



Published in final edited form as:

*Depress Anxiety*. 2018 September ; 35(9): 861–867. doi:10.1002/da.22782.

## Employment characteristics, work environment, and the course of depression over 23 years: Does employment help foster resilience?

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### Abstract

**Background**—Depression is the leading cause of disability and represents a significant challenge to stable employment and professional success. Importantly, employment may also operate as a protective factor against more chronic courses of depression as it can function as a form of behavioral activation and scaffold recovery by facilitating community integration. The current study examined work-related characteristics as protective or risk factors for subsequent long-term depression trajectories.

**Methods**—Relations between employment characteristics and lifetime course of depression were examined among 424 adults in the community who entered treatment for depression. The sample was followed for 23 years with assessments at 1, 4, 10, and 23 years post-baseline. At baseline, participants were asked about employment history and status along with work-related events and aspects of their work environments. Depression was measured at each assessment, and 3 different life course trajectories of depression were identified.

**Results**—Employment at baseline was associated with lower levels of depression at baseline and less severe life courses of depression. Among employed participants, higher occupational prestige, a more supportive work environment (greater involvement, cohesion, perceived support), and

lower work stress (less pressure and more control, role clarity, and autonomy) may protect against more severe, intractable depression over time and may have bolstered functioning.

**Conclusions**—Findings have potential to be harnessed for clinical translation to better inform vocational rehabilitation counseling and human resources programs. Specifically, clinician assessment of work setting can guide patient decision making about how to reduce vulnerability to depression and foster resilience via employment.

### Keywords

Depression; Employment; Resilience; Occupational Prestige; Work Environment

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### Introduction

Depression is the leading cause of disability worldwide (World Health Organization, 2017) with a staggering financial toll in the workplace (i.e., missed days, reduced productivity) (Greenberg, Fournier, Sisitsky, Pike, and Kessler, 2015). Indeed, the experience of clinical depression represents a significant challenge to stable employment and professional success (e.g., productivity, achievement and advancement, financial compensation). On average, workers with depression reported significantly more lost productive time at work due to health-related problems compared to those without depression, with 77.1% reporting at least some lost productive time (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003). Furthermore, depression has been shown to compromise a worker's quality of life, work performance, and social functioning in the workplace (Elinson, Houck, Marcus, & Pincus, 2004; Lerner & Henke, 2008).

Given the tremendous costs of depression in the workplace, the influence of work environment on mental health merits increased attention. A systematic review of work environment and depressive symptoms concluded that employees who report lack of decision latitude, job strain, and bullying experience significantly increased depressive symptoms over time (Theorell et al., 2015). In addition, prior research provides strong evidence for a link between depression and exposure to high job demands, low control, and low social support (Andrea, Bültmann, van Amelsvoort, & Kant, 2009; Mausner-Dorsch & Eaton, 2000; Siegrist, 2008; Van Vegchel, De Jonge, & Landsbergis, 2005; Ylipaavalniemi et al., 2005). Job demands are also direct predictors of burnout (i.e., cynicism, exhaustion) and indirect predictors of duration of absences from work over time (Bakker, Demerouti, De Boer, & Schaufeli, 2003).

In contrast, employment may also operate as a protective factor against more chronic courses of depression over the lifetime. A systematic review of longitudinal studies on the effects of employment on health found strong evidence for a protective effect of employment on depression (van der Noordt, Ijzelenberg, Droomers, & Proper, 2014). Employment may promote independence and identity formation, and help individuals obtain the economic resources critical for material well-being and full participation in society (Waddell & Burton, 2006). Accordingly, employment may function as a form of behavioral activation for those who struggle with depression and help scaffold a life worth living as it can help facilitate community integration and lend purpose and meaning to one's life. This purported

protective effect is plausible as research among individuals with severe mental illness (e.g., bipolar disorder, schizophrenia) has found supported employment to be associated with financial benefit, improved self-esteem, greater well-being, increased social contact and independence, and reduced use of community mental health services (Bond et al., 2001; Bush, Drake, Xie, McHugo, & Haslett, 2009; Harvey, Modini, Christensen, & Glozier, 2013). Furthermore, these benefits persist at 10-year follow-ups (Becker, Whitley, Bailey, & Drake, 2007; Salyers, Becker, Drake, Torrey, & Wyzik, 2004).

