(2015) support the idea of a general psychopathology "p" factor underlying all personality

disorders, but with various personality disorders showing additional loading onto specific "s"

factors. Interestingly, BPD loads most significantly onto this "p" factor, but fails to load onto any

of the other "s" factors. Again, this highlights the lack of generalizability between BPD and other

personality disorders, as well as the convoluted nature of the present diagnostic system.

Metacognition

One promising but lesser known pathway for understanding and treating personality

disorders, and for providing clinicians with a way to measure and monitor change over the

course of psychotherapy, even in psychoanalysis, is through the theoretical and empirical study

of metacognition (Dimaggio & Lysaker, 2010; Semerari et al, 2003;). Broadly speaking,

metacognition refers to "a thought about a thought". More specifically, Lysaker and Klion

(2016) define metacognition as "a mental act in which a person forms a thought or an idea about

his or her own or another's mental activities" (p. 17). Related to but different from similar terms

such as mentalization (Fonagy & Bateman, 2006) and social cognition, metacognition is more

than simply just thinking about one's own or another's thoughts, but includes processes by which

individuals use these abilities to problem solve and to cope with mental distress (Lysaker &

Klion, 2016; Semerari et al., 2003). Metacognition is thought to play a critical role in human

relationships and adaptive human functioning (Fodor, 1983, Lysaker & Klion, 2016), and

problems with metacognition are thought to be equally important in the psychopathology of

severe mental illness (DiMaggio & Lysaker, 2010). Through a metacognitive lens, symptoms associated with personality disorders can be conceptualized as related to impairment in one's capacity to think about one's own thoughts about oneself, about the actions and intentions of others, and about one's place in the world; and impairment in using these thoughts about thoughts to reach one's goals and overcome psychosocial difficulties.

Metacognitive Impairments in SMI populations. Metacognitive impairments have been observed across the spectrum of SMI—including within personality disordered individuals (Dimaggio & Lysaker, 2010)—and manifest in a variety of ways. Individuals with SMI may struggle making sense of their own thoughts and feelings. It may be difficult for them to imagine the mind of another—a key component of empathy/emotional intelligence/social cognition—and to make plausible guesses about how someone is feeling or what someone else is thinking. One person may not be able to put words to feelings, while another may have trouble labeling or distinguishing between emotions and affective states in nuanced ways. Other persons may struggle to make sense of, interpret, or become aware of the intentions of those around them. It may be difficult to infer intentions from action, and one may have difficulty comprehending how his or her actions affect others (Dimaggio & Lysaker, 2010). It may be hard to imagine others with independent motives and goals, and some individuals may not even think about the feelings, thoughts, or intentions of others, let alone themselves.

Problems associated with Metacognitive Impairments. One can imagine the problems that might arise when someone is unable to think effectively about their own or others' thoughts and ideas. Dimaggio and Lysaker (2010) noted metacognitively impaired individuals are often unable to recognize subtle emotional and behavioral cues in others—and in themselves—and

respond in a prosocial manner; their ability form meaningful relationships is severely limited.

They struggle to recognize the nature of their difficulties and seek out support and, with limited

reflective capacity, they are often unable to find meaning and satisfaction in work, love, and

leisure. They additionally note individuals with metacognitive impairment not only struggle with

discrete metacognitive abilities, as noted above, but they often struggle with integrating their

thoughts into a coherent narrative about themselves and others. Like puzzle pieces that just will

not fit together, they cannot integrate thoughts, feelings, and perceptions into effective problem-

solving strategies. As multiple studies outlined in the pages that follow suggest, difficulties in

these areas can be accompanied by severe psychopathology (Perris & Skagerlind, 1998) and

indeed may even contribute to the development of severe mental illness (Dimaggio & Lysaker,

2010).

Metacognition, Personality Disorders, and Psychoanalysis -The Current Study

Understanding personality dysfunction in terms of metacognitive impairment creates a

unique opportunity to better understand both the nature of severe personality disorders and their

treatment. Especially as it pertains to the psychoanalytic treatment of personality disorders,

metacognition provides a useful bridge between difficult-to-measure theoretical ideas about the

inner workings of the personality disordered mind, treatment methodology and focus, and

manifest symptoms that are often chaotic and destructive (Yang, Coid, & Tyrer, 2010). Building

on this unique synergy, this study seeks to use the concept of metacognition and a metacognitive

assessment tool to measure treatment outcomes for personality disorders in a psychoanalytic

treatment community and also to attempt to better understand unique metacognitive differences

between different personality disorders in the same setting. The following sections outline the

historical development of the concept of metacognition, provide a working definition of metacognition, and compare and contrast it with similar but different concepts. Contemporary findings in metacognition research and innovative treatment modalities are then highlighted, and the limitations of measuring metacognition will be explored. Next, the metacognition assessment scale MAS and its successor, the abbreviated metacognition assessment scale (MAS-a), will be described in detail, followed by an outline of how we used the scale in order to attempt to examine metacognitive differences and changes over time in a population with severe mental illness—specifically individuals with either borderline personality disorder, narcissistic personality disorder, or schizoid personality disorder—at the Austen Riggs Center, a long-term inpatient psychoanalytic psychiatric hospital.

Historical Development of Metacognition

Although the study of metacognition officially began in the late 1970s and early 1980s, previous research had already begun examining the ways in which individuals think about their own thoughts. Social psychology research on cognitive dissonance and self-attribution demonstrated our predisposition to attribute meaning to our experiences (Bem, 1967; Schachter & Singer, 1962), and through close observation of children, specifically through *False Belief* experiments, developmental psychologists have similarly inferred that the growth of mental processes throughout childhood allow young people to formulate and modify expectations and beliefs about the minds of one another (Astington & Baird, 2005; Wimmer & Perner, 1983; Wellman, Cross, & Watson, 2001).

Early formulations of metacognitive theory and the emerging hypothesis that metacognition plays a central role in mental illness were also supported by autism research. For

example, using a *false-belief* study, Baron-Cohen, Leslie, and Frith (1985) observed significantly worse performance in a group of autistic children than in a control group of children with Down's syndrome when tasked with guessing where a doll would look for a ball that had been moved when the doll was not present. The researchers hypothesized that individuals with autism may lack an ability to form theories about what might be transpiring in the minds of others (Theory of Mind). They proposed that such deficits could contribute to explaining the difficulties autistic children experience with interpersonal connection and socialization. Contemporary theorists (Sharp, Croudace, & Goodyer, 2007) similarly argue that biases and or distortions in the way individuals make sense of their social environment may impair pro-social development and may compromise mental health and maintain or result in emotional and behavioral disturbances.

Metacognition research advanced significantly as divergent branches of research including education, the cognitive sciences, and developmental psychology began to understand that mental processes involve more than just taking in information and problem solving, they involve reflecting on those thoughts and feelings and bits of information in such a way that the individual is able to make meaning of his or her experience (Dimaggio & Lysaker, 2010; Flavell, 1979). Furthermore, metacognitive researchers theorized that through metacognitive processes—forming mental representations of self and others, considering and making sense of one's own feelings and emotions, and caring deeply about and trying to ascertain the desires and intentions of others—individuals create mental models and develop processes that inform and guide thoughts, feelings, and behaviors, and that influence conceptualizations of self and others (Dimaggio & Lysaker, 2010; Fodor, 1983).

In the 1990s and early 2000s, researchers began exploring the role of metacognition in serious mental disorders among adults. Stiles and colleagues (1990) noted deficiencies in awareness of disturbing thoughts and limited abilities to label emotions in people with depressive disorders. Stiles and colleagues also reported increased efficacy in coping with thoughts and feelings as those patients became more aware of their problematic mental states. Based on his own experiences with individuals with borderline personality disorder, Fonagy (1991) hypothesized that deficits in metacognitive functioning may reflect not only developmental impairment but an implicit interpersonal defensive strategy that emerged in threatening social environments. Additionally, Firth (1992) hypothesized that difficulty recognizing and making sense of one's own mental states and the mental states of others was a stable, central feature in schizophrenia.

Metacognition Defined

Attempting to bring clarity and some degree of organization to ideas about metacognition, Semerari (1999) conceptualized metacognitive processes as a metacognitive system, with a set of functions that work both separately or together and can similarly be impaired separately or as a whole. Semerari and colleagues (2003) described three main categories of metacognition, namely awareness of self, awareness of the mind of another, and mastery, or the ability to use effective strategies to cope with relational and psychological distress. In time, Lysaker, Buck, and Hamm (2015) added the ability to see that others have separate lives with their own independent motives and equally valid perspectives as a key metacognitive ability termed *decentration*. They integrated *decentration* with Semerari's three categories into their theoretical formulation of metacognition and into a formal assessment tool,

to be described later in this paper. Both Semerari (1999) and Lysaker, Buck, et al. (2015) proposed these processes as interrelated, overlapping, and consistently interacting, enhancing or limiting social adaption and problem solving (Dimaggio, Lysaker, Carcione, Nicolo, & Semerari, 2008).

Dimaggio and Lysaker (2010) recognize the overlap between metacognition and other related concepts such as social cognition (which includes the concept of theory of mind developed by Premack & Woodruff, 1978), mentalization, and mindfulness and emotional intelligence. Important differences are noted, however. Both social cognition and metacognition focus on the way in which people form ideas about social exchanges (Davis et al., 2016; Pinkham et al., 2014), but metacognition is less concerned with accuracy of a person's ideas than with the complexity, adaptiveness, and flexibility of mental representations (Davis et al., 2016). The construct of *Mentalization*, developed by psychoanalyst Peter Fonagy and colleagues (Fonagy, Gergely, Jurist, & Target, 2002) and also closely related to metacognition, focuses on genuine versus less genuine forms of integrated self-reflection (Fonagy et al, 2002; Lysaker & Klion, 2016). However, mentalization emphasizes that impairments in the capacity for self-reflection and for reflecting on the thoughts of others arise primarily in the context of ruptured attachment. Metacognition research, on the other hand, sees metacognition and attachment as potentially independent (Outcalt et al., 2015; Lysaker & Klion, 2016), with integrative processes existing outside of the interpersonal context. This leaves room for metacognitive impairment to develop for reasons other than attachment rupture (memory, attention issues), or for metacognition to remain intact despite abuse, neglect, or relational trauma (Davis et al., 2016; Lysaker & Klion, 2016). Additionally, in metacognition as defined by Semerari and Lysaker and

colleagues, an individual's ability to form complex ideas about the self and others is understood

as separate from his or her ability to make use of that information in adaptive ways. Stark

differences in these process are sometimes seen in borderline personality-disordered individuals,

where those individuals have great difficulty successfully solving psychological problems,

despite being able to form complex ideas and mental representations about the self and others

(Lysaker & Klion, 2016; Semerari et al., 2014). The concepts of mindfulness and emotional

intelligence are similar to metacognition in that they both emphasize increasing self-awareness

and insight into the emotional experiences of others. Metacognition research however,

specifically research related to the development of Metacognitive Reflection and Insight Therapy

(MERIT), a loosely manualized treatment modality based on metacognition, has created an

incremental and developmental model for understanding how these processes are integrated into

a higher order framework for understanding and interacting with self and others, and how such

processes can go awry. Such a model is lacking for both mindfulness and emotional intelligence

(Lysaker & Klion, 2016).

     Differences between metacognition and related concepts are sufficient to warrant ongoing

study and exploration of metacognition as a unique and central aspect of the human psyche, both

in normal and abnormal psychology. DiMaggio and Lysaker (2010) propose a comprehensive

definition of metacognition:

> reflections on self and social experience (Semerari et al., 2003), to the set of skills which
>
> makes it possible to use cues such as bodily signals, facial expressions or overt behaviors
>
> to grasp one's own underlying emotions, thoughts and intentions as well as the emotions,
>
> thoughts and intentions of others (Semerari et al., 2007). It includes the ability to reason

about the contents of experience and, of the utmost importance, pragmatically to use

knowledge of mental states to cope with suffering, to find solutions when faced with

conflicting emotions, to negotiate with significant others the meaning of experience and

to adapt to the social environment and find ways to reach goals (p. 4).

Lysaker and Klion (2016) additionally note metacognition is not just an awareness of these

processes of thinking about one's thoughts and the thoughts of others, but a developmental and

incremental process moving towards higher and higher levels of integration, and that can be

studied and subject to direct intervention.

In this study, Lysaker's and colleagues definitions of metacognition are used to frame the

investigation of metacognition and metacognitive change. Lysaker and Klion's (2016)

understanding of metacognition as a developmental and incremental process likewise provides a

useful framework for measuring metacognitive differences and change over time.

Contemporary Metacognitive Findings

Metacognitive impairment in Schizophrenia samples. A significant amount of the

current research on metacognition has been conducted on samples of individuals with

schizophrenia spectrum diagnoses, and much of this research evidences significant

metacognitive impairment in schizophrenia samples (Lysaker & Dimaggio, 2014). Deficits in

metacognition assessed within the narratives of 61 men with schizophrenia were linked to

increased symptoms, poorer quality of life, problems with neurocognition, and poorer awareness

of illness (Lysaker et al., 2005). Lower metacognitive scores have been associated with an

increase in the number of severe negative symptoms (Lysaker et al., 2005; Nicolò et al., 2012;

Rabin, Hasson-Ohayon, Avidan et al, 2014) and predictive of future negative symptoms (Hamm

et al., 2012). They have also been linked with lower levels of functional competence (Lysaker, McCormick, et al., 2011), a poorer subjective sense of recovery (Kukla, Lysaker, & Salyers, 2013), problems with therapeutic alliance (Davis, Eicher, & Lysaker, 2011), a decreased ability to deflect stigma (Nabors et al., 2014) and related to histories of impulsive violence in forensic patients (Bo, Abu-Akel, Bertelsen, Kongerlev, & Haarh, 2013; Bo, Abu-Akel, Kongerslev, Haahr, & Bateman, 2014). Metacognitive scores have been shown to predict future vocational function in schizophrenia samples (Lysaker, Dimaggio, Carcione, et al., 2010), as well as to mediate the impact of neurocognitive deficits of social function (Lysaker, Shea, et al., 2010). Lysaker and colleagues (2012) also found that study participants with schizophrenia had significantly more metacognitive deficits than a sample of participants with HIV, suggesting metacognitive deficits are more than just a downstream consequence of lifetime adversity. Lysaker and Dimaggio note that in the majority of these studies, the relationships between metacognition and levels of function remained even when controlling for neurocognitive impairment and severity of symptoms (Lysaker & Dimaggio, 2014). Please see Lysaker, Vohs, et al. (2013) for a comprehensive review.

Metacognitive impairment in various psychiatric populations. Metacognitive deficits extend beyond the domain of schizophrenia and across the spectrum of mental illness. Morrison and Wells (2003) found psychotic patients who experience auditory hallucinations exhibited higher levels of dysfunctional metacognitive beliefs than either patients with schizophrenia-spectrum disorders with persecutory delusions, patients with anxiety disorders, or a non-patient control group. They also found that patients with persecutory delusions and those with anxiety disorders experienced a similar number of dysfunctional metacognitive beliefs, and that both

groups had higher scores than the non-patient group. Morrison and colleagues (Morrison et al..

2011) also found associations between specific metacognitive beliefs and symptom presentation

in a SMI sample, with negative metacognitive beliefs about paranoia resulting in greater distress

and positive metacognitive beliefs about paranoia resulting in greater degree of paranoid

delusions. Additionally, Vohs and colleagues (2014) found comparable metacognitive scores in

both first episode and prolonged psychosis groups, suggesting that metacognitive deficits may be

trait-like rather than situation dependent features. They also found those scores to be lower than

those in a psychiatric control group comprised of individuals with substance use disorders,

suggesting that different categories of mental illness differ in metacognitive dysfunction. All

three groups evidenced metacognitive deficits in the category of mastery, which is in line with

additional research that found problems using metacognitive knowledge to exist across various

Axis I and Axis II disordered populations (Semerari et al., 2003; Dimaggio et al., 2007; Semerari

et al., 2007; as cited in Vohs et al., 2014). Lastly, those with prolonged psychosis exhibited

higher levels of metacognitive functioning for all categories except mastery, a promising finding

suggesting metacognitive dysfunction can improve over time.

