

# The Impact of Job Accommodations on Employment Outcomes Among Individuals With Psychiatric Disabilities

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**Objective:** This study aimed to fill a gap in the literature on effectiveness of employment accommodations by comparing employment outcomes for individuals with psychiatric disabilities who received or did not receive accommodations, with models informed by a conceptual approach blending static labor supply theory, Sen's capability approach, and the International Classification of Functioning. **Methods:** Data for the study came from a longitudinal, four-year eight-state multisite demonstration project funded by the U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration. All participants had been recruited from clinical populations receiving outpatient psychiatric services. The effects of job accommodations on hours worked were assessed with generalized linear modeling (N=1,538). The effects of job accommodations on duration of employment were assessed with a parametric duration model analysis (N=1,040) that incorporated multiple spells of employment among individuals over the study period. **Results:** Controlling for covariates suggested by the conceptual model, analyses showed that individuals who reported job accommodations on average worked 7.68 more hours per month and those who reported receiving accommodations worked 31% longer, with each job accommodation reported decreasing the risk of job termination by nearly 13%. **Conclusions:** Results demonstrate that job accommodations show potential to improve employment outcomes for individuals with psychiatric disabilities receiving supported employment services, indicating that job accommodations should be stressed in policy and continuing education efforts for program staff and clients. (*Psychiatric Services* 65:1126–1132, 2014; doi: 10.1176/appi.ps.201300267)

It has long been recognized that adults with psychiatric disabilities experience employment difficulties. Approximately one person in five with schizophrenia works in a competitive employment setting, and less than half engage in any kind of employment at all (1). An estimated 61%–85% of working-age adults with psychiatric

disabilities, as opposed to 20% of adults without, are not even in the labor force (2,3). Individuals with psychiatric disabilities who do obtain employment face challenges such as functional limitations from impairment, which sometimes are exacerbated by increased interpersonal and social alienation (4,5). These factors contribute to adverse outcomes,

such as increased absenteeism and disability-related leave periods, reduced work hours, lower perceived productivity, and, ultimately, lower earnings (6).

Spurred by the passage of the Americans With Disabilities Act (ADA) in 1990, researchers and policy analysts have documented persistent barriers confronted by individuals with psychiatric disabilities in the labor market and developed a multitude of policy interventions to address these barriers. One such policy intervention is providing job accommodations, defined as an adjustment in the work environment that enables an individual with a disability to participate fully in an employment setting (4,7,8).

Only two studies relate empirical findings on the estimated effect of job accommodations to measurable employment outcomes (9,10). Fabian and colleagues (10) described the impact of accommodations provided to 30 individuals with psychiatric disabilities and examined the relationship between job duration and the intensity or amount of accommodations through survival analysis over a span of 34 months, finding that the median job retention was twice as long for those receiving five or more accommodations than for those receiving fewer accommodations. In a multisite longitudinal investigation by MacDonald-Wilson and colleagues (9), 191 participants obtaining employment with accommodations were interviewed quarterly for a year, resulting in a detailed record of functional deficits experienced and job accommodations provided to address them. Average

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reported earnings were \$109 per week, and 47% of respondents remained employed at the end of 12 months (9).

However, both studies were observational in that only individuals receiving reasonable accommodations were recruited. Randomized controlled trials or well-controlled quasi-experimental studies on accommodation are lacking that could strengthen evidence that provision of accommodations leads to improved work outcomes, such as increased hours worked and increased job tenure. To address this limitation, this study attempted to develop a counterfactual condition for comparison of the employment outcomes of workers under similar circumstances receiving or not receiving accommodations.

### **An integrated theory of job accommodations**

The conceptual framework used to guide the inquiry in this study includes static labor supply theory from labor economics, the capability approach, and the theoretical model behind the International Classification of Functioning (ICF) (11,12). Static labor supply theory models the decisions that individuals make concerning labor force participation at a point in time (13) and suggests that changes to health may affect labor supply decisions for individuals with disabilities, which would result in fewer hours of work and possibly a departure from the labor force entirely (14).

According to Sen's (11) capability approach theory, disability represents deprivation of an individual's capability to function or of the individual's practical opportunities to achieve a certain level of functioning. Disability occurs only when impairment places restrictions on a person's ability to function within a given context. Sen's model allows analysts to consider the interaction of environmental contexts, with personal characteristics suggested by static labor supply theory; these interactions are thought to have an impact on how much employment a person chooses to supply (15).