Burgeoning evidence shows that work environment can also buffer the negative effects of job demands on workers' psychological health problems (Bakker, Demerouti, & Euwema, 2005; Dollard & Bakker, 2010; Xanthopoulou et al., 2007). For example, a workplace with a stronger psychological safety climate (e.g., provides supportive practices such as opportunities to debrief after emotionally-challenging experiences) may enable employees to cope with job demands (Dollard & Bakker, 2010). Xanthopoulou and colleagues (2007) also found that job resources were strong buffers of the relationship between emotional demands and burnout. Finally, occupational prestige, the social status afforded by one's occupation, may also be protective against depression as research has found that higher prestige is associated with lower odds of reporting poor or fair self-rated health (Fujishiro, Xu, & Gong, 2010).

To date no studies have examined how employment, along with characteristics of the work environment, are associated with lifetime trajectories of clinical depression. This is a critical gap because such studies will serve to determine which aspects of employment can help employed individuals be resilient in the face of depression and less vulnerable to depression symptoms across the life course. In a community sample of depressed individuals who were followed for 23 years, three unique depression trajectories were previously identified by Cronkike et al.'s (2013); they were: low baseline severity with rapid decline, moderate baseline severity with rapid decline, and high baseline severity with modest and slow decline. The current study of the same sample sought to examine (1) associations at baseline of past-year employment status and work-related events with depression severity, (2) how employment status at baseline is related to different lifetime trajectories of depression, and (3) among participants employed at baseline, associations between occupational prestige and work environment characteristics (i.e., hypothesized risk and protective factors) and baseline depression severity, and their multivariate relationship to lifetime course of depression. We hypothesized that, at baseline, employment would be associated with lower levels of depression, and that among employed individuals, higher occupational prestige, lower work environment stress, and greater work-environment resources would be associated with less severe life course trajectories of depression.

## Materials and Methods

### Participants

Participants were 424 adults in the community who had entered depression treatment, having met Research Diagnostic Criteria for depression ( $M_{\text{age}} = 40.00$ ,  $SD = 14.10$ ; 85% Caucasian; 4% African American; 4% Hispanic; 2% Asian; 1% Native American, 4% other; 56% female; 43% married or cohabitating with a partner). The sample for this study was

participants used in Cronkite et al.'s (2013) study. The sample was followed for 23 years with assessments at 1, 4, 10, and 23 years post-baseline. The average response rate across all follow-up assessments among those who were still alive was 87%.

## Procedures and Measures

**Demographics and health**—At baseline, participants completed the Health and Daily Living Form (HDL; Moos, Cronkite, & Finney, 1992) to provide information about demographic characteristics and 12 possible medical symptoms (e.g., insomnia, headaches, constipation) experienced in the past year.

**Employment status, characteristics, and work environment**—Participants were asked at baseline about employment history, current employment status, help-seeking for an emotional problem from an employer, personal and family income, and 9 work-related events in the past year (yes, no; see Table 2 for events). Occupational prestige was assessed at baseline with the Duncan Socio-Economic Index (Duncan, 1961; Stevens & Featherman, 1981), which is based on education and income data from the United States census and the National Opinion Research Center prestige study. Participants who were unemployed provided their most recent occupation, allowing for assignment of an occupational prestige score to those individuals. Participants caring for young children indicated that they were not looking for work for “other reasons.” Using a published algorithm, housewives were assigned a Duncan SES score based in part on the husband’s occupational prestige score. Values range from 0 to 100 and represent the predicted scores from a regression equation linking age-standardized occupational prestige to educational and income levels in each census occupational category. Higher scores indicate higher levels of occupational prestige.