     In a study of 51 veterans suffering from PTSD, lower levels of self-reflectivity on the

abbreviated Metacognitive Assessment Scale (MAS-a; discussed in **Metacognitive Assessment**)

and higher levels of cognitive self-consciousness on the Metacognitions questionnaire (MCQ-30)

were uniquely related to greater levels of self-blame, despite controlling for age, level of

depression, and PTSD (Davis et al., 2016). Bouman and Meijer (1999) also noted specific

metacognitive thoughts were characteristic of hypochondriacs (worry about a lack of control

over thoughts of illness and cognitive self-consciousness), and the degree of dysfunction

amongst these thoughts mediated the severity of illness. These studies supports the idea that

metacognitive deficits are not just general, down-stream symptoms of mental illness per se, but

may be core features and mediators of disability (Dimaggio & Lysaker, 2010; see Morrison &

Wells, 2003). Additional studies noted in Morrison and Wells (2003) suggested metacognition

mediates severity in various psychological disorders including pathological worry and GAD

(Wells & Carter, 2001), obsessive-compulsive symptoms (Wells & Papageorgiou, 1998), test-

anxiety (Matthews, Hillyard, & Campbell, 1999), and PTSD (Holeva, Tarrier, & Wells, 2001).

Metacognitive impairment in personality disorders. Perhaps most pertinent to our

investigation is the contemporary research outlining the relationship between personality

disorders and metacognitive impairment.

Mentalization and metacognition. Much of the literature surrounding impairments in

reflective functioning in personality disordered populations has arisen through the work of

Fonagy and colleagues. Through the investigation of problems associated with thinking about

one's own thinking and the thinking of others in borderline personality disorder (Fonagy, 1991),

Fonagy developed the idea of mentalization, a similar concept to metacognition as noted and

described above. Similar to Lysaker and Klion (2016), Fonagy and Bateman (2016) recognize

the overlap between their term mentalization and metacognition and, without minimizing

differences, see both as representative of higher-order mental processes representing the core of

personality function. Though Fonagy and colleagues understand problems with reflective

functioning in personality disorders as developing in the context of ruptured attachment,

something metacognitive researchers do not assume, their work nonetheless is helpful for our

study in that they demonstrate in repeated studies the profound impairment in "thinking about

thinking" that is common in personality disorders. Examples of metacognitive impairment in personality disorders from the mentalization literature include the concept of "*psychic equivalence*" (Target & Fonagy, 1996), wherein individuals equate what is thought with what is real. Such experiences—similar developmentally to that of a normal 20 month old child (Gopnik & Meltzoff, 1997)—can be highly emotionally disturbing, akin to physical memories usually associated with posttraumatic stress disorder (PTSD; Morrison, Frame, & Larkin, 2003). Fonagy and Luyten (2009) contend that such a mode of thinking is not representative of excessive egocentrism, but a failure to separate what is in one's own mind from what is in the minds of others. *Pretend mode*, a mode of thinking wherein the internal mental world is decoupled from external reality (Ridenour, Knauss, & Hamm, 2018), is another example of a metacognitive failure found in BPD and is thought to be related to dissociation (Fonagy & Luyten, 2009). *Teleological mode*, a mode of thinking wherein "goal-directed actions take the place of words in representing one's mental state and as a point of reference to trying to understand the minds of others," is a third developmentally regressive and dysfunctional metacognitive mode of thought seen in BPD (Ridenour et al., 2018, p. 2).

Also relevant is the concept of *hypermentalizing*, a metacognitive process wherein one's assumptions about the minds of others become unrestrained, extending far beyond observable data (Sharp et al, 2013). Also referred to as *excessive theory of mind* (Dziobek et al., 2006) and *pseudomentalizing* for its lack of metacognitive accuracy (Allen, Fonagy, & Bateman, 2008), *hypermentalizing* is an alternative but problematic defensive metacognitive strategy, thought to be fueled by heightened emotional activation and chronic relational unpredictability. With it comes a certainty about the minds of others that can lead to misinterpretations about behaviors

and erroneous attributions about the intentions of others, commonly seen in BPD populations. Though several empirical studies demonstrate superior mentalization ability in BPD patients (Arntz & Veen, 2001; Fertuck et al., 2009; Franzen et al., 2011), these aspects of mentalization seem to be based more on explicit cognitive formulations of external features of self and others, such as facial expressions and behaviors, rather than evidence of a heightened accuracy in intuiting the mind of another (Satpute & Lieberman, 2006). Fonagy and Luyten (2009) additionally hypothesize that mentalization abilities are both trait and state dependent in BPD patients, with increased emotional arousal resulting in impaired mentalization, of which hypermentalization is one aspect.

Psychological defenses can also be understood as impairments in mentalizing and metacognition. For example, the inability to tolerate intensely negative aspects of the self—thought to be related to internalization of an abuser as part of the self—in those with BPD leads to the frequent externalization of these unacceptable states into others, resulting in chaotic interpersonal relationships with loved ones and therapists alike. Such projective processes perpetuate cycles of rejection and abandonment. For the individual with BPD, however, these processes may provide much-needed relief from intolerable emotions that otherwise could lead to self-harm or suicide (Fonagy & Luyten, 2009). In terms of metacognitive impairment, externalization and projective processes lead to poor awareness of the internal states of self and others, as well as to impairments in one's ability to use metacognitive knowledge in an adaptive manner (metacognitive mastery). Interestingly, both Fonagy (1991) and Lysaker and Klion (2016) agree that with higher levels of metacognitive functioning, there is the potential for

greater levels of psychic pain, a similar phenomenon experienced in the psychoanalytic process of working through defenses (Stark, 1999).

More recently, Fonagy, Luyten, and Allison (2015) argue that rigidity in personality, not merely its distortion, is a key component of personality disorders. They hypothesize that such rigidity arises when an individual is repeatedly exposed to situations—i.e., abuse, neglect—that undermine his or her ability to understand the mind of others and even his or her own mind. In consequence, social trust is undermined and the individual is unable to learn from others or from his or her own experiences. The authors argue that at the heart of such "epistemic petrification" is profound loneliness and isolation. Here again we see a failure of metacognition: regardless of the etiology of the disturbance, profound social difficulties will persist if one cannot reflect one's own thoughts and the thoughts of others, learn from others or from experiences, reconsider perspectives, or formulate new ideas about and adapt to an ever-changing social milieu. Not surprisingly, the authors believe a continuous, coherent, and consistent therapeutic alliance in the context of psychotherapy creates the conditions for the re-establishment of epistemic trust, which is itself a precondition to the development of mentalizing/metacognitive capacity (Bateman et al., 2018; Fonagy, Luyten, & Allison, 2015). This is in line with our hypothesis that metacognitive scores will improve in the context of psychoanalytic psychotherapy—to be discussed in more detail below—and provides a plausible mechanism of action for such improvement in the context of personality disorders. Though we must be careful not to over-generalize findings from BPD to other personality disorders, it is reasonable to assume that other personality disorders also develop as reified metacognitive coping strategies in response to social chaos and unpredictability.

Additional evidence exists for the relationships between metacognitive dysfunction and personality disorders. In a mixed sample of BPD and avoidant personality disordered individuals, Antonsen, Johansen, Ro, Kvarstein, and Wilberg (2016) found lower levels of reflective functioning—a similar concept to Lysaker and Dimaggio's (2014) metacognitive self-reflectivity—to be associated with higher levels of symptomatic and interpersonal distress, greater issues with self-esteem, poorer psychosocial functioning, and more problems with relationships and identity development. Between the two groups, lower levels of reflective functioning were found in the avoidant personality group, indicating that metacognitive problems likely extend beyond BPD into the broader spectrum of personality disorders, and that diagnostic-specific differences in metacognition may exist. Lastly, the study found that groups with different levels of reflective functioning benefitted from different types of treatment. The authors suspect those with higher levels of reflective functioning had a greater ability to understand themselves and others, and therefore made better use of a psychodynamically structured group treatment program.

A recent study also found that long-term hospitalization-based psychodynamic treatment was associated with significant decreases in mentalizing impairment and symptomatic distress amongst 175 patients with BPD diagnoses (De Meulemeester, Vansteelandt, Luyten, & Lowyck, 2018). Though improvement in mentalization was strongly associated with decreases in symptomatic distress ($r = .89$), the study further supports the central role of metacognition within personality disorders, suggests that improvements in metacognitive processes may explain in part the therapeutic change process, at least in BPD, and provides context for our understanding metacognitive impairment in a similar patient population at ARC, a similar treatment facility.

With regard to mentalization and metacognition in the context of attachment, one study on mentalization found that it is dysfunctional mentalizing itself, rather than emotional dysregulation that mediates the link between attachment coherence and features of BPD (Sharp et al., 2016). Similar findings from metacognition research (as opposed to mentalization research and further outlined below) were noted in Outcalt and colleagues (2016), where researchers found an interaction effect between metacognitive mastery and attachment, with metacognitive mastery moderating anxious attachment and better predicting BPD traits than attachment alone. Dimaggio and Lysaker (2015) highlight an important point of clinical agreement between mentalization and metacognition, namely that while metacognitive deficits exist at the trait level, they are modulated by the interpersonal context. Experiences of conflict, separation, social exclusion or isolation, threats from others, or real or imagined loss can disrupt metacognitive and mentalizing processes. For many, in an environment of understanding, attunement, and appropriate attachment, metacognitive capacity thrives (Liotti & Gilbert, 2011).

Metacognition beyond mentalization. Metacognitive impairments in personality disorders and differences between personality-disordered groups are also found outside of the mentalization literature. In their article first describing the Metacognitive Assessment Scale (MAS), to be discussed in the **Metacognition Assessment** section below, Semerari and colleagues (2003) used the MAS to highlight metacognitive differences between an individual with BPD and one with NPD. Study results revealed the BPD patient has difficulties primarily with integrating thoughts of self and others into a coherent narrative and in making distinctions between mental representations and reality. However, the BPD patient did demonstrate a greater ability to recognize elements of the inner world of self and others, including thoughts,

representations, and emotions, and to recognize the relationships between those elements. The

NPD patient, on the other hand, struggled to identify the elements of the inner world, but was

readily able to differentiate between representation and reality. The NPD patient struggled with

integrative efforts, but to a lesser degree than the BPD patient and improved more readily once

his or her ability to identify core elements of thought and emotion improved. Both patients had

impaired mastery functions, though in the BPD individual this metacognitive capacity was much

more impaired, in line with previous findings (Linehan, 1993; Semerari, 2001) and did not

improve to the same degree as the individual with NPD.

In a later study, Semerari and colleagues (2005) found similar metacognitive problems

present for a slightly larger BPD sample ($n = 4$), with BPD participants exhibiting difficulties

integrating representations of self and others and differentiating between fantasy and reality.

Problems with monitoring emotions for the NPD group were found as well, along with similar

deficits with monitoring emotions in avoidant personality disorder (APD) individuals (Dimaggio,

Procacci, et al., 2007).

In a much larger sample ($n = 306$), Semerari and colleagues (2014) investigated

metacognitive differences between various personality disorders ($n = 198$) and a control group

with symptom disorders without PD diagnoses ($n = 108$). Results indicated greater metacognitive

severity in the PD group than the control group and strong associations between metacognitive

dysfunction and the degree of severity of the PD. While their results support the idea of global

metacognitive dysfunction in PDs regardless of diagnosis, they also found different personality

styles correlated with impairment in specific metacognitive sub-functions: withdrawal correlated

with low monitoring (self-reflectivity), peculiarity with low differentiation and decentration, and

instability with low integration and differentiation (Semerari et al, 2014, p. 762). Their results

suggest general metacognitive pathology across the PD spectrum as well as unique

metacognitive profiles for different subgroups of PDs.

In another relatively large study, Semerari and colleagues (2014) compared

metacognitive abilities of a BPD group (*n* = 72) and a general PD group excluding BPD (*n* =

125). When controlling for general severity of psychopathology, the results revealed that the

BPD group scored significantly lower than the general PD group in the metacognitive areas of

differentiation and integration. Degree of severity of psychopathology within the BPD group was

strongly related to these metacognitive impairments as well. Together, these findings provide

some empirical support for a prototypical "borderline" metacognitive profile linked to these two

areas.

Furthermore, in a study looking at 14 individuals with a variety of PDs, Carcione and

colleagues (2011) found significant difficulties using metacognitive knowledge to problem-solve

(mastery). They also found different levels of effort exerted in problem solving amongst different

PDs, with BPD and dependent PD (DPD) individuals made the most attempts to solve problems

compared to those with avoidant PD (APD), paranoid PD (PPD), or NPD. Additionally,

metacognitive mastery strategies differed amongst the diagnoses, with DPD individuals tending

to seek help and reassurance from others, the APD individuals had more success with avoidance

strategies, and PPD and NPD utilizing more independent strategies.

Metacognition and alexithymia. Nicolo and colleagues (2011) also found that higher

levels of alexithymia—difficulty naming emotions and describing their causes and a critical

aspect of metacognition—were associated with both global psychopathology, poor

representations of interpersonal relations, and uniquely related to avoidant, dependent, depressive, and passive-aggressive PDs. Cluster B PDs—histrionic, borderline, narcissistic, and antisocial—did not evidence such associations with alexithymia. The authors do note that the self-report instrument used (TAS-20) in the study may allow participants to under- or over-estimate their own emotional awareness, which may explain deficits in self-knowledge in NPD samples found elsewhere (Dimaggio & Lysaker, 2015; Dimaggio, Procacci, et al., 2007). Nevertheless, the study further suggests metacognitive impairment throughout the PD spectrum as well as real metacognitive differences between types of PDs.

   Metacognition and theory of mind. Investigating correlations between Theory of Mind (ToM)—a similar construct to metacognition as noted above—and socially aversive personality features such as narcissism, psychopathy, lack of empathy, and Machiavellianism, Vonk, Zeigler-Hill, Ewing, Mercer, and Noser (2015) found psychopathic traits were negatively correlated with indicators of ToM, emotional understanding, and emotional management. They also found grandiose narcissism—as opposed to vulnerable narcissism—was positively correlated with both indicators of ToM and indicators of emotional intelligence. Their study suggests metacognitive differences, particularly in the ability to make sense of the minds of others, play a role in differentiating impulsive, lower functioning disordered personalities from those that tend to be more cunning and manipulative. Interestingly, Semerari and colleagues (2014) cite Arntz, Bernstein, Oorschot, and Schobre (2009) and note that Cluster C patients— those with either avoidant, dependent, or obsessive-compulsive PDs—showed the highest levels of understanding the minds of others in comparison to both BPD and healthy controls.

Empathy as metacognition. Empathy is also related to ToM, and by extension, metacognition. In a review of relevant empathy literature, Semerari and colleagues (2014) cite several studies demonstrating that patients with BPD were better at resonating sympathetically with the emotional states of others (affective empathy), but worse at understanding others' mental states (cognitive empathy; Harari, Shamay-Tsoory, Ravid, & Levkovitz, 2010; New et al, 2012). However, they also note that those with antisocial PD or psychopathic traits displayed severely damaged emotional empathy (Blair et al., 2004) with relatively unimpaired cognitive empathy (Richell, Mitchell, & Newman, 2003). A sample of NPD patients demonstrated a lack of empathy in general (Given-Wilson, McIllwain, & Warburton, 2011) and less in comparison to a BPD group as well (Ritter et al., 2011).

Metacognition and mindfulness. Deficits in mindfulness, another aspect of metacognition involving reflective capacity and awareness, have also been associated with antisocial PD (ASPD), aggression, and anger in an offender sample (Velotti et al., 2016). Interestingly, an interaction effect between mindfulness and expression of ASPD traits was also found, wherein those with higher levels of mindfulness—those able to be aware of their personal motives and behaviors—showed a much stronger relationship between levels of aggression and ASPD pathology. Differences in metacognitive ability, even within the same diagnostic category, may have important implications for treatment. Dimaggio and Brüne (2016) provide a somewhat comprehensive review of metacognitive literature for PDs. See for more details.

