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Denial and Acceptance Coping Styles and Medication Adherence in Schizophrenia

Stephanie Aldebot, B.A. and Amy G. Weisman de Mamani, PhD

Department of Psychology, University of Miami, Coral Gables, Florida

Abstract

Antipsychotics are often the first line of treatment for individuals with schizophrenia (Fialko et al., 2008). One challenge to effective treatment is lack of adherence to prescribed medication. Lower rates of adherence are associated with considerably higher rates of relapse and poorer course of illness. Therefore studying characteristics that may be related to medication adherence is important. Coping styles may be one such factor. Individuals utilize a variety of coping mechanisms to manage and navigate difficult life events, including mental illness (Cooke et al., 2007). In the present study, forty individuals with schizophrenia were assessed regarding their coping styles and medication adherence practices. As hypothesized, it was found that denial coping was inversely related to medication adherence. However, contrary to expectations, acceptance coping was not related to medication adherence. These findings suggest that targeting denial coping strategies in treatment may help foster more optimal strategies for managing schizophrenia.

Keywords

schizophrenia; coping; acceptance; denial; medication adherence

1. Introduction

Schizophrenia is a serious mental illness that is associated with profound impairment and societal burden (Lavretsky, 2008). Treatment for schizophrenia has significantly evolved since the advent of chlorpromazine and other antipsychotic medications and subsequent research has led to increased options regarding pharmacotherapy for the treatment of the illness (Kutscher, 2008).

Currently, antipsychotics tend to be the first-line of defense for the treatment of schizophrenia (Fialko et al., 2007). When on medications, many patients thrive (Velligan et al., 2007a). However, without them, prognosis is usually poor (Hui et al., 2006; Robinson et al., 1999; Sajatovic et al., 2002). Thus, a better understanding of the factors that may lead to non-adherence to prescribed psychopharmacotherapy agents is salient.

Adherence refers to the degree to which a person's behavior is consistent with the medical advice provided by a professional (Sackett & Haynes, 1976). It has been estimated that 70–80% of individuals with psychotic disorders are at least partially non-compliant with their medication regimens (Breen & Thornhill, 1998). Medication adherence is critical for facilitating recovery from psychotic episodes (Robinson et al., 1999) and relapse prevention (Sajatovic et al., 2002). Non-adherent individuals have been found to demonstrate more

positive symptoms, more relapses, more alcohol and cannabis use and poorer quality of life (Hui et al., 2006). Thus, non-adherence to medication regimens has critical implications for the course of the illness.

Some researchers have suggested that patient motivation for medication adherence may be compromised by enjoyment resulting from some of the symptoms of the illness. This issue was first explored by Van Putten and colleagues (1976). These investigators found that individuals who experienced increased levels of grandiosity were less compliant with their medication regimens. Patients have also indicated that the stigma of taking medication, physical side effects (e.g. weight gain, sexual dysfunction, lethargy), forgetfulness and lack of social support (Hultman et al., 1997) were some of the most common barriers to medication adherence (Hui et al., 2006).

Coping styles may be another individual difference that distinguishes adherent from non-adherent behaviors in patients with schizophrenia. In general, research shows that individuals utilize a variety of coping mechanisms to manage and navigate difficult life events, including mental illness (Cooke et al., 2007). While coping is a dynamic process that shifts throughout a stressful transaction (Folkman et al., 1986; Lazarus & Folkman, 1984), certain coping styles have been found to be more beneficial than others. For example, styles such as seeking support for instrumental reasons, turning to religion, planning and brainstorming ways to deal with a problem and positive reinterpretation of a stressful event are often adaptive (Carver et al., 1989; Cooke et al., 2007). On the other hand, using denial to cope, venting negative emotions, behavioral and mental disengagement from a stressor (Carver et al., 1989) and using alcohol and/or drugs (Potvin et al., 2008) are generally maladaptive. It is important to note that these strategies are not always detrimental, but can become so when used exclusively or in lieu of other potentially more effective coping techniques (Carver et al., 1989).

