



Using Self-Determination Theory to Understand Motivation Deficits in Schizophrenia: The ‘Why’ of Motivated Behavior



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ABSTRACT

Self-Determination Theory (SDT) provides a model for understanding motivation deficits in schizophrenia, and recent research has focused on problems with *intrinsic motivation*. However, SDT emphasizes that motivated behavior results from three different factors: intrinsic motivators (facilitated by needs for autonomy, competency, and relatedness), extrinsic motivators (towards reward or away from punishment), or when intrinsic and extrinsic motivators are absent or thwarted a disconnect–disengagement occurs resulting in behavior driven by boredom or ‘passing time’. Using a novel approach to Ecological Momentary Assessment, we assessed the degree to which people with schizophrenia were motivated by these factors relative to healthy control participants. Forty-seven people with and 41 people without schizophrenia were provided with cell phones and were called four times a day for one week. On each call participants were asked about their goals, and about the most important reason motivating each goal. All responses were coded by independent raters (blind to group and hypotheses) on all SDT motivating factors, and ratings were correlated to patient functioning and symptoms. We found that, relative to healthy participants, people with schizophrenia reported goals that were: 1) less motivated by filling autonomy and competency needs, but equivalently motivated by relatedness; 2) less extrinsically rewarding, but equivalently motivated by punishment; 3) more disconnected–disengaged. Higher disconnected–disengaged goals were significantly associated with higher negative symptoms and lower functioning. These findings indicate several important leverage points for behavioral treatments and suggest the need for vigorous psychosocial intervention focusing on autonomy, competence, and reward early in the course of illness.

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1. Introduction

Early definitions of schizophrenia highlighted motivation deficits as a crucial feature of the disorder (Bleuler, 1911; Kraepelin, 1919), and recently there has been an increase in focus on understanding these deficits (e.g., Barch, 2008). Several studies have since highlighted the importance of motivation in the disorder, finding that lower motivation is associated with poorer neurocognition, functioning, and outcome (Nakagami et al., 2008; Foussias et al., 2009; Gard et al., 2009). Perhaps the most prominent macrotheory on what drives human goal pursuit is Self-Determination Theory (SDT; Deci and Ryan, 2000; Ryan and Deci, 2000), which provides an important explanatory framework for understanding *why* individuals pursue specific goals and behaviors. Broadly, SDT emphasizes that individuals set goals and engage in behaviors in order to meet intrinsic psychological needs (*intrinsic motivation*), in

order to move towards external reward or away from punishment (*extrinsic motivation*), or, when intrinsic and extrinsic factors are thwarted, individuals can develop a *disconnection–disengagement* with their motivated behavior and its relationship with the environment (Deci and Ryan, 2000).

1.1. Intrinsic Motivation

Thus far, research in schizophrenia using SDT has focused on deficits in intrinsic motivation (e.g., Barch et al., 2008; Choi et al., 2010) (but see Silverstein, 2010). For example, in a recent Ecological Momentary Assessment (EMA) study with people with schizophrenia, intrinsic motivation was positively related to momentary experiences of positive emotion and negatively related to negative emotion (McCormick et al., 2012). Elsewhere, observer ratings of lower intrinsic motivation have been significantly associated with poorer outcome, neurocognition, and occupational functioning (Nakagami et al., 2008; Gard et al., 2009; Saperstein et al., 2011). Importantly, SDT emphasizes that intrinsic motivation is a broad construct facilitated by three ‘psychological

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needs' – autonomy (motivated behavior towards agency and self-expression), competence (motivated behavior towards knowledge, skill or learning), and relatedness (interpersonal connection) (Ryan and Deci, 2000). To our knowledge, there has not been a systematic assessment of these specific facilitators of intrinsic motivation in schizophrenia.

1.2. Extrinsic Motivation

SDT defines extrinsic motivation as behavior being motivated by external forces – specifically through praise, or other rewards (including monetary), or through avoidance of punishment or criticism (Deci and Ryan, 2000). People with schizophrenia are clearly responsive to rewards in treatment settings (Dickerson et al., 2005), and to monetary incentives in laboratory settings (Summerfelt et al., 1991; Gold et al., 2012). However, patients may have difficulty representing the value of reward when the rewarding stimulus is not present (Heerey and Gold, 2007; Gold et al., 2008). We have previously shown that people with schizophrenia have difficulty anticipating pleasurable experiences especially when those experiences are goal-directed or effortful (Gard et al., 2007, in revision). Whether this difficulty in representing or anticipating reward translates into deficits in extrinsic motivation is unclear. As for avoidance of punishment or criticism in schizophrenia, the research in this area is limited. Most research on 'punishment' has been completed in the context of monetary reward loss (e.g., Waltz et al., 2013), which is distinct from the avoidance of criticism/punishment as described in SDT (Deci and Ryan, 2000). Some work has been completed on the self-report of the sensitivity of the Behavioral Inhibition System (BIS; involving the avoidance of threat and punishment) in schizophrenia, with one study showing heightened BIS sensitivity in people with schizophrenia (Scholten et al., 2006), and another showing a positive relationship between self-reported BIS sensitivity and negative symptom reports in a large healthy population (Engel et al., 2013).