Metacognitive impairments in Schizoid PD. Significantly less information is available about metacognitive impairments in Schizoid personality disorder (SPD) in comparison to BPD and NPD. There are rich accounts of schizoid mechanisms and schizoid issues found in the

psychoanalytic literature (Akhtar, 1987; Guntrip, 1976; Klein, 1946; Laing, 1965; McWilliams, 2011), but only a handful of empirical studies found elsewhere. The *DSM-IV* (APA, 1994) defines SPD as a pervasive pattern of interpersonal detachment and restricted affective expression, and the ICD-10 (WHO, 1992) states SPD individuals have limited capacity to express feelings. The Psychodynamic Diagnostic Manual (PDM, 2006) stresses the idea of emotional ambivalence, as noted in Thylstrup and Hess (2009), wherein the SPD patient longs for closeness but fears it and experiences emotional pain with overstimulation. Thylstrup and Hess (2009) also note that emotional communication for the SPD patient is rare. SPD individuals often appear disinterested in engagement with others, despite hypothesized longings for engagement. Psychic ambivalence may represent failures in higher-order integrative ideas about self and others, as well as problems with reaching, or even determining psychic problems and goals (*Mastery*).

Several studies do allude to possible metacognitive deficits related to an impoverished awareness of one's own inner world and difficulties integrating various aspects of self and others. Grant and colleagues (2004) found an association between SPD and emotional disability, and Cramer, Torgersen, and Kringlen (2006) found an association between an SPD diagnosis and poor quality of life that was stronger than the effects of Axis I pathology, health, or socioeconomic variables (cited in Triebwasser, Chemerinski, Roussos, & Siever 2012). Winarick and Bornstein (2015) note that contemporary views suggest that a deficit in the capacity for mentalization as well as empathy are core features of the diagnosis in both the *DSM-5* (APA, 2013) and trait based models, while De Rick and Vanheule (2007) found positive correlations between alexithymia and schizoid traits. [*On a side note, alexithymia was also correlated with*

antisocial traits in the same study, as well as with schizotypal, avoidant and dependent traits in

Bach, de Zwaan, Ackard, Nutzinger, & Mitchell (1994).] Semerari and colleagues (2014) found

schizoid PDs to be highly correlated with several stylistic components of personality pathology,

including *Withdrawal* and *Peculiarity*. Of these, *Peculiarity* was in turn found to negatively

correlate with the metacognitive domains of differentiation and decentration, suggesting greater

peculiarity in schizoid presentation may be related to greater metacognitive impairments in terms

of differentiation and decentration. In other words, schizoid individuals may struggle to

recognize the subjectivity of their own thoughts and the representational nature of mental states

(*differentiation*)—similar to Bateman and Fonagy's (2004b) *psychic equivalence* mode and

Melanie Klein's *paranoid/schizoid position* (Klein, 1946)—and they may also struggle to make

inferences about the mental states of others by adopting their perspectives (*decentration*).

Furthermore, Carrasco and Lecic-Tosevki (2000) found people with SPD have an impaired

ability to respond appropriately to social stimuli, suggesting the schizoid presentation is more

than just a lack of desire to connect with others (cited in Esterberg, Goulding, & Walker, 2010).

   Metacognitive differences in SMI groups. Also under ongoing investigation, and

central to our research question in this study, is the hypothesis that metacognitive deficits may

manifest in unique ways depending on the type of presenting mental illness (Dimaggio &

Lysaker, 2010). The evidence above, citing a variety of different metacognitive deficits

associated with patients across the spectrum of mental illness, lends credence to this hypothesis.

Such differences may have significant treatment implications. For example, Dimaggio and

Lysaker (2010) suggest a lack of awareness of others due to dissociative processes occurring

during intensive affective experience, such as in posttraumatic stress disorder (PTSD) and in

BPD, would require significantly different treatment from a more persistent lack of awareness of

various internal states, such as in schizophrenia-spectrum disorders. Alternatively, patients with

psychosomatic disorders associated with alexithymia (Taylor, Bagby, & Parker, 1997) might

benefit from an entirely different metacognitive focus. Metacognitive deficits seen in patients

with psychosis, schizophrenia-spectrum disorders, and substance-use disorders may reflect

important gaps in reality testing, relational processes, and coping strategies (Lysaker, Buck, &

Hamm, 2015), and thus may benefit from treatment focused on these areas. As noted by

Semerari and colleagues (2003), patients with different personality disorders seemed to exhibit

unique metacognitive deficits in ways that support prominent theories of both narcissistic and

borderline personality disorder development (Semerari et al., 2003; Kernberg, 1975; Kohut,

1971; Linehan, 1993; Ryle, Leighton, & Pollock, 1997). Further metacognitive research may

help to support hitherto difficult to assess psychological constructs and important differences

between overlapping diagnostic categories so often seen in personality disorders. Recognition of

unique deficits in metacognition for different mental illnesses may prove to be enormously

important for treatment (Lysaker, Buck, et al., 2011; Salvatore, Russo, Russo, Popolo, &

Dimaggio, 2012), helping clinicians to provide therapeutic interventions tailored to the unique

needs of specific populations.

Neurobiological Correlates of Metacognition

Several lines of research support the idea that the brain involves specific regions for

metacognitive functioning. Mirror neuron research infers that we use the self as a model to

imagine the mind of another (Gallese & Goldman, 1998), with highly specific mirror neurons

activated by and responsive to both the observation of very specific complex actions of others as

well as to the body's own actions (Fadiga, Fogassi, Pavesi, & Rizzolatti, 1995; Grafton, Fagg,

Woods, & Arbib, 1996; Rizzolatti & Arbib, 1998;). The mirror neuron system, formed in part by

a cortical network including the rostral section of the inferior parietal lobule, the caudal sector

(*pars opercularis*) of the inferior frontal gyrus (IFG), and the adjacent part of the premotor

cortex (Rizzolatti, Fogassi, & Gallese, 2001), provides a biological pathway for beginning to

understand the ways in which we form hypotheses about the intentions of others and the inner

workings of their thoughts, as mirror neuron researchers hypothesize that mirror neuron

activation leads to an interoceptive experiential sense of actions observed in others. Rizzolatti

and Arbib's (1998) research also demonstrates how different percepts and thought constructs are

associated with unique neurons and neuronal complexes in different areas, lending credence to

the idea that different metacognitive domains—and their neurobiological correlates—can

function semi-independently as well as interdependently. Building upon mirror neuron findings

and further supporting the semi-independent functioning of metacognitive domains, Rizzolatti

and colleagues (Gallese, Keysers, & Rizzolatti, 2004, Cattaneo & Rizzolatti, 2009; Rizzolatti &

Craighero, 2004) argue that neuroimaging studies reveal two mirror neuron mechanisms in

different locations: one wherein mirror neuron activation in the parietal lobe, premotor cortex,

and caudal part of the inferior frontal gyrus (parietofrontal mirror system) provides the

fundamental mechanism for an experiential understanding of others' actions, and the other,

involving viscero-motor center activation in the insula and the anterior mesial frontal cortex

(limbic mirror system), underlies the experiential understanding of others' emotions.

 Combining mirror neuron research with psychoanalytic developmental theory (Kohut,

1984; Stern, 1985), Wolf, Gales, Shane and Shane (2001) hypothesize that the mirror neuron

system plays a crucial role in the development of empathy. Empathy, in turn, when understood as both an implicit affective resonance as well as a cognitive process of identifying with the emotional and psychological experience of another (Kohut, 1984; Wolf et al., 2001), can be seen interwoven throughout Lysaker and Klion's (2016) metacognitive domains and levels of metacognitive awareness. This is not to conclude that the mirror neuron system or empathic processes are synonymous with high-order metacognitive processes—processes that are likely mediated to some degree by cognition and reflective capacity (discussed in the next paragraph)—but that the mirror neuron system does indeed play a crucial role in the development of social cognition and provides plausible and foundational neurobiological pathways for the development of metacognition, empathy, and related concepts (Gallese et al., 2004; Sinigaglia, 2010).

While mirror neuron system research provides us with a way of understanding how individuals learn things about self and others at a neurobiological level, additional research investigating higher order cognitive processes such as thoughts and beliefs—essential elements in the associative learning process necessary for successful integration of implicit interoceptive experiences and social adaptation (Reed & McIntosh, 2013)—also suggests that different metacognitive capacities, which are inherently comprised of higher order cognitive processes, may be linked to different parts of the brain. Similarly, Dimaggio and Lysaker (2010) described metacognition as referring to a set of skills that operate separately through different but overlapping cortical regions (Mitchell, Macrae, & Banaji, 2006). For example, brain regions representing belief contents appear different than those linked to reasoning about actions and goals as well as from those areas utilized for inhibition control and syntactic processing (Saxe,

Carey, & Kanwisher, 2004). *False belief* tasks used while studying 'theory of mind' have

demonstrated activation of the right and left temporo-parietal junction (TPJ), the medial parietal

cortex (PC), and the medial prefrontal cortex (MPFC; Gallagher et al., 2000; Saxe & Kanwisher,

2003); while TPJ and PC activation also appear when thinking about the thoughts of others as

opposed to thinking about other kinds of information about people (Saxe & Powell, 2006).

Additionally, reasoning about one's own emotional states and personality characteristics may

result in different patterns of cortical activity than reasoning about those of others (Heberlein &

Saxe, 2005).

Integrating these two concepts of lower-order interoceptive states related to mirror

neuron activity and raw emotional feeling and higher-order thought processes such as reflective

capacity and beliefs about self and others, Panksepp and Northoff (2007) contend the two

intertwine throughout development into a single meaning-making system. They argue that an

individual's concept of self and ability to develop and self-regulate within a complex social

milieu is the result of this integration between the experiential and implicit neurobiological

processes and the more explicit, reflective cognitive processes. This idea is similar to Fonagy and

Bateman's contention that all aspects of high-order cognition such as metacognition "relate to

brain structure as a hierarchy of layers of abstraction and assume a top-down influence on lower

orders of this neural pyramid" (2016, p. 59), and is also in line with Lysaker and Klion's (2016)

belief that metacognitive impairment is, at a fundamental level, an impairment in meaning

making and the construction of a coherent and useful self-identity.

Further integration between metacognition, neurobiology, and psychoanalysis will be an

important part of our discussion, as we think about the ways in which personality-disordered

individuals manifest metacognitive differences, and whether these impairments are neurobiological, developmental or defensive in nature, or perhaps some combination of all three.

Current Metacognitive Treatment Modalities

A few treatment programs focus on improving metacognition as a treatment goal in rehabilitation and recovery (Dimaggio & Lysaker, 2010). Both Bateman and Fonagy's (2004a) mentalization-based treatment and Dimaggio's metacognitive interpersonal therapy (Dimaggio, Semerari, et al., 2007) seek to enhance self-other reflection in persons with personality disorders. Transference Focused Psychotherapy (TFP; Clarkin, Levy, Lenzenweger, & Kernberg, 2007), while not specifically designed to address metacognition, nonetheless seems to elicit positive metacognitive change by improving the ability to reason about mental states, as noted by changes in response to treatment on both the Adult Attachment Interview (AAI) and the Reflective Function (RF) coding scale (Levy et al., 2006). The effectiveness of TFP in improving metacognition is especially pertinent; it provides a precedent for understanding metacognitive change in the context of psychoanalytic psychotherapy, the focus of this present research endeavor. Jungian psychoanalyst Jean Knox (2013) similarly posits that reflective capacity, along with affect regulation and agency, is a key component of psychological growth and well-being. Allen's (2013) work on mentalization in the context of 'plain-old therapy' also supports the idea that what is being done in the process of talk therapy for trauma—often present in the personal narratives of personality-disordered individuals (Fonagy, Luyten, & Allison, 2015)—is essentially helping patients to think about their own thinking, a hallmark function of both psychoanalytic psychotherapy, mentalization, and metacognition.

Metacognitive Reflection and Insight Therapy, or MERIT, developed by Lysaker and colleagues is one of the newest and most promising metacognitive based-interventions. Developed in conjunction with the MAS-a assessment tool (described below in the **Assessment of Metacognition** section and used to assess metacognition in this study), MERIT is designed to simultaneously assess the metacognitive level of an individual across four metacognitive categories (as outlined above) and then intervene at an appropriate level of metacognitive maturity in a way that stimulates higher and higher levels of metacognition and insight.

Assessment of Metacognition

Metacognition is difficult to measure. Simple self-report measures are likely to under- or over-estimate the actual metacognitive abilities used on a day-to-day basis. Study situations designed to elicit metacognitive action are by definition different than real-world situations wherein metacognitive processes occur, and behavioral observation is similarly insufficient to capture the nuanced differences in metacognitive thought processes, as it attends to external rather than internal processes (Lysaker, Buck, et al., 2015). The Metacognition Assessment Scale (MAS; Semerari et al., 2003) has been a promising measurement tool. The MAS, first developed in Italian by authors from the Third Center for Cognitive Psychotherapy in Rome (Carcione, Falcone, Magnolfi, & Manaresi, 1997) and then translated into English (Semerari et al., 2003), was designed to evaluate general metacognitive capacity through the assessment of psychotherapy transcripts. The MAS is based on a synthesis of various models describing the key dimensions of metacognition, and focuses primarily on metacognitive capacity rather than metacognitive content (Lysaker, Buck, et al., 2015). The MAS focused on three sub-functions of metacognition: understanding one's own mind, understanding the minds of another, and mastery,

or the ability to work through one's mental representations and states to accomplish tasks or cope

with problematic mental states (Semerari et al., 2003). Within each sub-function category, the

scale consists of a series of items signifying different levels of metacognitive ability, arranged in

a hierarchical order. To generate a metacognitive score, therapy transcripts are read and noted for

opportunities to display metacognitive capacity and whether or not metacognitive capacity is

demonstrated. Upon completion of the transcript reading, a ratio of hits to misses is created, with

a higher ratio of hits to misses demonstrating better metacognitive capacity (Lysaker, Buck, et

al., 2015).

The MAS was designed to assess metacognition in persons with personality disorders.

The scale was subsequently adapted by Paul Lysaker and his group at Indiana University School

of Medicine for use specifically with schizophrenia and broader categories of mental illness. The

adapted version, the abbreviated Metacognition Assessment Scale (MAS-a), provides a means

for quantitative measurement of metacognitive capacity in persons with severe mental illness

(Lysaker, Buck, et al., 2015). The scale was modified in important ways. First, the MAS-a is

designed to be used with a spontaneously generated speech sample regarding psychological

challenges and life stories. The authors argue that metacognitive capacity is best estimated over

the natural telling of one's own story, rather than a series of prompts or questions that may create

opportunities for demonstrating metacognitive capacity (Lysaker, Buck, et al., 2015). Secondly,

the MAS-a uses four scales to assess different aspects of metacognition, thought to be relatively

semi-independent: "Self-Reflectivity", the ability to think about one's own mental states;

"Understanding of Others' Minds", the ability to think about the mental states of others;

"Decentration", seeing the world as existing with others having independent motives; and

"Mastery", the ability to implement effective strategies in order to cope with psychological problems and related distress (Lysaker, Buck, et al., 2015). Lastly, scoring has also changed. Rather than keeping track of opportunities for displays of metacognition and then creating a metacognitive score based on a hits-to-misses ratio, transcripts are evaluated for spontaneous demonstrations of metacognition within each metacognitive domain, with more sophisticated metacognitive statements receiving higher scores. The scores are hierarchical, and with the exception of Mastery, all lower metacognitive levels must be demonstrated for the individual to receive a full score on a higher level of metacognition. Higher scores are not considered if a lower-scoring metacognitive act is not met. Finally, the subscales can be summed to create a total score with a range of zero to 28.