The ICF model, like the capability approach model, is a dynamic interactive model of functioning and disability. As an integration of the medical and social models of health, it gives a coherent view from biological, social,

and individual perspectives and represents an international trend to lessen the connection of disability with diagnosis and move toward a concept in which the impairment is considered in a broader context (16). The ICF model offers a framework for describing how limitations in functioning and the environment are related to employment outcomes (17) given that environment, especially the human-made environment in the form of policy options, can both hinder and facilitate functioning (12).

According to the conceptual model, a person's functional limitation is moderated by capabilities from personal and environmental resources available to the individual. Factors such as health status and environmental barriers may engender difficulties in converting resources into functioning. However, environmental facilitators, such as job accommodations that address various employment limitations, could conceivably change employment outcomes by acting as resources that enable a person to convert capabilities into strengths, producing positive work outcomes in the form of increased hours worked and longer employment duration.

### **Research questions**

The research questions to be addressed in this article are the following: For individuals with psychiatric disabilities, how are job accommodations that are moderated by clinical and contextual factors related to average monthly hours worked in competitive employment across multiple spells of employment? How are job accommodations that are moderated by clinical and contextual factors related to the duration of job tenure across multiple spells of employment? The hypotheses, as suggested by the framework of the conceptual model, are that accommodations will mitigate functional limitation and be associated with an increase in hours worked and that they will decrease the risk of job loss, leading to longer sustained overall employment tenure.

### **Methods**

#### ***Sample***

The data in this investigation came from the federally funded Employment Intervention Demonstration Project (EIDP) that evaluated the impact of an evidence-based approach to delivering employment

services to individuals with psychiatric disabilities between 1996 and 2000 (18). Individuals were recruited from existing clinical populations in eight states by provider referral, self-referral, family referral, and word of mouth and, in one state, by newspaper advertisement. Inclusion criteria were being age 18 or older and meeting the requirement of psychiatric disability (severe and persistent mental illness) as defined by the Center for Mental Health Services of the Substance Abuse and Mental Health Services Administration. Eligible participants were unemployed but willing to work, and they completed a written informed consent approved by each site's institutional review board. The total eligibility pool was 10,653, from which 2,883 were invited to join the study. Of those, 1,655 completed the first interview, 1,648 of whom underwent random assignment; details are described in Cook and colleagues' 2005 article (18). Participants were compensated between \$10 and \$20 per interview, and 1,159 (70%) completed all five interviews as of month 24, indicating that attrition was not a major problem. With a lack of outcome information, work hours could not be estimated for 110 individuals, leaving an analytical sample of 1,538 for the hours analysis. For the duration analysis, the 1,040 individuals who obtained jobs during the 48-month period were included in the sample.

#### ***Data collection instruments***

Interview protocols consisting of structured assessments that have been psychometrically validated (19) were administered by trained interviewers. The protocol included clinical assessments of symptoms and diagnosis (including the Positive and Negative Syndrome Scale) and numerous self-rated measures of functioning, service and job satisfaction, employment history, demographic information, financial condition, and quality of life. Questions were also asked about frequency and age of first psychiatric hospitalization, substance use, and work motivation and self-esteem. Hours worked and amount earned were recorded on a weekly basis for the initial 24 months covered by the interviews and 24 months after,

**Table 1**

Descriptive statistics for variables for workers with psychiatric disabilities who received or did not receive accommodations<sup>a</sup>

