Community Mental Health Journal, Vol. 42, No. 2, April 2006 (© 2006)
DOI: 10.1007/s10597-005-9017-4

Demographic Characteristics and Employment Among People with Severe Mental Illness in a Multisite Study

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This research was funded by Cooperative Agreement No. SM51820 from the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, as part of the Employment Intervention Demonstration Program (EIDP).

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ABSTRACT: People with psychiatric disabilities experience disproportionately high rates of unemployment. As research evidence is mounting regarding effective vocational programs, interest is growing in identifying subgroup variations. Data from a multisite research and demonstration program were analyzed to identify demographic characteristics associated with employment outcomes, after adjusting for the effects of program, services, and study site. Longitudinal analyses found that people with more recent work history, younger age, and higher education were more likely to achieve competitive employment and to work more hours per month, while race and gender effects varied by employment outcome. Results provide strong evidence of demographic subgroup variation and need.

KEY WORDS: psychiatric disability; employment; demographic characteristics.

INTRODUCTION

People with psychiatric disabilities have extremely low rates of labor force participation compared to the general United States population. Overall estimates of employment rates among people with psychiatric disabilities range from about 15% to 30% (Tsang, Lam, Ng, & Leung, 2000). Studies of data from the National Health Interview Survey Disability Supplement (NHIS-D) and the Health Care for Communities Study (HCCS) indicate that the unemployment rate among people with mental disorders is three to five times higher than among those with no disorders (Sturm, Gresenz, Pacula, & Wells, 1999; Willis, Willis, Male, Henderson, & Manderscheid, 1998). In addition, the proportion of working age adults with mental disorders who are out of the labor force altogether, defined as not working and not looking for work, is twice that of the general population (49.6% compared to only 24.5%) (Willis et al., 1998).

At the same time, studies have shown that people with mental illnesses or psychiatric disabilities want to and can work productively at competitive jobs in integrated settings (Cook & Razzano, 2000; Crowther, Marshall, Bond, & Huxley, 2001; Drake, Becker, & Bond, 2003; Rogers, Anthony, Toole, & Brown, 1991). A considerable amount of research and practice, and more recently policy, in the mental health and vocational rehabilitation fields has focused on this issue, and how to increase employment among people with psychiatric disabilities. Research-based evidence from the field of psychosocial rehabilitation and community mental health indicates that supported employment and similar models of person-centered vocational support are effective

in helping people with serious mental illnesses obtain competitive jobs in the community that pay above minimum wage (Crowther et al., 2001; Drake et al., 2003; Twamley, Jeste, & Lehman, 2003).

In addition to focusing on *how* to achieve employment outcomes, research over the past few decades has attempted to identify demographic and other factors that can be used to predict *who* is more likely to achieve employment among people with psychiatric disabilities. Most of this research has taken the form of reports from small trials of vocational interventions. Over the past two decades, several authors have reviewed the literature on vocational rehabilitation programs for people with serious mental illnesses and tried to summarize how demographic characteristics relate to employment outcomes, often reporting inconsistent, or even contradictory findings. A number of explanations for this lack of consistency have been posited, including the lack of standardization of study methods and measures employed (Cook & Razzano, 2000), and the heterogeneity of the population being studied (Wewiorski & Fabian, 2004). Nonetheless, a small group of demographic characteristics has emerged as factors frequently related to the success of vocational programs: age, gender, race, prior work history, and education.

In literature reviews published both in 1984 and 1994, Anthony stated that the best demographic predictor of future work performance or vocational success is a person's prior employment history, accounting for between one quarter and one half (27–53%) of the measured variance in employment outcomes (Anthony, 1994; Anthony & Jansen, 1984). In his later review, Anthony also cited research identifying gender, race, and age as being related to vocational status. In 2000, Tsang and colleagues published a review of the literature reporting vocational outcomes for people with psychiatric disabilities since the mid-1980s, and found contradictory results with regard to age, gender, and ethnicity as predictors, but overall support for previous work history as a significant correlate of improved vocational outcome. Most recently, Weweiorski and Fabian (2004) conducted a review of recent literature on the association between demographic and other factors and employment outcomes, as well as a meta-analysis of 20 papers published since 1989. Their literature review confirmed the importance of prior work history as a robust predictor of superior employment outcomes, over and above treatment effects. They also found that the research literature contains consistent findings in which younger age is associated with both getting and keeping a job. However, there were

