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Running Head: LONG-TERM COURSE OF DEPRESSION

Life Stressors and Resources and the 23-year Course of Depression

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Abstract

Background: Life stressors and personal and social resources are associated with depression in the short-term, but little is known about their associations with the long-term course of depression. The current paper presents results of a 23-year study of community adults who were receiving treatment for depression at baseline (N=382). *Methods:* Semi-parametric group-based modeling was used to identify depression trajectories and determine baseline predictors of belonging to each trajectory group. *Results:* There were three distinct courses of depression: high severity at baseline with slow decline, moderate severity at baseline with rapid decline, and low severity at baseline with rapid decline. At baseline, individuals in the high-severity group had less education than those in the moderate-severity group, and more medical conditions than those in the moderate- and low-severity groups. Individuals in the high- and moderate-severity groups evidenced less psychological flexibility, and relied more on avoidance coping than individuals in the low-severity group. *Limitations:* Results are limited by use of self-report and lack of information about depression status and life events in the periods between follow-ups. *Conclusions:* These results assist in identifying groups at high risk for a long-term course of depression, and will help in selecting appropriate interventions that target depression severity, coping skills and management of stressors.

Keywords: Depression, Stressful Events, Coping, Social Resources, Longitudinal Trajectories

Life Stressors and Resources and the 23-year Course of Depression

The clinical course of depression may be characterized by slow or incomplete recovery and recurrences of major depressive episodes (Riihimäki et al., 2011). Even among individuals who receive treatment, a chronic course of depression is associated with poorer functioning in multiple domains (Pettit et al., 2009). There is limited literature on the long-term course of depression in adult clinical samples, with the majority of studies terminating in participants' early adulthood (Côté et al., 2009; Galambos et al., 2006) or following a non-clinical sample (Colman et al., 2007). Longitudinal studies that have followed clinical samples have not followed participants beyond 10 years (Klein et al., 2009; Rhebergen et al., 2011). Additionally, there is virtually no information about the psychosocial risk factors associated with the long-term course of depression.

In light of this, research is needed to identify the course of depression over the adult lifespan, subgroups of individuals with high levels of depressive symptoms that persist over time, and appropriate targets for intervention. The current study sought to identify depression course among individuals who received treatment for depression at baseline and were followed over a 23-year period. A secondary aim was to identify baseline life stressors and personal and social resources associated with depression course. To our knowledge, our study is the first to examine trajectories representing the course of depression in an adult clinical sample over this long of a follow-up period.

Longitudinal Course of Depression

Existing studies of the longitudinal course of depression have followed individuals up to 10 years after their diagnosis. In a 10-year study of the naturalistic course of depression, three distinct courses were identified, with the most common involving remission of the episode

within the first three years (Klein et al., 2006). Using a similar sample of adults with depression, a 3-year longitudinal study indicated that the majority of participants (60.8%) experienced a course of remission within the first year (Rhebergen et al., 2009). In a 7-year longitudinal study of adults with depression, the majority of participants experienced remission by 7 years (71.6%), though many of these participants continued to report subthreshold depression, defined as having at least one of the core depression symptoms in the past month (Rhebergen et al., 2011). These studies suggest that early remission (within the first year) is relatively common among a clinical sample, with some participants experiencing significant residual symptoms. There is limited information, however, about the course of depression over a longer follow-up period, and what the symptom trajectory is for individuals who do not experience early remission.

Baseline Predictors of Depression Course

Personal and social factors influencing depression have been examined extensively in the past decade (Hammen, 2005; Paykel, 2003; Spinhoven et al., 2011; Tennant, 2002). Variables such as life stressors (Hammen, 2005; Paykel, 2003; Tennant, 2002), personal resources such as personality characteristics and coping strategies (Holahan et al., 2005; Spinhoven et al., 2011), and social support (Pettit et al., 2009) have been studied in relation to depression. In general, studies have focused on predictors of the onset of depression, used cross-sectional designs, or considered short-term outcomes of individuals treated for depression. Few studies have considered life stressors and personal and social resources as predictors of the long-term course of depression, particularly whether variation in these factors is associated with different long-term courses of depression.

