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Primary Care Patients' Personal Illness Models for Depression: Relationship to Coping Behavior and Functional Disability

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Abstract

Objective—The applicability and clinical utility of Leventhal's model of illness cognition is evaluated in depressed primary care patients. The intercorrelations of illness beliefs and the mediational effects of coping behavior on these beliefs are evaluated. Moderating effects of coping behaviors are explored.

Method—Baseline evaluations of demographic information, depression diagnoses, depressive symptom severity, self-reported psychosocial and physical functioning, medical comorbidity, illness beliefs, and depression coping strategies were obtained from 191 primary care patients receiving antidepressant medication for the treatment of depression.

Results—Patients' beliefs about depressive symptoms, causes, duration, controllability and consequences of these symptoms are described. Leventhal's mediational model was partially supported for the outcome of psychosocial functioning. Coping behavior did not mediate the relationship between illness beliefs and physical functioning. The relationship between participants' beliefs about the cause, controllability and duration of depressive symptoms were mediated by the use of behavioral disengagement, venting, or self-blame as a strategy to cope with depression. In addition, use of acceptance, religious coping, or behavioral disengagement moderated the relationship between beliefs about the cause of depression (i.e., environment or chance, medical illness) and psychosocial functioning.

Conclusions—Illness models for depression are important determinants of functioning in depressed primary care patients. These beliefs and coping behaviors are potentially modifiable and could be the target of interventions to decrease functional impairment in depressed patients.

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Keywords

depression; illness perceptions; primary care; coping

Introduction

Determining how individuals understand and define depression and its consequences as a health problem is critical to understanding how they manage this illness (1). Knowledge about primary care patients' model of their illness can help in the development of more effective treatment engagement strategies, self management training, adherence interventions, and support services appropriate to patients' needs. While patterns of illness behavior among individuals with psychiatric disorders have been documented (1,2), little attention has been paid to the role of the depressed person's illness beliefs in identifying, and coping with the disorder, and the association of these factors with disability, care seeking, and treatment adherence.

Leventhal's self-regulatory model of illness representation (3,4) addresses just these relationships. In this model, the primary emphasis is on the patient's beliefs about their condition. The individual is viewed as an active problem-solver who develops hypotheses about the nature of symptoms and appropriate ways of coping with them. Thus, the person's conception of the cognitive and affective attributes of health threats shape behaviors for coping with or controlling the illness and may play a critical role in evaluating coping and adaptational outcomes (3,4). Leventhal's model is a mediational one, which proposes that illness beliefs lead to coping responses, which in turn, influence health outcomes. Thus, the effect of beliefs about depression on psychological and physical functioning would be mediated by the intermediate variable of coping behaviors.

Illness beliefs have five distinct components: (a) identity: the label the person uses to describe the illness and the symptoms viewed as being part of the disorder; (b) cause: beliefs about what caused the symptoms or illness; (c) timeline: the expected duration of the symptoms or illness; (d) consequences: expected effects and outcomes of the illness; and (e) perceived controllability: the responsiveness of the symptoms or illness to treatment or self-management.

A recent meta-analysis (5) reports on 45 studies which examined this model in 23 illnesses and conditions (e.g., diabetes, arthritis, irritable bowel syndrome); however, no studies of psychiatric disorders were identified. In addition, the mediational effect of coping behavior has been demonstrated in illnesses such as hypercholesterolemia (6) and Huntington's disease (7), but not in psychiatric conditions. Given the models' demonstrated usefulness in understanding self-care behaviors, adherence, and functional adaptation in physical illnesses, it would be important to know whether it can be applied to a common psychiatric disorder such as depression. In fact, one of the key challenges of applying Leventhal's self-regulatory model to depression is that it specifies that somatic, affective, as well as cognitive symptoms have an impact on illness beliefs, and depression itself is characterized by changes in these symptoms. Of particular significance is the fact that depression is characterized by cognitive distortions and this may be a confounding factor. However, to the extent that people view their physical and emotional well-being in similar ways, this model should be applicable to depression as well as other psychiatric disorders.