contradictory or equivocal findings across studies with regards to the association of gender, race, and education with employment outcomes. The authors' meta-analysis examined the relationship of age, gender, and race, to employment outcomes across a number of studies. Consistent with the literature review, there was a significant and negative relationship between older age and employment outcomes. However, the meta-analysis found no significant overall effect of gender on employment. Finally, while being white was associated with attaining employment, people of color were more likely to be employed 6 months after placement in their meta-analysis.

Recognizing that there are limitations to the external validity and generalizability of small-scale trials or local area studies, Yelin and Cisternas analyzed data from a nationally representative sample to examine employment patterns among people with mental illnesses (1997). The authors used ten years of data from the National Health Interview Survey (1982–1991), an annual survey of the U.S. population living in the community, to investigate labor market participation among people with self-reported mental conditions and those with psychiatric disabilities (as defined by Social Security disability status). Their analyses found that among people with psychiatric disabilities, older age and nonwhite race were negatively related to labor force participation, although gender was not. They also report that while these factors are similarly related to labor force participation and status in the general population, the presence of mental health disorders intensifies these disparities. Thus, although labor participation decreases with increased age in the general population, among people with psychiatric disabilities, this phenomenon occurs at an earlier age and to a greater degree. While nonwhites generally experience lower labor force participation rates than whites, this inequality is greater among people with psychiatric disabilities. In the general population, men have higher labor force participation than women; however, this is not the case among people with psychiatric disabilities among whom male and female employment rates are fairly equally low.

The purpose of the analysis reported here is to examine the relationship between demographic characteristics and employment outcomes using a third type of data source, which to date has not been available to the field: a multi-state, federal research and demonstration program. The Employment Intervention Demonstration Program (EIDP) collected detailed vocational and other data from a large number of participants in eight U.S. states using uniform methods and

measures. The EIDP provides the largest sample of a randomized controlled trial of supported employment available for analysis to date. Now that relatively successful evidence-based practices are available, more conclusive research on the relationship between demographic characteristics and vocational outcomes can be used to tailor and focus supported employment programs to subgroups of people with mental illness, in recognition of the heterogeneity of this population, and the larger social context of the labor market.

METHODS

Sample and Procedures

The EIDP was a 5-year study of supported employment programs for people with severe mental illnesses, funded by the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration (CMHS/SAMHSA), and has been described in more detail elsewhere (Cook, Carey, Razzano, Burke, & Blyler, 2002; Cook et al., 2005). By means of a Cooperative Agreement funding mechanism, researchers, federal personnel, and patient representatives developed and implemented a Common Protocol (Employment Intervention Demonstration Program: Common Protocol and Documentation, 2001), uniform data collection methods, and a hypothesis-driven analysis plan. This effort was lead by a Coordinating Center (CC) based at the University of Illinois at Chicago, Department of Psychiatry, in partnership with the Human Services Research Institute in Cambridge, Massachusetts.

EIDP participants were recruited from existing clinical populations via case manager referral, self-referral, word-of-mouth, and at one site, newspaper advertisement. Participants were defined as those meeting the following inclusion criteria: being 18 years or older at the time of study enrollment; being willing and able to provide informed consent; having an Axis I *DSM-IV* diagnosis of mental illness; and being unemployed at time of entry into the study. Subjects were recruited between 2/1996 and 5/2000 and all were monetarily compensated, with amounts varying from $10 to $20 per interview. All EIDP study sites administered the same semiannual interview assessments measuring demographic characteristics and weekly vocational assessments of employment status. Once enrolled in the study, lack of participation in EIDP services or research interviews were not criteria for exclusion from the study sample, allowing for analysis of an "intent-to-treat" population. Enrolled participants were randomized into enhanced or comparison study conditions at each site. The results of the experimental study condition are described elsewhere (Cook et al., 2005). Evaluation of the equivalence of the two study conditions on participant demographic characteristics found no statistically significant differences, indicating successful randomization. However, there were some significantly different distributions of demographic characteristics among study sites.