Life Stressors. Life stressors often precede the onset of depression and are associated with depression course (Hammen, 2005; Paykel, 2003; Spinhoven et al., 2011; Tennant, 2002).

They have been defined as the number of major life events (positive and negative; Pettit et al., 2009; Spinhoven et al., 2011), as life stressors including chronic medical conditions (Hammen, 2005; Katon, 2003; Tennant, 2002), and as the number of daily hassles (Pettit et al., 2009). More negative life events over two years (Spinhoven et al., 2011) and more major life events over 11 years (Pettit et al., 2009) were associated with a more severe course of depression, but positive life events and daily hassles showed no association with depression course (Pettit et al., 2009; Spinhoven et al., 2011).

Personal Resources. Personal resources, such as personality characteristics and coping strategies, also affect the course of depression. For example, individuals who have a low sense of mastery and of optimism tend to remain depressed over time (Colman et al., 2011; Pettit et al., 2009). Individuals with higher levels of psychological flexibility, characterized by having a positive self-image and a calm, happy, and low-key temperament (Holahan & Moos, 1986), may be more likely to engage in coping strategies that decrease the risk of depression (Kirsch et al., 1990). There is limited research, however, on whether such personal characteristics are directly associated with depression course in the long-term. In this regard, individuals low on extroversion may have a delayed first remission of depression (Spinhoven et al., 2011).

Coping can be broadly defined as efforts to manage psychological stress (Folkman et al., 1986; Lazarus, 1993). Avoidance coping, such as denying a problem, resigning oneself to it, or venting one's emotions, is generally associated with negative psychological outcomes (Ben-Zur, 2009; Nagase et al., 2009), including increased depressive symptoms (Penley et al., 2002). Avoidance coping may increase the likelihood of long-term depressive symptoms by creating new problems for the individual, which serve to worsen the depression or contribute to ongoing distress (Holahan et al., 2005).

Social Resources. Compared to non-depressed individuals, those with depression report more days of limited social activity and less social support (Strine et al., 2009). Cross-sectional studies found that less social support was associated with more depression symptoms in both clinically depressed and community samples (Ibarra-Rovillard & Kuiper, 2011). Longitudinal studies suggest that support from family members and friends can protect against the onset of major depression (Kendler et al., 2005) and facilitate recovery from a major depressive episode (Hendryx et al., 2009; Keitner et al., 1992). Less social integration, more negative social interactions, and worse relationships with family members were associated with a long-term course of depression (Hölzel et al., 2011; Pettit et al., 2009).

Prior Results with the Present Cohort

Previously published studies examined outcomes at 4- and 10-year follow-ups from earlier and concurrent assessments of the same cohort of patients presented here. At the 10-year follow-up, three courses of depression were identified: full remission, partial remission, and nonremission of depressive symptoms. The majority of participants experienced partial remission, indicating that they were still fluctuating between remission and depression, or were consistently experiencing symptoms of depression that did not meet full criteria for a depression diagnosis.

In terms of psychosocial predictors of depression course, more negative life events and medical conditions experienced during the 1-year and 4-year follow-ups predicted a worse course of depression over the first 4 years of follow-up (Billings & Moos, 1985; Swindle et al., 1989). Regarding personal resources, individuals who had a less easygoing disposition at baseline, and those who relied more on avoidance coping at the 4-year and 10-year assessments, were more likely to have a 4-year and 10-year non- or partially-remitted depression course

(Cronkite et al., 1998; Swindle et al., 1989). In addition, fewer close relationships at baseline and during the 4- and 10-year follow-up intervals were associated with a greater likelihood of a non-remitted course at 10 years (Cronkite et al., 1998).