1.3. Disconnected-disengaged

Finally, when psychological intrinsic needs are hindered, or when extrinsic rewards or punishments are not clear or available, one can experience a disconnected–disengagement with the environment (Ryan and Deci, 2000). In this state, (sometimes referred to as an 'impersonal–amotivated' orientation) the individual feels that his or her behavior is not connected to an outcome and that he or she lacks agency, choice, or direction. When an individual experiences a great deal of disconnected–disengagement, they often report that their behavior is driven by boredom or a desire to 'pass the time' (Deci and Ryan, 2000). Disconnected–disengagement appears to most closely map on to the negative symptom 'avolition', of the DSM (American Psychiatric Association, 2013). Given this, we would predict that people with schizophrenia would report more goals that lack agency, direction, or that are driven by boredom.

1.4. Present Study

To our knowledge, no previous study has assessed the specific reasons underlying motivated behavior in people with schizophrenia relative to healthy individuals in a real world setting. We used EMA to assess the short-term goals that people with and without schizophrenia reported in their daily lives. We provided cell phones to participants and had trained research assistants (blind to participant group and study hypotheses) call with semi-structured questions. This approach has been used with other complex populations (Lanzi et al., 2007; Galloway et al., 2008), and is ideal because it minimizes the cognitive/motivational burden of traditional EMA, and allows for truly idiographic and open-ended responses to questions. We asked participants about their short-term goals and about the *most important reason for engaging*

in these goals. Independent raters (also blind to group and hypotheses) then coded all goals on psychological needs, extrinsic motivators, and disconnected-disengagement. We hypothesized that relative to healthy participants, people with schizophrenia would have goals that were rated lower on psychological needs for autonomy, competence, and relatedness, and higher on levels of disconnected-disengagement. Given the mixed evidence of extrinsic motivation in schizophrenia, we did not have an a priori hypothesis on this factor.

2. Method

2.1. Participants

All participants with schizophrenia were recruited from outpatient clinics and day treatment centers in the Bay Area. Exclusion criteria for all participants included a history of head trauma/loss of consciousness, substance abuse in the last six months, neurological disorders, and non-fluency in English, participants with schizophrenia were excluded if there were significant changes in medication or dosage in the previous 30-days, or hospitalization in the previous three months. Healthy comparison subjects were recruited through community postings and bulletin boards. Forty-seven outpatients with schizophrenia ($n = 31$) or schizoaffective disorder ($n = 16$) and 41 healthy comparison subjects participated in the study. Diagnoses for all participants were confirmed using the SCID DSM-IV-Clinician Version (First et al., 1997). People with schizophrenia were also given the Positive and Negative Syndrome Scale interview (PANSS; Kay et al., 1987). There were no differences in any demographic measure between groups (see Table 1).

2.2. Procedures

The EMA procedure was fully explained to participants during an orientation, and each participant provided written informed consent. All participants were provided with, and used a study cell phone (for call consistency). All participants were given a thorough orientation to be sure that they understood the questions about goals and reasons motivating the goals, and at least one test call was conducted to confirm that each participant fully understood the task. Starting 1–3 days later, participants were called by trained research assistants four times a day (at pseudorandom times) for seven days between the hours of 9 am and 9 pm. If calls were missed participants were called again within 15 min. The number and timing of calls are similar to other

Table 1

Demographic characteristics for people with and without schizophrenia. There were no differences between groups on any variable.

Characteristic	Schizophrenia N = 47	Healthy Comparison N = 41	p-value
Age	39.55 (13.95)	36.83 (14.89)	.38
Education, years (SD)	13.9 (2.55)	14.55 (2.05)	.21
Parental Education, years (SD)	13.95 (2.75)	14.25 (3.46)	.68
Gender, n, %			.20
Male	35, 74%	26, 63%	
Female	12, 26%	15, 37%	
Ethnicity, n, %			.39
African American	6, 13%	5, 12%	
Caucasian/White	18, 38%	21, 51%	
Asian American	9, 19%	8, 19%	
Latino	8, 17%	6, 15%	
Other	6, 13%	1, 2%	
Diagnosis, n			
Schizophrenia	31	NA	
Schizoaffective	16	NA	
Chlorpromazine Eq. (SD)	418.14 (555.67)	NA	
PANSS-Total, Sum Average (SD)	64.42 (13.11)	NA	
PANSS-Positive, Average (SD)	15.27 (4.97)	NA	
PANSS-Negative, Average (SD)	16.69 (5.27)	NA	

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