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Improving treatment motivation in individuals with psychosis: Predictors of response to motivational enhancement

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ABSTRACT

We sought to evaluate the influence of demographic, symptom, functional and cognitive factors on task-specific motivation, as well as improvement in task-specific motivation that occurs in response to motivational interviewing. In the absence of any intervention, better task-specific motivation was associated with higher perceived competence and lower symptomatology. Post-motivational enhancement improvement in motivation was predicted by fewer hospitalizations and better cognitive insight, with baseline symptomatology no longer predictive. Findings suggest motivational enhancement is likely to benefit individuals with diverse clinical presentations, though may be particularly well suited to those with lesser disease severity and better cognitive insight.

1. Introduction

Impairments in motivation have long been considered a core feature of psychotic spectrum disorders (PSD; Kraepelin, 1919; cf Foussias and Remington, 2010) and significantly impede daily functioning and treatment efficacy (Chen, 1991; Foussias et al., 2014; Tattan and Creed, 2001). While investigators have had little success improving global motivation to engage in goal-directed behavior, there is some evidence that different components of motivation are only loosely related (e.g., state vs. trait motivation; general vs task-specific motivation) in part due to moderating or mediating influences of other variables (e.g., perceived competence, self-efficacy, causality orientation) (Breitborde et al., 2014; Choi et al., 2014). Importantly, emerging evidence suggests that motivation for specific activities (i.e., task-specific motivation) can be improved (Choi and Medalia, 2010, though see Medalia et al., 2012 for negative finding).

We recently reported that motivational interviewing is an effective method for enhancing task-specific motivation to engage in a behavioral intervention (Fiszdon et al., 2016). In that randomized controlled trial, individuals with PSD and cognitive impairment were given the opportunity to attend up to 10, unpaid, computerized cognitive training sessions. Prior to the training, participants were randomized to receive either two sessions of motivational enhancement (ME) focused on enhancing motivation for this type of cognitive training, or two sessions of a control interview (CI) condition, where participants received feedback about their learning styles. The motivational enhancement intervention was adapted from a 2-session Dual Diagnosis Motivational Interviewing protocol expressly designed to accommodate cognitive impairments in individuals with psychosis (e.g., greater structure and repetition; Martino et al., 2002, 2006). The intervention included personalized norm-referenced feedback about cognitive functioning (based on baseline cognitive testing), psychoeducation about how cognitive training can improve cognition, a decisional balance activity (eliciting pros/cons of pursuing the training) and collaboratively developing a change plan for improving cognitive functioning. We found that ME was associated with significant, large effects on amount of improvement in task-specific motivation, as well as number of training sessions attended. Moreover, we found that for the sample as a whole, number of sessions attended was significantly predicted by post-interview (whether ME or CI) motivation level.

With the recent focus on tailored, patient-centered interventions, there has been more emphasis on identifying individual variables that predict treatment response. Accordingly, in the current analyses, we sought to better understand individual factors that predict both baseline task-specific motivation, as well as improvement in task-specific motivation that occurs in response to motivational interviewing. Our analyses focused on demographic, symptom, functioning, subjective and objective cognitive, and psychological (perceived competence,

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cognitive insight) variables for the 32 individuals with PSD that completed both ME sessions. While some studies have examined the relationship between some of these variables and compensatory cognitive training outcomes (e.g. Burton and Twamley, 2015), no studies known to us have examined their influence in predicting the impact of motivational enhancement on task-specific motivation. As such, current analyses were exploratory in nature and we adopted the null hypotheses.

2. Methods

Please see Fiszdon et al. (2016) for detailed information about the parent study, including full sample demographics, assessments, and details of the experimental and control conditions. Briefly, thirty-two outpatient volunteers with PSD (schizophrenia, schizoaffective disorder, psychosis NOS or affective disorder with psychotic features) were randomized to and completed both ME sessions, after which they were invited to attend unpaid computerized cognitive training sessions.

Baseline assessments included demographics (age, education, age at onset, number of hospitalizations), symptoms (PANSS total and PANSS 5 factors; Bell et al., 1994; Kay et al., 1987), functioning (Global Assessment of Functioning [GAF; American Psychiatric Association, 1994]; Medication Management Ability Assessment [MMAA, Patterson et al., 2002]), perceived competence for the computerized training (Perceived Competence Scale [PCS, Williams et al., 1998]), and the Beck Cognitive Insight Scale (BCIS; Beck et al., 2004). The Brief Assessment of Cognition in Schizophrenia (BACS; Keefe et al., 2008) was used to gauge objective cognitive functioning, while premorbid and current IQ estimates were based on the Wide Range Achievement Test-Reading subtest (WRAT-3; Jastak and Wilkenson, 1993) and Wechsler Abbreviated Scale of Intelligence 2-subtest (WASI, Wechsler, 1999). The Patient's Assessment of Own Functioning Inventory (PAOFI) self-report (Richardson-Vejlgaard et al., 2009) was administered as a measure of subjective perception of cognitive deficits. In addition to these baseline variables, task-specific motivation for the cognitive training was assessed using the Intrinsic Motivation Inventory for Schizophrenia Research (IMI-SR; Choi et al., 2010) both at baseline, as well as immediately after the ME interviews (before participants underwent any cognitive training sessions). The 21-item IMI-SR has three scales assessing domains pertinent to motivation for cognitive training: value/utility (e.g., "I think doing this activity could help me"), perceived choice (e.g., "I believe I had some choice about doing this activity"), and interest/enjoyment (e.g., "I enjoyed doing this activity very much"). Analyses focused on baseline variables that (a) correlate with baseline task-specific motivation (IMI-SR) and, (b) predict response to the ME intervention, as indexed by pre-post ME interview change in IMI-SR. Initial individual predictor regressions to determine selection of variables for multivariable models were exploratory, and hence used a liberal $p < 0.10$ significance level (Hosmer and Lemeshow, 2013). Subsequently, multivariable regression models containing significant predictors for each of the two outcomes were examined. Variables that were no longer significant in the presence of other variables were removed sequentially (backward elimination method) from lowest association until all variables were significant.