The Work Environment Scale (WES; Moos & Insel, 1986) was administered to employed participants at baseline. The 90-item WES is comprised of 10, 10-item subscales that measure the social environment of different types of work settings, i.e., *involvement* – employees are concerned about and committed to the job, *cohesion* – employees are friendly and supportive of one another, *supervisor support* – management is supportive of employees and encourages employees to be supportive of one another, *autonomy* – employees are encouraged to be self-sufficient and to make their own decisions, *task orientation* – emphasis on good planning, efficiency, and getting the job done, *work pressure* – the press of the workload and time urgency dominate the work milieu, *clarity* – employees know what to expect in their daily routine and rules and policies are explicitly communicated, *control* – management uses rules and pressures to keep employees under control, *innovation* – emphasis on variety, change, and new approaches, *physical comfort* – physical surroundings contribute to pleasant work environment. Internal consistency among employed participants at baseline ranged from 0.61 to 0.85 on these subscales. Participants were asked to respond to each item as either “true” or “false” as it related to their current work environment; scores for each subscale range from 0–10. Two factors are calculated to create a *work stress index* ( $\alpha = .80$ ) comprised of the subscales of work pressure, control (by management), clarity (reversed), autonomy (reversed), and a *work resources inventory* ( $\alpha = .83$ ) comprised of the subscales of involvement, cohesion, and supervisor support. Previous research with WES is

also sensitive to real-world employment outcomes (Cohen, Stuenkel, & Nguyen 2009; Westerman & Yamamura, 2007).

**Depression**—Depression was measured at each assessment using a 10-item global depression scale created to correspond most closely to the DSM-IV depression criteria (American Psychiatric Association [APA], 1994). Participants were asked how frequently during the past month they had experienced each of 10 depressive symptoms (0 = never, 1 = seldom, 2 = sometimes, 3 = fairly often, and 4 = often). Scores ranged from 0 to 40 (baseline:  $M = 24.16$ ,  $SD = 8.61$ ,  $\alpha = 0.87$ ) with higher scores indicating more depression. Among participants who were employed at baseline and completed 2 or more assessments internal consistency ranged from .86 to .88 at years 1, 4, 10, and 23, respectively. These psychometric properties are similar to those reported for Major Depressive Disorder as assessed by DSM-V (APA, 2013).

Cronkite et al. (2013) used semi-parametric group-based modeling to identify 3 distinct trajectories of depression: low baseline severity with rapid decline (least severe), moderate baseline severity with rapid decline (moderate severity), and high baseline severity with modest and slow decline (most severe). Trajectories were identified for all individuals who completed multiple assessments, with most having completed all 5 assessments over the 23-year longitudinal study (i.e., 68% of all the participants who were employed at baseline). Of the 220 participants included in the current study's longitudinal component, 54 (25%), 124 (56%), and 42 (19%) were in the least severe, moderate severe, and most severe groups, respectively.

## Data Analyses

Descriptive statistics were conducted with the full sample at baseline to characterize employment status, employment history, and employment-related events in the year prior to the baseline assessment. T-tests and Spearman Rho correlations were conducted to determine associations between employment status and employment-related events during the year prior to baseline and depression severity at baseline. Zero-order correlations were conducted to assess associations at baseline between occupational prestige and WES subscales and depression severity among participants who were employed at baseline. Chi-square tests were conducted with the full sample at baseline to determine whether employment status at baseline was differentially associated with depression course trajectory group. Finally, a Multivariate Analysis of Covariance (MANCOVA) was conducted among participants who were employed at baseline, to determine how employment characteristics (occupational prestige, work environment characteristics) at baseline were associated with depression course trajectory group, with and without controlling for covariates (baseline depression, age, gender, education, medical symptoms).

## Results

### Descriptive Statistics

At baseline, participants' mean years of education was 13.33 ( $SD = 2.30$ ), and the average number of medical symptoms experienced in the past year was 5.51 ( $SD = 3.17$ ),

respectively. Fourteen percent of participants had a total family income of less than \$5,000 and 18% had a total family income of \$30,000 or more (i.e., \$30,000 at time of data collection is approximately \$180,000.00 in 2017; United States Department of Labor, n.d.).

At baseline, 55% ( $n = 233$ ) of participants were employed (full, part-time, or both), and 45% were not ( $n = 190$ ). Among those who were employed, 73% ( $n = 169$ ) were full-time, 18% ( $n = 42$ ) were part-time, and 9% ( $n = 22$ ) worked both full and part-time jobs. Among participants who were unemployed ( $n = 190$ ), only 25 were actively looking for work (69 = “health too poor”; 27 = “retired”; 69 = “other reason”). Fifty-two percent ( $n = 99$ ) of those who were unemployed had been out of work for a year or longer. The mean level of occupational prestige was 50.21 ( $SD = 19.20$ ; possible score 0–100).