This paper describes personal illness models for depression in a sample of 191 primary care patients receiving antidepressant medication. We also evaluate the applicability and clinical utility of this model in depression by (a) examining whether the intercorrelation of illness cognition dimensions are consistent with those reported by other physical conditions, and (b)

determining the nature of the relationship between individuals' beliefs about depression and their functional disability. We hypothesize that: (a) the magnitude of the intercorrelations of illness cognition dimensions will be within the low to moderate range; (b) behaviors used by patients to cope with depression will mediate the relationship between illness beliefs and functional disability.

Method

Participants

Study participants were family practice patients enrolled in a year-long observational study of adherence and personal illness models for depression. All participants were referred to the study by their primary care physician. Primary care patients were eligible for referral if they: (a) were 18 years or older; (b) had been prescribed an antidepressant medication for treatment of depression in the preceding two weeks or had been switched to a new antidepressant within the preceding two weeks; (c) had no lifetime history of bipolar disorder; (d) had no substance dependence or abuse in the preceding six months; and (e) had no current psychotic symptoms or history of psychotic disorder. The study protocol was approved by the University of Pittsburgh Institutional Review Board and the Veteran's Affairs Institutional Review Board and all participants provided written informed consent.

Participants were recruited from two urban family practice health centers, a single specialty group practice, and two primary care clinics in the Veterans Health Administration (VHA). The health centers are the outpatient clinical settings of the Family Practice Residency Program of the University of Pittsburgh Medical Center. The group practice has eight office locations and 23 board certified family physicians. In addition, patients were recruited from two primary care clinics located at the VA Pittsburgh Healthcare System-Oakland site (VA Pittsburgh-Oakland). The VA Pittsburgh-Oakland is a major medical center located in VISN 4 (the VA Stars and Stripes Healthcare Network), which covers Pennsylvania, West Virginia, eastern Ohio, and Delaware.

A total of 456 patients were referred to the study (8 were ineligible; 172 were unable to be reached within two weeks of the referral; 60 refused participation); 216 completed the baseline assessment (25 were ineligible); and 191 were eligible and enrolled in the study.

Procedure

Participants completed five evaluations over a one year period. Semi-structured interviews and self-report questionnaires were used to ascertain demographic information, clinical status (depression and anxiety diagnoses, depression severity), psychosocial and physical functioning, medical comorbidity, and beliefs about depression. This paper focuses on data obtained from the baseline evaluation of 191 patients enrolled in the study.

Measures

Demographic Information—Self-reported information on race, gender, education, employment, marital status, and income was obtained from each participant.

Clinical Characteristics: ***Primary Care Evaluation of Mental Disorders (PRIME-MD):*** This structured interview guide was used to assess the presence of current mood, anxiety, substance use, and somatoform disorders (8).

Beck Depression Inventory (BDI): The BDI is a widely used 21-item self-report inventory designed to assess severity of depressive symptoms (9,10).

Medical Outcomes Study Short Form General Health Survey (MOS SF-36): This 36-item self-administered questionnaire was developed for use with primary care patients in the Rand Medical Outcomes Study (11). The eight MOS scales were weighted and aggregated into the Physical Component Scale (MOS PCS) score and the Mental Component Scale (MOS MCS) score (12). These scales have standardized scores, which have a mean of 50 and a standard deviation of 10.

Medical Comorbidity: was assessed with the Medical Comorbidity Checklist. Number of current medical conditions was assessed with a modified version of a chronic medical conditions checklist developed by Wells and colleagues for use in the Medical Outcomes Study (13). The checklist was modified by adding the following conditions: thyroid disease, eye disease (cataracts, glaucoma, detached retina); lupus, and HIV/AIDS.

Previous Mental Health Treatment: was assessed with a single question "At any time in the past, have you ever visited any mental health professional (e.g., psychiatrist, psychologist, social worker, psychiatric nurse, other mental health professional or counselor) for a problem with your emotional or mental health? If yes, was it (a) in the past 12 months; (b) past 6 months; (c) past 3 months; (d) past month."

