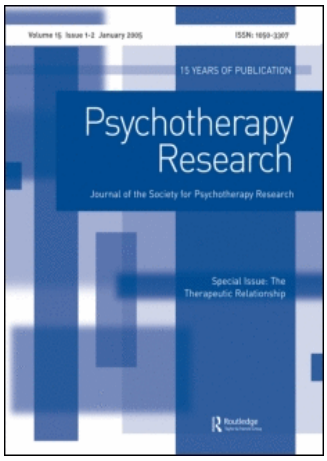

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The recovery of metacognitive capacity in schizophrenia across 32 months of individual psychotherapy: A case study

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Abstract
It has been asserted that psychotherapy might help persons with schizophrenia to improve their capacity for metacognition, that is, their ability to think about their own thinking and the thinking of others. To explore this issue, metacognitive capacity, delusions, and insight were assessed using the psychotherapy transcripts of an adult with schizophrenia and severe delusions for a period of time spanning 32 months. Correlations revealed that metacognitive capacity increased as symptoms and lack of insight decreased. Results suggest that metacognitive capacities increased before symptoms changed and that awareness of one's own thoughts emerged before awareness of others' thoughts. Progress appeared to be initially volatile, with early gains sustained only after approximately 1½ years.

The concepts of metacognition and theory of mind refer to a wide range of cognitive tasks that involve thinking about thinking, both one's own thinking and that of others (Brune, 2005; Semerari et al., 2003). This capacity may be compromised in schizophrenia (Koren, Sneidman, Goldsmith, & Harvey, 2006; Langdon, Coltheart, Ward, & Catts, 2001) and has been linked to barriers to recovery, including severity of delusions, poor insight, and poor quality of life (Harrington, Langdon, Siegert, & McClure, 2005; Lysaker, Carcione, et al., 2005). With a limited ability to form and scrutinize thoughts about oneself and others, it may, furthermore, often be difficult for persons with this condition to construct a meaningful account of gains or losses, to link daily events with the past, or to envision a future that could be affected by present action. As a result, deficits in metacognition may be one explanation for the diminishment in sense of self or identity as broadly observed to characterize schizophrenia by writers from differing perspectives (Laing, 1978; Lysaker & Lysaker, 2002; Parnas & Handest, 2003; Searles, 1965).

With this in mind, interest has arisen in whether psychotherapy could help persons recover their capacities for metacognition and thereby enhance their abilities to make better sense of their symptoms and their future. If psychotherapy can promote improved metacognitive ability in schizophrenia, perhaps it could be increasingly adapted to assist persons to make and sustain key gains. Supporting this possibility, the psychotherapy of schizophrenia has long been concerned with how persons construct meaning (Fenton, 2000), and some forms of cognitive therapy have been shown to affect belief systems and positive symptoms (Sensky et al., 2000). Furthermore, psychotherapy can be conceptualized as offering opportunities to engage in dialogues that call on persons' capacities to form, recognize, and challenge their understanding of themselves and others, possibly spurring growth in those abilities. Also, several studies have suggested that psychotherapy leads to enhancements in metacognition among persons with severe personality disorders (e.g., Semerari et al., 2005).

One case study—of a man with schizophrenia generally adherent to treatment but with significant levels of disorganization—has suggested that metacognitive capacity improved slowly over the course of 32 months (Lysaker, Davis, et al., 2005). In the current study, we have attempted to replicate these findings with a patient with more severe levels of delusions who had been chronically nonadherent to treatment. We also planned to systematically track changes in delusions and lack of insight concurrent with changes in metacognitive capacity. By lack of

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insight, we refer specifically to lack of awareness of having a mental illness; thus, the term is used in the sense of knowing that one has schizophrenia and does not refer to a broader awareness of intrapsychic function. Of note, although the case is ongoing, we chose to assess changes after 32 months because this is the end point used in the previous single-case study (Lysaker, Davis, et al., 2005). Specifically, we chose to measure delusions and lack of insight because they were the major presenting symptoms in this case.