### Differences Between Unemployed and Employed Participants

Unemployed participants were more likely to be men. Employment status did not differ as function of race or ethnicity. Compared to unemployed participants, those who were employed were younger, more educated, and had higher occupational prestige. Unemployed participants reported higher levels of depression than employed participants. Among those who were employed, a t-test revealed no difference in depression severity between participants who worked part-time and those who worked full-time. Finally, employed participants had fewer medical symptoms than those who were unemployed. Table 1 summarizes these results.

### Employment History, Help-Seeking, Absences, and Employment-Related Events

Regarding employment history, 31% ( $n = 130$ ) of the entire sample (employed and currently unemployed) had changed jobs 1 or more times in the past year. Regarding help-seeking, 27% ( $n = 112$ ) of participants had ever turned to an employer for help to share about personal or emotional problems, and 21% ( $n = 89$ ) had done so in the past year. The average number of days unable to work due to health problems in the past year was 73.16 ( $SD = 126.42$ ). See Table 2 for a summary of employment-related events in the past year.

### Employment History, Work Environment Characteristics, and Depression

Among participants who were employed at baseline, lower levels of depression at baseline were associated with higher levels of baseline occupational prestige ( $r = -.13, p < .05$ ), personal and family income ( $r = -.14, p < .05$ ;  $r = -.15, p < .05$ ), and work environment support ( $r = -.15, p < .05$ ) and clarity ( $r = -.15, p < .05$ ), and lower levels of work environment stress ( $r = .23, p < .01$ ) and pressure ( $r = .19, p < .05$ ). Length of time (number of days) unable to work due to health problems in the year prior to baseline was positively associated with baseline depression ( $r = .29, p < .001$ ).

In terms of work-related events in the year prior to baseline (for those employed at baseline), Spearman Rho correlations indicated that individuals who had (in the past year) been fired or laid off ( $\rho = .15, p < .05$ ), unemployed for a month or more ( $\rho = .17, p < .05$ ), had a significant decrease in income ( $\rho = .14, p < .05$ ), and went deeply into debt ( $\rho = .15, p < .05$ ) reported higher levels of depression at baseline. Individuals who endorsed a significant



increase in income in the year prior to baseline reported lower levels of baseline depression ( $\rho = -.15, p < .05$ ) (see Table 2 for a summary of correlations).

### Employment Status and Depression Life Course Trajectory

Among participants who completed multiple assessments, employment status at baseline was significantly related to depression life course trajectory ( $\chi^2 = 21.26, p < 0.01$ ). The least severe, moderately severe, and most severe groups represented 75% (n=54), 56% (n=124), and 40% (n=42) of employed individuals, respectively. Twenty-five percent of the least severe group, 44% of the moderately severe group, and 60% of the most severe group were unemployed at baseline. Post-hoc chi-square tests comparing 2 groups at a time (not controlling for covariates) revealed that individuals in the moderately severe group were less likely to be employed than those in the least severe group ( $\chi^2 = 8.34, p < 0.01$ ) and more likely to be employed than those in the most severe group ( $\chi^2 = 7.17, p < 0.01$ ). Those in the least severe group were more likely to be employed than those in the most severe group ( $\chi^2 = 21.08, p < 0.01$ ).

### Occupational Prestige, Work Environment, and Depression Life Course Trajectory

To address the final objective, a MANOVA was conducted with participants who were employed at baseline to determine if baseline occupational prestige, work environment stressors, and work environment resources differed as a function of depression life course trajectory. Findings from post-hoc Tukey's tests revealed that (1) individuals in the least severe and moderate severity groups had significantly higher occupational prestige at baseline compared to those in the most severe depression group, (2) individuals in the least severe group had significantly greater work environment resources at baseline compared to those in the moderate and most severe groups, and (3) individuals in the least severe group had significantly lower work environment stressors at baseline compared to those in the moderate to severe depression groups (see Table 3). A MANCOVA controlling for baseline depression, gender, age, education, and medical symptoms, revealed that individuals in the least severe depression group ( $M = 6.15, SD = 1.99$ ) had higher levels of work environment resources at baseline compared to participants in the moderate depression severity group ( $M = 5.30, SD = 2.14; p < .05$ ). No other group differences emerged.

