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## Metacognition in psychotic disorders

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CHAPTER

# 2

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

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**ABSTRACT**

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

## INTRODUCTION

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

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

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

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

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

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

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

## **METHODS**

### **PARTICIPANTS**

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

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

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

## **MATERIALS**

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

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

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

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

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

## **PROCEDURE**

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

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



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

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

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

### **ANALYSIS**

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

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

## RESULTS

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

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

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

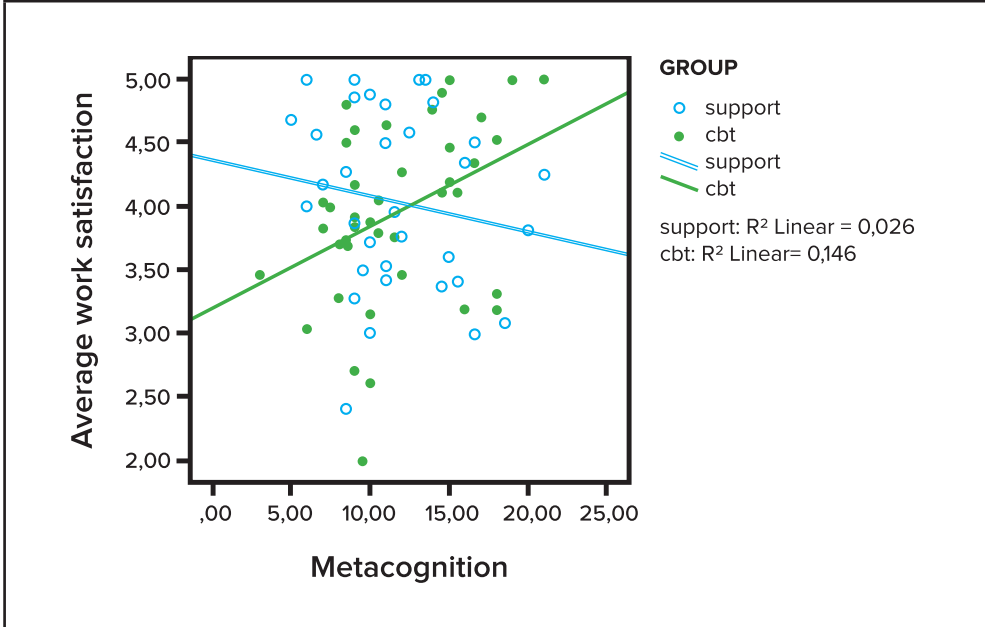
metacognition should not be interpreted in isolation as metacognition might have the expected moderator effect on treatment.

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

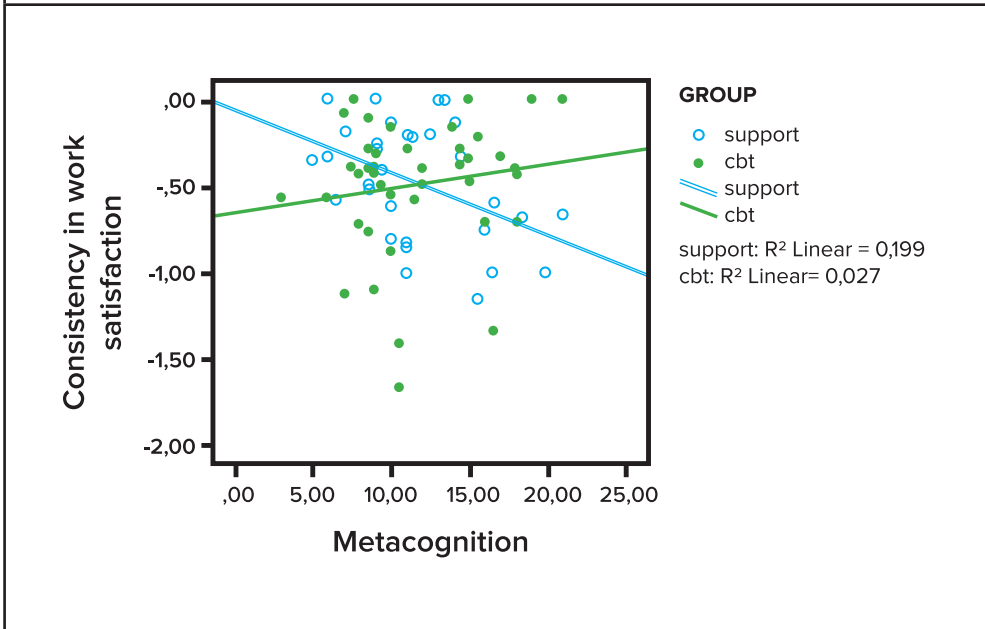
The second regression analysis examined whether metacognition, treatment, and the interaction between treatment and metacognition significantly predicted the consistency in job satisfaction over and above positive symptoms, negative symptoms and demographic variables. There were no significant main effects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

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

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



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



## DISCUSSION

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

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

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

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

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

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

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

## **ROLE OF FUNDING SOURCE**

This study was funded by the Veterans Administration Rehabilitation Research and Development Service (D6629R). This body played no role in study design; the collection, analysis and interpretation of data, in the writing of the report; and in the decision to submit the paper for publication.

## **CONTRIBUTORS**

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

## **CONFLICTS OF INTEREST**

There are no conflicts of interest or disclosures.

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