We predicted that with time metacognitive capacity would improve as lack of insight and delusions diminished. Although a single-case study does not have the power of a randomized controlled trial, it does have the advantage of more detailed analyses of changes over time, allowing for the generation of hypotheses for future research. We, therefore, planned to explore whether improvements in metacognitive capacities occurred before or after symptom change and whether particular metacognitive capacities improved before others.

Method

Participant

Scarlatti was a divorced man in his 40s with a college education who lived in his community and received outpatient psychiatric care. He met full criteria for schizophrenia and had experienced hallucinations and delusions since his early 20s with no periods of remission. He denied he was ill and believed that he could control the weather and was the son of an African queen. He had pressured speech and significant levels of anxiety. The course of his illness was associated with multiple hospitalizations, lost jobs, social alienation, substance abuse, and legal problems. He spent most of his time alone and expressed little interest in others. Cognitive testing using the Hopkins Verbal Memory Test (Brandt, 1985) and Logical Memory Test of the Wechsler Memory Scale III (Wechsler, 1997) revealed grave impairments in verbal memory, with Scarlatti achieving scores 1.5 *SD* below the expected score for age. He had been nonadherent for years to traditional and atypical antipsychotic medications and had shown little benefit from case management services. He was chosen for this study because he had participated in psychotherapy for more than 2 years and suffered from chronically disabling symptoms not likely to spontaneously remit.

The raters in this study were Caucasian women in their 20s and 40s. The raters had a master's degree in clinical psychology or nursing. Paul H. Lysaker, a Caucasian male in his 40s and a clinical psychologist with more than 20 years of experience working with persons with severe mental illness, was the psychotherapist.

Instruments

The Metacognitive Assessment Scale (MAS; Semerari et al., 2003) was created to detect metacognitive change among persons with personality disorders. The MAS focuses on metacognitive capacity rather than specific contents and defines metacognition as the set of abilities that allows persons to understand mental phenomena and to use that understanding to problem solve and cope. The MAS contains four scales: Understanding of One's Own Mind, or the ability to think about one's own mental states; Understanding of Others' Minds, or the ability to think about others' mental states; Decentration, or seeing the world as existing with others having independent motives; and Mastery, or the ability to implement effective strategies to cope with problems. Each scale consists of a series of capacities, and 1 point is awarded for each capacity that is rated as evident in a psychotherapy transcript. The highest possible score for Understanding of One's Own Mind is 9; for Understanding of Others' Minds, 8; for Decentration, 3; and for Mastery, 9. These can be summed to create a total score ranging from 0 to 29.

The capacities within each scale of the MAS are arranged in hierarchical order, such that once a capacity is rated as not attained no higher capacities should be possible (e.g., if one does not recognize one's emotions, it should not be possible to understand links between one's thoughts and feelings). Thus, when scoring, if evidence was found that a capacity was present, the rater next searched for evidence of the next capacity. If no evidence was found for the presence of a capacity, no evidence of the subsequent higher capacities was sought. For instance, to determine whether Scarlatti achieved the fourth capacity of the MAS Understanding of One's Own Mind scale, which is awareness of one's own emotions, raters searched the transcript for places where Scarlatti described different ways he felt. If there were several places where Scarlatti described his own emotions, a point was awarded, and the rater searched for evidence of the next capacity, which is awareness that one's views of the world are fallible. If evidence was found that Scarlatti understood his views of the world as not absolute, then a point was awarded, and the rater began searching for the next capacity. In this way, increasing scores reflected evidence of increasingly complex metacognitive operations.