Overview of the Present Study

The current study employed a 23-year longitudinal design to characterize the course of depression experienced by community adults who were receiving treatment for depression at baseline. Depression was assessed at baseline and at each follow-up (1, 4, 10, and 23 years later). We also sought to determine baseline risk factors that characterized groups of individuals in each of the identified courses of depression. Risk factors examined were life stressors and personal and social resources. Based on the research presented above, we hypothesized that three broad courses of depression would emerge: a long-term course characterized by little remittance of symptoms, a partially remitted course, and a course indicative of full remission. We also hypothesized that a long-term course of depression would be characterized by more life stressors (negative life events and chronic medical conditions), and fewer personal (personality and coping) and social resources.

Method

Participants

At baseline, the sample consisted of 424 individuals who entered treatment for unipolar depression at one of five facilities: two community mental health centers, a health maintenance organization, a university hospital, and a Department of Veterans Affairs Medical Center. Individuals who were over the age of 18 and met the Research Diagnostic Criteria (RDC) for depression (Spitzer et al., 1978) were eligible to participate. Exclusion criteria were a concurrent diagnosis of a neuropsychological, metabolic, manic, or substance use disorder. Informed

consent and completed surveys were obtained from participants at baseline and at 1-, 4-, 10, and 23-year follow-ups by mail, telephone, or in-person. The average response rate across all follow-ups among those who were still alive was 87%, with 95% ($n=395$ of the 415 still alive) participating at the 1-year follow-up, 91% ($n=370$ of 407 still alive) at the 4-year follow-up, 84% ($n=313$ of 373 still alive) at the 10-year follow-up, and 79% ($n=248$ of 316 still alive) at the 23-year follow-up. The local Institutional Review Board approved the study.

The sample size for this study consisted of 382 participants with complete data on the baseline life stressor and personal and social resource variables. Of these, 91% participated in multiple (two or more) follow-ups, and 54% participated in all four follow-ups. On average, individuals in the baseline sample were 39.9 years old ($SD=14.2$) and had 13.4 years of education ($SD=2.3$); 56.7% were employed and 85.3% were White ($n=326$), with the remainder American Indian or Native American (1.6%, $n=6$), Asian (1.6%, $n=6$), Black (3.4%, $n=13$), Mexican-American (3.9%, $n=15$), or another race (4.2%, $n=16$).

Measures

At baseline, participants completed the Health and Daily Living Form (HDL; Moos, Cronkite, & Finney, 1992) to provide information about demographic characteristics, depression symptoms and mental health treatment, stressful events, medical symptoms, and personal and social resources. Good reliability, stability, and convergent and predictive validity has been established for the HDL in this long-term study of depression (Holahan et al., 1999; Moos et al., 1998a, 1998b) as well as in other long-term, naturalistic studies, such as those of health in middle and older age (Brennan et al., 2011; Moos et al., 2010; Moos et al., 2011) and individuals initially untreated for substance use disorders (Moos & Moos, 2002, 2005, 2007; Timko et al., 2006, 2011).

Mental health treatment. Receipt of any *mental health treatment in the past 12 months* (prior to the baseline episode), coded as 1 = *yes* (38.5%) and 0 = *no* (61.5%), was recorded from patient charts by project staff or a staff liaison at each facility.

Stressors. We created two baseline stressor indices. *Negative life events* is a count of 15 events that occurred in the past year (e.g., death of a family member, divorce, job loss), each coded as 0 = *no* and 1 = *yes* ($M=2.4$ negative life events, $SD=2.0$). *Medical conditions* is a count of 14 diagnosed chronic medical conditions (e.g., arthritis or rheumatism, diabetes, serious back trouble) participants had in the past year, each coded as 0 = *no* and 1 = *yes* ($M=1.0$ medical condition, $SD=1.3$). Predictive validity of these measures was demonstrated in prior studies with this cohort, where more negative life events and medical conditions predicted a worse course of depression over the first 4 years of follow-up (Billings & Moos, 1985; Swindle et al., 1989).