Conceptual factor variable	Overall (N=1,654)				Accommodation (N=370)			No accommodation (N=1,284)			Test statistic for H <sub>0</sub> <sup>c</sup>	df	p
	N	%	M <sup>b</sup>	SD	%	M <sup>b</sup>	SD	%	M <sup>b</sup>	SD			
Dependent variable: hours worked per month <sup>d</sup>	1,538	—	14.40	30.95	—	20.26	33.10	—	12.58	30.04	t=3.95	1,536	<.01
Explanatory variable													
Received accommodation	370	22	—	—	100	—	—	—	—	—	—	—	—
1 reported	182	—	—	—	49	—	—	—	—	—	—	—	—
2 reported	86	—	—	—	23	—	—	—	—	—	—	—	—
≥3 reported	102	—	—	—	28	—	—	—	—	—	—	—	—
Covariate													
Activities limitation													
General health affects work	1,639	—	.35	.48	—	.31	.47	—	.36	.48	t=1.46	1,637	.14
Emotional problem affects work	1,636	—	.47	.50	—	.42	.50	—	.49	.50	t=2.09	1,634	.04
Went out past week	1,645	—	.55	.50	—	.58	.50	—	.54	.50	t=1.27	1,643	.21
Has multiple jobs <sup>d,e</sup>	465	46	—	—	26	—	—	29	—	—	t=.85	1	.36
Frequency phones family	1,639	—	3.47	1.39	—	3.65	1.30	—	3.42	1.41	t=2.69	1,637	.01
Frequency sees family	1,637	—	3.12	1.53	—	3.26	1.41	—	3.07	1.57	t=2.06	1,635	.04
Frequency phones nonfamily	1,638	—	3.26	1.52	—	3.49	1.48	—	3.20	1.52	t=3.26	1,636	<.01
Frequency sees nonfamily	1,639	—	2.90	1.45	—	3.00	1.43	—	2.87	1.46	t=1.46	1,637	.15
Environmental barrier													
SSI past month (current \$) <sup>f</sup>	1,619	—	182.24	226.02	—	194.20	222.52	—	178.83	226.97	t=1.14	1,617	.26
SSDI past month (current \$) <sup>g</sup>	1,629	—	203.48	477.37	—	203.46	281.00	—	203.49	519.98	t=.00	1,627	.99
Local unemployment rate (%)	1,649	—	4.40	1.16	—	4.60	1.35	—	4.36	1.10	t=3.62	1,647	<.01
Environmental facilitator													
Received supported employment	958	58	—	—	58	—	—	58	—	—	χ <sup>2</sup> =.07	1	.79
Positive family relationships	1,653	—	.47	.50	—	.51	.50	—	.47	.50	t=1.45	1,651	.15
Positive social relationships	1,653	—	.60	.49	—	.69	.46	—	.58	.50	t=4.15	1,651	<.01
Health status													
Diagnosed schizophrenia (baseline)	848	52	—	—	22	—	—	50	—	—	χ <sup>2</sup> =3.25	1	.07
Good overall health	1,653	—	.65	.48	—	.63	.48	—	.65	.48	t=.79	1,651	.43
Blunted affect	1,639	—	2.23	1.26	—	2.32	1.33	—	2.21	1.24	t=1.49	1,637	.14
Social withdrawal	1,639	—	2.79	1.39	—	2.59	1.33	—	2.85	1.40	t=3.11	1,637	<.01
Social avoidance	1,639	—	2.61	1.38	—	2.37	1.34	—	2.67	1.39	t=3.69	1,637	<.01
Personal characteristic													
Age in 2000	1,647	—	41.70	9.43	—	40.38	8.42	—	42.07	9.67	t=3.04	1,645	<.01
Female	776	47	—	—	44	—	—	48	—	—	χ <sup>2</sup> =1.60	1	.21
White	802	49	—	—	45	—	—	50	—	—	χ <sup>2</sup> =2.55	1	.11
Married (baseline)	153	9	—	—	8	—	—	10	—	—	χ <sup>2</sup> =.44	1	.51
Independently housed (baseline)	1,319	80	—	—	82	—	—	79	—	—	χ <sup>2</sup> =1.66	1	.20
Children under 18 living at home	393	24	—	—	25	—	—	24	—	—	t=.312	1	.58
Education completed (baseline)	—	—	—	—	—	—	—	—	—	—	χ <sup>2</sup> =2.78 <sup>h</sup>	2	.25
Elementary through high school	1,055	64	—	—	68	—	—	63	—	—	—	—	—
Some college	414	25	—	—	23	—	—	26	—	—	—	—	—
College degree <sup>i</sup>	176	11	—	—	9	—	—	11	—	—	—	—	—
Months employed past 5 years	1,512	—	13.53	16.28	—	13.23	15.65	—	13.61	16.46	t=.37	1,510	.71
Positive work motivation (baseline)	1,541	93	—	—	94	—	—	93	—	—	χ <sup>2</sup> =.52	1	.47
Economic burden	1,653	—	.50	.50	—	.41	.49	—	.53	.50	t=3.94	1,651	<.01

<sup>a</sup> All tabulations are based on results from the baseline interview.