The original and modified scales are useful because they allow for an empirical, quantitative method for studying metacognition. The MAS-a is especially helpful in that it bypasses the need for metacognitive prompts and provides an important opportunity to observe metacognitive functioning in a less artificial capacity. A reliable and consistent scoring system such as the MAS/MAS-a can also help us to not only observe metacognitive deficits, but to track metacognitive changes over time. The nuanced method of assessing transcripts allows for metacognitive evaluation across settings, and perhaps even during real-time therapeutic encounters. While the MAS-a was designed to be used in conjunction with the Indiana Psychiatric Illness Interview (IPII; Lysaker, Clements, Plascak-Hallberg, Knipscheer, & Wright, 2002), the assessment scale could theoretically be utilized during any similar open-ended, relatively non-structured clinical interview where there is some degree of questioning regarding

interpersonal and psychological functioning (Lysaker, Buck, & Ringer, 2007; Lysaker et al.,

2005).

Austen Riggs Center and the Follow-Along Study

One setting where the MAS-a is already proving useful is at the Austen Riggs Center

(ARC), a long-term, psychoanalytic psychiatric hospital. ARC has conducted a large number of

open-ended interviews for patients with severe mental illness (SMI) over the course of their

eleven-year Follow-Along Study. While the IPII was not used, a similar interview, the Dynamic

Interview (Fowler & Perry, 2005; Perry, Fowler, & Seminiuk, 2005), was administered initially

at six month intervals, beginning at the time of admission, and when possible, continuing

through and after extensive psychoanalytic treatment for the duration of the Follow-Along Study.

These archival interviews provide an excellent opportunity to study metacognitive differences

among patient groups and changes in response to treatment using the MAS-a.

A pilot study with a very small sample size ($n = 9$) was conducted in the summer of 2016

at ARC. Though statistical significance was not observed, likely due at least in part to our small

sample size, large effect sizes were found for group differences in metacognition as well as for

metacognitive change over time (Neal et al., 2017). Patients with narcissistic personality disorder

(NPD) had higher scores in the metacognitive domain of mastery than patients with borderline

personality disorder (BPD), while those with substance use disorders (SUD) achieved higher

total metacognitive scores than patients with psychosis (PSY). Interestingly, while patients with

BPD had large effect sizes (Cohen's $d > 1.00$) in response to treatment, patients with SUD had

large negative effect sizes in certain metacognitive domains. Such differences may have

implications both for theoretical conceptualization of the various disorders studied and for

facilitating more effective interventions (Lysaker, Buck, et al., 2011). Deepening our understanding of metacognitive differences may help us not only measure psychodynamic treatment outcomes but improve treatment protocols and outcomes as well. While this hypothesis is yet untested, perhaps patients with SUD and NPD may benefit from interventions designed to help increase awareness of the thoughts and feelings of others, while those with BPD may benefit more from interventions designed to stimulate higher levels of functioning across all metacognitive domains as well as to integrate metacognitive functioning across domains in the service of problem solving and mastery.

The Present Study

Given the promising development of metacognitive theory, assessment, and intervention, as well as the results of our pilot study, we are hopeful about the continued use of the MAS-a in investigating metacognition in SMI populations as well as in conjunction with a psychoanalytic treatment modality. This brings us to our current study. Essentially, we want to know if paying attention to Metacognition can tell us something important about treating patients at ARC, and about treating patients with SMI in general. Therefore, the aim of our research is three-fold: (a) to add to the current knowledge of the ways in which metacognition acts as a mediating factor in mental illness by examining the ways in which thoughts about the self, thoughts about others, thoughts about one's place in the world, and one's ability to seek help and use skills might mitigate or worsen symptoms of mental illness; (b) to shed light on potential differences in metacognition among various mental health disorders, specifically narcissistic, schizoid, and borderline personality disorders; and (c) to examine the efficacy of long-term psychoanalytic psychotherapy for treatment of SMI.

We seek to achieve our aims by investigating group differences in metacognition and metacognitive outcomes amongst a sample of personality-disordered individuals at ARC. We chose to look again at NPD and BPD populations, and we added SPD diagnosed individuals to our sample due to both a limit in NPD patient transcripts available and curiosity about the ways in which a third personality disorder might present differently than either BPD or NPD. Our hypotheses are listed in bullet points below, with each followed by a brief summary of our rationale:

- BPD/NPD/SPD groups would change at different rates across metacognitive domains (BPD ≠ NPD ≠ SPD; null hypothesis is BPD = NPD= SPD).

- Self-reflectivity would increase over time for the sample as a whole (Self-Reflectivity $n =$ 28: Occasion 1 < Occasion 2)

Our hypothesis that our different groups would exhibit different metacognitive profiles is based on the existing literature as well as the results of our pilot study. Our hypothesis that there would be global increases in self-reflectivity also occurred in the pilot study and intuitively makes sense, as increased metacognitive capacity, which could also be understood as greater insight, is a central goal of psychoanalytic psychotherapy. Greater levels of understanding lead to greater capacity for emotional regulation, psychological growth, and developing a sense of agency which facilitates behavioral change and reaching goals (Knox, 2013; Lysaker & Klion, 2016). We also hypothesized that,

- NPD participants would demonstrate better overall Mastery than BPD participants, but

- BPD participants would demonstrate more improvement over time

Again, these findings are similar to our findings in the pilot study and previous studies highlighting difficulties with mastery in BPD populations (Fonagy et al., 2015; Linehan, 1993; Semerari et al, 2003), and difficulties with change in NPD patients (Semerari et al., 2003). Theoretically, Fonagy et al.'s (2015) idea that central to the BPD diagnosis is an impairment in the ability to learn due to a profound loss of trust in others may explain in part why BPD patients struggle with mastery functions. This loss of trust is thought to make it very difficult—without first specifically focusing on the reparation and development of such a capacity to trust—for BPD patients to rely on others and to make use of psychological and metacognitive strategies that would often be discussed in the therapeutic milieu. Participants with Narcissism, on the other hand, may score higher on various metacognitive domains initially but be resistant to change for a variety of reasons. Individuals with NPD may not see their problem as part of their core identity, and therefore they may be more able to find treatment helpful for dealing with problems that actively alleviate symptoms. Pathological narcissism may be a more distressful phenomenon for those who love narcissists rather than for the narcissists themselves, though some would argue that a narcissistic existence has its own significant distresses, stemming from experiences of shame and humiliation (Bernardi & Eidlin, 2018; Kohut, 1971).

Lastly, we hypothesized that,

- The SPD group would have a metacognitive profile that was different than either the BPD or the NPD groups. Specifically, we hypothesized that Self-Reflectivity would be worse in the SPD group than either of the others

This seemed like a reasonable hypothesis, due both to difficulties with emotional recognition—a key step in the MAS-a self-reflection hierarchy and as suggested by the literature outlined

above—as well as difficulties with formulating coherent and well-integrated narratives of the

self—as suggested by psychoanalytic formulations of the schizoid personality as entailing split-

off self-aspects (Akhtar, 1987; Klein, 1946; McWilliams, 2006).

Chapter 2

Method

Participants

Archival data gathered as part of the ARC Follow-Along Study (FAS) were employed. Participants signed consent at the time of initiation into the FAS, and all transcripts & narratives were de-identified prior to this current study. As noted above, the ARC Follow-Along Study is an 11-year, longitudinal project that gathered information from patients at six-month intervals. Patients accepted into the follow-along study were all patients who consented to be a part of the study and who were admitted to ARC during the time of the study. Patients admitted to ARC are individuals with multiple mental health diagnoses who have often been deemed "treatment resistant." At the time of this study, 80% of patients meet criteria for treatment refractory mood disorders; 40% had had six or more self-destructive episodes; 50% had made at least one serious suicide attempt; 60% had had three or more pre-Riggs hospitalization; 60% had also experienced early neglect, trauma, or abuse; and approximately 35% met criteria for post-traumatic stress disorder (Austen Riggs Center, 2016). Common diagnoses at ARC include personality disorders, psychosis, substance use, mood disorders, and anxiety disorders. Patients live in a restraint-free open setting where they are encouraged to stay but can come and go should they choose. They participate in multiple group therapies weekly as well as individual psychodynamic psychotherapy four-times a week. Patients have access to both psychiatric and psychological services and participate in thorough psychological testing processes.

Patients initially agree to stay at ARC for a minimum of six weeks, though they often stay much longer, with average length of stay being six months (Austen Riggs Center, 2016). The FAS collected assessment and interview data upon arrival to ARC and every six months during and following treatment for as long as the patient could be reached by ARC for the duration of the Follow-Along Study. ARC has hundreds of archived transcripts of interviews conducted at these six-month intervals. This current study uses transcripts selected from this archival data.

Twenty-eight individuals from the Follow-Along Study sample who received diagnoses of borderline personality disorder (BPD), narcissistic personality disorder (NPD), or schizoid personality disorder (SPD) were selected as participants for this study. To be included, patients were required to have completed the intake assessment and a second assessment at least six months later. Table 1 includes general demographic information, including average length of stay.

Participants in the sample ranged in age from 16 to 50 years old with a mean of 29.9 years. 75% of participants were female, though the BPD group was 100% female and the NPD group was 75% male. The SPD group was 60% female and 40 % male. 93% (26) of the sample identified as Caucasian and 7% (2) identified as Asian. 64% identified as American, 7% as Jewish, and 29% unknown with regard to ethnicity. 3% had completed only high school, 43% had attended only some college, 36% had completed college, and 18% had obtained a graduate professional degree. Average initial length of stay was 18.3 months and average total length of stay was 20.2 months. The number of average readmissions was 0.29, and the average GAD score upon admission was 39.2.

Table 1

Sample Demographics Overall and By Group

	Overall	**BPD**	**NPD**	**SPD**
	(*N* = 28)	(*N* = 14)	(*N* = 4)	(*N* = 10)
Age in years M				
(*SD)*	29.9 (*9.8*)	34.5 (*10.5*)	22.5 (*3.1*)	26.5 (*7.5*)
Gender N(%)				
Female	21 (75%)	14 (100%)	1 (25%)	6 (60%)
Male	7 (25%)	0 (0%)	3 (75%)	4 (40%)
Race N(%)				
White (Caucasian)	26 (93%)	14 (100%)	3 (75%)	9 (90%)
Asian	2 (7%)	0 (0%)	1 (25%)	1 (10%)
Ethnicity N(%)				
American	18 (64%)	8 (57%)	3 (75%)	7 (70%)
Jewish	2 (7%)	2 (14%)	0	0
Unknown	8 (29%)	4 (29%)	1 (25%)	3 (30%)
Level of Education N(%)				
Graduate Professional Degree	5 (18%)	5 (36%)	0	0
College Completed	10 (36%)	3 (21%)	2 (50%)	5 (50%)
Some College	12 (43%)	5 (36%)	2 (50%)	5 (50%)
Completed HS/Equivalent	1 (3%)	1 (7%)	0	0
Ave Initial Length of Stay (in months)	18.3	16.5	22.1	19.4
Ave Length of Stay including Readmissions	20.2	17.6	23.7	22.5
# of Readmissions (Ave)	.29	0.3	0.5	0.2
GAD scores M(SD)	39.2 (8.6)	39.4 (8.6)	43.5 (4.5)	37 (9.9)

Participants selected had to have completed at least two dynamic interviews at least six

months apart, and the transcripts of those interviews had to be legible. As noted above,

participants carried, on average, approximately six diagnoses at the time of admission (Austen

Riggs Center, 2018). Within our sample, participants averaged approximately 4 diagnoses. In

order to control for the impact of additional diagnoses not under investigation in this study, NPD

participants (the smallest group that met inclusion criteria) and SPD participants were matched

with BPD participants (our largest group) according to additional diagnostic categories. For

example, an NPD individual with depressive disorder and eating disorder diagnoses would be

matched with a BPD individual also diagnosed with both a depressive disorder and an eating

disorder. Similarly, an SPD individual with a mood disorder with psychotic symptoms would be

matched with a BPD individual who presented with a similar diagnosis. Participants initially

selected for the study who were deemed to have illegible transcripts were removed from the

study and replaced with a candidate who could be matched with another participant of a different

diagnosis in the manner outlined above. Group membership was based on diagnosis listed in the

FAS database; individuals with personality diagnoses of both BPD and NPD were placed in the

NPD group, while individuals with personality diagnoses of both BPD and SPD were placed in

the SPD group. Table 2 lists the different diagnoses and the number of individuals with each

diagnosis present by groups. Efforts were made to match participants as closely as possible, but

complex psychiatric presentations with multiple diagnoses made exact pairing difficult.

Diagnostic totals therefore differ slightly from group to group.

Table 2

Number of Diagnoses Present Overall and in Each Group by General Diagnostic Category

		O	BPD	NPD	SPD
DSM-IV Diagnostic Code	Diagnosis	*n*	*n*	*n*	*n*
295.60 & 295.90	Schizophrenia Spectrum Disorder	2	-	-	2
295.70	Schizoaffective Disorder	3	2	1	-
296.20-296.36	Major Depressive Disorder	17	9	2	6
296.52-296.62	Bipolar disorder I	2	1	-	1
296.89	Bipolar disorder II	1	1	-	-
297	Delusional Disorder	1	-	-	1
298.90	Psychotic Disorder NOS	3	2	1	-
299.80	Asperger's/ Pervasive Dev. Disorder NOS	-	-	-	1
300.00	Anxiety Disorder NOS	1	1	-	-
300.01	Panic Disorder without Agoraphobia	2	1	1	-
300.02	Generalized Anxiety Disorder	1	1	-	-
300.14	Dissociative Identity Disorder	1	1	-	-
300.15	Dissociative Disorder NOS	4	3	-	-
300.21	Panic Disorder with Agoraphobia	1	-	-	1
300.23	Social Phobia	1	-	1	-
300.30	Obsessive-compulsive Disorder	3	-	1	2
300.40	Dysthymic Disorder	13	7	2	4

Table 2 (continued from previous page)

DSM-IV Diagnostic Code	Diagnosis	O *n*	BPD *n*	NPD *n*	SPD *n*
300.60	Depersonalization Disorder	1	-	-	1
301.13	Cyclothymic Disorder	1	-	-	1
303.90	Alcohol Dependence	1	-	1	-
304.20	Cocaine Dependence	1	-	-	1
304.80	Polysubstance Dependence	4	1	2	1
305.00	Alcohol Abuse	4	3	-	1
305.40	Alcohol Related Disorder NOS	1	-	-	1
305.90	Sedative, Hypnotic, or Anxiolytic Abuse	1	1	-	-
305.90	Other or Unknown Substance Abuse	3	1	1	1
307.50	Eating Disorder NOS	3	1	1	1
307.51	Bulimia Nervosa	2	2	-	-
309.81	Posttraumatic Stress Disorder	5	3	-	2
315.90	Learning Disorder NOS	1	-	-	1
347.00	Narcolepsy	1	-	-	1

Table 2 Alternative

Number of Diagnoses Present Overall and in Each Group by General Diagnostic Category

		O	BPD	NPD	SPD
DSM-IV Diagnostic Code	Diagnosis	*n*	*n*	*n*	*n*
295.60-295.90	Schizophrenia Spectrum Disorders	5	2	1	2
296.20-296.36	Major Depressive Disorders	17	9	2	6
296.52-296.62	Bipolar disorder I	2	1	-	1
296.89	Bipolar disorder II	1	1	-	-
297	Delusional Disorder	1	-	-	1
298.90	Psychotic Disorder NOS	3	2	1	-
299.80	Asperger's/Pervasive Dev. Disorder NOS	-	-	-	1
300.00-300.23	Anxiety Disorders	11	6	2	1
300.30	Obsessive-compulsive Disorder	3	-	1	2
300.40	Dysthymic Disorder	13	7	2	4
300.60	Depersonalization Disorder	1	-	-	1
301.13	Cyclothymic Disorder	1	-	-	1
303.90-305.90	Substance Use Disorders	15	6	4	5
307.50	Eating Disorder NOS	3	1	1	1
307.51	Bulimia Nervosa	2	2	-	-
309.81	Posttraumatic Stress Disorder	5	3	-	2
315.90	Learning Disorder NOS	1	-	-	1
347.00	Narcolepsy	1	-	-	1

Materials

  Dynamic interview. Interview transcripts were derived from a 50-minute semi-structured

clinical interview called the Dynamic Interview (Fowler & Perry, 2005; Perry et al., 2005).