Personal resources. We assessed baseline personal resources with three indices. *Psychological flexibility* is the sum of three self-descriptive items (calm, easygoing, happy) rated on a 5-point scale (0 = *not at all*, 4 = *quite accurately*; range 0 to 12, $M=5.6$, $SD=2.7$, $\alpha=0.59$). *Self-esteem* is the sum of six self-descriptive items (ambitious, assertive, confident, dominant, outgoing, and successful), rated on the same 5-point scale (range 0 to 24, $M=11.5$, $SD=5.5$, $\alpha=0.83$). To assess *avoidance coping*, participants were asked to think of the most important problem or stressful situation they had encountered in the last 12 months. *Avoidance coping* is the sum of how frequently they used eight coping responses (e.g., taking it out on others, refusing to believe it happened) on a 4-point scale (0 = *never*, 3 = *fairly often*; range 0 to 24, $M=7.8$, $SD=4.5$, $\alpha=0.56$). We used avoidance coping despite its relatively modest internal consistency because of its conceptual importance and its established validity (despite lower alphas) in studies with other samples (e.g., Ilgen et al., 2008; Timko et al., 2005), and because

valid coping scales often show lower internal consistency. Endorsing one type of coping strategy may reduce the likelihood that other coping strategies will be endorsed within the same category, particularly when response frequencies are low (Moos & Holahan, 2003).

Predictive validity of our measures of personal resources were established in prior studies with the same cohort, where less psychological flexibility and more avoidance coping was associated with a 4-year and 10-year non- or partially-remitted depression course (Cronkite et al., 1998; Swindle et al., 1989).

Social resources. We measured baseline social resources with three indices. *Number of close relationships* is the average of the number of close friends and the number of people participants could count on for real help in times of trouble ($M=4.2$, $SD=4.1$). *Quality of a significant relationship* is the sum of six items rated on a 5-point scale (0 = *never*, 4 = *often*) describing a significant relationship (e.g., have a good time together, disagree about something important – reverse scored; range 0 to 24; $M=14.2$, $SD=4.5$, $\alpha=0.75$). *Social activities* is the number out of 12 activities participants engaged in during the past month with friends or family (e.g., athletic event, game, party; range 0 to 24; $M=7.1$, $SD=4.7$). In prior studies with the same cohort, fewer social resources at baseline were associated with a non-remitted course of depression at 10 years (Cronkite et al., 1998).

Depressive symptoms. At baseline and at each follow-up, participants were asked how frequently during the past month they had experienced each of 10 depressive symptoms that match the DSM-IV criteria for depression (American Psychiatric Association [APA], 1994). The symptoms included (1) feeling depressed, sad, or blue, (2) poor appetite or weight loss, (3) trouble sleeping or sleeping too much, (4) loss of energy; fatigue or tiredness, (5) inability to sit still, (6) feeling slowed down and having trouble moving, (7) loss of interest or pleasure in usual

activities or in sex, (8) feeling guilty, worthless, or down, (9) trouble concentrating, thinking, or making decisions, and (10) thoughts about death or suicide. Items were coded on a 5-point scale of 0 = *never*, 1 = *seldom*, 2 = *sometimes*, 3 = *fairly often*, and 4 = *often*. At each assessment, a depression composite score was calculated as the sum of the 10 items; scores ranged from 0 to 40 (baseline: $M=24.0$, $SD=8.7$, $\alpha=0.87$; 1-year: $M=17.7$, $SD=9.0$, $\alpha=0.90$; 4-years: $M=16.2$, $SD=9.0$, $\alpha=0.90$; 10-years: $M=14.8$, $SD=8.1$, $\alpha=0.89$; 23-years: $M=13.7$, $SD=8.6$; $\alpha=0.89$). At the 23-year follow-up only, participants also completed the 9-item Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002), which is a measure of depression severity. The correlation between the PHQ-9 and our 10-item depression measure was high ($r = 0.86$), suggesting good convergent validity of our measure of depressive symptoms.