As elsewhere (Lysaker, Davis, et al., 2005), raters were trained by Paul H. Lysaker using the MAS manual. Training involved reviewing transcripts from other cases and then the blind review of the same transcripts from this case by two different raters. This proceeded until raters demonstrated what appeared to be a thorough understanding of the rating principles. After this, interrater reliability was assessed for the MAS total score, with two blind raters assessing eight transcripts. This revealed a significant intraclass correlation ($r = .88$, $p < .01$). Regarding the psychometric properties of the MAS, previous studies have also found evidence of acceptable internal consistency (Cronbach's $a = .80$, $p < .01$) and test–retest reliability coefficients conducted across 6 months that ranged from .93 to .89 (Lysaker, Dimaggio, Buck, Carcione, & Nicolò, in press; Semerari et al., 2003). Concerning its validity when applied to persons with schizophrenia, evidence has also been presented suggesting it is correlated with Amador et al.'s (1994) Scale to Assess Unawareness of Mental Disorder, a measure sensitive to the ability to evaluate one's own mental states (Lysaker, Davis, et al., 2005). It has also been linked to impoverished psychosocial function, deficits in neurocognitive abilities associated with other measures of metacognition (Lysaker, Davis, et al., 2005), and, most recently, performance on tests of affect recognition (Lysaker et al., in press). Regarding convergent and divergent validity performance of the MAS, MAS scores have been found to be correlated with performance on the Scale to Assess Narrative Development, which measures depth of personal narrative while being uncorrelated with theoretically unrelated aspects of self-experience such as internalized stigma (Lysaker, Buck, Taylor, & Roe, 2007). The MAS has also been used in previous studies to track changes in metacognition in individual psychotherapy for persons with severe personality disorders and has been found to correspond to hypothetical deficits that underlie these disorders (Dimaggio et al., in press; Semerari et al., 2005).

The Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987) is often referred to as the gold standard of symptom assessment of treatment efficacy (Rabinowitz, Mehnert, & Eerdekens, 2006). It is a 30-item scale designed to rate a range of symptoms found in severe mental illness through use of a semistructured interview. In this study, we used the PANSS delusions and lack of insight items and rated each based on psychotherapy transcripts alone. For each of these items, raters rated the respective clinical phenomenon on a 7-point scale (1 = *absence of the problem*; 2 = *minimal levels of the symptom*; 3 = *mild levels*; 4 = *moderate levels*; 5 = *moderately severe levels*; 6 = *severe levels*; 7 = *extreme levels*). For instance, a rating of 3, or a mild lack of insight, suggests the client is aware of most significant aspects of mental illness but not all, whereas a rating of 6, or severe, suggests a total denial that one was ever ill. A rating of 3, or a mild lack of delusions, suggests a number of vaguely formed delusions that have little to no impact on daily life, whereas a rating of 6, or severe, suggests several crystallized delusions tenaciously held that significantly influence daily life. Raters were trained by Paul H. Lysaker using the PANSS manual. Training involved reviewing transcripts from other cases and then blind review of the same transcripts from this case by two different raters. This proceeded until raters demonstrated what appeared to be a thorough understanding of the rating principles. Interrater reliability was assessed after training was completed, with blind raters assessing eight transcripts. This revealed significant intraclass correlations for delusions and lack of insight (rs = .94 and .92, respectively, $p < .01$).

Evidence of interrater reliability, normal distribution of scores, test–retest reliability, internal consistency, criterion-related validity, and construct validity for the PANSS has been presented in multiple studies, which have been summarized in several sources (Kay et al., 1987; Kay, Opler, & Lindenmayer, 1988, 1989).

Procedure

One entire typed psychotherapy transcript was randomly chosen from each of the 32 months of psychotherapy notes and deidentified. References to time in therapy were removed. Transcripts, blind to time, were rated using the MAS and PANSS by two separate raters, who were unaware of the other's ratings.

Intervention

Psychotherapy context. Scarlatti received psychotherapy under voluntary and routine conditions in an outpatient medical center in the midwestern United States. Psychotherapy involved 45-min weekly sessions and had been ongoing for more than 32 months. The client attended more than 90% of scheduled weekly appointments. Psychotherapy was integrative in orientation with interventions derived from cognitive, psychodynamic, humanistic, and constructivist backgrounds (Lysaker & Buck, 2006). By integrative psychotherapy, we refer to an underlying assumption that the intentional creation of meaning in psychotherapy calls for varying interventions interlaced into an internally consistent theoretical network but not for an atheoretical