According to Carver et al. (1989), denial coping occurs when individuals report the “refusal that a stressor exists or the attempt to act as though the stressor is not real”. On the other hand, Carver and colleagues, define acceptance coping as “accepting that a difficult situation is real and must be addressed.” Although these coping styles appear to be on opposite ends of one spectrum, they are actually distinct processes that may be utilized in conjunction with each other (Carver et al., 1989). Often individuals may utilize both denial and acceptance to deal with different aspects of their illness (Greenhouse et al., 1999). For instance, a patient may accept that he/she has a diagnosis of schizophrenia, but may deny having some of the symptoms (e.g., paranoia; poor hygiene). The distinction between these coping styles is further evidenced by the fact that they are not always found to be highly correlated with each other (Carver et al., 1989).

Not surprisingly, research suggests that individuals with schizophrenia often report and demonstrate significant difficulty coping with life stresses (Corrigan & Toomey, 1995). Schizophrenia patients, compared to people without mental illness, often employ a more limited range of coping styles (Ritsner et al., 2006; Rollins et al., 1999), characterized by a preference for avoidance and passive coping, rather than utilizing more problem-focused methods (Farhall & Gehrke, 1997; Lysaker et al., 2003). Patients with schizophrenia who utilize denial coping styles have been found to have more symptom exacerbation and higher rates of relapse (Meyer, 2001). Patients that refuse to believe that they are ill are unlikely to be motivated to learn more about the illness and to take steps to care for their symptoms. Denial is not an all-or-nothing phenomenon. Partial denial may also be used, where individuals comply with various treatments for their illness, but they may not openly acknowledge their diagnosis. Partial denial may also be in place when individuals accept parts of their illness, such as cognitive impairment or hallucinations, but deny that they have schizophrenia.

Impaired insight and the employment of denial coping strategies have been found to be related but distinct characteristics (Moore et al., 1999). Both strategies are similar in that they appear to result in faulty attributions being made regarding the state of one's mental health (e.g., patients attributing the cause of their symptoms to something unrelated to mental illness). There are multiple paths to impaired insight in psychosis, including neurocognitive factors, and for some, avoidant coping styles. It is important to note that both of these paths are not necessarily mutually exclusive (Osatuke et al., 2008). For example, Startup (1996) concluded that for patients with mild neurocognitive deficits, poor insight is often the result of denial coping strategies. However, for patients with greater neurocognitive impairments, poor insight is instead thought to reflect underlying neurological deficits (Startup, 1996).

Impaired insight and denial coping strategies also appear to be dissimilar in many ways. For example, impaired insight often reflects obliviousness to one's condition, mirroring anosognosia in neurological disorders (Shad et al., 2006; Rickelman, 2004; Amador & Paul-Ouduard, 2000). The use of denial coping strategies, on the other hand is more sophisticated, and necessitates some initial awareness of a condition that one then actively ignores and rebuffs. In other words, according to Bach and Hayes (2002), denial represents a way of dealing with the illness that requires cognitive capacity to implement the taxing cognitive mechanism of continuous suppression of thoughts related to the schizophrenia label.

Unlike denial, research has demonstrated that reactions that include recognition and acceptance of one's mental illness often lead to more informed and better decisions regarding treatment (Bach & Hayes, 2002) and have been linked to better outcomes for individuals coping with bipolar disorder (Yen et al., 2007), medical illness (Carver & Scheier, 1994) and alcoholism (Kurtz, 1981). Active acceptance of specific symptoms of schizophrenia, such as hallucinations, has been found to be associated with perceived control of the hallucinations (Farhall et al., 2007) and subsequent noncompliance with harmful hallucination commands (Shawyer et al., 2007). Individuals that recognize and accept the fact that they have an illness may take steps, such as learning more about it and educating their friends and family members. They may also be more prone to engage in didactic treatment plans with mental health professionals.