While the Dynamic Interview is different from the IPII utilized in the development of the MAS-

a, Lysaker, Buck, et al. (2015) have used the MAS-a with psychotherapy transcripts to evaluate

metacognitive growth for individuals with schizophrenia in two separate case reports (Lysaker et

al., 2005; Lysaker, Buck, & Ringer, 2007), setting a precedent for expanded use of the MAS-a in

open ended interview tools such as the Dynamic Interview.

  The abbreviated Metacognitive Assessment Scale. The abbreviated Metacognition

Assessment Scale (MAS-a), (Lysaker, Buck, et al., 2015; Semerari et al., 2003), was used to

evaluate four primary metacognitive domains**:** "Self-Reflectivity," awareness of self;

"Understanding of Other's Minds," awareness of the mind of another; "Decentration," seeing the

world as existing with others having independent motives, and "Mastery," the ability to use

effective strategies to cope with relational and psychological distress. Each scale consists of a

series of evaluative measures that are arranged in hierarchical order. Transcripts were coded for

increasingly complex levels of each metacognitive capacity and total metacognitive capacity.

  MAS-a reliability. The MAS-a has been found to demonstrate consistently good

interrater reliability (Lysaker, Buck, et al., 2015). Lysaker, Buck, et al. (2007) found strong

internal consistency amongst the subscales, and Lysaker, Buck, et al. (2008) found significant

intra-class correlations for all MAS-a subscales, ranging from $r = 0.61$ ($p < 0.05$) for

Decentration to $r = 0.93$ ($p < 0.0001$) for total metacognitive score. Significant test-retest

reliability was also demonstrated, with intra-class correlations ranging from 0.68 for

Decentration to 0.85 for Total Metacognitive Score.

   MAS-a validity. The various domains of metacognition outlined by the MAS-a have been

shown to correlate with numerous other measures of mental well-being (Lysaker, Buck, et al.,

2015). Self-reflectivity among participants with schizophrenia diagnoses has been linked with

assessments of awareness of illness (Lysaker et al., 2005), cognitive insight (Lysaker, Warman,

et al., 2008), and work placement performance (Lysaker, Dimaggio, Caricione, et al., 2010).

Mastery has been found to buffer the impact of neurocognitive deficits on social function

(Lysaker, Shea, et al., 2010) and influence social relationships consistently over time (Lysaker,

Erickson, et al., 2011). Functional capacity and self-reports of coping strategies and self-esteem

are also correlated with metacognitive mastery scores (Lysaker, McCormick, et al.*,* 2011;

Lysaker, Erikson, et al., 2011). Both mastery and self-reflectivity appear to be insight-related,

predicting awareness of symptoms and consequences of illness (Lysaker, Dimaggio, Buck et al.,

2011) and associated with complexity of social schemas (Lysaker, Dimaggio, Daroyanni, et al.,

2010). Metacognitive deficits associated with schizophrenia also appear to be more severe than

those associated with significant physical health adversity, suggesting changes in metacognition

result from more than stress and or reduced coping ability (Lysaker, Ringer, et al., 2012). Nicolò

et al. (2012) provide similar psychometric results in an Italian replica study following translation

of the MAS-a.

   With regards to convergent validity, MAS-a scores are correlated with performance on

the Scale to Assess Narrative Development (STAND), a scale that measures depth of personal

narrative (Lysaker, Buck, et al., 2008). The Mastery subscale of the MAS-a was also correlated

with indices on the Social Cognition and Object Relations Scale (SCORS; Westen, 1991) assessing awareness of the psychological complexity and mutuality of interpersonal relationships. With regards to divergent validity, MAS-a scores are uncorrelated with theoretically unrelated self-experiences such as internal stigma (Lysaker, Buck, et al., 2008).

MAS reliability. As the MAS-a was adapted from the MAS, reliability and validity of the MAS supports use of the MAS-a. Test construction of the MAS is outlined in Semerari et al. (2003); each item was discussed and approved by the research group after reviewing available literature and session transcripts. An intra-class correlation found good overall reliability from 0.83 for understanding the mind of the other to 0.89 for understanding one's own mind and total score (Lysaker et al. 2005).

MAS validity. As outlined in Carcione et al. (2008), construct validity was supported by comparing metacognitive processes to available literature on mentalization and attachment (Fonagy et al., 2002; Main, 1991), metacognition in the context of learning processes (Flavell, 1979), theory of mind (Baron-Cohen et al., 1985; Premack & Woodruff, 1978), meta-representation (Firth, 1992; Sperber, 2000), metacognitive regulation (Nelson & Narens, 1990) and mastery of problematic experiences (Stiles et al., 1990).

Concurrent validity has been demonstrated (Lysaker et al., 2005) as well in a comparison of the MAS with data from the Scale to Assess Unawareness of Mental Illness (SUMD; Amador et al., 1994), a scale designed to measure insight into awareness of disease, with higher self-reflection scores correlating with better awareness of illness. The same study investing a schizophrenia sample demonstrated metacognitive performance to be related in meaningful and predictable ways to neuro-cognition; symptoms, including emotional withdrawal, depression,

and suspiciousness; and poor quality of life (Lysaker et al., 2005). MAS subscales are also correlated with performance tests of affect recognition (Lysaker, Buck & Ringer, 2007), and the MAS self-reflection subscale was associated with low levels of emotionality on the Therapeutic Cycle Model (TCM; Mergenthaler & Bucheim, 2000), a theoretically related construct used to assess emotional awareness (Gelo, Carcione, Dimaggio, Nicolò, & Mergenthaler, 2007).

Additional materials gathered in the Follow-Along Study. Multiple interviews and inventories were administered throughout the Follow-Along Study and are listed below. However, our current research goals necessitate only that the Diagnostic Interviews for selected patients along with diagnoses and demographics be made available at this time.

- Defense Style Questionnaire (DSQ)

- Brief Symptom Inventory (BSI)

- Hamilton Anxiety Rating Scale (HAM-A)

- Hamilton Depression Rating Scale (HAM-D)

- Impulse/Anger Checklist

- LIFE Interview: Diagnostic Interview

- Guided Clinical Interview (GCI)

- Structured Clinical Interview (SCID) for DSM-IV Axis I Disorders

- LIFE Interview:
  - o Psychosocial Role Functioning
  - o Global Assessment of Functioning Scale (GAF)
  - o Psychosocial Treatment Inventory (PTI)
  - o Paykel-Uhlenhuth Life Events Scale Coding Sheet

  o   Medications

- RAP-Relationship Anecdote Paradigm

- Dynamic Interview

- Loevinger Sentence Completion Test

- NEO 5-Factor Personality Inventory

- Coding Systems

  o   Core Conflictual Relationship Themes (CCRT)

  o   Defense Mechanism Rating Scale (DMRS)

  o   Psychodynamic Conflict Rating Scale (PCRS)

  o   Traumatic Antecedent Interview (TAI)

  o   Patterns of Childhood Experience (PCE)

  o   Wishes and Fears (W&F)

  o   Social Cognition and Object Relations Scale (SCORS)

Procedure

The participants with desired diagnostic characteristics were chosen from within the

group of participants for the ARC Follow-Along Study (see participants section above for

details). During the Follow-Along-Study, semi-structured interviews were initially administered

at the beginning of treatment and in six-month intervals—when possible—for patients involved

in the Follow Along Study. Interviews were then transcribed. Two interview transcripts at least

six months apart for each of the participants included in the sample were obtained and used in

this study. The two MAS-a coders were both blind to personality group, but only one MAS-a

coder was blind to whether the transcript was derived at the first or second occasion.

Data Analysis

Scores for individual metacognitive domains as well as total metacognition scores were computed and compared between personality groups and across time. Basic descriptive statistics were calculated for borderline, narcissistic, and schizoid personality groups. Analyses of Co-Variance (ANCOVAs) and Repeated Measures t-Tests were conducted to investigate for changes over time, differences between groups, and the interaction between groups and occasions over time. Finally, effect sizes were calculated for the ANCOVAs and the repeated measures T-tests.

Chapter 3

Results

Twenty-eight participants that met inclusion criteria were recruited from the archival data of the ARC Follow-Along Study as outlined above. Transcripts from two occasions at least six months apart—the first of which corresponded with initiation of treatment at ARC—were coded for metacognition using the MAS-a for each individual. Mean and standard deviations for MAS-a scores by overall sample and by group across occasions are displayed in Table 3.

Using SPSS 25.0, ANCOVAs were conducted on each metacognitive scale with Occasion 1 as a covariate to account for the relatedness of our sample across occasions (Hayes & Rockwood, 2017). Despite the unidirectional nature of one of our hypotheses (BPD > change over time than NPD), we opted for a bidirectional analysis in order to capture results not predicted and to reduce the likelihood of a Type I error. The alpha level for significance testing was set at 0.05. Levene's test of Equality of Error Variances are reported in Table 4. Lack of statistical significance suggests homogeneity of variance throughout the sample. However, a trend towards significance for the total score may indicate heterogeneity of variance within the sample that currently cannot be observed (Field, 2013). Larger group sizes in future studies may help to detect group differences in variance.

Table 3

MAS-a Means and Standard Deviations - Whole Sample and By Groups on Separate Occasions

MAS-a Scale	Overall (*n* = 28)	BPD (*n* = 14)	NPD (*n* = 4)	SPD (*n* = 10)
Occasion 1				
Self-Reflectivity M(*SD*)	4.54 (1.00)	4.57 (1.00)	4.75 (1.19)	4.43 (1.03)
Awareness of others M(*SD*)	3.76 (0.72)	3.75 (0.52)	3.94 (1.56)	3.70 (0.56)
Decentration M(*SD*)	1.30 (0.46)	1.30 (0.50)	1.25 (0.68)	1.33 (0.35)
Mastery M(*SD*)	4.65 (0.89)	4.80 (0.80)	4.13 (1.18)	4.65 (0.91)
Total M(*SD*)	14.26 (2.47)	14.43 (2.22)	14.10 (4.07)	14.10 (2.36)
Occasion 2				
Self-Reflectivity M(*SD*)	5.27 (1.31)	5.25 (1.19)	5.00 (1.84)	5.40 (1.37)
Awareness of others M(*SD*)	4.00 (0.88)	3.96 (0.75)	3.94 (1.39)	4.08 (0.92)
Decentration M(*SD*)	1.47 (0.45)	1.54 (0.45)	1.38 (0.75)	1.43 (0.33)
Mastery M(*SD*)	5.34 (1.07)	5.25 (0.87)	5.75 (1.50)	5.30 (1.23)
Total M(*SD*)	16.08 (3.31)	16.00 (2.86)	16.06 (5.46)	16.20 (3.34)

Table 4

Levene's Test of Equality of Error Variances

Metacognitive Domain	F Statistic (2,25)	*P* value(α=0.05)
Self-Reflectivity	0.81	0.46
Awareness of Others	1.53	0.24
Decentration	0.02	0.98
Mastery	1.42	0.26
Total	2.85	0.08

Table 5 displays the ANCOVA outcomes for all metacognitive domains with corresponding effect sizes. Bonferroni's correction for multiple statistics was not applied due to the high number of repeated measures *t*-tests run in order to calculate effect sizes by group and metacognitive domain. Statistical significance ($\alpha \leq 0.05$) should be interpreted with caution. Nevertheless, the small *p* value for each of the univariate regression outcomes (see Table 5) suggests statistically significant findings for all metacognitive domains—except Mastery—even if Bonferroni's correction were to be applied.

For the sample as a whole, statistically significant changes were found across all metacognitive scores. Effect sizes in terms of η^2 for all domains with the exception of Mastery are considered small. Effect size for Mastery is considered negligible. However, in terms of partial η^2, effect sizes are larger. When looking at repeated measures *t*-tests for the sample as a whole, all statistics were considered significant at the 0.05 level and Cohen's *d* effect sizes were

Table 5

ANCOVA Outcomes and Effect Sizes by Metacognitive Domain

Metacognitive Domain	F Statistic	p value(α=0.05)	Effect size (partial η^2)	Effect size η^2
Self-Reflectivity	$F_{(225)} = 26.47$	< 0.001	0.52	0.027
Awareness of others	$F_{(225)} = 41.35$	< 0.001	0.63	0.028
Decentration	$F_{(225)} = 11.55$	0.002	0.33	0.026
Mastery	$F_{(225)} = 5.41$	0.029	0.18	0.007
Total	$F_{(225)} = 27.16$	< 0.001	0.53	0.021

small to large. Largest effects were noted with Self-Reflectivity ($d = 0.78$) and Total scores ($d = 0.85$).

When examining individual groups using ANCOVAs, no significant group differences or interaction effects between personality diagnosis and time were found for any metacognitive domain. Repeated measures *t*-tests were subsequently conducted on each metacognitive scale for each group individually to observe potential trends and subtle differences in effect sizes within each group. Cohen's *d* effect sizes were calculated using the equation recommended by Morris and DeShon (2002) for repeated measures. Results with corresponding effect sizes are listed in Table 6. Bonferroni's correction was not applied; statistical significance ($\alpha \leq 0.05$) should be interpreted with caution.

Table 6

Repeated Measures T-test Outcomes with Corresponding Effect Sizes by Metacognitive Domain and by Group

Domain	Total ($n = 28$)			BPD ($n = 14$)			NPD ($n = 4$)			SPD ($n = 10$)		
	t(27)	*p*	*d*	t(13)	*p*	*d*	t(3)	*p*	*d*	t(9)	*p*	*d*
Self-Ref.	4.12	< 0.001	0.78	3.02	0.01	0.81	2.77	0.02	0.37	0.74	.51	0.87
Others	2.34	0.027	0.44	1.84	0.09	0.49	1.67	0.13	0.00	0.00	1.00	0.53
Decen.	2.11	0.044	0.43	1.76	0.10	0.49	0.77	0.46	0.87	1.73	0.18	0.54
Mastery	3.27	< 0.003	0.65	2.02	0.07	0.54	1.62	0.14	1.18	2.36	0.10	0.75
Total	4.22	< 0.001	0.85	2.98	0.01	0.83	2.25	0.05	1.09	2.18	0.12	0.89

Figures 1-5 display mean changes over time for each metacognitive domain with corresponding effect sizes.

Results indicate all categories of Metacognition improve over time in response to treatment for the sample as a whole. Effect sizes for the sample as a whole were small to large, with the largest being in the category of Self-Reflectivity and Total Metacognitive Score. With regard to group differences, however, no statistically significant differences were observed. When repeated measures *t*-tests were conducted on each group individually to assess for unique features of change over time, different effect sizes were found depending on the group and the metacognitive domain (see Table 6). While differences in effect sizes may indicate possible differences between groups in the way that groups change over time, this was not captured by the ANCOVA results mentioned earlier. Results should be interpreted with caution.