approach. The therapist's orientation emphasized the avoidance of authoritarian relationships and embodied many traditional psychotherapeutic values, including the provision of a supportive environment enabling reflection on the developing therapeutic relationship and the pursuit of personal autonomy. The therapist held a constructivist narrative theory of self (Gallagher, 2000), stressing that sense of self is embodied within the stories one constructs both alone and with others. This stance guided interventions such that they were intended to help the client make his own sense of his story while exploring how the client experienced the therapist as the audience for and with whom he was constructing the story. In this manner, the therapist understood himself at times as acting as a cognitive prosthetic, his voice serving as an aid to the client in being able to think about his own thinking and adopt the position as author of his life (Lysaker & Daroyanni, 2006).

Psychotherapy content. Regarding the issues addressed in Scarlatti's treatment, Scarlatti began by monopolizing the therapy hour, speaking without pause about his delusions and using them to explain all distressing immediate life events. The therapist began by reflecting how consumed Scarlatti was by these beliefs and how there seemed to be little room in his mind for other thoughts or feelings, such as enjoying certain events in his life. With this, Scarlatti noticed how he could speak for hours about these issues, and he recognized that his consumption with the content of his delusions was a burden to him. In time, Scarlatti began to reveal a sense of his life as composed of stunning disappointments dating back to childhood sexual trauma. At this junction (approximately Month 15), Scarlatti expressed fear that the therapist would abuse him as others had, and this led to an exploration of his anger, envy, and feelings of affection for the therapist as well as Scarlatti's tendency to anticipate rejection and attack by others. Following this, there was deeper exploration of the trauma he had experienced, his sense of himself as unlovable, a realization of how he had hurt others with his behavior, and the terror he felt reaching out to others (approximately Month 25). Scarlatti at this point had evolved an understanding of his illness as a biologically based condition inherited from his father that had limited his cognitive abilities and complicated his ability to process trauma and cope with low self-esteem. He began to discuss actions that might plausibly improve the quality of his life.

Results

Metacognition, delusions, and insight scores are presented in Figure I. To examine relationships between measurements and time, Spearman rho correlations were calculated. This form of correlation was chosen because time was measured in an ordinal fashion. Because sessions were sampled on a monthly basis, we cannot assume that the intervals between measurement points are equal. These correlations revealed the MAS total had a positive relationship with time ($r = .79$, $p < .001$) and negative relationships with delusions ($r = -.64$, $p < .001$) and lack of insight ($r = -.48$, $p < .01$). Insight and delusions were negatively related to

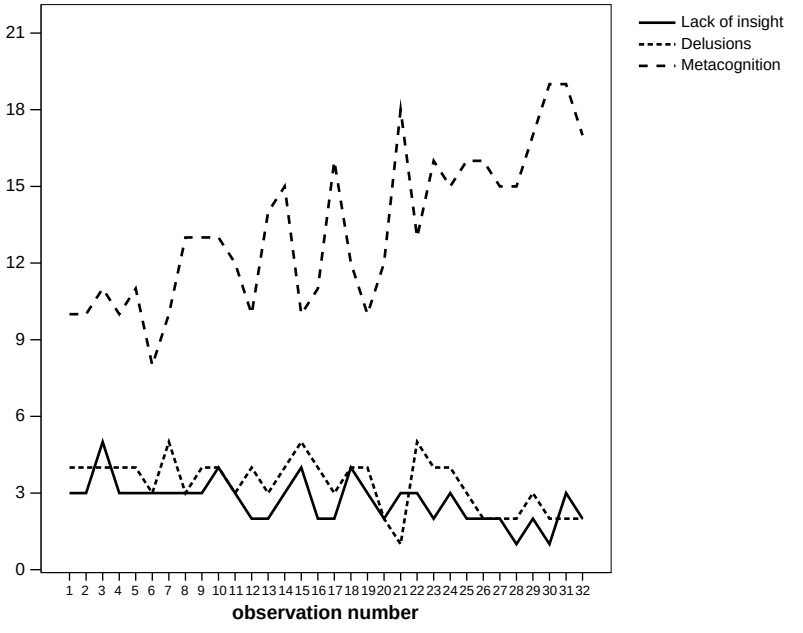

Figure I. Metacognition, delusions, and insight scores over 32 months.

time ($rs = -.56$ and $-.58$, respectively, $ps < .001$) and positively correlated with each other ($r = .57$, $p < .01$). Individual scores for three of the MAS subscales over the 32 months are presented in Figure II.