Acceptance of one's mental illness can also have detrimental consequences (Cooke et al., 2007). For example, some data indicates that increased awareness of one's illness may be a harmful force in some contexts, because it can increase demoralization, depression and suicide (Lewis, 2004; Osatuke et al, 2008). It appears that acceptance is only likely to be a beneficial coping mechanism when patients have sufficient resources (e.g., therapy; adequate social support systems), to assist them with the problems that they have come to recognize as part of their illness (Lewis, 2004). Another important variable to consider is how much internalized stigma the patient experiences (Lysaker et al., 2007). Recently, Lysaker and colleagues (2007) found that internalized stigma moderates the relationship between insight (a variable closely related to acceptance) and outcomes. Specifically, high levels of insight into one's illness and low internalized stigma were associated with increased functioning, whereas high levels of insight and high internalized stigma were associated with decreased functioning (Lysaker et al., 2007). Thus, insight and acceptance are likely to be most beneficial when stigma is low and there are adequate resources available to support the patient in coming to terms with the illness.

As discussed earlier, antipsychotics play a crucial role in preventing symptom exacerbation and rehospitalization and are therefore considered one of the most effective interventions for patients with schizophrenia (Davis et al., 1993; Lieberman et al., 2005). As far as we are aware, the current study will be the first to directly assess the relationship between medication adherence, denial, and acceptance coping strategies in individuals with schizophrenia. In this

study, we use a sample of 40 patients with schizophrenia that are on medication to assess the hypothesis that greater use of acceptance coping strategies and lesser use of denial coping strategies will be associated with better reported adherence to medication regimens. Because previous research has linked coping strategies (Cooke et al., 2007) and medication adherence (Morken et al., 2008) to severity of psychiatric symptoms, we control for symptoms severity in all primary analyses.

2. Methods

2.1 Population and procedures

Forty individuals (mean age = 38.13, SD = 13.05, 70% men, 50% Hispanic, 27.5% African American, 22.5% Caucasian) with schizophrenia or schizoaffective disorder were drawn from a larger research study exploring the psychosocial correlates of schizophrenia. Participants who met criteria for schizophrenia or schizoaffective disorder and at the time of testing were prescribed antipsychotic medications, were included, and completed the questionnaires described below. Participants were recruited from the community via ads posted in public transportation, radio and newspaper ads and hospital referrals in the greater Miami area. All participants had at least an 8th grade education, 72.5% (29) had their high school degree and 55% (22) had some college education. Coping and compliance questionnaires were administered during the baseline interview, after acute episodes had subsided.

2.2 Instruments

The Structured Clinical Interview for the DSM-IV Axis I Disorders, Version 2.0, patient edition (SCID-I/P) was used to confirm diagnosis. The SCID-I/P (First, Spitzer, Gibbon, & Williams, 1996) is a semi-structured interview designed for diagnosing patients with Axis I disorders according to DSM-IV criteria. This study used the psychotic symptoms section of the SCID-I/P to confirm diagnoses of schizophrenia or schizoaffective disorder. The SCID-I/P is widely used and has demonstrated high inter-rater reliability on individual symptoms and overall diagnosis (Ventura et al., 1998). To assess inter-rater reliability in the current study, all interviewers as well as the study Principle Investigator watched six videotaped interviews and independently rated each question and determined an overall diagnosis. Inter-rater agreement using Cohen's Kappa was 1.0. In other words, interviewers were in complete consensus regarding the presence or absence of diagnosis.

Severity of psychiatric symptoms was rated using the Brief Psychiatric Rating Scale (BPRS; Ventura et al., 1993; Overall & Gorham, 1988). The BPRS is a semi-structured interview with 24 questions evaluating symptoms such as anxiety, depression, suspiciousness, hallucinations, and unusual thought content. All questions are on a 7-point Likert-type scale ranging from 1 (not present) to 7 (extremely severe). This widely used scale has been shown to be reliable in both white and minority populations, both in English and in Spanish (Caram, et al., 2001; Nuechterlein et al., 1992). A total score was created by summing across the 24 items. All interviewers were first trained extensively in BPRS coding by the second author and coded practice tapes until they achieved high inter-rater reliability with the trainer. To establish formal inter-rater reliability, all interviewers then watched 6 videotaped BPRS training interviews developed at UCLA by Dr. Joseph Ventura. Intraclass (agreement) correlation coefficients between the study interviewers and Dr. Ventura's consensus ratings ranged from .85 to .98 for total scores. In general, and as is common in studies using this scale (e.g., Ventura, et al., 1993; Schutzwahl et al., 2003) coefficients were higher for items based on verbal responses ($M = .91$, $SD = .06$) and lower for items based on interviewer observations ($M = .65$, $SD = .28$). Restriction of range in the observation only scores appeared to contribute to lower coefficients, as there was less variability for these items.

