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Valued Living and Its Relationship to Medication Adherence in Patients with Bipolar and Comorbid Substance Use Disorders

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Abstract

Bipolar disorder with comorbid substance abuse is associated with high rates of treatment nonadherence. Adherence interventions developed to date have had mixed effects in this population. Valued living (i.e., the consistency between a patient's personal values and daily actions) represents a potentially useful treatment target that may improve adherence. We investigated the relationship between valued living, medication adherence, symptoms, and functioning in a sample of 39 patients diagnosed with bipolar disorder and a comorbid substance use disorder. Results showed that greater values-action consistency explained a unique amount of variance (R^2 Change = 15.2%) in medication adherence even after controlling for symptom severity, functional impairment, and other reported reasons for nonadherence. Drug use and treatment beliefs also predicted nonadherence. Findings suggest that valued living should be investigated further as a potentially malleable treatment target in future adherence intervention research.

Keywords

bipolar disorders; drug abuse; alcohol abuse; adherence; values

INTRODUCTION

Treatment nonadherence is a frequently cited concern in patients with bipolar disorder. In fact, bipolar disorder has some of the highest reported rates of nonadherence relative to other forms of psychopathology, with upwards of 60% of patients exhibiting this problem (Lingam and Scott, 2002). Even though rates of nonadherence are already high in bipolar disorder, comorbid substance abuse has been found to be a strong predictor of poorer

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treatment adherence (Lingam and Scott, 2002). Many interventions have been studied for improving treatment nonadherence in bipolar disorder over the years, but their effects have either been modest or equivocal, and there are no well-established, efficacious interventions developed to date (Crowe et al., 2012). Furthermore, there is a paucity of studies specifically testing interventions designed to address the unique needs and nonadherence issues in patients with bipolar and comorbid substance use disorders (Gaudiano et al., 2011).

Investigations of novel psychosocial treatment targets that are malleable and related to adherence in bipolar substance abuse are needed for refining and improving psychosocial interventions. One promising concept is that of “valued living,” which developed from a contextual science model of behavior (Wilson et al., 2010). From this perspective, values are defined as chosen, global, and desired life goals that provide overall direction and guidance for a person’s actions. Valued living, then, represents the consistency between an individual’s deeply held values and his/her daily actions. For example, if an individual values his/her well-being, then adhering in his/her daily actions to a treatment regimen that was collaboratively developed and agreed upon by both patient and provider would be consistent with this value. In contrast, values-action inconsistencies (e.g., nonadherence) are hypothesized to produce psychological distress and functional impairment. Research on values suggests that inconsistencies with daily actions are associated with avoidance, depression, anxiety, hostility, and relationship problems, whereas values-action consistencies are correlated with various psychological strengths, including mental health, social functioning, and vitality in non-bipolar samples (Wilson et al., 2010).

In the current study, we sought to investigate the relationship between valued living and symptoms and functioning in patients with bipolar and comorbid substance use disorders. We hypothesized that values-action consistency (i.e., valued living) would be associated with treatment adherence in terms of patients’ overall reported medication adherence. We also hypothesized that valued living would explain significant variance in medication adherence even after accounting for symptom severity, functional impairment, and treatment beliefs.

METHOD

Participants

Participants ($N = 39$) were recruited primarily from a psychiatric hospital for a “parent” clinical trial (for details see Wenzel et al., 2015). Participants met the following criteria: 1) DSM-IV diagnosis of Bipolar I or II Disorder or Bipolar Disorder NOS (BD), as determined by the Structured Clinical Interview for DSM-IV (SCID; First et al., 2002); 2) DSM-IV drug and/or alcohol use disorder (abuse and/or dependence) also based on the SCID; 3) current prescription for at least one mood-stabilizing medication (lithium, antipsychotic, anticonvulsant); 4) at least 18 years of age; 5) ability to speak and read English sufficiently well to complete study procedures; and 6) regular access to a telephone. Exclusion criteria were: 1) borderline or antisocial personality disorder with therapy-interfering behaviors (e.g., chronic suicidality and self-harm), based on the SCID-II (First et al., 1997); 2) nicotine dependence as the only substance use disorder; 3) a medical illness that contraindicated the use of mood-stabilizing medication; 4) pregnancy (due to the potential adverse effects of

mood stabilizing medications for this population); 5) current homelessness; or 6) discharge to long-term residential substance abuse treatment.

Procedure

The local Institutional Review Board approved all study procedures. Newly-admitted patients' hospital charts were screened based on eligibility criteria using a Protected Health Information waiver. After obtaining permission from the treating psychiatrist, patients were approached, given a brief verbal overview of the study, including the nature, purpose, risks, and benefits, and invited to participate. Informed consent was obtained from those who expressed interest. Participants were compensated with gift cards for completing assessments.