Discussion

Results are consistent with and replicate a previous case study (Lysaker, Davis, et al., 2005) suggesting metacognition improved over the course of psychotherapy. Specifically, metacognitive capacity improved as delusions and lack of insight were observed to decrease. Examination of the pattern of scores suggests that for the first 7 months there was little change in symptoms or metacognition. Next, there was a period of volatile change in metacognitive capacity, with many significant gains followed by subsequent losses. Lack of insight dropped below a clinically significant level for the first time at 1 year and delusions to this level at 20 months. The stability of gains appeared to be achieved after 26 months.

Of note, although we report a strong linear trend, examination of Figure I revealed that scores appear volatile and improvement is more often followed by decline than further improvement and decline is often followed by improvement than by further decline. For instance, considering the MAS total scores, among the 30 adjoining scores there are 18 instances (60%) in which a score improved or sustained an improvement. Of those 18 instances in which a score improved or stayed the same, only five times was the next score also an improvement and only three times did it stay the same. Thus, just barely less than two thirds of the time a decline follows improvement. Although this may reflect measurement error, it is also possible that the kinds of improvements we are observing here are ones that occur in a stair-step manner. Perhaps capacities develop slowly, are built on one another, and have to be practiced over time before they are sustained. This pattern of growth followed by loss may also point to the possibility that with improvement came pain and temporary regression. Indeed, as Scarlatti looked at his life more realistically, he saw himself as less powerful and as having done things he was ashamed of, and so with recovery came significant anguish.

In terms of what this reflected in the transcripts, we find Scarlatti spending less and less time by the sixth month talking about how he is royalty and more time talking about his own feelings of helplessness and trying to decide what to do. For instance, a typical session within the first year contained verbalizations such as:

> Scarlatti: You idiot, you're the crazy one [referring to the therapist]. You know about my royal past. You're jealous of that. You hate me. You all know I am the king and one day I will be worshipped. I know what you're thinking. I'm not a maniac lunatic. Mine is coming!

By contrast, after the second year of psychotherapy, a typical session involved multiple reflections such as:

> Scarlatti: Maybe I am a maniac. I think about the weather, say I caused it to rain, bug my roommate,

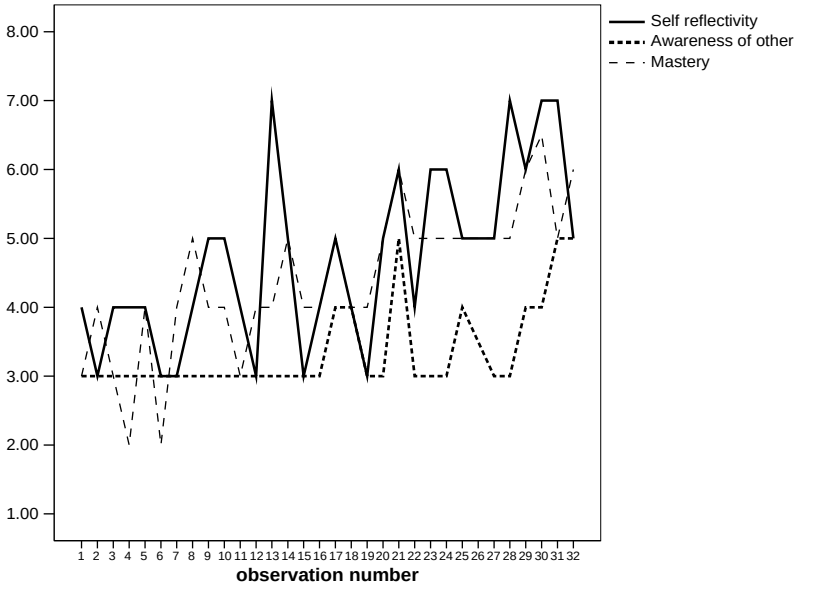

Figure II. Metacognitive Assessment Scale subscale scores over 32 months.