Adherence and denial coping were assessed from two modified subscales of the COPE inventory (Carver, 1997). The COPE instructions were tailored to focus on schizophrenia/schizoaffective disorder as follows ‘This questionnaire asks you to indicate what you generally do and feel, when you experience stress related to coping with having schizophrenia/schizoaffective disorder.’ Items are coded on a 1 (I haven’t been doing this at all) to 4 (I’ve been doing this a lot) Likert scale.

The denial subscale contains four items. The following is an example: “I’ve been saying to myself ‘this isn’t real.’” Cronbach’s alpha for this subscale was .67. The acceptance subscale contains two items. The following is an example, “I’ve been accepting the reality of the fact that it has happened.” Cronbach’s alpha for this subscale was .72. Subscale items are summed such that higher scores indicate greater usage of denial or acceptance strategies.

The Medication Adherence Scale (Thompson, et al., 2000) was used to assess fidelity to pharmacotherapy. This 10-item questionnaire focuses on the past three months and asks participants to respond yes or no to a series of questions about their medication usage (e.g. “Do you ever forget to take your medication?”), their attitudes toward taking medication (e.g. “It is unnatural for my mind and body to be controlled by medications”), and the side effects attitudes to psychotropic medication (e.g. “Medication makes me feel tired and sluggish”). Adherent answers were awarded a 1 and non-adherent answers were awarded a 0. A total score was then obtained by summing across items with higher scores reflecting greater adherence. In the current study, adherence ranged from 0 to 10, with a Mean of 5.95 (SD = 2.43). Cronbach’s alpha for this subscale was .59.

3. Results

3.1 Preliminary analyses

Descriptive statistics and means and standard deviations for demographic and all primary variables are summarized in Table 1. Preliminary analyses were conducted to assess whether the demographic variables of gender, ethnicity, and years of education, were related to our primary study variables of denial coping, acceptance coping and medication adherence. Because no significant associations were found ($p > .05$ for all), these demographic variables were not explored further in the study.

3.2 Primary analysis

A hierarchical linear regression analysis was conducted to test the primary hypothesis that greater acceptance coping and less denial coping would be associated with greater medication adherence, after controlling for symptom severity. BPRS total scores were entered in Step 1 and acceptance and denial coping were entered in Step 2. Surprisingly, BPRS symptoms ($b = -.06$, $p = .712$) were not significantly related to medication adherence ($F_{(1, 39)} = .138$, $p = .712$). When acceptance and denial coping strategies were entered in Step 2, there was a significant R^2 change of .19. After controlling for symptoms, the linear combination of coping styles, was significant ($F_{(3, 39)} = 2.876$, $p = .049$). The multiple correlation coefficient was .44, indicating that approximately 19% of the variance of medication adherence in the sample can be accounted for by the linear combination of coping styles.

In exploring the relative strength of the individual predictors, we found that, as hypothesized, denial coping made a significant contribution to medication adherence ($t(37) = -2.83$, $b = -.43$, $p = .008$). However, contrary to our hypotheses, acceptance did not make a significant contribution to medication adherence ($t(37) = .994$, $b = .15$, $p = .327$). Interestingly, it should be noted that a Pearson Correlation indicated that acceptance and denial coping were not significantly related to each other ($r = .107$, $p = .512$).