Analysis Plan

Semi-parametric group-based trajectory analysis (Nagin, 1999) was used to identify trajectories based on probabilities of depression over 23 years. PROC TRAJ, a SAS macro (Jones et al., 2001), was utilized to test quadratic trajectory models with increasing numbers of groups (two-, three-, four-, and five-group models). Missing data on depression scores and due to mortality were accounted for by the trajectory model (Haviland et al., 2011). The Bayesian Information Criterion (BIC) was used to determine the number of groups that best fit the data. Models were selected based on the lowest BIC value and non-significant growth parameters were trimmed for parsimony. The dependent measure was specified as a censored normal variable because depression scores ranged from 0 to 40. Baseline depressive symptoms were selected as the intercept time point because all participants met the RDC for major depressive disorder at that time. The average posterior probabilities were .80 or above. All independent measures (demographics, prior mental health treatment, life stressors and personal and social

resources) were added to the model as predictors of trajectory group membership. The effects of the independent variables were estimated jointly with the trajectories and the uncertainty of the participants' trajectory groups was incorporated into the model. Adjusted odds ratios are reported for each independent measure.

Results

Stability of Depressive Symptoms

Depression symptoms at each follow-up were significantly correlated with symptoms at each other assessment point (average $r=.42$) suggesting high levels of stability of symptoms between follow-ups.

Course of Depression

Model fit. A series of models with an increasing number of groups was evaluated for model fit. A three trajectory group solution was selected as the best fitting model based on the BIC scores ($BIC_{\text{one-class}} = -5667.8$, $BIC_{\text{two-class}} = -5551.2$, $BIC_{\text{three-class}} = -5541.6$, $BIC_{\text{four-class}} = -5550.5$, $BIC_{\text{five-class}} = -5560.0$). The average posterior probabilities for the three-group solution were .88 or above.

Trajectory groups. In the three-group model, the first trajectory group, called *low severity* (estimated population proportion of 22.7%), consisted of participants who had an average initial depression score that was relatively low (intercept of 12.7) and experienced a fairly rapid decline in depressive symptoms over the subsequent four years followed by a leveling off (see Figure 1). The second group, called *moderate severity* (estimated population proportion of 49.5%), consisted of participants with moderate depression scores initially (intercept of 22.8) who experienced a fairly rapid decline over the subsequent four years followed by a leveling off. The third group, called *high severity* (estimated population proportion

of 27.8%), consisted of participants with high depression scores on average at baseline (intercept of 29.8) who experienced only modest declines in their scores over the next four years, continued declines at 10 years, and then a leveling off between 10 and 23 years.

Predictors of Depression Course

Descriptive profiles. Using the posterior probabilities of group membership as weights and calculating weighted averages, we prepared descriptive profiles of the three trajectory groups (see Table 1). Members of the high-severity group were older, less educated, and more likely to be male (58.6%) than those in the moderate- and low-severity groups. In addition, members of the high-severity group were more likely than those in the low-severity group to have received mental health treatment in the year prior to the current episode at study intake (45.3%). The high-severity group also had more medical conditions than the other two groups, had the fewest personal resources (less psychological flexibility, lower self-esteem, and more reliance on avoidance coping), and had the weakest social resources (fewer close relationships, lower quality of relationships, fewer activities with friends and family).

Group contrasts. In a fully-adjusted multinomial logistic regression model (see Table 2), education, medical conditions, psychological flexibility, and avoidance coping emerged as independent predictors of trajectory group membership. On average, individuals in the high-severity group had less education than those in the moderate-severity group and more medical conditions than those in the other two groups. Compared to individuals in the low-severity group, individuals in the high- and moderate-severity groups reported less psychological flexibility and more use of avoidance coping.

Discussion

In this 23-year study of individuals who were receiving treatment for depression at baseline, we identified three distinct courses of the disorder: (1) initially mild depression followed by a fairly rapid decline and leveling-off of depressive symptoms; (2) initially moderate depression followed by a fairly rapid decline and leveling off; and (3) initially severe depression followed by modest but continuing declines in symptoms and then a leveling off. The most common course was characterized by moderate initial symptoms, a rapid decline over the next four years, and a leveling off from 4 to 23 years; approximately half of the participants experienced this course of depression. Individuals in the high-severity group experienced a course of depression over the 23 year period that was consistently higher than the baseline levels of the moderate- and low-severity groups.