The study presented here uses 24 months of data from 1273 EIDP participants in seven states (Arizona, Connecticut, Maine, Maryland, Massachusetts, South Carolina and Texas). This excluded data from the remaining EIDP site in Pennsylvania, because it tested an intervention for already-employed participants. As a result, Pennsylvania subjects did not meet the study inclusion criterion of unemployment, and the

distribution of their outcome data was inappropriate for pooling with that of the remaining study sites.

Measures

The independent variables in this analysis were the demographic characteristics identified from the literature review by the Steering Committee as being most often associated with employment outcomes among people with psychiatric disabilities: prior work history; age; gender; race/ethnicity; and education. Table 1 shows the distribution of these participant characteristics in the study sample at baseline. About two-thirds of participants (64%) had done any work for pay in the 5 years prior to EIDP participation, and were coded as 1 = any prior work, 0 = none. The median age at baseline was 38 years, with an average of 38.3 (s.d. = 9.4), and participants were categorized as being either at or above median age or younger. Over one-thirds (35%) of participants had less than a high school education. Slightly over half of participants (53%) were male. About 50% of participants were white, 29% were African American, and 15% Hispanic/Latino.

Two vocational outcome variables were selected for analysis by the EIDP Steering Committee in order to reflect two aspects of employment: quality and intensity. The first vocational outcome chosen was *competitive employment*, defined as work in a job that meets the following four criteria: pays minimum wage or higher; is located in a mainstream, integrated setting; is not set-aside for mental health consumers; and is consumer-owned[1]. The first two criteria match the Department of Labor's definition of competitive employment, and the second two are consistent with the definition of competitive employment given in the original EIDP Request for Applications. For each of the 24 months of the study period, participants were coded as either having worked in competitive employment (1) or not (0). During the first month of study participation, almost 5% of all participants engaged in competitive employment; this proportion rose to 17% during month 12, and continued to climb, so that 20% of all participants were engaged in competitive employment at month 24. Cumulatively, a total of 44.7% of all participants engaged in competitive

TABLE 1

Employment Intervention Demonstration Program (EIDP) Participant Characteristics and Employment Outcomes over 24 Months (N=1273)

Variable	*Percent*
Any paid work in 5 years prior to study baseline	64
Older than median age (38 years)	52
Less than a high school education	35
Male	53
White	50
Worked in a competitive job in any month during study	45
Worked at least 40 hours in any month during study	45

employment in at least 1 month over the 24 months. The second vocational outcome studied was *work for 40 or more hours in a single month*, an outcome used by the Centers for Medicare and Medicaid Services in their Demonstration Program, "Demonstration to Maintain Independence and Employment," issued June 7, 2000 (CFDA No. 93.779). This outcome evaluates the intensity of employment in terms of a minimum number of hours worked during a one-month time period. For each of the 24 months of the study period, participants were coded as either having achieved this level of employment (1) or not (0). During the first month of study participation, just over 2% of all participants worked for 40 or more hours; this proportion rose to 19% of study participants working 40 or more hours during month 12, and 22% of all participants working 40 or more hours during month 24. Cumulatively, a total of 45.2% of all participants worked for at least 40 hours in at least 1 month over the entire study period.

Follow-up Rates and Attrition

The number of interviews for each participant included in the analysis ranged from 1 to 5 (baseline and 4 follow-up interviews), with a mean of 4.3 (s.d. = 1.1) per participant. Of 1273 participants, 824 (65%) completed 5 interviews, 173 participants (14%) completed 4 interviews, 122 (10%) completed 3, 111 (9%) completed 2, and the remaining 43 (3%) completed 1 interview. The demographic characteristics of those completing 5 interviews were compared to those of all others, in order to ascertain attrition bias. The only significant differences were in gender and age: 68% (n = 404) of women completed all five interviews compared to 62% (n = 420) of males ($p < .05$); and completers were an average of 1 year older than non-completers (39 vs. 38 years, $p < .03$). The potential influence of these differences on the outcome of the analysis is adjusted for in the multivariate models.