3. Results

The sample was 48% male, on average 47 years old, with 13 years of education, 23 at age of onset, with 11 prior hospitalizations, average GAF of 42, minimal to mild symptoms (PANSS Total = 50), WASI IQ estimate of 90, and cognitive performance approximately 1.5 SD below average (BACS composite *t*-score = 35).

Significant individual predictors of baseline motivation were: objective and self-reported cognition, perceived competence, along with positive, cognitive and emotional distress psychiatric symptoms (Table 1a). Following entry of these variables into a multivariable model and using backward elimination, perceived competence, PANSS cognitive and PANSS emotional distress factors were retained in the model (see Table 1b), together accounting for 60% of variance in baseline motivation levels.

Table 1a
Individual demographic, cognitive, and symptom/function predictors of baseline IMI-SR.

	b	*Std. error*	beta	*p* value	95% CI
Demographics					
Age	0.12	0.41	0.51	0.78	−0.73 to 0.96
Gender	5.17	8.17	0.12	0.53	−11.52 to 21.85
Education	−0.71	2.22	−0.06	0.75	−5.23 to 3.83
Age of onset	−0.05	0.32	−0.03	0.87	−0.71 to 0.60
Hospitalizations	0.30	0.31	0.17	0.34	−0.33 to 0.93
Cognitive					
WRAT-3 *t*-score	0.06	0.44	0.02	0.90	−0.83 to 0.94
WASI IQ	−0.30	0.28	−0.20	0.28	−0.87 to 0.26
PAOFI memory	0.88	0.37	0.40	0.03*	0.12 to 1.64
PAOFI language	0.49	0.42	0.21	0.25	−0.36 to 1.34
PAOFI executive	0.73	0.40	0.32	0.07*	−0.08 to 1.55
BACS composite	0.72	0.36	0.34	0.06*	−0.02 to 1.45
Symptom & functioning					
MMAA	0.06	0.57	0.02	0.92	−1.11 to 1.23
BCIS	1.06	0.65	0.29	0.11	−0.27 to 2.39
Perceived competence	2.80	0.56	0.68	<0.001*	1.66 to 3.94
DSM GAF	0.43	0.37	0.21	0.25	−0.32 to 1.19
PANSS positive	−2.46	0.83	−0.48	0.006*	−4.15 to (−0.76)
PANSS negative	0.21	1.04	0.04	0.84	−1.91to 2.32
PANSS cognitive	−2.32	1.05	−0.38	0.03*	−4.46 to (−0.19)
PANSS emotional	−2.24	0.93	−0.40	0.02*	−4.14 to (−0.34)

Note. IMI-SR—Intrinsic Motivation Inventory for Schizophrenia Research; WRAT—Wide Range Achievement Test Word Reading subtest; WASI IQ—Wechsler Abbreviated Scale of Intelligence IQ; PAOFI—Patient's Assessment of Own Functioning Inventory; BACS—Brief Assessment of Cognition in Schizophrenia; BCIS—Beck Cognitive Insight Scale; MMA—Medication Management Ability Assessment; DSM GAF—Diagnostic Statistical Manual Global Assessment of Functioning; PANSS—Positive and Negative Syndrome Scale.
*Significant at the 0.10 level.

Table 1b
Final multivariable model of predictors of baseline IMI[§].

	b	*Std. error*	beta	*p* value	95% CI
Perceived competence	2.45	0.48	0.59	<0.001*	1.47 to 3.43
PANSS cognitive	−1.83	0.71	−0.30	0.02*	−3.28 to (−0.38)
PANSS emotional	−1.80	0.64	−0.32	< 0.01*	−3.11 to (−0.50)

Note. PANSS—Positive and Negative Syndrome Scale.
*Significant at the 0.10 level.
§ $F(3, 28) = 16.58$, $p < 0.001$, $R^2 = 0.60$.

Baseline motivation significantly predicted post-ME motivation level ($F = 4.47$, $p = 0.04$). In individual predictor analyses controlling for baseline levels of motivation (entered in first block), two variables significantly predicted post-ME motivation level—number of hospitalizations and cognitive insight (Table 1c). When these two were entered into a multivariable regression model that again controlled for baseline motivation, only number of hospitalizations remained significant, accounting for an additional 13% of the variance in motivational increase post-ME, above and beyond variance accounted for by baseline motivation (Table 1d). Cognitive insight trended towards significance ($p = 0.06$), but was not included in the final model. Together, baseline motivation and number of hospitalizations explained 23% of change in motivation level post-ME.

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