Illness Perceptions: ***Illness Perception Questionnaire (IPQ):*** This 57-item questionnaire was used to measure the components of patient's illness beliefs, based on Leventhal et al's (4) self-regulatory model of illness behavior. The five scales assess illness components (i.e., identity, cause, timeline, consequences, and perceived controllability) that underlie a patient's representation of illness. Scale items are scored on a 4-point (all of the time to never) or a 5-point (strongly agree to strongly disagree) Likert scale. The scale was developed on diabetes, rheumatoid arthritis, and chronic pain samples and has demonstrated validity and reliability in these chronic illnesses (14). The authors note that the scale can be adapted for use in a variety of illnesses. For the present study, an adapted version of the original scale was used. Several components of the original scale were modified for the assessment of illness beliefs in a depressed sample and piloted in 40 primary care patients (15) . In that study illness beliefs were found to be significantly associated with depression coping strategies, and illness management behaviors such as prior mental health treatment, current antidepressant treatment, and medication adherence.

The illness identity subscale is comprised of 23 items that assess the frequency of symptoms endorsed as part of depression on a 4-point likert scale (all of the time to never). The timeline subscale assesses the duration of depressive symptoms endorsed on a 5-point likert scale (strongly agree to strongly disagree), e.g., "my symptoms will last a short time." Perceived consequences of depressive symptoms are assessed with 7 items scored on a 5-point likert scale (strongly agree to strongly disagree), e.g., "my symptoms have had major consequences on my life." Perceived controllability of depressive symptoms is assessed with 7 items scored on a 5-point likert scale (strongly agree to strongly disagree), e.g., "my symptoms will improve in time." The cause subscale is comprised of 14 items, each assessing a specific cause of depression. In order to use these items in bivariate and multiple regression analyses, we completed an exploratory factor analysis to determine whether items comprised a unidimensional or multidimensional scale. A principal components extraction with orthogonal rotation was completed on the 14 items. An eigenvalue of at least 1.0 was the criterion used to retain principal component factors (16) and the analysis yielded a five factor solution. Factor items were limited to those with loadings of .40 or greater.

The five factors identified by principal components analysis accounted for 57% of the total item variance. These factors were: environment/chance; stress/interpersonal relationships;

marriage or relationship problem; medical illness; self-care; and heredity/death. Items comprising each factor were used to develop subscale scores, using unit weighting.

Coping Strategies: The 28-item Brief COPE scale was used to assess coping styles in response to depressive symptoms. The scale has 14 conceptually distinct subscales with two items per scale. This scale is a brief version of the COPE Inventory which has been used extensively in health-related research (17,18). Subscales include: active coping (taking action to remove or circumvent the stressors), planning (thinking about how to confront the stressor, planning one's active coping efforts), seeking instrumental support (seeking assistance, information, or advice about what to do), seeking emotional support (getting sympathy or emotional support from someone), religion (increased engagement in religious activities), positive reframing (making the best of a situation by growing from it, or viewing it in a more favorable light), acceptance (accepting the fact that the stressor has occurred and is real), humor (making jokes about the stressor), self-distraction (focusing on doing things to take one's mind off the stressor), denial (an attempt to reject the reality of the stressor), venting (to ventilate or discharge emotional distress), substance use (turning to alcohol or drugs as a way of disengaging from the stressor), behavioral disengagement (giving up, or withdrawing from coping with the stressor), self-blame (blaming oneself for the occurrence of the stressor). For this study, scale items that made reference to coping with situations or stressors (e.g., I try to grow as a result of the experience) were modified to assess coping with symptoms (e.g., I try to grow as a result of having experienced these symptoms).

Statistical Analyses

The clinical characteristics, demographic characteristics and illness beliefs (identity, timeline, cause, consequences, controllability) are described using means, standard deviations, and frequency counts. Bivariate associations among illness beliefs were examined using Pearson correlation coefficients.

Four regression models were used to test for full and partial statistical mediation (19). The first model determined whether there was a significant association between illness beliefs and coping behavior. The second regression model examined the association between coping behavior and functional disability (physical and mental health functioning). The third regression model evaluated the association between illness beliefs and physical and psychosocial functioning. The final regression model determined whether the statistical significance of illness belief components was eliminated or reduced when coping behavior was controlled in a model predicting and physical or psychosocial functioning. A separate set of regression models was used to evaluate each combination of independent, mediator, and dependent variable. Recruitment site was always included as a covariate. The INDIRECT SPSS macro (20) was utilized to assess the indirect effects within the multiple mediator models described above. This macro provides regression coefficients in addition to bootstrap confidence intervals for mediator models with more than one mediator or models with statistical controls (as used here). Due to the number of models evaluated, a conservative alpha level of .01 was used to test for significance.