<sup>b</sup> Scales for interpreting the mean values are fully described in the online data supplement to this article.

<sup>c</sup> Group means or expected frequencies are not statistically different from 0.

<sup>d</sup> These figures were averaged across all 48 months. Hours worked on a competitive job are by strict definition of the Employment Intervention Demonstration Project.

<sup>e</sup> Overall percentage calculated from N=1,022

<sup>f</sup> SSI, Supplemental Security Income

<sup>g</sup> SSDI, Social Security Disability Insurance

<sup>h</sup> Inference drawn from F distribution in one-way analysis of variance

<sup>i</sup> Associate's through doctorate

resulting in 48 months of employment outcome data. Additional employment information was recorded each time a participant started, changed, or terminated employment and included an open-ended detailed description of any job accommodations, which was subsequently summarized as a count of number of accommodations reported for each job. All data collection protocols for this study are available from the authors on request.

Quality assurance of data was conducted on two levels. At the program level, the research team took elaborate steps to ensure that the interview protocol met the strongest psychometric requirements and independently verified all employment outcomes data through payroll documentation. At the study level, the research team purged the data set of input and calculation errors and generated descriptive statistics on all study variables to detect and correct for illegal values.

#### *Analytic model for the hours worked hypothesis*

The generalized linear model (GLM) with log link was selected to test the hypothesis on hours worked because the cumulative distribution of average hours worked exhibited a mixed distribution. The GLM is a weighted non-linear regression model that allows for the estimation of mean hours worked in which the assumption of independent and identically distributed disturbance with constant variance may be relaxed (20–22). Goodness-of-fit tests, including the modified Park test, log likelihood, and Akaike and Bayesian information criteria, were conducted to confirm that the log-link function was the correct assumption made about the distribution of hours worked (22,23). Marginal effects were calculated for all coefficients to facilitate interpretation (24). A positive relationship between accommodations and the marginal effect would indicate that the receipt of job accommodations led to increased work hours, with other factors held constant.

#### *Analytic model for the employment tenure hypothesis*

We used duration model analysis, also known as survival analysis, to test the hypothesis that individuals who report

**Table 2**

Impact of job accommodations on hours worked by persons with psychiatric disabilities, by generalized linear model<sup>a</sup>

Conceptual factor variable	Coefficient	SE	Marginal effect <sup>b</sup>	SE
Explanatory variable: accommodation	.805**	.138	7.006**	1.146
Activities limitation				
General health affects work	-.366	.261	-3.185	2.258
Emotional problem affects work	-.325	.251	-2.832	2.189
Went out past week	.101	.206	.881	1.785
Frequency phones family	-.073	.073	-.639	.627
Frequency sees family	.127	.066	1.102*	.560
Frequency phones nonfamily	.413**	.076	3.590**	.664
Frequency sees nonfamily	-.350**	.085	-3.050**	.734
Environmental barrier				
Amount SSI past month (current \$) <sup>c</sup>	-.003**	.000	-.023**	.003
Amounts SSDI past month (current \$) <sup>d</sup>	-.001**	.000	-.009**	.002
Local unemployment rate (%)	-.071	.067	-.621	.586
Environmental facilitator				
Received supported employment	.422**	.146	3.674**	1.205
Positive family relationships	.194	.223	1.690	1.941
Positive social relationships	-.056	.259	-.484	2.257
Health status				
Diagnosed schizophrenia (baseline)	-.577**	.152	-5.024**	1.330
Good overall health	-.107	.218	-.934	1.897
Blunted affect	-.294**	.076	-2.562**	.656
Social withdrawal	-.177	.110	-1.543	.952
Social avoidance	.173	.106	1.503	.918
Personal characteristic				
Age in 2000	.051	.046	.439	.402
Age in 2002	-.001	.001	-.006	.005
Female	-.177	.143	-1.535	1.244
White	.048	.144	.417	1.254
Married (baseline)	.592**	.208	5.149**	1.823
Independently housed (baseline)	.371*	.184	3.224*	1.588
Children under 18 living at home	-.135	.202	-1.171	1.759
Education completed (baseline)	.033	.045	.285	.392
Months employed past 5 years	.017**	.004	.144**	.033
Positive work motivation (baseline)	.271	.306	2.360	2.669
Economic burden	-.230	.226	-2.002	1.968

<sup>a</sup> Hours refer to competitive jobs by strict definition of the Employment Intervention Demonstration Project. Family specified is gamma with log link. Robust standard errors are reported for heteroskedasticity. For the generalized linear model, N=1,407, intercept=1.998, SE=1.183, -2 log likelihood=-4,450.88, and scale parameter=6.19.