Statistical Analysis

Correlation analyses were conducted to examine the bivariate relationships among independent, covariate, and outcome variables. Then multivariate analyses of the longitudinal data were conducted using random-effects logistic regression models. Part of the family of random regression models (RRM), random-effects logistic regression appropriately handles common features of longitudinal data, including: the heterogeneity of individual study participants; the serial correlation of repeated measures of individuals; missing observations over time; and the inclusion of both time-fixed and time-varying covariates (Gibbons et al., 1993; Hedeker & Gibbons, 1996; Hedeker & Mermelstein, 1996). These multivariate analyses provide an estimate of the effect of each participant demographic characteristic on each vocational outcome across the entire 24-month study period, controlling for the effects of the other variables in the model, including linear and nonlinear time (month and month squared respectively). Models included random intercepts to accommodate individual variability in likelihood of achieving each outcome. Each model included indicator variables for study site because of the statistically significant differences in distribution of demographic characteristics across sites. Models also included study condition, study condition over time, and cumulative measures of services hours as controls for effect of differences among supported employment programs and their comparisons.

RESULTS

The results of the correlation analyses are shown in Table 2. There were a few statistically significant correlations among the demographic characteristics, but none were large enough to indicate multicollinearity (all $r < .20$). Among the participant characteristics, older age was significantly and negatively correlated with having a work history in the 5 years prior to the study, with having less than a high school education, and with being male. Older age was significantly and positively correlated with being white. Regarding the employment outcomes, time (month in study) was positively and significantly correlated ($p < .01$) with both, as was study condition (enhanced vs. comparison). Prior work history also was positively correlated with both employment outcomes, but there was a significant negative correlation between age and employment outcomes. Education and gender were not significantly correlated with either employment outcome, but being white was significantly ($p < .05$) and positively correlated with achieving competitive employment during the study. Finally, although the two outcome variables were moderately correlated with each other ($r=.59$), this relationship was not strong enough to indicate that the variables were actually measuring the same outcome.

Results of the multivariate analyses of the longitudinal data are shown in Table 3. Two random-effects logistic regression models are shown, one predicting competitive employment in each month of the study, and the second predicting working 40 or more hours in each month of the study. In the model predicting competitive employment, linear time (month) is positive and significant, with an odds ratio (OR) of 1.20. Generally speaking, this finding indicates that with each increment of time in the study (month), participants' likelihood of achieving competitive employment increased by 20%. At the same time, curvilinear time is significant and negative, indicating that the positive slope of the time trend attenuated slightly over the course of the study. Experimental condition (the enhanced supported employment programs) was associated with much greater likelihood of achieving competitive employment (OR = 4.95). The experimental condition interaction with time is negative, indicating that this advantage of enhanced over comparison group participants also attenuated slightly over time (OR = .98). Among the demographic characteristics, having any work history in the 5 years prior to baseline was associated with a roughly three times greater likelihood of getting a competitive job

TABLE 2

Bivariate Correlations Among Model Variables (N = 1273)

	Time	*Prior Work History*	*Age (10 year Increments)*	*Less than High School Education*	*Male*	*White*	*Treatment Group*	*Competitive Employment*	*Worked 40+ Hours*
Time	1								
Prior work history	.014	1							
Age (10 year increments)	.033	−.177**	1						
Less than high school education	.005	.023	−.089**	1					
Male	.001	.012	−.111**	.042	1				
White	−.024	.052	.100**	.015	−.029	1			
Treatment group	.023	−.002	.028	−.008	−.023	.006	1		
Competitive employment	.176**	.169**	−.097**	.048	.019	.072*	.166**	1	
Worked 40+ hours	.204**	.235**	−.133**	.043	−.029	.034	.077**	.590**	1

*Correlation is significant at the .05 level (2-tailed).
**Correlation is significant at the .01 level (2-tailed).