> but that might be true . . . I might be a maniac. It's probably not true. I feel bad about myself like all I am is a bum. I might be mentally ill. I quit at everything because no one could admire me, I always think I'm less and so I quit before I try. I yell at my mother for some reason, get hateful and hurt her feelings rather than talking healthy with her.

As illustrated in these two brief excerpts, we see Scarlatti initially tenaciously holding delusional beliefs, with no self-reflectivity or awareness of his mental illness. In contrast to this, we later see his acknowledging his mental illness, doubting his delusional beliefs, and gaining an emerging self-awareness and awareness of others.

This same pattern of emerging self-reflectivity can be seen in the pattern of discussion about the evolving therapeutic relationship also taken from the first year and late in the second year:

> Scarlatti: You are narrow-minded. You think you're better than everyone. But you got problems. In truth you're pretty worthless. You don't know about the half the things you should. You don't know nothing about chiropractors and the muscles that support the spine and you're a doctor. You probably wear a bright orange cap when you go out.
> Therapist: You're sure heaping on the abuse today.
> Scarlatti: Cause you deserve it. You're jealous of me. And don't try and cut me off.

By contrast, Scarlatti is having the same reaction but now he is able to examine and question it:

> Scarlatti: Have you ever had a sexual disease? You know what I mean and you're not going to answer it. That's fine. Don't answer. I tell you everything personal that's possible. You're upset I can tell.
> Therapist: You're hoping I've had a sexually transmitted disease so you can laugh at me.
> Scarlatti: I do, don't I? Why do I do that? I guess it makes me feel good. I feel so small all the time. I put people down to feel important. I turn it all inside and it becomes hateful. I look at everything so negative, abuse people.

While a hostile quality appeared throughout both excerpts, initially it appears unchecked and untouched by reflection. Later Scarlatti is still angry but now can find something he feels and is not focused exclusively on finding the something someone else is. He also is assigning meaning, with the help of the therapist, to his own behavior and starting to consider the larger consequences.

Regarding changes in the different domains of metacognitive capacity assessed by the MAS, as portrayed in Figure II, it appears that there was first growth of both mastery and Scarlatti's awareness of his own thinking from as early as the third month, whereas awareness of the mind of the other showed no growth until 17 months. This may suggest that psychotherapy was associated first with Scarlatti becoming able to recognize and distinguish his emotions, then to see his beliefs as subjective and subject to bias, and then as something he could consider and change. As the capacity to do this emerged, he also began to consider that his attempts to problem solve were limited by his appraisal of his problems and that if he saw matters differently he might cope more effectively. Only after those capacities had been present for months did he begin to develop an awareness of the thoughts and feelings of others.

Turning to the issue of the interventions offered, we find that there were generally three broad types of therapist interventions that appeared to progress from one to the next with time. First, the therapist assumed a generally reflective stance. He noted often how Scarlatti was consumed with his beliefs. He resisted goading to argue about the validity of these beliefs, but admitted that one problem that he saw was that Scarlatti tended to focus so intensely on these beliefs that he seemed at times to have no idea of what was happening around him. This led to an admitted rocky alliance in which Scarlatti could acknowledge how deeply he feared interacting with others and how confused he was about what others thought and felt. For the first time, he had a story of himself: He was obsessed and confused, although not necessarily wrong, regarding the content of his obsession.