<sup>b</sup> Evaluated at variable means, except for binary regressors, where effect was evaluated at the discrete change from 0 to 1

<sup>c</sup> SSI, Supplemental Security Income

<sup>d</sup> SSDI, Social Security Disability Insurance

\*p<.05, \*\*p<.01

receiving job accommodations experienced longer employment tenure across multiple spells of employment. The model evaluates duration in a given job by estimating how long it takes before transition to another job occurs (25,26). By focusing on transition rather than average job duration, we accounted for the fact that some individuals did not experience job termination during the study period.

Duration analysis examines the probability that a transition over a given period has occurred, modeled through a hazard function and defined as the

instantaneous probability of transitioning out of a spell of employment (25). Whereas ordinary regression describes the conditional mean and variance of a distribution (27), the hazard function describes the conditional rate of job separation. In duration models, covariates affect the expected duration of employment by changing the position of the baseline hazard, or the rate at which a given person experiences the transition event—job loss in this case. Covariates shift the hazard function up or down. An important consideration is whether covariates change over the



**Table 3**

Impact of job accommodations on hazard of job separation among persons with psychiatric disabilities: duration model results<sup>a</sup>

Conceptual factor variable	Coefficient	SE	Hazard ratio	SE
Explanatory variable: accommodation	-.136**	.039	.873**	.034
Activities limitation				
General health affects work	.048	.120	1.049	.126
Emotional problem affects work	.359**	.119	1.431**	.170
Went out past week	-.003	.101	.997	.101
Multiple jobs	-.513**	.065	.599**	.039
Frequency phones family	-.023	.039	.977	.038
Frequency sees family	-.027	.034	.973	.033
Frequency phones nonfamily	-.086*	.038	.918*	.035
Frequency sees nonfamily	.105**	.040	1.111**	.045
Environmental barrier				
SSI past month (current \$) <sup>b</sup>	.0003	.0001	1.000	<.001
SSDI past month (current \$) <sup>c</sup>	.0001	.0001	1.000	<.001
Local unemployment rate (%)	-.021	.031	.979	.030
Environmental facilitator				
Received supported employment	.095	.064	1.100	.070
Positive family relationships	-.071	.111	.932	.103
Positive social relationships	.148	.117	1.160	.136
Health status				
Diagnosed schizophrenia (baseline)	.153*	.069	1.166*	.081
Good overall health	-.150	.100	.860	.086
Blunted affect	.039	.036	1.039	.038
Social withdrawal	-.003	.057	.997	.057
Social avoidance	.030	.056	1.031	.058
Personal characteristic				
Age in 2000	-.073**	.023	.930**	.021
Age in 2002	.001*	.0001	1.001*	.0001
Female	-.163*	.070	.849*	.059
White	-.032	.068	.969	.066
Married (baseline)	.007	.102	1.007	.103
Independently housed (baseline)	-.220**	.081	.802**	.065
Children under 18 living at home	.134	.099	1.144	.114
Education completed (baseline)	-.003	.023	.997	.023
Months employed past 5 years	-.006**	.002	.994**	.002
Positive work motivation (baseline)	.061	.155	1.063	.164
Economic burden	.222*	.103	1.249*	.129

<sup>a</sup> Weibull proportional hazards with shared frailty (random effects), gamma distribution assumed. The likelihood ratio test determines whether the within-subject correlation (frailty) component ( $\vartheta$ ) is statistically significant. For N=2,357 jobs, the intercept was -1.642\*\*, with SE=.568, -2 log likelihood=-4,129.29,  $p=.746$ ,  $\vartheta=.224$ , and the likelihood ratio test of  $\vartheta$  giving  $\chi^2=46.28$ ,  $p<.001$ .