When a statistical mediation effect was not found, regression models were constructed to explore the potential moderating effect of the coping behavior on the relationship between functional impairment and depression illness beliefs. Recruitment site was used as a covariate in each model. To investigate statistical moderation, sequential regression modeling was utilized where coping behavior (moderator) and illness belief components (predictor) were included in the first step and the interaction between coping behavior and illness belief components on the second step. Multicollinearity was also assessed. Again, due to the number of models evaluated, a conservative alpha level of .01 was used to test for significance.

Results

Sample Characteristics

Table 1 presents participants' demographic characteristics. On average, study participants were about 45 years old, predominantly white, and female. More than half of the sample was employed at least part-time, were married or living with a partner, and had greater than a high school education.

On average, participants reported two current medical conditions, mild to moderate symptoms of depression, mild impairment in physical functioning, but significant impairment in psychosocial functioning. Approximately 20% of the sample had visited a mental health professional in the preceding year.

According to the PRIME-MD interview, two-thirds of the sample was diagnosed with major depression or major depression plus dysthymia. Approximately 15% of the sample received no depression diagnosis on the PRIME-MD. The remaining diagnoses (19%) included partial remission of major depression, dysthymia, and minor depression. Comorbid anxiety disorder or subsyndromal anxiety disorder was common in this sample, with 26% to 49% of patients endorsing an anxiety disorder or clinically significant anxiety symptoms.

Description of Personal Illness Models for Depression

Identity—As shown in Table 2, more than two thirds of the sample reported experiencing mood disturbance (sadness or anhedonia) frequently in the past month; while aaproximately half endorsed irritability. Fatigue and sleep disturbance were also commonly reported; with at least 75% of participants endorsing these symptoms. Few participants endorsed frequent suicidal thoughts, but frequent feelings of hopelessness, worthlessness, psychomotor retardation or agitation, and difficulty concentrating were more common. Other types of co-occurring symptoms included: anxiety; pain, gastrointestinal symptoms, and shortness of breath or racing heart.

Perceived Cause of Depressive Symptoms—The five most commonly reported causes of depressive symptoms are shown in Table 2. Participants endorsed multiple causes, with ‘stress’ being the most commonly reported. Most (97%) respondents identified at least two causes of depressive symptoms. Relationship or interpersonal issues were also commonly reported, as was ‘heredity’ and ‘own behavior.’

Expected Duration of Depressive Symptoms (Timeline)—The majority (66%) of participants characterized depressive symptoms as fluctuating or cyclic. As shown in Table 2, this aspect of depression was commonly endorsed even when symptoms were described as acute or chronic in nature. Further, a substantial minority of patients (41%) described depressive symptoms as chronic, while only 23% of patients described symptoms as acute.

Perceived Controllability of Depressive Symptoms—Perceived controllability was high in this sample, with at least 80% of participants indicating that their behavior determined whether symptoms got better or worse and that treatment would be effective in improving depressive symptoms. Similarly, approximately two-thirds believed that their symptoms would improve with time and that they could control depressive symptoms. The sample was split in its belief that recovery from depressive symptoms depended on faith in God; while very few participants believed that recovery depended upon chance or fate, or that little could be done to improve symptoms.

Perceived Consequences of Depressive Symptoms—Most participants viewed depressive symptoms as having significant negative consequences on their lives, while very few indicated that symptoms had little impact on their lives (Table 2). However, only about half viewed depression as a serious condition. Approximately one third of respondents reported that depressive symptoms had significant financial consequences, and more than half indicated that it affected the way they viewed themselves as well as the way others viewed them. Despite the negative impact of depressive symptoms, a number of participants reported that living with depressive symptoms had become easier.