4. Discussion

Treatment of schizophrenia relies on adherence to medication. However, few correlates of medication adherence have been identified for individuals with schizophrenia. The present study examined whether acceptance and denial coping strategies were associated with medication adherence in schizophrenia. We hypothesized that individuals who were more accepting of their disorder would be more likely to adhere to their medication regimens, while those that relied more heavily on denial strategies to cope would be less adherent to their medications.

Data from the present study yielded strong support for one of our hypotheses. After controlling for symptom severity, individuals who dealt with the stress of their illness by pretending that they are not ill or by ignoring the magnitude of their symptoms were, as expected, less adherent to their prescribed medication. This may be the case because patients who refuse to accept the fact that they are ill may not believe that their symptoms are something that can be managed, and thus, may be less motivated to take steps to resolve their symptoms, such as taking medication. Further, if individuals refuse to believe that they are ill, they may be unlikely to believe that their psychotic experiences are symptoms of their illness, and that their strange experiences may be dealt with through medication or psychological intervention.

Enhancement of schizophrenia patient's ability to cope with stress is an essential tool that may help to prevent relapse and improve functional ability (Bradshaw, 1993). Given that research has found that there is some flexibility in the coping styles that one utilizes (Folkman et al., 1986, Lazarus & Folkman, 1984), the findings of this study may have implications for treatment. Future treatments that directly target denial coping strategies and encourage patients to face the reality of their illness may lead to better medication adherence.

Interventions such as Coping Strategy Enhancement (CSE), Coping-Skills Training and Adherence-Coping Education (ACE) are cost effective methods and can be delivered in group format (Uzenoff et al., 2008; Bradshaw, 1993). These types of cognitive behavioral therapies encourage patients to become aware of and deal with their illness and are taught specific skills to help modify environmental stressors, change erroneous perceptions and maladaptive interpretations of events and reduce their physiological arousal in the face of stress (Bradshaw, 1993). As a whole, these interventions teach skills that allow for growth in individuals' coping repertoires (Farhall et al., 2007), an area where patients with schizophrenia have been found to have deficits (Ritsner et al., 2006; Rollins et al., 1999). If individuals that tend to employ denial coping strategies are taught new, healthier ways of coping, they may be less likely to rely on denial to deal with stress associated with their illness. Accordingly, they may be more likely to adhere to their medication regimen.

Our results provide further support for the fact that acceptance and denial are distinct constructs, as they were not significantly related with each other. Thus it is important to be aware that having information about a patient's use of one coping process (denial or acceptance) does not necessarily inform us about their practices with respect to the other coping strategy. Treatments should therefore aim to target both techniques independently. When a central goal of therapy is to increase medication adherence, results of the current study suggest that placing more emphasis on denial over acceptance is warranted.

This study is marked by several limitations. First, the design was cross-sectional. Although we found that greater denial coping is associated with poorer medication adherence in schizophrenia, no causal claims can be made until this relationship is evaluated over time. Another limitation is our relatively small sample size. To increase confidence in our findings, future studies are needed that replicate our results with a greater number of patients. In addition, this study is limited by its failure to measure insight and internalized stigma. Given that prior

research has found that these variables may be related to the current variables of study, future research is needed to clarify these relationships.

Finally, this study is limited by our reliance on self-report measures of coping and medication adherence. Patients with schizophrenia are known to be poor historians (Mutsatsa et al., 2006) and may not be able to accurately report on their coping styles. Furthermore, some data suggests that patients frequently overestimate or inaccurately evaluate their medication compliance (Velligan et al., 2007b). Thus, future research is needed that confirms patient reports of medication compliance through methods such as blood plasma levels, pill counts, electronic monitoring and psychiatrist and family member confirmations.

In conclusion, this is the first study to evaluate the association between denial coping strategies and medication adherence in schizophrenia. Results suggest that individuals with schizophrenia that employ more denial coping strategies are less likely to take their medications as prescribed. Thus, targeting denial coping may be one way that psychosocial interventions can reduce non-adherence to medication in patients with psychosis.