Baseline assessments were analyzed in the current study, administered by trained interviewers (bachelor's or master's-level research assistants). All raters were trained by the investigators and were required to achieve acceptable inter-rater reliability (kappas > 0.80). Raters also received weekly supervision and ongoing monitoring of assessment recordings to prevent rater "drift" by study investigators.

Measures

Valued living—The *Valued Living Questionnaire* (VLQ; Wilson et al., 2010) is a reliable and valid self-report measure that assesses values-action consistency. Respondents rate the degree of importance of 10 different value domains (e.g., family, friends, work, recreation) on a 10-point scale from 1 = "not at all important" to 10 = "extremely important." Next, they rate how consistent their actions were with the same 10 value domains within the past week from 1 = "not at all consistent with my value" to 10 = "completely consistent with my value." In addition to the Importance and Consistency Subscale totals, a Composite Score is calculated by calculating the mean of the product of the importance and consistency ratings, such that higher scores indicate greater values-action consistency. The Composite Score has been shown to be more reliable and valid as the overall measure of valued living (Wilson et al., 2010).

Medication adherence—We administered an adapted version of the *Medication Compliance Questionnaire* (MCQ), which has been used in previous bipolar treatment studies (Lam et al., 1996). Patients were asked to report the number of missed doses of their psychotropic medications during the past month, using the MCQ anchors (0 = never missed, 1 = missed once or twice, 2 = missed 3–7 times, 3 = missed > 7 times, 4 = stopped completely). We examined the mean ratings across all medications to provide a more reliable and global measure of adherence.

The *Ratings of Medications Influences* (ROMI) is a valid and reliable, structured interview that contains 7 questions assessing reasons for adherence (ROMI-Adhere; e.g., perceived benefits, family influence, pressure/force) and 13 questions about reasons for nonadherence (ROMI-Nonadhere; e.g., lack of benefits, stigma, side effects) over the past month (Weiden et al., 1994). Items are rated 1 = "none" to 3 = "strong" endorsement and higher mean scores on subscales indicate greater endorsement of reasons for adherence or nonadherence.

Symptoms and functioning—The clinician-rated *Quick Inventory of Depressive Symptomatology-Clinician Rated* (QIDS-CR; Rush et al., 2003) is a reliable and validated 16-item, interview-based measure of severity of depressive symptoms over the past week. The *Clinician-Administered Rating Scale for Mania* (CARS-M; Altman et al., 1994) is a reliable and valid 15-item, interview-based measure of manic and psychotic symptoms over the past week. The *Timeline Follow-Back* (TLFB; Sobell and Sobell, 1996) is a validated interview that assesses daily self-reported drug (number of days using drugs) and alcohol use (number of standard drinks consumed) over the previous month. The brief version of the *World Health Organization Disability Assessment Schedule* (WHODAS 2.0; Andrews et al., 2009) is a 12-item self-report measure that has evidence of reliability and validity for assessing various aspects of psychosocial and physical disability over the past month.

RESULTS

Simple-Order Correlations

Sample characteristics are described in Table 1. Correlations among study variables and descriptive statistics are displayed in Table 2. Pearson r correlations revealed that the VLQ Composite Score was significantly inversely correlated with the QIDS-CR ($p < .001$), the WHODAS-12 ($p < .001$), and MCQ ($p = .017$). Also, the VLQ Consistency Subscale was significantly inversely related to the QIDS-CR ($p < .001$), WHODAS-12 ($p = .002$), and MCQ ($p = .013$). Thus, lower values-action consistency was associated with higher depression severity, functional impairment, and medication nonadherence. In addition, the ROMI-Nonadhere was significantly correlated with the MCQ ($p = .013$), QIDS-CR ($p < .001$), and WHODAS-12 ($p < .001$). Stronger endorsement of reasons for medication nonadherence was related to greater medication nonadherence, depression severity, and psychosocial disability. The MCQ also was significantly correlated with TLFB-Drug ($p = .036$), such that greater medication nonadherence was related to a greater number of days using drugs.