Intercorrelations Among Illness Beliefs

Significant low to moderate correlations were found among illness beliefs (Table 3). Thus, endorsement of frequent symptoms (identity) was negatively associated with perceived control, and positively associated with perceived consequences of depression and the belief that depression is caused by stress or interpersonal relationships. Greater perceived control was associated with fewer perceived consequences, less illness chronicity, and lower endorsement of beliefs that depression was caused by the environment or chance, or medical illness. Greater perceived consequences were associated with greater perceived chronicity of depression, and the belief that depression is caused by medical illness, self-care, or stress. Greater perceived chronicity of depression was associated with endorsement of heredity or death as a cause of depression.

Mediation Effects

Coping behavior did not mediate the relationship between illness beliefs and physical functioning. However, when predicting mental health functioning, illness beliefs are mediated by coping behavior. Of the 14 coping subscales evaluated, venting and self-blame were found to have a significant mediating effect (Table 4). Venting and self-blame both statistically mediated the relationship between stress and interpersonal problems as a perceived cause of depressive symptoms and psychosocial functioning. Thus, stress and interpersonal problems as perceived causes of depressive symptoms are associated with psychosocial functioning because of their effect on venting and self-blame. For example, if an individual believes their depressive symptoms are caused by stress or interpersonal problems, they are more likely to vent or blame themselves, and are therefore likely to exhibit poorer psychosocial functioning.

Behavioral disengagement and self blame partially mediated the relationship between illness beliefs and psychosocial functioning (Table 4). Both behavioral disengagement and self-blame partially mediated the relationship between perceived duration of depressive symptoms (timeline) and psychosocial functioning. Similarly, behavioral disengagement partially mediated the relationship between perceived control of depressive symptoms and psychosocial functioning. Thus, if an individual believes their depressive symptoms will last longer, they are more likely to disengage from meaningful behaviors, and have lower psychosocial functioning. Similarly, if an individual believes their depressive symptoms are more chronic, they are also more likely to blame themselves, and therefore to report lower psychosocial functioning. Also, if a person believes they have control of their depressive symptoms, they are less likely to disengage from meaningful behaviors, and are therefore more likely to report higher psychosocial functioning.

Moderation Effects

Several moderating effects of coping behaviors on the relationship between illness beliefs and psychosocial functioning were found (Table 5). The coping behaviors included acceptance, behavioral disengagement, and religious coping. Acceptance moderated the relationship between environment/chance as a perceived cause of depression and psychosocial functioning. Among those who strongly believed that depressive symptoms were caused by external factors

(i.e., environment/chance), greater acceptance of depressive symptoms was associated with poorer psychosocial functioning, while lower acceptance was associated with higher psychosocial functioning. Behavioral disengagement and religious coping both moderated the relationship between medical illness as a perceived cause of depression and psychosocial functioning. Among those who strongly endorsed medical illness as a cause of depression, greater use of behavioral disengagement was associated with poorer psychosocial functioning, while less behavioral disengagement was associated with higher psychosocial functioning. Finally, greater use of religious coping among participants who strongly endorsed medical illness as a cause of depression was associated with poorer psychosocial functioning, while less religious coping was associated with higher psychosocial functioning.

Discussion

Although many studies have examined illness beliefs in physical conditions, to date few have examined personal illness models in depressed persons. This investigation presents data on primary care patient's beliefs about depression, and the nature of the relationship between strategies used to cope with depression, depression beliefs and physical and psychosocial functioning.

Illness Beliefs About Depression

Primary care patients most commonly endorsed multiple causes of depression, with ‘stress’ and ‘interpersonal conflict’ being the most commonly cause. While patients varied in terms of how long they expected their symptoms to last, the majority of patients characterized their symptoms as cyclic or fluctuating in nature. Most patients believed that their symptoms were controllable either through their own behavior or through treatment, which is not surprising given that all study patients had agreed to take antidepressant medication prescribed by their primary care physician. While most participants also indicated that depressive symptoms had a negative impact on their lives, interestingly, only about half of the sample viewed depression as a serious condition.

Clinical Implications—These beliefs about depression can be used to inform psychoeducational efforts with primary care patients. For example, patients accurately describe the cyclical nature of depression, treatability of depression, and negative consequences of depression. Educational efforts might focus on the complex causes of depression, that depression is a serious illness that should be treated, and that although it may appear that depressive symptoms may be easier to live with over time, the goal of treatment is full recovery.