In the second year, the work progressed and the therapeutic relationship was a focus of discussion. It was noted that Scarlatti tended to never share emotions with others and Scarlatti explored why it was possible to speak with his therapist and what he was gaining by that. Scarlatti here also acknowledged a fear that the therapist would sexually abuse him as an uncle had when he was a child. This led to exploration of the depths to which that trauma had affected Scarlatti's self-esteem. In this sense, Scarlatti seemed to discover a relation to another, which led to the discovery of his own affects and the growth of the ability to recognize and distinguish between his emotions. Finally, in the third year, the focus shifted to what Scarlatti could realistically achieve in his life, what he might do to feel that he "had something to be proud of." This work involved a decidedly cognitive focus with challenges to Scarlatti when he seemed to abdicate responsibility for

examining the implications of his thoughts and actions. He thus worked on both understanding what was wrong and what he should do about that.

Interestingly, across these interventions, we also see a shift in how Scarlatti and the therapist made sense of his delusions. By end of the first year, for instance, it is discussed how perhaps his belief that he is the descendent of royalty was an explanation for immediate social experience. He said: "I know I am because of how they look at me . . . Right there. I mean why else would they all be so jealous?" So if we take him at face value, perhaps his delusion explains his discomfort when around others. As time went on, Scarlatti seemed to no longer use this belief to explain immediate experience but used it instead to explain something more abstract, namely a life of failure. He says: "I failed because they made me . . . I mean they held me back and that's why I don't have nothing." Here, the delusion seemed to explain pain that came from self-reflection. When asked in the third year how he would feel if he ever discovered this was not true, Scarlatti was blunt: "It would be very sad and lonely . . . wouldn't you want to be important and then if you weren't and were a nobody . . . no that would be back breaking." Perhaps as metacognitive capacity developed, the therapy naturally evolved to explore at deeper and more abstract levels these previously enduring delusional beliefs, ultimately weakening and in a sense dismantling the need for them.

Although causality cannot be proven in a case study, several hypotheses can be generated from these data for the purposes of future study. First, it is possible that psychotherapy offers persons with psychosis a place to exercise and develop their capacities for self-reflection and that gains in the capacity for self-reflection may play a role in helping to decrease certain positive symptoms as well as to improve insight. It is also possible that the development of self-awareness is a precondition for the development of a worldview in which one is not the center of all events and the workings of the world are seen as emerging from interactions among others who possess their own thoughts and feelings. Of note, Scarlatti did not achieve the highest levels of metacognition. He did not, for instance, achieve what Semerari et al. (2003) call the integration function, which is the ability to give a complete description of one's own mental state and the interpersonal processes in which a person is involved, distinguishing cognitive and emotional elements. This may suggest, given his cognitive deficits, there was a limit to how much his metacognitive capacities could improve. It may also be that more therapy or a different kind of therapy is necessary before such higher levels of change are possible.

There are limitations to this study. Replication is needed with persons with varying backgrounds, stages, and courses of schizophrenia. The integrative therapy offered Scarlatti might be dissimilar from other forms of psychotherapy, and different patterns of recovery may emerge in cases in which psychotherapists have other orientations. For instance, the therapy in this case was guided by a view that Scarlatti's confusion was the result of a reduced capacity to make sense of his life and not patterns of early family dynamics. Thus, results may not generalize to some psychoanalytic approaches that have conceptualized the core difficulties of schizophrenia as linked to dysfunctional childhood relationships (e.g., Searles, 1965) or other approaches that paternalistically provide clients with accounts of their illness rather than help clients evolve them on their own. Further, because we relied on the PANSS scoring system to assess behavior within transcripts and did not conduct formal symptom assessments outside of psychotherapy, any discussion of clinical improvement should be considered preliminary. Also there are many issues related to medication that were not assessed here. Regarding medication, Scarlatti's adherence improved while at the same time his dosage was adjusted downward. It is unclear, though, whether this means that with improvement he started at least taking some medication (admittedly a lower dose than initially recommended) or whether he had been adherent all along and as he became healthier he required a lesser dose.

Finally, although there was improvement, there was no cure. There is still much to be learned, and we suggest that the methods and concepts operative here offer a starting point for studying the role of psychotherapy in promoting the recovery of the capacity for metacognition in schizophrenia and subsequent improvements in other domains.

Note

[1] All identifying information in this report has been systematically disguised.

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