<sup>b</sup> SSI, Supplemental Security Income

<sup>c</sup> SSDI, Social Security Disability Insurance

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

observation period, because time-varying covariates may also inhibit our ability to determine the impact of covariates on the duration of employment. This concern was addressed by averaging all time-varying covariates (25).

Another important consideration in our analysis was how to account for multiple jobs or changes in employment for the same individual during the time frame studied. Failure to account for the correlation among multiple job durations for the same person would lead to biased estimates of the effect of accommodations on the risk

of job termination. The estimator that best addresses this challenge is a parametric form known as Weibull. Results of testing six competing parametric models confirmed that Weibull was the best fit for the employment duration data.

## Results

Table 1 presents descriptive findings at baseline for the sample of 1,655 individuals in the full EIDP data set. [Variables in the structural model that best exemplify elements in the conceptual model, along with hypothe-

sized directions of effect, are outlined in a data supplement available online with this article.] Study participants worked a mean of 14.4 hours per month. Those who received a job accommodation worked an average of 7.68 hours more per month than those without accommodations ( $p\leq.05$ ). There were no significant differences between the groups across most of the demographic factors, but the covariates grouped by the remaining components of the conceptual model indicated more differences. Although the two groups were quite similar with respect to demographic factors, individuals with no reported accommodations tended to experience more activities limitation, benefit less from environmental facilitators, and report poorer health status and higher levels of economic burden.

## Hours estimation analysis

Table 2 summarizes results from the GLM estimation on average hours worked per month and demonstrates that the pattern of effects generally followed the direction hypothesized [see online data supplement], providing empirical support for the conceptual framework. Some limitations to activities, such as frequency of seeing non-family members, and environmental barriers predicted fewer hours worked, as did some measures of health status, such as reported schizophrenia ( $p\leq.01$ ) and blunted affect ( $p\leq.01$ ). More hours worked were predicted by the environmental facilitator supported employment and by labor market predictors, such as number of months employed in the past five years and frequency in phoning non-family members ( $p\leq.01$ ). Human capital variables, such as being married ( $p\leq.01$ ), predicted more work hours. Concerning the first research question, the marginal effects column in Table 2 shows that individuals who reported receiving job accommodations on average worked seven hours more per month ( $p<.01$ ), after analyses controlled for all other covariates.

## Employment duration analysis

Duration of employment was measured in days across multiple spells of employment. The length of a completed employment spell was  $135.81\pm194.03$  days, or 27.16 weeks. With data broken down by number of jobs and converted

into weeks, the first job averaged 37.39 weeks ( $186.97 \pm 243.28$  days), the second job 24.88 weeks ( $124.43 \pm 161.61$  days), the third job 19.93 weeks ( $99.66 \pm 136.17$  days), the fourth 16.66 weeks ( $83.30 \pm 121.41$  days), and the fifth and subsequent jobs averaged roughly the same duration, 12.33 weeks ( $61.63 \pm 111.74$  days). Approximately half of all first jobs lasted more than 13 weeks. More than 75% of these lasted between 36 and 265 weeks. The more jobs one worked, the shorter the spell of employment with each successive job.

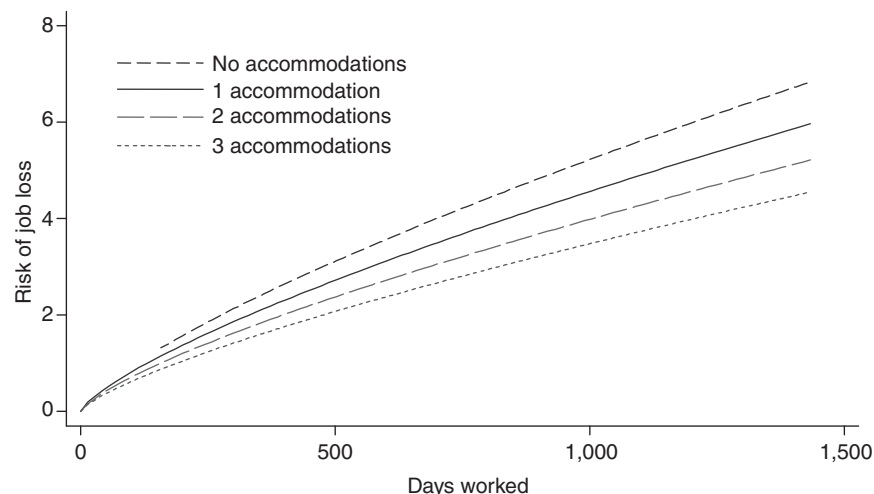
The direction of effect shown in Table 3 indicates that numerous covariates affected the risk of job termination in the expected direction, again providing empirical support for the conceptual framework. [The online data supplement provides further details.] In regard to the second research question, the accommodations hazard ratio of .873 ( $p < .01$ ) indicates that workers receiving accommodations tended to remain employed longer, with each additional job accommodation decreasing the risk of job termination by 12.7%. For those with job accommodations, the predicted mean period of employment was 206.96 days, 31% higher than those without job accommodations ( $p \leq .05$ ). Figure 1 shows the impact of job accommodations on the cumulative risk of job loss and demonstrates that with each additional accommodation, the risk of job loss diminished over time.