Intercorrelations Among Illness Beliefs

The intercorrelations among illness cognition dimensions were consistent with those reported in studies of physical illness in which associations are significant, but not of the magnitude that would indicate conceptual overlap (5). As predicted by the model, illness beliefs were significantly associated with functional outcomes. This is consistent with prior research on medical conditions and extends them to a common psychiatric disorder, depression.

Mediation and Moderation of Illness Beliefs by Coping Behaviors

Our findings provide partial support for Leventhal's mediational model. We identified full or partial mediating relationships between illness beliefs, coping behaviors, and psychosocial functioning. We did not find support for Leventhal's mediational model when examining physical functioning. Key illness beliefs associated with psychosocial functioning include: perceived control of depressive symptoms, perceived duration of depressive symptoms, and perceived cause of depressive symptoms (i.e., stress/interpersonal, environment/chance, medical illness). Coping behaviors that mediated or moderated the relationship between illness

beliefs and psychosocial functioning include: behavioral disengagement, self-blame, venting, acceptance and religious coping. Due to the number of regression analyses conducted to examine both mediational and moderating effects, our findings must be considered preliminary, and warrant replication in future studies.

In relation to psychosocial functioning, beliefs about stress as a cause of depression, the controllability of depressive symptoms, and expected duration of symptoms, were either fully or partially mediated by coping behaviors. In terms of coping behaviors, behavioral disengagement, self blame, and venting were key coping behaviors that either fully or partially mediated the relationship between illness beliefs and psychosocial functioning.

Clinical Implications—These findings identify key illness beliefs and coping behaviors that can be the target of clinical interventions to improve psychosocial functioning in depressed patients. It has been documented that psychosocial impairment is an important feature of this illness (21) and that functional improvement among treated individuals is slower than symptomatic improvement (22). Interventions designed to improve psychosocial functioning in depressed primary care patients might benefit by specifically focusing on strategies to help increase perceived control of depression and decrease behavioral disengagement, venting, and self-blame in depressed patients. Psychoeducational strategies might focus on educating depressed persons about the expected duration of depression, and the importance of treatment in attaining recovery from the specific episode and in preventing future episodes. Specific focus on these beliefs and coping behaviors may readily be incorporated into existing interventions, and may lead to more rapid functional improvement during depression treatment.

Moderating Effects of Coping Behaviors on Illness Beliefs—Leventhal's mediational model was not supported with respect to physical functioning in depressed patients. However, exploratory analyses indicated that perceived cause of depression is an important belief, whose relationship to psychosocial functioning is moderated by coping behaviors such as acceptance, behavioral disengagement, and religious coping.

Clinical Implications—Patients' beliefs about the cause of their depressive symptoms are important determinants of how they manage these symptoms. Our findings suggest that specific coping strategies (e.g., acceptance) can have a different impact on functioning, depending on the perceived cause of depression. Thus, for the patient who believes that depressive symptoms are caused by factors outside of his/her control (i.e., environment/chance), acceptance of these symptoms leads to greater functional impairment.

It is not uncommon for primary care patients to endorse medical illness as a cause of depression. Our findings suggest that when patients endorse this belief, their coping strategies have an important influence on their psychosocial functioning. Thus, increased withdrawal or increased religious coping is associated with poorer functioning. Clinicians might inquire about patients' perceived causes of depression. Psychoeducation can be used to provide accurate information, and behavioral activation strategies might help patients' to decrease behavioral withdrawal. Many patients in our sample used religious coping to manage depressive symptoms. As noted by Organista and colleagues (23), religiosity can be viewed as a cognitive-related domain in which clinicians can work with patients. In their work, churchgoing and prayer were reinforced as behavioral and cognitive activities that help patients cope with stress and negative mood states. However, they recommended that forms of prayer that serve to decrease active problem solving be explored and challenged by the clinician.