## Discussion

The current study examined work-related characteristics as protective or risk factors for subsequent long-term depression trajectories. Specifically, we sought to understand how certain aspects of employment helped depressed individuals to function and even thrive over the life course. Depressed individuals' work life and financial situation may be more unpredictable and less stable than those of non-depressed individuals. Depressed individuals in our sample reported notable rates at baseline of past-year income loss and missed work days due to health problems along with several other stressful work events in the past year, including a greatly increased workload, changing jobs at least once in the past year, being laid off or fired, and having trouble with supervisors. Several of these work-related events were positively correlated with depression symptom severity during the year before the baseline assessment.

Although employment at baseline was related to depression trajectory severity, we observed that many depressed individuals were in fact employed. At baseline, a significant proportion of individuals with subsequent moderate to severe life course trajectories of depression were employed (56% and 40%, respectively), and the amount of time worked prior to baseline (part-time vs full-time) was not associated with depression severity trajectory. Individuals who were employed at baseline tended to follow less severe depression trajectories and to have fewer other health problems. For these individuals, work may serve a behavioral activation function, inserting accountability and structure into their lives when they might have otherwise remained isolated. Inversely, those who were unable to maintain employment in the face of depression appeared to follow a less favorable recovery trajectory. Programs that help depressed individuals enter and remain in the workforce may therefore reduce the prevalence of lifetime disability and promote thriving in this population.

An abundance of research has documented the long-term course of depression and its detrimental effects on employment and productivity (e.g., Greenberg et al., 2015; Mrazek, Hornberger, Altar, & Degtiar, 2014). However, our work is some of the first to focus on the effects of work environment on depression trajectories. Our results indicate that higher occupational prestige, a more supportive work environment (involvement, cohesion, perceived support), and lower work stress (high pressure, low control, poor role clarity, limited autonomy) may have been protective and bolstered functioning.

Another key finding was the infrequency with which depressed individuals had ever talked about their personal or mental health problems with an employer. Only 21% of our sample of depressed individuals had ever asked an employer for help with personal problems. Mental health stigma has been an area of great focus in the workplace and mental health community in recent years (Boyd, Adler, Otilingam, & Peters, 2014; Corrigan, Druss, & Perlick, 2014), with various campaigns focused on enhancing awareness and acceptance of mental health problems. Moreover, prominent figures in business have begun to share their own struggles with depression (see CNN, 2017) and more workplace wellness programs are taking active steps to address depression and other mental health conditions among employees (e.g., Willis Towers Watson, 2016). Still, our finding of a low rate of help-seeking from an employer points to an opportunity for progress to be made in reducing barriers to disclosing mental health-related issues to employers and finding appropriate accommodations.

### **Strengths, Limitation, and Future Directions**

The current study is characterized by several strengths, most notably its comprehensive longitudinal examination of the effect of professional functioning on course of depression. Limitations should also be noted. First, depressed people may have been more likely to perceive a poorer work environment (versus truly had one). Second, different forms of employment may exercise different effects on health. The current study did not assess for specific occupational type, and future research should examine how self-employment and certain vocational specializations may be associated with depression. Third, the causal role of employment on depression is somewhat difficult to establish given that depressive symptoms could contribute to some of the financial and work environment difficulties. The



relation between employment and health can be bi-directional, such that the perception of positive effects of employment on health can be biased by the fact that healthier people are more likely to be and stay employed (van der Noordt et. al , 2014). For instance, even after controlling for baseline depression, age, gender, education, and medical symptoms, baseline employment may have been prognostic marker for a other factors, including cognitive abilities and personal resources that increase the likelihood of less severe lifetime depression trajectories. Fourth, the current study focused on baseline employment and did not examine changes in employment over time. Job changes are frequent in the US (US Department of Labor, 2017) and 31% of this sample had changed jobs one or more times in the year prior to the baseline assessment. Concurrent job circumstances may be more relevant to depressive symptoms than past employment circumstances and future studies would substantially contribute to the literature by examining time-varying relations between employment and depression. Finally, the current study's sample was predominantly Caucasian and results may not generalize to minority populations. Future research should utilize culturally informed assessment tools to understand the workplace experience for female and minority employees (e.g., potential for micro-aggressions, explicit discrimination or racism, sexual harassment).