Membership in each group was independently associated with specific life stressors and personal resources measured at baseline. Individuals in the high- and moderate-severity groups had more medical conditions, and relied more on avoidance coping than individuals in the low-severity group. Individuals in the high-severity group had less education and more medical conditions than those in the moderate-severity group. Low levels of psychological flexibility appeared to be a risk factor, as individuals who were lower on this characteristic were more likely to be in the high- or moderate-severity group than in the low-severity group. Individuals who enter treatment for depression with these risk factors appear to be more likely to experience a long-term course of depression, and may need additional intervention that targets specific, modifiable risk factors (i.e., coping strategies) to help alleviate the severity of depressive symptoms over time and to achieve a better long-term outcome.

At the 10-year follow-up of the current cohort (Cronkite et al., 1998), the majority of individuals experienced a partially remitted course of depression. Individuals who reported less psychological flexibility and fewer close relationships at baseline were less likely to experience remission of depression. The current results extend these findings by using a group-based modeling approach (Nagin, 1999) to identify the naturalistic course of depressive symptoms over 23 years rather than using a priori groups defined by depression severity, and examining baseline predictors of depression course over a much longer follow-up period.

Depression Course

Prior studies on the longitudinal course of depression found that most participants experienced remission of depression over follow-up periods ranging from one to seven years (Klein et al., 2006; Rhebergen et al., 2009; Rhebergen et al., 2011). Our results suggest that there is a subset of individuals who continue to experience a high level of depressive symptoms over an extended period, with no clear indication of remission. Additionally, almost half of our participants experienced moderate severity symptoms that continued to be relatively high despite an initial drop in symptoms around the four-year follow-up. Our findings regarding the long-term course of depression suggest that ongoing monitoring and booster treatments may be required even if there is evidence of an initial drop in symptoms in the first few years following treatment initiation (Hollon et al., 2005).

Baseline Predictors of Depression Course

Education. Less education at baseline predicted a course of depression characterized by high levels of depressive symptoms. Previous longitudinal studies have not found an association between education and depression course (Pettit et al., 2009), whereas cross-sectional epidemiological studies have found depression to be more prevalent among individuals with less

than a college education (Blazer et al., 1994). Individuals with low education often use fewer mental health services and delay initial treatment (Wang et al., 2005). Our results suggest that after initially seeking treatment, these individuals continue to experience a worse course of depression over a long follow-up period. Collaborative depression care management, which incorporates use of a care coordinator, has shown promise in improving depression outcomes among individuals with low education and those who experience other barriers to effective treatment (Bao et al., 2011).

Medical conditions. Having more chronic medical conditions at baseline predicted a poorer long-term course of depression. Individuals with chronic medical conditions have a high prevalence of depressive disorders (Katon, 2003), the symptoms of which may fluctuate depending on the controllability of the medical illness. Although not examined in the current study, depression often contributes to poor adherence to treatment regimens for medical conditions (DiMatteo et al., 2000), thereby creating a cycle whereby medical symptoms worsen due to nonadherence, which may precipitate an episode of depression. Our results support standard practice regarding the importance of screening for medical conditions as part of a comprehensive psychosocial assessment. For individuals with co-occurring medical and mental health conditions, integrated care that focuses on monitoring and management of the depression and medical condition, along with associated risk factors, may improve the long-term outcomes of both (Ciechanowski, 2011).

The lack of significant associations between negative life events and depression course suggests the possibility that such events may be related more to specific depression episodes over the short term than to the long-term course of depression (Stroud et al., 2008). In addition,

coping strategies used in response to negative life events may be more closely associated with the long-term course of depression than the number of negative life events per se.