In summary, our findings indicate that Leventhal's model allows for the identification of potentially modifiable beliefs and coping behaviors that can be targeted to improve psychosocial functioning in depression interventions. Our findings can be generalized only

primary care patients who have agreed to be treated for depression and who are similar to study patients in demographic and clinical characteristics. It will be important to replicate these findings in patient populations that are more diverse in terms of race/ethnicity, age, socioeconomic status, clinical severity, and treatment history (e.g., no prior treatment, treatment with psychotherapy only, etc.) as these are factors that may strongly influence illness beliefs. Future studies should also examine the relationship between illness beliefs, coping behaviors, and other outcomes such as medication adherence, treatment seeking, and treatment initiation. This model can be useful in designing or refining interventions designed to improve functional outcomes by targeting specific beliefs and coping strategies.

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Table 1

Baseline Clinical and Demographic Characteristics of Enrolled Sample (N=191)

Demographics	
Mean (SD) Age	45.1 (15.9)
N (%) Female	135 (70.7%)
N (%) White	179 (93.7%)
N (%) Employed Full/Part-time	101 (52.9%)
N (%) Married or Living with Partner	103 (53.9%)
N (%) > High School Education	106 (55.5%)
Clinical Characteristics	
Mean (SD) BDI[a]	19.5 (10.3)
Mean (SD) MOS PCS[b]	44.6 (11.5)
Mean (SD) MOS MCS[c]	30.7 (10.7)
Mean (SD) Number of Current Medical Conditions	2.0 (1.6)
N (%) with Mental Health Visit in Past 12 Months	38 (19.9%)

[a] Beck Depression Inventory (BDI)

[b] Medical Outcomes Study Mental Component Scale (MOS MCS)

[c] Medical Outcomes Study Physical Component Scale (MOS PCS)

Table 2

Illness Cognitions for Depression

	N	%
Illness Identity[a]		
Sadness		73%
Loss of interest		64%
Irritability		51%
Fatigue		80%
Sleep Disturbance		75%
Hopelessness		32%
Worthlessness		39%
Suicidal thoughts		10%
Psychomotor retardation or agitation		65%
Trouble concentrating		51%
Anxiety		45%
Pain (headaches, general aches and pains, stomach pain or chest pain)		46%
Gastrointestinal symptoms (nausea, gas, or constipation)		34%
Shortness of breath or racing heart		16%
Perceived Cause of Depressive Symptoms[b]		
Stress	155	81%
Other people	88	46%
Marriage/relationship problems	79	41%
Hereditary	77	40%
Own behavior	74	39%
Expected Duration of Depressive Symptoms[b]		
Chronic and Intermittent	45	25%
Acute and Intermittent	38	21%
Intermittent Only	36	20%
Chronic Only	30	16%
None of the Above	30	16%
Acute Only	4	2%
Perceived Controllability of Depressive Symptoms[b]		
What I do can determine whether my symptoms get better or worse	156	82%
Treatment will be effective in improving my symptoms	154	81%
My symptoms will improve in time	131	69%
There is a lot that I can do to control my symptoms	114	60%
Recovery from my symptoms depends on my faith in God	92	48%
Recovery from my symptoms depends on chance or fate	27	14%
There is very little that can be done to improve my symptoms	22	12%
Perceived Consequences of Depressive Symptoms[b]		
My symptoms have strongly affected the way I see myself as a person	142	74%
My symptoms have had major consequences on my life	125	65%
My symptoms have strongly affected the way others see me	98	51%
My symptoms are part of a serious condition	94	49%
My symptoms have serious financial consequences	78	41%
My symptoms have become easier to live with	63	33%
My symptoms have not had much effect on my life	12	6%

[a] Symptoms endorsed frequently in the past month

[b] Agree or strongly agree with statement

Table 3

Intercorrelations Among Illness Belief Subscales[a]

Illness Cognitions	1	2	3	4	5	6	7	8	9
1 **Identity**									
2 **Perceived Controllability**	**-.16**								
3 **Consequences**	**.38**	**-.18**							
4 **Timeline Cause**	.14	**-.29**	**.21**						
5 Environment/Chance	-.04	**-.16**	-.07	-.04					
6 Heredity/Death	.11	-.13	.07	**.17**	.14				
7 Medical Illness	.06	**-.17**	**.24**	.11	**.15**	**.19**			
8 Self Care	.06	.08	**.16**	.12	.03	.13	.06		
9 Stress/Interpersonal relationships	**.27**	-.08	**.22**	.05	-.01	**.28**	-.07	**.19**	

[a]Correlations between .15 and .18 are significant at the p<.05 level. Correlations > .19 are significant at the p < .01 level.