Multivariate Analyses

Given the number of significant simple-order correlations among study variables, we were interested in understanding the unique contribution of values-action consistency to medication adherence in the sample. Thus, we conducted a hierarchical multiple regression analysis in which we entered the QIDS-CR, WHODAS-12, TLFB-Drug, and ROMI-Nonadhere (variables previously found to be intercorrelated) in the first step of the regression model. Step 1 results showed that only the TLFB-Drug variable ($\beta = .34$; $t = 2.05$; $p = .049$) significantly predicted MCQ scores ($F = 3.04$; $dfs = 4, 31$; $p = .032$; $R^2 = .28$). The ROMI-Nonadhere variable also was approaching significance in the first step ($p = .056$). Next, we entered the VLQ-Composite in the second step of the model to determine the unique amount of variance explained by the VLQ in relation to medication nonadherence after controlling for the effects of the other variables. Step 2 results revealed that the VLQ-Composite explained a significant amount of variance in the MCQ above and beyond the other variables in the model (F Change 7.85; $dfs = 1, 30$; $p = .009$). The VLQ-Composite ($\beta = -.50$; $t = 2.80$, $p = .009$) explained 15.2% (R^2 Change) of the unique variance in MCQ scores, which represents a large effect. Also in the second step of the regression model,

greater number of days using drugs ($\beta = .39$; $t = 2.59$; $p = .015$) and stronger endorsement of reasons for nonadherence ($\beta = .41$; $t = 2.45$; $p = .021$) predicted greater medication nonadherence.

DISCUSSION

This is the first study to our knowledge to investigate the role of valued living in relationship to medication adherence in patients with bipolar disorder and comorbid substance abuse. Results revealed that values-action consistency was correlated with medication adherence, depression severity, and psychosocial disability in the expected directions. In multivariate analyses, valued living had incremental explanatory power with regard to medication adherence even after controlling for other relevant clinical variables, including depression severity, psychosocial disability, and reasons for nonadherence. In fact, values accounted for 15% of the unique variance in medication adherence. Drug use and nonadherence beliefs also were predictive of nonadherence in the multivariate model. The aforementioned findings point to valued living as being a novel predictor of treatment adherence that deserves further study.

Previous research had found valued living to be correlated with mental health, depression, and psychosocial functioning in non-bipolar patients (Wilson et al., 2010). However, the current study is the first to demonstrate this relationship in a bipolar sample also exhibiting substance abuse comorbidity. Co-occurring bipolar disorder and substance abuse are predictors of some of the highest rates of treatment nonadherence documented in the literature (Lingam and Scott, 2002). Current findings suggest that valued living may be an underappreciated protective factor that can reduce the presence of nonadherence in this high risk population.

In terms of treatment implications, our results suggest that medication prescribers should consider not only the severity of illness and functional impairment, but also the match between the patient's personal values and treatment recommendations to foster greater consistency. This is especially important given the high rates of complex polypharmacy and medication burden in this population that has questionable clinical benefit (Weinstock et al., 2014). A mismatch between a patient's values and the treatment offered may lead to disruptions in the therapeutic alliance with the provider, which also has been found to be an important factor related to nonadherence behaviors in bipolar patients (Gaudiano et al., 2006).

Furthermore, valued living provides a potential target for psychosocial treatments that may help to improve adherence. For example, a subset of patients in the current study ($n = 30$) also participated in a parent pilot randomized controlled study in which they received a novel psychosocial intervention as an adjunct to treatment as usual (Wenze et al., 2015). The intervention, called Integrated Treatment Adherence Program (ITAP; Gaudiano et al., 2011), emphasized values clarification, problem solving, and patient-provider communication to increase values-action consistency. Results of this trial showed that ITAP produced greater and faster improvements in depression, mania, psychosocial functioning, and values-action consistency over 6 months compared with treatment as usual alone. There was a trend for

greater improvements in medication adherence over time for those receiving ITAP. Other psychosocial treatments for bipolar patients without substance abuse have contained components emphasizing personal values and shown promising results (e.g., Bauer et al., 2006).

Future research should clarify whether treatment adherence is specifically linked to one or more value domains more strongly (e.g., health) than others (e.g., leisure), or if it is related to the consistency between various important life values and behaviors more broadly. A contextual behavioral science model (upon which the valued living construct is based) (Wilson et al. 2010), would hypothesize that the meaning and importance of specific value domains differ from patient to patient. Thus, it is the process of aligning one's actions with one's values in a personally satisfactory way that leads more broadly to healthy lifestyle behaviors including treatment adherence. Our results were consistent with this model in that both the VLQ Composite Score and Consistency Subscale were more strongly related to the clinical variables compared with the VLQ Importance Subscale. These findings speak to the potential clinical utility of the valued living construct as being different from and providing additional information beyond that obtained from traditional assessments of medication adherence behaviors and related beliefs. Nevertheless, future research could explore the potential usefulness of refining the VLQ so that it more specifically assesses values in relation to treatment adherence or other healthy lifestyle behaviors.

