



# Measuring motivation in schizophrenia: Is a general state of motivation necessary for task-specific motivation?



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## ABSTRACT

Despite the important role of motivation in rehabilitation and functional outcomes in schizophrenia, to date, there has been little emphasis on how motivation is assessed. This is important, since different measures may tap potentially discrete motivational constructs, which in turn may have very different associations to important outcomes. In the current study, we used baseline data from 71 schizophrenia spectrum outpatients enrolled in a rehabilitation program to examine the relationship between task-specific motivation, as measured by the Intrinsic Motivation Inventory (IMI), and a more general state of volition/initiation, as measured by the three item Quality of Life (QLS) motivation index. We also examined the relationship of these motivation measures to demographic, clinical and functional variables relevant to rehabilitation outcomes. The two motivation measures were not correlated, and participants with low general state motivation exhibited a full range of task-specific motivation. Only the QLS motivation index correlated with variables relevant to rehabilitation outcomes. The lack of associations between QLS motivation index and IMI subscales suggests that constructs tapped by these measures may be divergent in schizophrenia, and specifically that task-specific intrinsic motivation is not contingent on a general state of motivation. That is, even in individuals with a general low motivational state (i.e. amotivation), interventions aimed at increasing task-specific motivation may still be effective. Moreover, the pattern of interrelationships between the QLS motivation index and variables relevant to psychosocial rehabilitation supports its use in treatment outcome studies.

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## 1. Introduction

In recent years, there has been increased interest in the role of motivation in schizophrenia (Barch, 2005; Velligan et al., 2006), and in particular, how motivation may mediate important relationships between negative symptoms and functioning and/or how motivation may predict the success of psychosocial rehabilitation (Gard et al., 2009; Nakagami et al., 2008). Motivation is a diverse and multidimensional construct, with different components of motivation having discrete theoretical underpinnings (Trémeau et al., 2013). When motivation is examined in the context of many schizophrenia studies, an assumption is often made that the variable being assessed is the symptom of amotivation. Researchers have only recently begun to separately examine intrinsic motivation (IM) versus a general state of motivation (SM) (K.H. Choi et al., 2012). IM and SM are categorically and theoretically distinct constructs. IM is based on intact hedonic systems

and the perceived ability to do well on a particular activity, as well as the value and usefulness placed on that activity (Deci and Ryan, 1985; Ryan and Deci, 2000). IM is limited to the activity itself and therefore contingent on the specific characteristics of that activity and perceptions of competency to tackle the activity or participate in it (J. Choi et al., 2010a). On the other hand, SM, as its name implies, includes a multitude of varying motivations for diverse activities that creates an overarching state of impetus. SM is based on drive theory and deficits in this domain suggest a restricted sense of volition that impresses upon every segment of living, from social functioning, to work, to hygiene. IM has been shown to be responsive to manipulations made to the specific task or activity, and a target of intervention when modifying activity parameters to encourage greater engagement for that activity (Choi and Medalia, 2010). SM, on the other hand, may be more difficult to target since it is a broader, pervasive phenomenon and more in line with negative symptomatology and the deficit syndrome.

It is not clear if motivation for a specific activity is related to or contingent on a general state of motivation. Can someone be internally motivated to participate in a particular treatment activity even if they do not possess a general state of motivation? This would be worthwhile

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to know in terms of psychiatric rehabilitation – is it possible to motivate patients with schizophrenia for a specific activity in the absence of a general state of motivation? These distinctions between IM and SM emphasize the need to understand what type of motivation is being measured when attempting to improve treatment engagement and outcome in schizophrenia. Despite motivation's relationship to functioning, there has not been meaningful discussion about the need to evaluate the specific types of measures used and better understand potentially different motivational constructs tapped by discrete measures.

While a few studies specifically set out to assess motivation *a priori* and have included motivation-specific measures in their assessment batteries, many more studies do not contain specific motivational assessments. For this larger cohort of studies, some have assembled an index of motivation from the interview-based Quality of Life Scale (QLS; Heinrichs et al., 1984). Nakagami et al (2008) developed this method to gauge a general state of intrinsic motivation by summing pertinent intrapsychic deficit items from the QLS probing sense of purpose, motivation, and curiosity. The QLS index has been used in a number of schizophrenia studies (Nakagami et al., 2010; Vohs et al., 2013), and there is some evidence that it may predict rehabilitation outcomes (Saperstein et al., 2011) (K.H. Choi et al., 2013). Other studies have used a self-report measure of motivation called the Intrinsic Motivation Inventory (Tas et al., 2012). The IMI (Plant and Ryan, 1985; Deci et al., 1994; Markland and Hardy, 1997) is based on the Self-determinism Theory (SDT) of motivation, the most widely accepted theory on human motivation (Ryan and Deci, 2000). SDT postulates that people with internal locus of control feel self-determined to follow through with a specific activity because they see their behavior as stemming from their own choices, values, and interests rather than being controlled by an external force. The IMI has been previously tailored for a wide range of activities in non-psychiatric (McAuley et al., 1989) and psychiatric samples, including schizophrenia (J. Choi et al., 2010b).