Table 4

Illness Beliefs, Coping Behaviors and Psychosocial Functioning: Mediation Effects

Full Mediation Effects	**B**	**SEB**	**p**
Cause: Stress/Interpersonal to Venting (a)	.4931	.1583	.0021
Direct Effects of Venting on Psychosocial Functioning (b)	−1.3697	.4297	.0017
Total Effect of Cause: Stress/Interpersonal on Psychosocial Functioning (c)	−2.1355	.9500	.0258
Direct Effect of Cause: Stress/Interpersonal on Psychosocial Functioning (c′)	−1.4602	.9514	.1265
Cause: Stress/Interpersonal to Self Blame (a)	.4918	.1809	.0072
Direct Effects of Self Blame on Psychosocial Functioning (b)	−1.9115	.3595	.0000
Total Effect of Cause: Stress/Interpersonal on Psychosocial Functioning (c)	−2.1355	.9500	.0258
Direct Effect of Cause: Stress/Interpersonal on Psychosocial Functioning (c′)	−1.1955	.9047	.1880
Partial Mediation Effects	B	SEB	p
Control to Behavioral Disengagement (a)	−.6651	.1851	.0004
Direct Effects of Behavioral Disengagement on Psychosocial Functioning (b)	−2.3459	.4864	.0000
Total Effect of Control on Psychosocial Functioning (c)	3.7923	1.2996	.0040
Direct Effect of Control on Psychosocial Functioning (c′)	2.2319	1.2700	.0805
Timeline to Behavioral Disengagement (a)	.7275	.1706	.0000
Direct Effects of Behavioral Disengagement on Psychosocial Functioning (b)	−2.1936	.4885	.0000
Total Effect of Timeline on Psychosocial Functioning (c)	−4.6184	1.1937	.0002
Direct Effect of Timeline on Psychosocial Functioning (c′)	−3.0225	1.1908	.0120
Timeline to Self Blame (a)	1.0560	.2248	.0000
Direct Effects of Self Blame on Psychosocial Functioning (b)	−1.7233	.3693	.0000
Total Effect of Timeline on Psychosocial Functioning (c)	−4.6184	1.1937	.0002
Direct Effect of Timeline on Psychosocial Functioning (c′)	−2.7986	1.1974	.0205

Table 5

Illness Beliefs, Coping Behaviors, and Psychosocial Functioning: Significant Moderation Effects

	B	SEB	ß	R^2	ΔR^2
Predicting Psychosocial Functioning					
Step 1:				.044*	
Site Variable 1	.088	1.966	.003		
Site Variable 2	7.179	2.437	.211*		
Step 2:				.051	.007
Cause: Environment/Chance	1.523	1.185	.091		
Acceptance	.014	.546	.002		
Step 3:				.094*	.043
Cause: Environment/Chance*Acceptance	−2.562	.866	−.209*		

	B	SEB	ß	R^2	ΔR^2
Predicting Psychosocial Functioning					
Step 1:				.044*	
Site Variable 1	1.602	1.860	.058		
Site Variable2	5.872	2.285	.173*		
Step 2:				.180*	.136
Cause: Medical Illness	.519	.879	.040		
Behavioral Disengagement	−2.755	.471	−.396*		
Step 3:				.210*	.030
Cause: Medical Illness*Behavioral Disengagement	1.274	.485	.179*		

	B	SEB	ß	R^2	ΔR^2
Predicting Psychosocial Functioning					
Step 1:				.044*	
Site Variable1	.539	1.961	.020		
Site Variable2	6.993	2.435	.206*		
Step 2:				.063	.019
Cause: Medical Illness	.718	.926	.055		
Religious	.614	.340	.127		
Step 3:				.099*	.036
Cause: Medical Illness*Religious	−1.146	.423	−.192*		

• $p < .01$.

• $p < .01$.

• $p < .01$.