Study limitations should also be considered. For example, our sample size was only modest and data were cross-sectional. The cross-sectional nature of the data does preclude the potential bidirectional relationship between valued living and adherence. In fact, we would expect one to influence the other, and vice versa, in a reciprocal and complementary fashion. Therefore, the relationship between values and adherence should be assessed in larger, longitudinal studies. It also would be useful to understand if the relationships observed among variables in the current sample are specific to bipolar disorder or are typical of various forms of psychopathology by including other psychiatric and non-psychiatric comparison groups. Furthermore, patients with mania can sometimes exhibit lower insight into their illness (Novick et al, 2015), and therefore the self-report nature of several of the measures should be considered, especially given the lack of associations identified with manic severity. In addition, there was low ethnic-minority representation in our sample and thus the utility of the VLQ in more diverse samples should continue to be examined.

Finally, medication adherence was measured by self-report alone in the current study and objective assessment should be conducted in future research. However, it is important to note that research supports the overall accuracy of self-reported medication adherence in this population (Lam et al., 1996). Also, the subsample of patients from the current study who participated in the parent clinical trial (Wenze et al., 2015) showed good reliability between their self-reported adherence and the collateral ratings obtained from family members. Despite these limitations, the current findings provide useful information on a potentially novel, yet malleable treatment target in bipolar patients with substance use problems that should inform future intervention development.

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Table 1

Sample demographics.

Variable		<i>M</i> or %	<i>SD</i> or <i>n</i>
Age (in years)		46.2	10.7
Education (in years)		14.0	5.2
Medications	Lithium/Anticonvulsant (yes)	78.4%	29
	Antipsychotic	51.4%	19
	Antidepressant (yes)	43.2%	16
	Anxiolytic/Hypnotic (yes)	51.4%	19
	Other (yes)	21.6%	8
	Female	51.3%	20
Sex	Male	48.7%	19
	White/Non-Hispanic	87.2%	34
Race/Ethnicity	African-American	2.6%	1
	Asian	2.6%	1
	American Indian	5.1%	2
	Hispanic/Latino	2.6%	1
	Married/Domestic Partner	31.4%	13
Marital Status	Single/Never Married	26.3%	10
	Divorced/Widowed	41.0%	16
	Bipolar I	82.1%	33
Diagnosis	Bipolar II	10.3%	4
	Bipolar NOS	7.7%	3
	Drug Abuse/Dependence	74.4%	29
Substance Use Disorder	Alcohol Abuse/Dependence	94.9%	37
	Stimulant-Amphetamine-Cocaine	25.6%	10
Drug Type (primary)	Sedative-Anxiolytic-Hypnotic	12.8%	5
	Opioid	7.7%	3
	Cannabis	17.9%	7
	Hallucinogen	2.6%	1
	Polysubstance	7.7%	3
	Depressive	51.3%	20
Mood Episode	Manic/Mixed	48.7%	19

Table 2

Intercorrelations among study variables and descriptive statistics

Study Variables	VLQ-Composite	VLQ-Importance	VLQ-Consistency	MCQ	QIDS-CR	CARS-M	ROMI-Adhere	ROMI-Non-adhere	TLFB-# drinks	TLFB-# drug days	WHODAS-12	Total # Meds
VLQ-Composite	--	.51**	.86**	-.39*	-.55**	.11	-.28	-.23	-.03	-.21	-.54**	-.03
VLQ-Importance		--	.38**	-.17	.18	-.20	-.07	-.14	-.21	.01	-.17	-.10
VLQ-Consistency			--	-.40*	.15	-.54**	-.38*	-.29	.05	-.03	-.49**	-.06
MCQ				--	.21	-.06	.26	.41*	-.08	.34*	.18	-.23
QIDS-CR					--	-.03	.14	.54**	.03	.28	.17	.05
CARS-M						--	.10	.11	-.09	.19	-.01	.09
ROMI-Adhere							--	.09	-.28	.31	.26	-.01
ROMI-Nonadhere								--	-.17	.18	.35*	-.07
TLFB-# drinks									--	-.31	-.08	-.13
TLFB-# drug days										--	.27	.07
WHODAS-12											--	.13
Total # Meds												--
Mean	33.4	69.7	43.0	1.2	16.6	15.5	2.1	1.3	135.8	8.7	18.1	3.2
SD	16.3	15.7	20.5	1.2	6.3	9.5	0.5	0.3	151.5	11.6	9.1	1.5

Note.

* $p < .05$;** $p < .01$.

VLQ = Valued Living Questionnaire (Composite Score mean; Importance and Consistency Subscale totals); MCQ = Medication Compliance Questionnaire; QIDS-CR = Quick Inventory of Depressive Symptomatology-Clinician Rating; CARS-M; Clinician-Administered Rating Scale for Mania; ROMI = Rating of Medication Influences (adherence and nonadherence subscales); TLFB = Timeline Follow-Back (# drinks or drug days/month); WHODAS-12 = World Health Organization Disability Assessment Schedule (12-item version).