## Conclusions

In summary the findings from the current study, with further replication, have the potential to be harnessed for clinical translation and to better inform vocational rehabilitation counseling and human resources programs. That is, by assessing a patient's work setting, clinicians may be able to help guide a patient on making decisions about changing the work setting to reduce vulnerability to depression and foster resilience in the face of mental health struggles. In addition, assessment of occupational factors that affect depression might help human resource managers identify vulnerable employees for targeted interventions (e.g., Employee Assistance Programs, digital mental health interventions). A growing body of evidence indicates that work is social determinant of health (Ahonen, Fujishiro, Cunningham, & Flynn, 2018) as it determines income and social prestige, power, and connectedness. Accordingly, this study represents an important first step to understanding relations between employment characteristics and mental health among individuals with depression and offers several important future directions for the study of changes in employment and well-being across the lifespan.

## Acknowledgments

This research was supported in part by a Department of Veterans Affairs Rehabilitation Research & Development Career Development Award granted to Dr. Heinz (1IK2RX001492-01A1), a Department of Veterans Affairs Health Services Research & Development Senior Research Career Scientist Award (RCS 00-001 to Dr. Timko), and Eli Lilly. The expressed views are those of the authors and do not represent those of the VA.

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**Table 1**

Differences in demographic and health-related characteristics between employed and unemployed participants at baseline.

	Employed n(%)	Unemployed n(%)	X <sup>2</sup>
Female	140(59%)	96(41%)	3.88*
Male	93(50%)	94(50%)	
Caucasian	203(57%)	155(43%)	2.12
Non-Caucasian	30(47%)	34(53%)	
	<b>M (SD)</b>	<b>M (SD)</b>	<b>t</b>
Age	36.50(11.59)	44.22(15.69)	5.64**
Education	13.70(2.21)	12.87(2.34)	-3.74**
Occupational Prestige <sup>^</sup>	50.21(19.20)	43.20(21.86)	-3.16**
Depression	22.23(8.71)	26.46(7.91)	5.23**
Medical Symptoms	5.08(3.00)	6.03(3.29)	3.11**

n = 421–423.

<sup>^</sup> n = 376.

\*  $p < .05$ ;

\*\*  $p < .01$

**Table 2**

Employment history, help-seeking, absences, and employment-related events in the past year at baseline for the full sample.

<b>Employment Variable</b>	<b>Yes</b>
Changed jobs at least once in past year	31%
Ever asked employer for help	21%
	<b>M(SD)</b>
Days of work missed due to health problems in past year <sup>*+</sup>	73.16 (126.42)
<b>Employment Event</b>	<b>Yes</b>
Trouble with Superiors	22%
Laid off/Fired <sup>+</sup>	15%
Unemployed for a month or longer <sup>+</sup>	34%
Experienced a greatly increased workload	28%
Received a promotion	13%
Took a better job	21%
Income increase (by 20%) <sup>++</sup>	16%
Income decrease (by 20%) <sup>+</sup>	21%
Went deeply into debt <sup>+</sup>	18%

N = 419–423;

\* N = 407.

<sup>+</sup> Indicates a significant positive correlation with baseline depression among those individuals who were employed at baseline.

<sup>++</sup> Indicates a significant negative correlation with baseline depression among those individuals who were employed at baseline.

Comparison of depression trajectories on occupational prestige, work environment resources and stressors.

**Table 3**

Employment Characteristic	Least Severe		Moderate Severity		Most Severe		F	P
	M(SD)		M(SD)		M(SD)			
Occupational Prestige	54.83(2.56) <sup>a</sup>		51.62(1.67) <sup>b</sup>		43.79(2.99) <sup>a,b</sup>		4.10	.02
Work Environment Stressors	3.79(.21) <sup>a,b</sup>		4.29(.13) <sup>a</sup>		4.54(.24) <sup>a,b</sup>		3.19	.05
Work Environment Resources	6.15(.28) <sup>a,b</sup>		5.30(.19) <sup>a</sup>		5.22(.33) <sup>a,b</sup>		3.59	.03

Note: Means that share a superscript are significantly different at  $p < .05$ .