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References

- Amador XF, Paul-Oudouard R. Defending the unabomber: anosognosia in schizophrenia. *Psychiatric Quarterly* 2000;71(4):363–371. [PubMed: 11025913]
- Bach P, Hayes SC. The use of acceptance and commitment therapy to prevent the rehospitalization of psychotic patients: A randomized controlled trial. *Journal of Consulting and Clinical Psychology* 2002;70(5):1129–1139. [PubMed: 12362963]
- Bradshaw WH. Coping-skills training versus a problem-solving approach with schizophrenic patients. *Hospital and Community Psychiatry* 1993;44(11):1102–1104. [PubMed: 8288183]
- Breen R, Thornhill JT. Noncompliance with medication for psychiatric disorders: reasons and remedies. *CNS Drugs* 1998;9:457–471.
- Caram A, Agraz FP, Ramos VH, Garcia RR. Evaluación de la intervención psicodramática en pacientes con trastornos psicóticos. *Acta psiquiátrica y Psicológica de América Latina* 2001;47:351–358.
- Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology* 1989;56:267–283. [PubMed: 2926629]
- Cooke M, Peters E, Fannon D, Anilkumar APP, Aasen I, Kuipers E, Kumari V. Insight, distress and coping styles in schizophrenia. *Schizophrenia Research* 2007;94(1–3):12–22. [PubMed: 17561377]
- Corrigan PW, Toomey R. Interpersonal problem solving and information processing in schizophrenia. *Schizophrenia Bulletin* 1995;21(3):395–403. [PubMed: 7481570]
- Davis, JM.; Janicak, PG.; Singla; Sharma, RP. Maintenance antipsychotic medication. In: Barnes, TRE., editor. *Antipsychotic drugs and their side effects*. New York, NY: Academic Press; 1993. p. 183–203.
- Farhall J, Gehrke M. Coping with hallucinations: Exploring stress and coping framework. *British Journal of Clinical Psychology* 1997;36:259–261. [PubMed: 9167865]
- Fialko L, Garety PA, Kuipers E, Dunn G, Bebbington PE, Fowler D, Freeman D. A large-scale validation study of the Medication Adherence Rating Scale (MARS). *Schizophrenia Research* 2008;100:53–59. [PubMed: 18083007]
- Folkman S, Lazarus RS, Dunkel-Schetter C, DeLongis A, Gruen RJ. Dynamics of a stressful encounter: Cognitive appraisal, coping and encounter outcomes. *Journal of Personality and Social Psychology* 1986;50:992–1003. [PubMed: 3712234]
- Greenhouse WJ, Meyer B, Johnson SL. Coping and medication adherence in bipolar disorder. *Journal of Affective Disorders* 1999;59:237–241. [PubMed: 10854641]