Self-Reflectivity: BPD/NPD/SPD

	Occasion 1 M(*SD*)	Occasion 2 M(*SD*)
BPD-Cohens d:0.81	4.57 (1.00)	5.25 (1.19)
NPD-Cohens d: 0.37	4.75 (1.19)	5 (1.84)
SPD- Cohens d:0.87	4.43 (1.03)	5.4 (1.37)
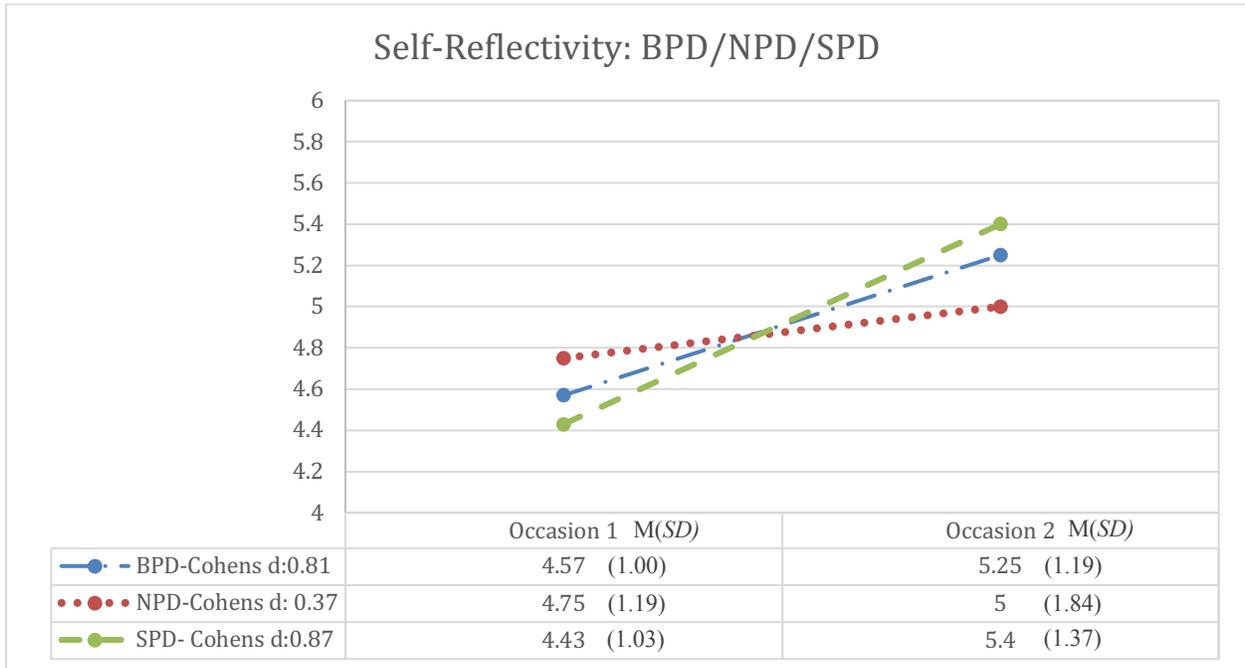
Figure 1. Changes in Self-Reflectivity by Groups Over Time.

Awareness of Others' Minds: BPD/NPD/SPD

	Occasion 1 M(*SD*)	Occasion 2 M(*SD*)
BPD-Cohens d:0.49	3.75 (0.52)	3.96 (0.75)
NPD-Cohens d: 0.00	3.94 (1.56)	3.94 (1.39)
SPD- Cohens d:0.53	3.7 (0.56)	4.08 (0.92)
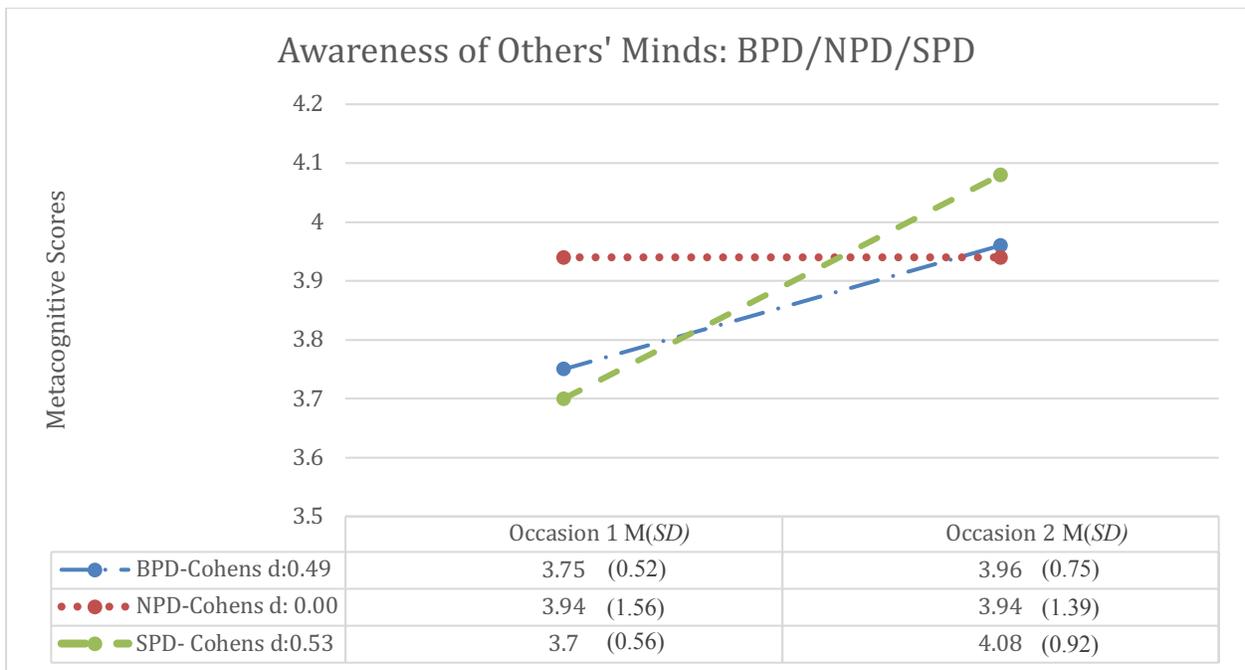
Figure 2. Changes in Awareness of Others' by Groups Over Time.

	Occasion 1 M(*SD*)	Occasion 2 M(*SD*)
BPD-Cohens d:0.49	1.3 (0.50)	1.54 (0.45)
NPD-Cohens d: 0.87	1.25 (0.68)	1.38 (0.75)
SPD- Cohens d: 0.54	1.33 (0.35)	1.43 (0.33)
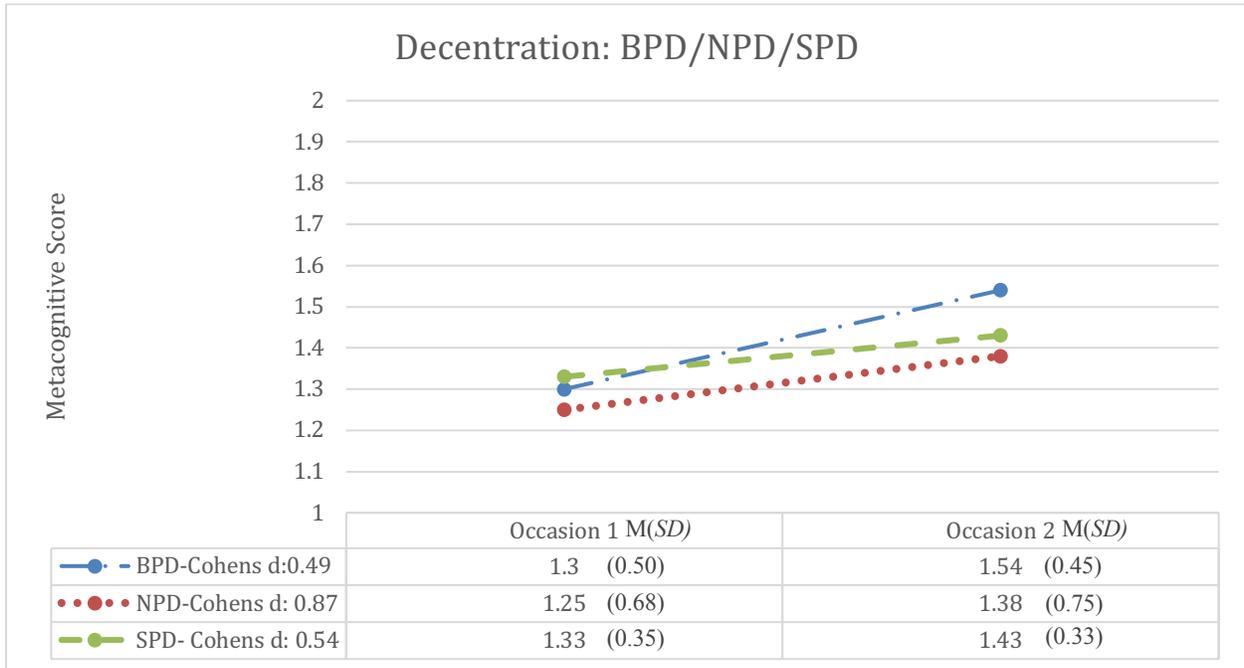
Figure 3. Changes in Decentration by Groups Over Time.

	Occasion 1 M(*SD*)	Occasion 2 M(*SD*)
BPD-Cohens d:0.54	4.8 (0.80)	5.25 (0.87)
NPD-Cohens d: 1.18	4.13 (1.18)	5.75 (1.5)
SPD- Cohens d: 0.75	4.65 (0.91)	5.3 (1.23)
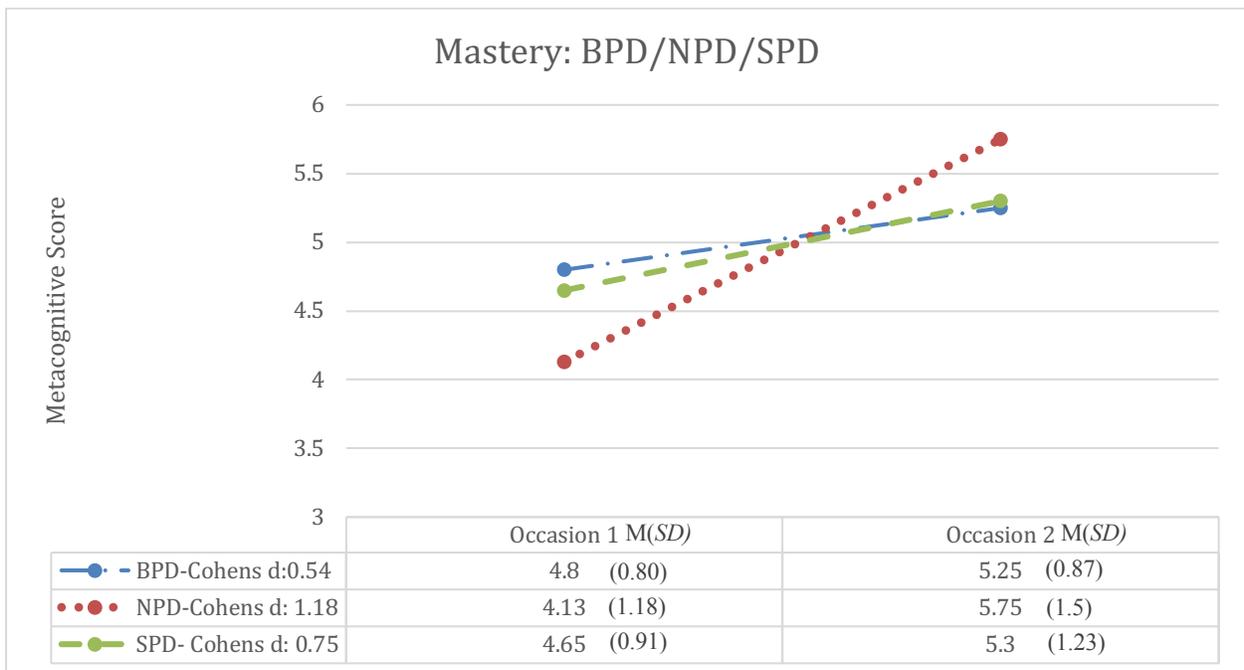
Figure 4. Changes in Mastery by Groups Over Time.

Total: BPD/NPD/SPD

	Occasion 1 M(*SD*)	Occasion 2 M(*SD*)
BPD-Cohens d:0.83	14.43 (2.22)	16 (2.86)
NPD-Cohens d: 1.09	14.1 (4.07)	16.06 (5.46)
SPD- Cohens d: 0.89	14.1 (2.36)	16.2 (3.34)

Figure 5. Changes in Total Metacognitive Score by Groups Over Time.

Hypothesis Testing

With regard to our first hypothesis, *that BPD/NPD/SPD groups would change at different rates across metacognitive domains (BPD ≠ NPD ≠ SPD; null hypothesis is BPD = NPD= SPD),* results indicate that personality diagnosis (NPD, BPD, or SPD) did not influence the rate of metacognitive change. 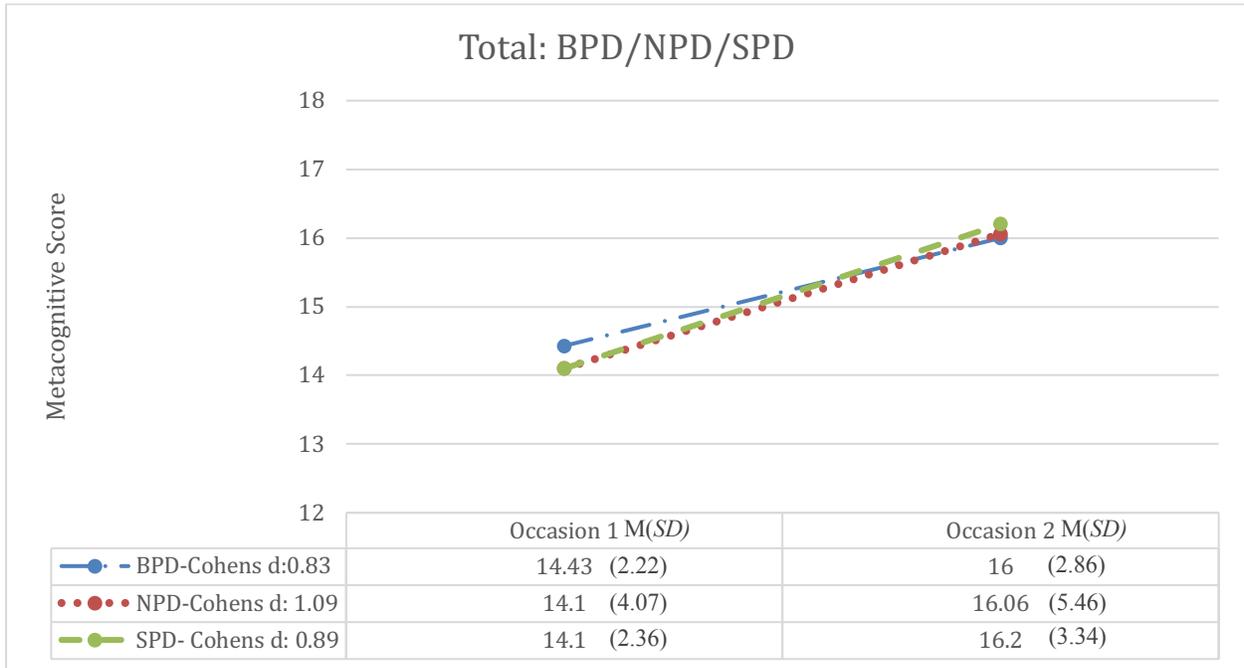No differences were found between the groups for any of the metacognitive domains. Here we retain the *null hypothesis*.

Our second hypothesis, that *Self-Reflectivity would increase over time for the sample as a whole (Self-Reflectivity n = 28: Occasion 1 < Occasion 2),* was confirmed. Additionally, metacognitive change was found to exist at statistically significant levels across all metacognitive domains with medium to large effect sizes (Table 5 & Table 6).

Our third hypothesis, *that NPD participant would demonstrate better overall Mastery than BPD patients,* was not supported at the level of statistical significance. However, the effect size for Mastery for NPD participants was larger ($d = 1.18$) than either the BPD group ($d = 0.54$) or the SPD group ($d = 0.75$; Table 6), suggesting group differences may be found with a larger sample size.

Our fourth hypothesis, *that BPD participants would demonstrate more improvement than NPD patients over time*, was not supported at the level of statistical significance either. Effect sizes for the BPD group were found to be larger than the NPD group for categories of Self-Reflectivity and Awareness of Others, but smaller for the categories of Decentration, Mastery, and Total Metacognitive Scores (Table 6).