Psychological Flexibility. Consistent with prior research (Cronkite et al., 1998), we found that individuals endorsing higher levels of happiness, sense of calm, and an easygoing disposition had a lower likelihood of membership in the moderate- or high-severity groups. These characteristics may offset the negative impact of life stressors, such as medical conditions. These traits, particularly calmness, perhaps can be strengthened through skills-based programs such as those focusing on mindfulness and emotion regulation, for example (Nelis et al., 2011). These types of interventions may increase the ability to stay calm in distressing situations, put problems in perspective, and thereby reduce the likelihood of elevating depressed mood.

In the current study, social resources did not predict depression course. However, prior research with this and other samples suggested that more social support was associated with a better depression outcome (Cronkite et al., 1998; Paykel, 1994). Social support indices may not be especially predictive of depressive symptoms over long time intervals because they may change frequently, partially due to changes in the individual's depressive symptoms. Future studies may consider using collateral reports of social functioning to determine which aspects of support are related to improved depression course.

Avoidance coping. Participants who reported more use of avoidance coping at baseline were more likely to experience either a moderate- or high-severity course of depression. Use of avoidance coping as a strategy for dealing with stressful situations, as opposed to dealing with the problem directly through a more adaptive coping strategy, may serve to amplify the problem in the future and thereby generate more difficulties (Holahan et al., 2005), or precipitate a depressive episode. Interventions to decrease avoidance coping may be helpful in preventing a

poor depression outcome. For example, cognitive-behavioral skills training and mindfulness-based techniques are associated with reduced use of avoidance coping and may be effective in mitigating the negative effects of avoidance coping on depression (Weinstein et al., 2009).

Limitations

The results of the current study should be considered in light of its limitations. First, almost all of the measures were based on self-report, which are subject to common method variance. For example, the association of medical conditions with high severity of depression may have been due to depressed individuals perceiving themselves as more ill than they were. This concern is mitigated somewhat by our having asked participants to report only physician-diagnosed conditions, which has been found to have acceptable to high levels of agreement with medical data (Barlow et al., 1998; Farmer et al., 2008; Holahan et al., 1995; Martin et al., 2000). Even so, other sources of data about life stressors, personal and social resources, coping strategies, and depressive symptoms would be helpful in corroborating participant reports. Prior research on a subset of the current cohort found substantial concurrence between the reports of participants and those of their spouses on measures of participant life stressors and personal and social resources (Billings & Moos, 1984). Regarding the measure of negative life events in particular, although interviews to obtain detailed narrative information may yield superior reliability and validity, they are intensive, time-consuming, and expensive, and so are rarely used (Doherenwend, 2006).

A second limitation is that we assessed life stressors, personal and social resources, and avoidance coping only in the year prior to entering treatment for depression. Experiences in these domains that occurred prior to the one-year window of our assessments could be relevant to the long-term course of depression, as could experiences during the follow-up intervals (Cronkite et

al., 1998). Third, there were substantial gaps between assessments when participants could have changed depression status, but we were unable to capture this variation with our data.

Conclusion

This study is the first to examine the course of depression over the long term. The findings have implications for understanding how depression develops over the adult lifespan, and identifying predictors of depression course. In a 23-year naturalistic study of individuals with depression, we identified three courses of depression, categorized by low, moderate, or high initial symptoms, and varying courses of symptom decline over time. Of particular concern is that 28% of participants treated for depression at baseline were categorized as high-severity due to a pattern of symptoms indicating high depression scores at baseline and only modest declines in symptoms at four years, with a leveling off of symptoms at 10 and then 23 years. We also identified that membership in the moderate- and high-severity groups was more common among individuals who, at baseline, had more medical conditions, less psychological flexibility, and used more avoidance coping. Further, less education at baseline was more common among those in the high-severity group. This information is helpful for identifying individuals who are at high risk for a long-term course of depression. It could also help with treatment planning, as individuals with these risk factors may benefit from multifaceted treatments, such as integrating depression treatment with management of medical conditions, or including interventions aimed at less use of avoidance coping and more use of adaptive coping strategies (Stanton, 2010). Finally, our results raise the possibility that matching individuals to treatments depending on their risk factors and projected course of depression may be beneficial, particularly since some treatments for depression have proven more effective for high versus low severity cases (Elkin et al., 1995).

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