- Hui CLM, Chen EYH, Kan CS, Yip KC, Law CW, Chiu CPY. Detection of non-adherent behavior in early psychosis. *Australian and New Zealand Journal of Psychiatry* 2006;40:446–451. [PubMed: 16683971]
- Kurtz, E. Shame and guilt: Characteristics of the dependency cycle. Hazelden Foundation; Center City, MN: 1981.
- Kutscher, EC. Antipsychotics. In: Mueser, KT.; Jeste, DV., editors. *Clinical Handbook of Schizophrenia*. New York: Guilford Press; 2008. p. 159-167.
- Lavretsky, H. History of schizophrenia as a psychiatric disorder. In: Mueser, KT.; Jeste, DV., editors. *Clinical Handbook of Schizophrenia*. New York: Guilford Press; 2008. p. 3-13.
- Lazarus, RS.; Folkman, S. Stress, appraisal and coping. New York: Springer; 1984.
- Lewis L. Mourning, insight and reduction of suicide risk in schizophrenia. *Bulletin of The Menninger Clinic* 2004;68(3):231–244. [PubMed: 15342330]
- Lieberman JA, Stroup TS, McEvoy JP, Swartz MS, Rosenheck RA, Perkins DO, Keefe RS, Davis SM, Davis CE, Lebowitz BD, Severe J, Hsiao JK. Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. *New England Journal of Medicine* 2005;353(12):1209–1223. [PubMed: 16172203]
- Lysaker PH, Bryson GJ, Lancaster R, Evans J, Bell M. Insight in schizophrenia and associations with executive function and coping style. *Schizophrenia Research* 2003;59:41–47. [PubMed: 12413641]
- Lysaker PH, Lancaster RS, Davis LW, Clements CA. Patterns of neurocognitive deficits and unawareness of illness in schizophrenia. *Journal of Nervous and Mental Disease* 2003;191(1):38–44. [PubMed: 12544598]
- Lysaker PH, Roe D, Yanos PT. Toward understanding the insight paradox: internalized stigma moderates the association between insight and social functioning, hope and self-esteem among people with schizophrenia spectrum disorders. *Schizophrenia Bulletin* 2007;33:192–199. [PubMed: 16894025]
- Meyer B. Coping with severe mental illness: Relations of the Brief COPE with symptoms, functioning and well-being. *Journal of Psychopathology and Behavioral Assessment* 2001;23:265–277.
- Moore O, Cassidy E, Carr A, O’Callaghan E. Unawareness of illness and its relationship with depression and self-deception in schizophrenia. *European Psychiatry* 1999;14:264–269. [PubMed: 10572356]
- Morken G, Widen JH, Grawe RW. Non-adherence to antipsychotic medication, relapse and rehospitalization in recent-onset schizophrenia. *BMC Psychiatry* 2008;8:32. [PubMed: 18447935]
- Morrison AP, Haddock G, Tarrier N. Intrusive thoughts and auditory hallucinations: A cognitive approach. *Behavioral and Cognitive Psychotherapy* 1995;23:937–941.
- Mutsatsa SH, Joyce EM, Hutton SB, Barnes TRE. Relationship between insight, cognitive function, social function and symptomatology in schizophrenia: The West Longon first episode study. *European Archives of Psychiatry and Clinical Neuroscience* 2006;256:356–363. [PubMed: 16902732]
- Nuechterlein KH, Dawson ME, Gitlin M, Ventura J, Goldstein MJ, Snyder KS, Yee CM, Mintz J. Developmental processes in schizophrenia disorders: Longitudinal studies of vulnerability and stress. *Schizophrenia Bulletin* 1992;18:387–425. [PubMed: 1411329]
- Osatuke K, Ciesla J, Kasckow JW, Zisook S, Mohamed S. Insight in schizophrenia: a review of etiological models and supporting research. *Comprehensive Psychiatry* 2008;49(1):70–77. [PubMed: 18063044]
- Overall JE, Gorham DR. The brief psychiatric rating scale: Recent developments in ascertainment and scaling. *Psychopharmacological Bulletin* 1988;24:97–99.
- Potvin S, Stip E, Lipp O, Roy MA, Demers MF, Bouchard RH, Gendron A. Anhedonia and social adaptation predict substance abuse evolution in dual diagnosis schizophrenia. *American Journal of Drug and Alcohol Abuse* 2008;34(1):75–82. [PubMed: 18161645]
- Rickelman BL. Anosognosia in individuals with schizophrenia: toward recovery of insight. *Issues in Mental Health Nursing* 2004;25(3):227–242. [PubMed: 14965844]
- Ritsner MS, Gibel A, Ponizovsky AM, Shinkarenko E, Ratner Y, Kurs R. Coping patterns as a valid presentation of the diversity of coping responses in schizophrenia patients. *Psychiatry Research* 2006;144(2–3):139–152. [PubMed: 17011633]
- Robinson D, Woerner MG, Alvir JM, Bilder R, Goldman R, Geisler S, Koreen A, Sheitman B, Chakos M, Mayerhoff D, Lieberman JA. Predictors of relapse following response from a first episode of