Our fifth hypothesis, that *the SPD group would have a different metacognitive profile than either the BPD or the NPD group*, also was not supported at the level of statistical significance. However, effect sizes (Table 6) indicate the SPD group had more improvement in every metacognitive category than the BPD group, but was out performed in the categories of Decentration, Mastery, and Total Metacognitive Scores by the NPD group.

Our last hypothesis, that *Self-Reflectivity would be worse in the SPD group than either the BPD or NPD group*, also was not supported at the level of statistical significance. In addition, the SPD group had the largest change as shown by effect size for Self-Reflectivity out of all the groups (Table 6). While not statistically significant, mean scores for the *Self-Reflectivity* category for the SPD group were lower than the other groups initially, but ended up higher than both on the second occasion.

Chapter 4

Discussion

Findings

This study set out to examine metacognitive group differences between BPD, NPD, and SPD populations in response to a psychoanalytic psychotherapy intervention. Goals included adding to the literature on personality disorders and metacognition, highlighting unique characteristics of specific personality disorders (BPD, NPD, and SPD), and increasing the evidence-base for psychoanalytic psychotherapy as an acceptable treatment modality for SMI. The findings of this study were successful in meeting these goals to some degree, though our hypotheses were not confirmed unilaterally, as noted above.

With regard to psychoanalytic psychotherapy as an acceptable treatment modality for SMI, this study indicates significant metacognitive change occurred regardless of personality diagnosis (Table 5), with medium effect sizes across four metacognitive domains and a large total metacognitive effect size (Table 6). Self-reflectivity showed the greatest effect amongst the metacognitive subcategories ($d = 0.78$). Though the mean changes (Table 3) for the group as a whole range from only 0.25 points (Decentration) to almost 1.75 points (Total), such differences represent clinically relevant metacognitive changes, especially in a SMI population. For example, a $d = 0.73$ increase in *Self-Reflectivity* from 4.54 to 5.27 reflects the progress of someone who has had difficulty recognizing the fallibility of their own thoughts becoming able to not just to recall moments when they were wrong, but to begin to recognize the limits of what they can attain in the here and now. An albeit smaller difference in *Awareness of Others* from a

mean score of 3.76 to 4.00 signifies some level of clinical change as well; participants have moved from only recognizing various cognitions in others to consistently making reasonable inferences about cognition and affect.

Improvement in *Mastery* from a mean score of 4.65 to 5.33 reflects that in addition to active or selected avoidance or simply relying on others, individuals regularly implement specific behavioral strategies (i.e., refraining from raising one's voice in an anger provoking situation and forcing oneself to listen; Lysaker, Buck, et al., 2015) and are beginning to respond to psychological problems by changing the way in which they think about them (Lysaker, Buck, et al., 2015). Again, for SMI populations in general and personality disordered individuals specifically known for their rigidity and inflexibility, these seemingly small differences likely reflect substantial clinical progress, results that are consistent with previous studies indicating positive outcomes for long-term psychoanalytic psychotherapy for persons with SMI and with personality disorders in particular (Bateman & Fonagy, 2008; Chiesa, Fonagy, & Holmes, 2003; Clarkin et al., 2007; de Maat, de Jonghe, Schoevers, & Dekker, 2009; Leichsenring & Leibing, 2003; Leichsenring & Rabung, 2008; Levy et al., 2006; Messer & Abbass, in press; Shedler, 2010).

With regard to our hypotheses that our groups would display different metacognitive profiles, these hypotheses were not supported at the level of clinical significance. Differences in mean metacognitive scores and degrees of change of those scores over time were negligible across the three groups. This was contrary to findings in our pilot study (Neal et al., 2017), which revealed statistically significant group differences ($F_{1,7}= 12.15$; $p = .01$) and very large effect sizes (Cohen's $d = 2.65$) between NPD and BPD in terms of Mastery. However, similar to our

pilot study (Neal et al., 2017), differences were noted amongst effect sizes of metacognitive scores across occasions when computed for each group individually (Table 6). In terms of *Self-Reflectivity*, large effect sizes were noted for the BPD group ($d = 0.81$) and the SPD group ($d = 0.87$), but only small effect sizes were noted for the NPD group ($d = 0.37$), suggesting SPD and BPD groups improve in their capacity for self-reflection in response to treatment at a greater rate than do NPD patients. With regard to the category of *Awareness of Others*, while moderate effect sizes were noted for both the BPD and SPD groups, no change (effect size of $d = 0.00$) was found for the NPD group, suggesting treatment had no effect—whether due to a neurocognitive deficit or a lack of desire—for this group to improve their capacity to think about the thinking of others.

On the other hand, the NPD group had the highest effect size for changes in the category of *Decentration* ($d = 0.87$), while effect sizes for the BPD group ($d = 0.49$) and the SPD group ($d=0.54$) were relatively moderate. This was unexpected. However, when looking at the mean scores for *Decentration* from Occasion one ($M = 1.25$) to Occasion two ($M = 1.38$) for the NPD group, clinical significance of such differences appears to be negligible. What is more interesting is the lack of clinically significant change—despite statistically significant change—for the sample as a whole in the category of *Decentration*. If these findings accurately represent this population, they may suggest high-acuity mental illness, with myriad symptoms and profound levels of dysfunction, is inherently self-absorbing. Alternatively, self-absorption and problems with perspective taking may exist as core symptoms for personality disorders in general, or each of these disorders specifically. In retrospect, a good hypothesis we did not include would have been that SPD groups would be worse than BPD groups in the metacognitive category of

decentration, but not worse than NPD groups. Though all personality disorders manifest with elements of narcissism, it makes sense that detachment from the world and a lack of desire for connections with others would appear phenomenologically similar to the self-absorption commonly found in NPD and the preoccupation with issues of attachment and individuation found in BPD. In each scenario, there is a self-focus that limits perspective taking. See also Akhtar (1987, p. 505) for similar overlap between the "contact shunning" disorders NPD and SPD observed by Kohut (1971).

In terms of *Mastery*, the NPD group exhibited the greatest change and a large effect size (Cohen's d = 1.18), with close to a large effect size also for the SPD group ($d = 0.75$) and a moderate effect size for the BPD group (d = 0.54). This is in line with our hypothesis that NPD patients would be better able to make use of psychotherapy in the service of *Mastery* than would BPD patients, and in line with other studies (Outcalt et al., 2015) showing *Mastery* deficits in BPD samples, including our pilot study (Neal et al., 2017). This effect could occur for a variety of reasons, one of the most compelling of which is Fonagy et al.'s (2015) theory on *epistemic trust,* which suggests that in BPD patients, trust is undermined to such a degree that learning from others becomes nearly impossible.

Effect sizes for treatment of patients with personality disorders at the ARC are within the range of treatment effect sizes reported by Lambert, Weber, and Sykes (1993); they reported an average therapy effect size of $d = 0.82$. In general, the results of this study are promising in that they support a growing consensus that psychoanalytic treatment of SMI is appropriate, and that measurable metacognitive improvements can be found in response to a psychoanalytic psychotherapy intervention (Shedler, 2010). However, given the complexity of the patient

population at ARC, as well as the uniqueness of the treatment milieu, these results have limited

generalizability. Additionally, while effect size differences between groups do suggest that there

may be unique metacognitive profiles for different personality disorders, further research is

needed to better determine the veracity of these findings.

Limitations

There are multiple limitations of this study. First, the size of our NPD sample within the

FAS database was small. In order to test our hypotheses, the same individuals selected in the

original pilot study (Neal et al., 2017) were reassessed. However, this did not seem to affect our

statistics, as those 4 individuals were compared to a larger sample of BPD individuals and a

group of SPD individuals, entirely different comparison groups from the first study. Second, this

study is limited by the inherent complexity of personality disorder diagnosis. While our patients

met criteria for *DSM-IV* (APA, 1994) personality diagnoses, important criticisms have

highlighted multiple flaws with this diagnostic system, limiting the validity of these diagnostic

categories (see *Chapter 1 – Introduction*, p. 4; Skodol et al., 2011; Bateman et al., 2018).

Furthermore, at least three within our sample met criteria for both BPD and SPD, suggesting that

the groupings to which our participants have been assigned may have been less than ideal.

Similarly, Charles (2018, personal communication) has noted that in her clinical work with SMI

populations and in reading FAS transcripts, she believes NPD individuals often appear

"borderline" when decompensated, thus creating a BPD population that appears more

heterogenous than it would be if these two groups could be appropriately sorted. Statistical

similarities for the groups are therefore not surprising, as personality group differences may be

obscured for numerous reasons.

Third, the overall complexity of the patients at ARC and of our sample population makes it difficult to control for confounding factors such as medical conditions, disabilities, substance use, psychosis, and any number of a variety of other diagnoses that may have influenced metacognitive ability and made direct PD comparisons difficult.

Fourth, this study was limited by the fact that our transcripts, derived from the Dynamic Interview, were not designed to be used with Lysaker, Buck, et al.'s (2015) MAS-a scale, as was the IPII. The Dynamic Interview has different question prompts, and the questions asked varied amongst interviewers throughout the interviews. Spontaneously generated examples of metacognitive functioning may have been limited or enhanced by the questions asked as well as by the style of the interviewer. Unfortunately, this was a limitation of our archival study design, using a measure of assessment that did not exist when the interviews were originally recorded. The results of our MAS-a scores are therefore not entirely comparable to other studies using the MAS-a.

Fifth, compared to other populations with similar levels of SMI such as the samples derived from the VA population in many of Lysaker's studies, patients at ARC are disproportionately wealthy and well-educated. While patients at ARC often experience feelings of shame and guilt because they fail despite such resources and also display similar levels of impoverished metacognition (Charles, 2018, personal communication), such stark socio-economic differences nevertheless pose obstacles in comparing our results to other similarly studied samples.

Sixth, the decentration scale has a limited range (0-3) compared to the other scales in the MAS-a (0-9 for Self-reflectivity, 0-7 for Awareness of others, and 0-9 for Mastery). With such a

limited range and only several markers determining the various levels of metacognitive

sophistication in this category, metacognitive growth in terms of decentration may be under- or

overestimated when compared to change in other scales.

Seventh, one major flaw of the study was that while both MAS-a coders were blind to

personality group, one MAS-a coder was aware of which transcripts represented occasion one vs.

occasion two. Thus, with regard to differences over time, our study was only half-blind. Despite

the fact that the MAS-a provides rather concrete scoring metrics and that scores between both

coders were similar, a lack of complete blindness to time increases the likelihood that

investigator bias may have played a role in determining the results of the study.

Lastly, this study was limited due to the fact that even though all received treatment at

ARC, study participants were exposed to different therapists, different durations of therapy, and

different psychiatric medication regimens. The durations between occasion 1 and occasion 2

were also not entirely uniform, though attempts were made to score the initial and first follow-up

transcript when possible. Results may have been different with a more controlled study.

Future Directions

Additional research is needed to more adequately answer our question of whether

different personality disorders have unique metacognitive deficits. Future studies would benefit

from greater control over diagnostic variables, more consistency between the administration style

of the interviews, exposure to treatment and duration between interviews, and more open ended

interview questions (using the IPII Interview instead of the Dynamic Interview according to

guidelines in Lysaker, Buck, et al., 2015). While our sample was racially homogenous, age, sex,

and race may be important covariates to consider in future studies.

Conclusion

Despite the limitations of this study, our sample as a whole does seem to be representative of the general population at ARC. Our results suggest no statistically significant differences between groups, but statistically and clinically significant improvements in metacognitive functioning—or insight—in the SMI sample as a whole following at least six months of psychoanalytic psychotherapy in a psychiatric hospital setting. Effect sizes were moderate for each of the metacognitive domains—Self-reflectivity, Awareness of others, Decentration, and Mastery—and large for Total metacognitive scores. These effect sizes are similar to those found in meta-analyses of psychotherapy outcomes (e.g., Barber et al., 2013; Lambert, 2013; Leichensenring et al., 2013) and are generally consistent with Shedler's (2010) report regarding the efficacy of psychodynamic psychotherapy.

In general, this study adds to the evidence-base in support of psychoanalytic psychotherapy for SMI populations and highlights the effectiveness of a unique assessment instrument—the MAS-a—for measuring metacognitive change in a sample with complex mental illness. While this study did not find personality diagnosis to be a statistically significant mediator of metacognition and of metacognitive change over time, noticeable differences in effect sizes between personality groups over time may suggest important differences might be found with a larger study. Such differences may help us better understand the psychopathology of personality disorders and adjust treatment based on the unique metacognitive needs of the patient.

Personal Reflection

For several reasons, completing this dissertation was a transformative experience for me. For one, my knowledge of both metacognition and the implications of metacognitive impairment in SMI populations has grown extensively. So too has my understanding of the important and nuanced ways that different diagnoses—schizophrenia-spectrum, mood disorders, personality disorders—vary in terms of metacognitive capacity and in terms of the etiology of their metacognitive limitations. This project has also improved my ability to assess metacognitive limitations in real time and to work therapeutically with individuals at a more appropriate level of metacognitive ability. This has practical significance in terms of increasing the effectiveness of my therapeutic approach, but it also helps me feel better about the work I do with individuals who have a lower level of metacognitive functioning. Working with such individuals can be difficult and disorienting, and it can often be much harder to notice progress or improvement in therapy than it is with higher functioning individuals. Learning the MAS-a has given me a framework for understanding metacognitive growth as a developmental process, and with that in mind, noticing even small developmental steps a patient might take—such as recognizing a thought or an emotion—can be immensely rewarding.

Lastly, I have come to understand that one's capacity for *doubt* is a developmental milestone (see level 5 of the Self-reflectivity scale). Early in my own faith journey, a need for certainty about the nature of God and about my own identity in a vast universe constricted my psychological and spiritual growth. In needing things to be a certain way, I had an impaired ability to see and to make sense of the way that things actually were. This led to a truncated life experience guided by a fear of not knowing and a fear of knowing wrongly. Only when I was

able to be honest about my own doubt—about my capabilities, about my faith, my sense of morality, and about my identity—did I begin to grow emotionally, psychologically, and spiritually.

Certainty seems to mitigate anxiety, but only on one level of our being, and only for a time. In grasping for certainty, something terrifying about the world—that we do not really know—is pushed just out of our awareness. We turn a blind eye and trade painful truths for a perpetual fear of un-knowing that which on some level of our being, we must already know. Holding in mind doubt as a developmental milestone reminds me to embrace uncertainty at every corner. Embrace doubt, not as a counterpoint to faith, but as a way to tether oneself to reality. Doubt is an antidote not to faith but to self-deception; it is a stepping stone to a greater ability to think meaningfully about our own thoughts and our experiences in the world.

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    prolonged psychoses. *Schizophrenia Research, 153,* 54-59.

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    symptoms and meta-cognitive beliefs. *Behaviour Research and Therapy*, *36*(9), 899-913,

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    function of wrong beliefs in young children's understanding of deception. *Cognition,*

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    personality disorder diagnosis: contrasting correlates of schizoid and avoidant traits.

    Personality and Individual Differences, *79,* 25-29.

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    amodal perception to empathy and communication: The role of mirror neurons in this

    process. *Psychoanalytic Inquiry, 21*(1), 94.

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    health problems, 10(2). Geneva, Switzerland: WHO Publications.

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    survey. *British Journal of Psychiatry, 197*, 193-199.