## Discussion

This study was the first attempt to investigate the impact of job accommodations on employment outcomes among workers with psychiatric disabilities through a well-controlled quasi-experimental design comparing those with and without reported job accommodations. The objectives of the study were to identify, through hours worked and the tenure of employment across multiple jobs, the impact of job accommodation on labor supplied. The hypothesis that accommodations would predict increased hours worked was largely supported by findings from the EIDP data set. The hypothesis that accommodations would lengthen employment tenure is also supported by the findings of this study. Each additional job accommodation decreased the risk of job termination. The mean employment tenure was 31% higher

**Figure 1**

Cumulative impact of workplace accommodations on job loss among persons with psychiatric disabilities<sup>a</sup>



<sup>a</sup> Risk of job loss is measured by the cumulative hazard.

among those with accommodations, which translates to almost seven months more employment. This is less than Fabian and colleagues' (10) reported tenure for their small sample of 30 individuals, but nonetheless the pattern is similar: the higher the number of accommodations reported, the longer the tenure of employment.

One potential limitation of this study is the age of the data set used in the analysis. However, the EIDP data set remains one of the largest multisite samples of individuals with psychiatric disabilities using supported employment and continues to be studied by other researchers (28). Another limitation is that samples were not drawn from a national probability sample, and individuals who participated self-selected into the study, limiting any inference to the population of individuals with psychiatric disabilities in the United States. In addition, the role of employer characteristics in the provision of accommodations was not examined.

A final limitation results from the likely underreporting and mismeasurement of accommodations, due in part to a lack of operational definition of accommodations and the functional limitations they were meant to address. At times, project staff members were confused about what constituted accommodations, especially if workers requested them informally. Since the conclusion of the EIDP project, experts in the field have refined methods to describe

and categorize functional limitations and the accommodations to address them (4); such methods should be employed in future studies. Errors in measurement also could be adjusted with econometric methods such as bounded regression, designed to correct mismeasured binary regressors (29).

Despite these limitations, this study advances our understanding on several fronts of the impact of job accommodations for individuals with psychiatric disabilities. The econometric methods employed also pave the way for further investigation.

## Conclusions

Given that job accommodations show the potential to improve employment outcomes for individuals with psychiatric disabilities, one policy implication is that they should be stressed in continuing education efforts and thoroughly discussed in supported employment programs as one possible option available for clients, provided they are comfortable with disclosing their disability and requesting accommodation. Doing so may require additional training of program staff, but our findings that job accommodations were consistently effective suggest that such an investment would be worthwhile.

The results presented here provide support for more systematic documentation and measurement of the effectiveness of accommodations. A chief barrier against adequate implementation of

reasonable accommodations is lack of evidence-based knowledge in real-world settings. This involves treating accommodations as a major human service intervention, where process is carefully documented, fidelity to proper procedures measured, and a system put in place regularly to relate components of accommodations to employment outcomes (30,31). Documenting the intervention and creating a process to enable fidelity measures have already started with the taxonomy on functional limitations and reasonable accommodations (4). Expanding these efforts will not only add to our understanding of the path from reasonable accommodations to outcomes, but it will also allow public policy to take an important step closer toward the fulfillment of the vision of the ADA.

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