- schizophrenia or schizoaffective disorder. *Archives of General Psychiatry* 1999;56:241–247. [PubMed: 10078501]
- Rollins AL, Bond GR, Lysaker PH. Characteristics of coping with symptoms of schizophrenia. *Schizophrenia Research* 1999;36:30.
- Sackett, DL.; Haynes, BR. *Compliance with therapeutic regimens*. Baltimore, MD: Johns Hopkins University Press; 1976.
- Sajatovic M, Rosch DS, Sivec HJ, Sultana D, Smith DA, Alamir S, Buckley P, Bingham CR. Insight into illness and attitudes toward medications among inpatients with schizophrenia. *Psychiatric Services* 2002;53(10):1319–1321. [PubMed: 12364685]
- Shad MU, Mudassani S, Keshavan MS. Insight and prefrontal sub-regions in first-episode schizophrenia—a pilot study. *Psychiatry Research and Neuroimaging* 2006;146:35–42.
- Shawyer F, Ratcliff K, Mackinnon A, Farhall J, Hayes SC, Copolov D. The voices acceptance and action scale (VAAS): Pilot data. *Journal of Clinical Psychology* 2007;63(6):593–606. [PubMed: 17457846]
- Startup M. Insight and cognitive deficits in schizophrenia: evidence for a curvilinear relationship. *Psychological Medicine* 1996;26(6):1277–1281. [PubMed: 8931174]
- Thompson K, Kulkarni J, Sergejew AA. Reliability and validity of a new Medication Adherence Rating Scale (MARS) for the psychoses. *Schizophrenia Research* 2000;42:241–247. [PubMed: 10785582]
- Uzenoff SR, Perkins DO, Hamer RM, Wiesen CA, Penn DL. A preliminary trial of adherence-coping-education (ACE) therapy for early psychosis. *The Journal of Nervous and Mental Disease* 2008;196(7):572–757. [PubMed: 18626299]
- Van Putten T, Crumpton E, Yale C. Drug refusal in schizophrenia and the wish to be crazy. *Archives of General Psychiatry* 1976;33:1443–1446. [PubMed: 999448]
- Velligan DI, Diamond PM, Mintz J, Maples N, Li X, Zeber J, Ereshefsky L, Lam YF, Castillo D, Miller AL. The use of individually tailored environmental supports to improve medication adherence and outcomes in schizophrenia. *Schizophrenia Bulletin* 2007a;34(3):483–493. [PubMed: 17932089]
- Velligan DI, Wang M, Diamond P, Glahn DC, Castillo D, Bendle S, Lam YW, Ereshefsky L, Miller AL. Relationship among subjective and objective measures of adherence to oral antipsychotic medications. *Psychiatric Services* 2007b;58(9):1187–1192. [PubMed: 17766564]
- Ventura J, Green MF, Shaner A, Liberman RP. Training and quality assurance with the Brief Psychiatric Rating Scale: the drift busters. *International Journal of Methods in Psychiatric Research* 1993;3:221–244.
- Ventura J, Liberman RP, Green MF. Training and quality assurance with the structured clinical interview for DSM-IV (SCID-I/P). *Psychiatry Research* 1998;79:163–173. [PubMed: 9705054]
- Yen CF, Chen CS, Yang SJ, Ko CH, Yen JY, Huang CF. Relationship between insight and psychosocial adjustment in patients with bipolar I disorder. *Bipolar Disorders* 2007;9(7):737–742. [PubMed: 17988364]
- Young DA, Zakzanis KK, Bailey C, Davila R, Griese J, Sartory G, Thom A. Further parameters of insight and neuropsychological deficit in schizophrenia and other chronic mental disease. *Journal of Nervous and Mental Disease* 1998;186(1):44–50. [PubMed: 9457146]

Table 1
Descriptive Statistics for Demographic and Primary Variables

	Mean(SD)	Frequency(%)
Age	38.45(12.79)	
Gender		
Men		27(67.5%)
Women		13(32.5%)
Ethnicity		
Hispanic		20(50%)
Caucasian		9(22.5%)
African American		11(27.5%)
Years of Education		
Advanced Degree		1(2.5%)
College Degree		3(7.5%)
Some college		19(47.5%)
High School Graduate		7(15.5%)
Some school beyond grade 8		8(20%)
Grade 8 completed		2(5%)
Denial Coping	1.8(.59)	
Acceptance Coping	3.1(.85)	
Medication Adherence	5.95(2.4)	