Appendix A

Curriculum Vitae

David W. Neal, RN, MA

4213 NE Aspen Way, Newberg, OR, 97132 • 310.924.0978
dneal13@georgefox.edu

Education	**PsyD** Clinical Psychology	*Anticipated* Class of 2019

George Fox University, Newberg, OR

Dissertation: *Metacognitive changes in individuals with severe mental illness in response to psychoanalytic therapy*
      Preliminary Proposal Defense: Full Pass, May 12th, 2017
      Current Status: Data collection
      Dissertation Defense: Expected by April, 2018
      Dissertation committee: Rodger Bufford, PhD; Marilyn Charles, PhD, ABPP;   Nancy Thurston, PsyD, ABPP

MA Clinical Psychology   Class of 2016
George Fox University, Newberg, OR

BS Nursing   Class of 2005
Mt. St. Mary's College, Los Angeles

BS Biochemistry & Molecular Biology   Class of 2003
   Minor: Philosophy
California Lutheran University, Thousand Oaks, CA

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Clinical
Training

Practicum II & Pre-Internship   2016-Present
Behavioral Health Consultant - Oregon Health and Science University (OHSU) Family Medicine Clinic at Scappoose, OR
- Population: low socio-economic status; rural community; complex psychiatric and medical co-morbidities; children, adolescents, and adults
- Brief and short-term intervention, long-term psychodynamic psychotherapy, group therapy, and couples therapy for children and adults in an integrated care setting. Provide risk assessments and consultation to interdisciplinary team.
- Provide comprehensive neuropsychological, personality, and projective assessments
- Supervisor: Chloe Ackerman, PsyD

Behavioral Health Crisis Consultation Team   2016-Present
Behavioral Health Consultant
Providence Newberg Medical Center, Newberg, OR
Willamette Valley Medical Center, McMinnville, OR

- Population: Individuals of all ages and diverse backgrounds presenting to the emergency department with suicidal/homicidal ideation, alcohol/drug intoxication, psychosis, substance-induced psychiatric diagnoses, cognitive decline, and/or inability to care for self
- Crisis consultation, neurocognitive screening, and general risk assessment for two medical centers, law enforcement, and mental health agencies in Yamhill County
- Collaboration with multidisciplinary staff including nurses, physicians, law enforcement and mental health agencies in Yamhill County to formulate plan for stabilization and discharge or hospitalization
- Supervisors: Mary Peterson, PhD, ABPP; Joel Gregor, PsyD; William Buhrow, PsyD; Luann Foster, PsyD

Supplementary Practicum   2016-Present
Doctoral Student Therapist
Behavioral Health Clinic, George Fox University, Newberg, OR
- Provide long-term psychodynamic psychotherapy one to two times weekly for two adult clients
- Case conceptualization, treatment planning, diagnosis, session notes, and psychoanalytic supervision
- Supervisor: Nancy Thurston, PsyD, ABPP, Certified Psychoanalyst

Supplementary Practicum   2016-2017
Doctoral Student Therapist
Behavioral Health Clinic, George Fox University, Newberg, OR
- Provided long-term psychodynamic psychotherapy one time weekly for one adult client
- Case conceptualization, treatment planning, diagnosis, session notes, and psychoanalytic supervision
- Supervisor: Ryan Kuehlthau, PsyD

Practicum I   2015-2016
Student Therapist
Yamhill-Carlton Middle School, Yamhill, OR
- Provided individual and group therapy services for children and adolescents in a rural school district
- Comprehensive psychological assessments for learning disabilities, ADHD referrals, and significant emotional and behavioral disturbances
- Risk assessment, family therapy, consultation with faculty and staff regarding student mental health issues
- Supervisor: Elizabeth Hamilton, PhD

Pre-Practicum   2015
Student Therapist
George Fox University Grad. Dept. of Clinical Psychology, Newberg, OR

- Population: Undergraduate Students
- Provided individual therapy for two students from a person-centered orientation
- All sessions video recorded and reviewed by supervisors
- Supervisors: Glena Andrews, PhD, Cass Sieg, MA

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Other Work Experience

Staff Nurse 2015-2016
Pediatric Answer Line
Randall Children's Hospital, Portland, OR

- Provided after-hours triage for ~400 health-care providers in Oregon and Washington
- Rapid physiological assessment via telephone; coordination of care for escalation/follow-up

Staff Nurse 2012-2014
RISK (Recognized Illness and Severity in Kids) Nurse
Seattle Children's Hospital, Seattle, WA

- Provided on-demand rapid critical care nursing assessment and intervention for up to 16 high-risk patients a night on acute care units throughout 260-bed hospital
- Coordinated care between ICU team and in-patient medical, surgical, and nursing teams. Worked with families of patients to provide family-centered care

Staff Nurse 2012-2014
Critical-Care Float Pool
Seattle Children's Hospital, Seattle, WA

- Provided intensive-care to children suffering from life-threatening disease or trauma in Pediatric Intensive Care Unit, Cardiac Intensive Care Unit, and Neo-Natal Intensive Care Unit
- Worked on multidisciplinary team to coordinate care; worked with families to provide family-centered care for child and family unit

Staff Nurse 2011-2012
Cardiac Intensive Care Unit
Seattle Children's Hospital, Seattle, WA

- Provided care to medically complex patients preparing for and recovering from cardiac surgery
- Worked closely with families of patients to provide support and family-centered care
- Provided training and supervision to nursing students, new nurses, and newly hired staff

Staff Nurse and Charge Nurse 2005-2011

Cardio-Thoracic Intensive Care Unit
Children's Hospital Los Angeles
- Provided care to patients with medically complex needs preparing for and recovering from cardiac surgery
- Facilitated delivery of quality nursing care, met the needs of nursing staff, and coordinated activity within 15-bed ICU as charge nurse
- Worked closely with new nursing staff in ICU as preceptor and mentor
- Worked with families of patients to provide support and family-centered care
- Co-led multidisciplinary leadership meetings in order to provide better patient care through personal and professional growth

Research Experience

Doctoral Dissertation

Dissertation: *Metacognitive changes in individuals with severe mental illness in response to psychoanalytic psychotherapy*
Preliminary Proposal Defense: Full Pass, May,12th, 2017
Current Status: Data collection
Dissertation Defense: Expected by April, 2018
    Dissertation committee: Rodger Bufford, PhD; Marilyn Charles, PhD, ABPP; Nancy Thurston, PsyD, ABPP

Research Vertical Team Member
- Collaborate and design various research projects with team members Formal presentations of research projects and results
- Supervisor: Rodger Bufford, PhD

Publications/ Presentations

Posters
Neal, D., Bufford, R., Stricklen, J., Nalbandian, R., Charles, M., & Thurston, N. (2017, April). *Metacognitive outcomes of psychodynamic therapy for severe and persistent mental illness.* Poster session presented at the 2017 American Psychological Association Division (39) of Psychoanalysis Annual Conference, New York, NY.

Presentations
Charles, M. & Neal, D. (2018-*anticipated*). *20,000 Leagues under the sea: a deep dive into the personality of the complex psychiatric patient*. Integrated paper session submission accepted for the 2018 Annual Society of Personality Assessment Convention, Washington, D.C., March 2018

Charles, M., Dodd, Z., & Neal, D. (2018-anticipated). *Trauma, truth, and representation: Art and the consulting room.* Panel session submission under review for the 2018 American Psychological Association Division (39) of Psychoanalysis Annual Conference, New Orleans, LA.

Captari, L., Pace, A., Neal, D., McDermott, H., Hansen, M., Guevara, C. (2017, April). *From the couch to the community: Exploring diverse and culturally relevant applications of psychoanalysis.* Panel presentation at the 2017 American Psychological Association Division (39) of Psychoanalysis Annual Conference, New York, NY.

Andrews, G., Neal, D., Leoncé, C., & Seiders, J. (2016, August). *Cognition, memory, and behavior of sibling groups with FASD: Nature and Nurture.* Symposium presentation at the 2016 American Psychological Association Annual Convention, Denver, CO.

Teaching & Academic Experience	**Adjunct Professor** Graduate level course; Interpersonal neurobiology and psychopharmacology George Fox University Department of Counseling	2017
	Teaching Assistant Graduate level course: Psychopharmacology George Fox University Graduate Dept. of Clinical Psychology Professor: Glena Andrews, PhD	2017
	Teaching Assistant Graduate level course: Psychodynamic Psychotherapy George Fox University Graduate Dept. of Clinical Psychology Professor: Nancy Thurston, PsyD, ABPP	2017
	Teaching Assistant Graduate level course: Theories of personality and psychotherapy George Fox University Graduate Dept. of Clinical Psychology Professor: Winston Seegobin, PsyD; Joel Gregor, PsyD	2015-2016

Awards   **Scholar – Division 39 (Psychoanalysis) of the American Psychological Association**
2017

- Given to graduate students and early career psychologists who demonstrate interest and promise as psychoanalytic practitioners. Scholars are provided mentorship from a senior psychoanalyst, given a stipend to travel to Division 39's annual conference, and are offered resources in furthering their psychoanalytic education.

Special Academic Commendation 2017
George Fox University Graduate Department of Clinical Psychology
- Award for outstanding academic, clinical, and professional contributions to George Fox University's PsyD program.

Leadership Experiences & Professional/ Academic Affiliations

Co-chair   2016-Current
- Psychoanalytic reading group – *Friends of Freud*
- Psychoanalytic Student Interest Group   2016-Current

Student Member
- American Psychological Association   2014-Current
- APA Division 39 (Psychoanalysis)   2016-Current
- International Society for Psychological   2016-Current
  and Social Approaches to Psychosis
- Neuroscience Education Institute   2016-2017
- APA Division 53 (Child and Adolescent Psychology)   2015-2016

Participant   2009-2011
Critical Care Medicine Leadership Training
Children's Hospital Los Angeles

Selected Professional Trainings

Clinical Team   2014-Current
- Consultation group that meets weekly to present and discuss cases from various clinical perspectives
- Supervisors: Carlos Taloyo, PhD; Nancy Thurston, PsyD, ABPP; Paul Stolzfus, PsyD; Kris Kays, PsyD

Steif, B., Jenkins, S., & Rodriguez, A. (2017). *Black psychoanalysts speak.* Screening and panel discussion at Oregon Psychoanalytic Center. Portland, OR.

Knafo, D. (2017). *Psychosis: Key psychoanalytic concepts.* Webinar presentation *via* The International Society for Psychological and Social Approaches to Psychosis- US. New York, NY.

Bartlett, R. (2017, Oct). *Listening for unconscious communications.* Presented at George Fox University, Psychoanalytic Student Interest Group. Newberg, OR.

Aron, L., Churchill, H., DeVinney, H., Hedlund, S., Lugar, S., & Rubin, B. (2017, April). *Striking when the iron's cold? Exploring the how, when, if, and why of pursuing psychoanalytic training.* Continuing education master class at Division of Psychoanalysis (39) 37th Annual Spring Meeting. New York, NY.

White, C. (2017, April). *A conversation with Cleonie White, PhD.* Special workshop for graduate students at Division of Psychoanalysis (39) 37th Annual Spring Meeting. New York, NY.

Seegobin, W., Peterson, M., McMinn, M. & Andrews, G. (2017, March). *Difficult dialogues.*

Presentation presented at George Fox University, Graduate Department of Clinical Psychology Spring Diversity Grand Rounds, Newberg, OR.

Warford, P. & Baltzell, T. (2017, March). *Domestic violence: a coordinated community response*. Presentation presented at George Fox University, Graduate Department of Clinical Psychology Spring Colloquium, Newberg, OR.

Brown, S. (2017, Feb). *Native self-actualization: it's assessment and application in therapy.* Presentation at George Fox University, Graduate Department of Clinical Psychology Spring Grand Rounds, Newberg, OR.

George Fox University Behavioral Health Bootcamp 2016
Newberg, OR
- Multi-day training to prepare professionals and students to work in Integrated Care/Behavioral Health.
- Topics: Common Diagnoses, Diversity, Motivational Interviewing, and Evidence-Based Interventions for Integrated Care.

Summer Intensive Rorschach Training Workshop 2016
Nancy Thurston, PsyD, ABPP, Certified Analyst

Bourg, W. (2016, Nov). *When divorce hits the family: helping parents and children navigate*. Presentation presented at George Fox University, Graduate Department of Clinical Psychology Fall Grand Rounds, Newberg, OR.

Frawley-O'Dea, M.G. (2016) *Transference/countertransference paradigms in clinical work.* Presentation at Brookhaven Institute for Psychoanalysis and Christian Theology. Fogelsville, PA.

Kuhnhausen, B. (2016, Oct). *Sacredness, naming, and healing: Lanterns along the way*. Presentation presented at George Fox University, Graduate Department of Clinical Psychology Fall Colloquium, Newberg, OR.

McWilliams, N. (2016). *What remains of value to therapists in the work of Sigmund Freud?* Presentation at Brookhaven Institute for Psychoanalysis and Christian Theology. Fogelsville, PA.

Charles, M. (2016). *Object relations.* Presentation at Brookhaven Institute for Psychoanalysis and Christian Theology. Fogelsville, PA

Altman, N. (2016). *Race, class, culture in psychotherapy.* Presentation at the Oregon Psychoanalytic Center. Portland, OR.

Jenkins, S. (2016, Mar.). *Managing with diverse clients*. Presentation presented at George

Conferences
Attended

Fox University, Graduate Department of Clinical Psychology Spring Colloquium, Newberg, OR.

Hall, T. & Janzen, D. (2016, Feb.). *Neuropsychology: What do we know 15 years after the decade of the brain?* & *Okay, enough small talk. Let's get down to business!* Presentation presented at George Fox University, Graduate Department of Clinical Psychology Spring Grand Rounds, Newberg, OR.

Mauldin, J., (2015, Oct.). *Let's talk about sex: sex and sexuality with clinical applications*. Presentation presented at George Fox University, Graduate Department of Clinical Psychology Fall Grand Rounds, Newberg, OR.

Hoffman, M., (2015, Sep.). *Relational Psychoanalysis and Christian Faith: A Heuristic dialogue.* Presentation presented at George Fox University, Graduate Department of Clinical Psychology Fall Colloquium, Newberg, OR.

McRay, B., (2015, Mar.). *Spiritual Formation and Psychotherapy.* Presentation presented at George Fox University, Graduate Department of Clinical Psychology Spring Colloquium, Newberg, OR.

Sammons, M., (2015, Feb.). *Credentialing, Banking, the Internship Crisis, and other Challenges for Graduate Students in Psychology.* Presentation presented at George Fox University, Graduate Department of Clinical Psychology Spring Grand Rounds, Newberg OR.

Dodgen-Magee, D. (2014, Nov.) *"Facetime" in an Age of Technological Attachment*. Presentation presented at George Fox University, Graduate Department of Clinical Psychology Spring Colloquium, Newberg, OR.

Doty, E.,& Becker, T. (2014, Oct.) *Understanding and treating ADHD and Learning Disabilities in the DSM 5.* Presentation presented at George Fox University, Graduate Department of Clinical Psychology Fall Grand Rounds, Newberg, OR.

Division of Psychoanalysis (Div. 39) 37th Annual Spring Meeting   2017
The Times, They Are A-Changin'. How about us?
New York, NY.

The International Society for Psychological and Social   2016
Approaches to Psychosis Annual Meeting

From Reductionism to Humanism – Moving Forward from Psychosis and Extreme States
Boston, MA

American Psychological Association Annual Convention   2016
Insights Emerge with the Exchange of New Ideas.
Denver, CO

References

Glena Andrews, PhD, Licensed Psychologist
Director of Clinical Training
George Fox University Graduate Department of Clinical Psychology
Phone:503.554.2386   Email: gandrews@georgefox.edu

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Professor of Clinical Psychology
George Fox University Graduate Department of Clinical Psychology
Advisor and Research Vertical Team Leader
Phone: 503.554.2374   Email: rbufford@georgefox.edu

Nancy Thurston, PsyD, ABPP, Licensed Psychologist & Certified Psychoanalyst
Professor of Clinical Psychology
George Fox University Graduate Department of Clinical Psychology
Phone: 503.554.2378   Email. nthursto@georgefox.edu

Chloe Ackerman, PsyD, Licensed Psychologist
Clinical Instructor of Family Medicine
OHSU Family Medicine at Scappoose
Phone: 503.418.4290   Email: ackermch@ohsu.edu

Marilyn Charles, PhD, ABPP, Licensed Psychologist & Certified Psychoanalyst
Austen Riggs Center
Staff Psychologist
Phone: 413.358.2801   Email: Marilyn.charles@austenriggs.net

Additional references available upon request.