In the current cross-sectional study, we sought to compare the two different measures of motivation: a self-report measure aimed at assessing intrinsic motivation for specific tasks – the IMI – and the more general interview-based state index of intrinsic motivation derived from a subset of quality of life items mentioned above (QLS 3-item motivation index). We were particularly interested in exploring the relationship of these two constructs to each other, as well as their relationship to demographic, illness course, neurocognitive, and functional measures. The overarching questions we asked were: (a) what is the relationship between task-specific versus a general state of IM in schizophrenia? (b) Which is more strongly associated with factors relevant to psychosocial functioning? (c) Is a high degree of general state IM necessary to possess a high degree of IM for a specific task?

## 2. Method

### 2.1. Participants

Baseline data were obtained from 71 participants enrolled in an ongoing study of cognitive remediation. In order to qualify for the study, volunteers had to meet the following criteria: diagnosis of schizophrenia spectrum disorders, aged 18–65, outpatient status, no evidence of mental retardation, no evidence of traumatic brain injury or other neurological disorder, no evidence of substance abuse in past 30 days, and clinical stability as evidenced by no hospitalizations, no changes in medications, and no changes in housing in the past 30 days. Participants were recruited from community mental health and Veterans Administration Medical Center clinics. The study had been approved by local Institutional Review Boards.

### 2.2. Procedure

After providing written informed consent, all participants completed comprehensive baseline assessments, as detailed in the Measures

section. Assessments were administered over multiple sessions, as needed, to reduce fatigue. DSM-IV diagnoses were based on Structured Clinical Interview for DSM-IV (SCID; First et al., 1996) administered by PhD-level staff. All clinical symptom interviews were performed by highly trained raters, with inter-rater reliability ranging from 0.75 to 0.99.

### 2.3. Measures

#### 2.3.1. Cognition

Neurocognitive assessment included measures of verbal memory (Logical Memory I and II scales from the Wechsler Memory Scale-Revised, WMS-R; Wechsler, 1987), visual memory (delayed recall from the Rey Osterreith Complex Figure Test, Rey-O; Osterrieth, 1944), attention and working memory (Digit Span subtest from the Wechsler Adult Intelligence Scale-Revised, WAIS-R; Wechsler, 1981), executive function (percent perseverative errors on the Wisconsin Card Sorting Test, WCST; Heaton, 1981), sustained attention (Continuous Performance Test, A/X; Loong, 1991), and IQ estimate (2 scale estimate from Wechsler Abbreviated Scale of Intelligence, WASI; Wechsler, 1999).

#### 2.3.2. Symptoms

To assess current (past 30 days) symptomatology, we used the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987). Each of the 30 items is rated on a 7-point Likert scale, with total scores ranging from 30 to 120. For the current analyses we used the 5-factor solution (Bell et al., 1994), which consists of the following factors: positive, negative, cognitive, emotional discomfort, and hostility. Higher scores are indicative of greater pathology. Global self-esteem was measured using the 10-item, self-report Rosenberg Self-Esteem Scale (Rosenberg, 1965), with higher scores indicative of greater self-esteem.

#### 2.3.3. Functioning

In addition to several work-related self-report variables (longest full-time job, months since last full-time job and hours worked in past month), functioning was assessed using the Independent Living Skills Survey, self-report version (ILSS-SR; Wallace et al., 2000), a comprehensive, performance-focused measure of community functioning developed for use with individuals with serious and persistent mental illness. Areas of functioning assessed by ILSS-SR include: appearance & clothing, personal hygiene, care of personal possessions, food preparation, health maintenance, money management, transportation, leisure and community, job seeking, and job maintenance. Additionally, two measures of functional capacity were administered: the UCSD Performance Based Skill Assessment (UPSA; Patterson et al., 2001a) and the Social Skills Performance Assessment (SSPA; Patterson et al., 2001b). The UPSA relies on standardized role-plays to assess performance on five types of tasks: planning and recreational activities, communication, transportation, finance, and household chores. The SSPA is a standardized measure of social competence, wherein examinees engage in two brief role-plays and are rated on various components of social skills, including social appropriateness, speech clarity/fluency, assertiveness, etc. For both types of functional measures, higher scores are indicative of better functioning.

#### 2.3.4. Motivation

Two measures of motivation were used: Intrinsic Motivation Inventory (IMI; Plant and Ryan, 1985) and a 3-item motivation index derived from the Quality of Life scale (Heinrichs et al., 1984). The IMI is a 7-point Likert-type scale designed to assess a participant's subjective experience of an activity specifically in an experimental setting. Participants are asked to rate their interest/enjoyment, ability and effort as they pertain to a given activity (e.g. "I enjoyed doing this activity very much"), with higher scores indicative of greater IM for the task. For the current study, the IMI subscales "Interest", "Competency", and "Effort" were used, as well as the total IMI score. Participants completed the IMI in response

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