TABLE 3

Results of Multivariate Analysis* of the Longitudinal Relationship Between Participant Demographic Characteristics and Two Vocational Outcomes (N = 1273)

	Competitive Employment		*Work 40+ hours/month*	
	Estimated Odds Ratio	*p-Value*	*Estimated Odds Ratio*	*p-Value*
Time (month)	1.20	$p < .001$	1.27	$p < .001$
Time^2 (month*month)	.99	$p < .001$	.99	$p < .001$
Prior work history	3.03	$p < .001$	3.63	$p < .001$
Age (10 year increments)	.83	$p < .001$	.86	$p < .001$
Less than high school education	.62	$p < .001$	.52	$p < .001$
Male	.96	$p < .44$	1.19	$p < .001$
White	1.21	$p < .01$	.81	$p < .001$
Treatment group	4.95	$p < .001$	2.08	$p < .001$
Treatment group*time	.98	$p < .001$	1.01	$p < .01$

*Random-effects logistic regression analysis; models control for study site and total hours of vocational and clinical services received.

(OR = 3.03), over and above the effects of time, treatment group, and other control variables. Being white also was associated with a greater likelihood of achieving competitive employment (OR = 1.21), compared to being a member of a race/ethnic minority group. Each 10-year increment in participant age was associated with an almost 20% lesser likelihood of achieving competitive employment over the study (OR = .83). Having less than a high school education was associated with an almost 40% lesser likelihood of achieving competitive employment (OR = .62), compared to those with a high school education or equivalent, or more. Gender was not significant.

In the multivariate model predicting work for 40 or more hours in a month, the effect of time was similar. Each month in the study was associated with an increased likelihood of working for 40 or more hours (OR = 1.27), although the positive trend attenuated slightly over time as indicated by the time squared variable (OR = .99). Here, too, effect of treatment group (enhanced vs. comparison) is positive, showing that those in the enhanced condition were more than twice as likely to work 40 or more hours in a month (OR = 2.08). The treatment interaction with time is positive but very slight (OR = 1.01), indicating that this trend became slightly more pronounced over time. As with competitive employment, having a prior work history was associated with over three times the likelihood of working 40 or more hours in a month during the study (OR = 3.63). Also similar to competitive employment, being older and having less than a high school education were associated with lesser likelihood of working 40 or more hours in a month (OR = .86 and OR = .52, respectively). Unlike competitive employment, being white was associated with a lesser likelihood of achieving this employment outcome (OR = .81), and gender was statistically significant in this model, with males being almost 20% more likely to work 40 or more hours in a month than females (OR = 1.19).

DISCUSSION

Results from this multisite demonstration program support and further inform the existing literature regarding the association between individual demographic characteristics and employment outcomes among people with psychiatric disabilities. Using a multivariate statistical technique sensitive to the heterogeneity of the study population, we were able to observe that although supported employment models

improved vocational outcomes for all study participants, there were additional effects on employment outcomes attributable to individual demographic characteristics. Even controlling for the effects of time, study site, study condition, and hours of services received, study participants who had worked at all in the 5 years prior to the study were significantly more likely to achieve competitive employment or to work at least 40 hours in a month than other participants, while older participants and those with less than a high school education were significantly less likely to achieve either of these vocational outcomes. There was no gender difference in obtaining competitive jobs, but men were more likely to work more hours in a month than women. Finally, although whites were more likely than racial minority participants to achieve competitive employment, minority participants were more likely to work more hours in a month.

The positive effect of having a recent work history on obtaining competitive employment or working for 40 hours or more a month is in keeping with much of the existing research in this area. It has been suggested that having had positive employment experiences in the past improves individuals' vocational efficiency and outcome expectancies, leading to greater likelihood of re-employment (Wewiorski & Fabian, 2004). Or, it may be that people with more positive work histories are better able to account for their experience and provide employer references, and therefore are viewed as more desirable employees than people who have been out of the labor force for many years. In this study, prior work history was a very strong predictor of positive employment outcomes, even though it was measured as simply "any" paid work in the 5 years prior to the study. This finding supports the research-based principle of rapid job search and placement of individuals in paid employment as quickly as possible, especially for those who have little or no work experience (Bond, Dietzen, McGrew, & Miller, 1995; Cook & Razzano, 1995; Crowther et al., 2001).

Older age was negatively related to both employment outcomes, supporting what have sometimes been equivocal findings in the literature. The age finding, however, is completely consistent with what is known about general labor force participation, and with what Yelin and Cisternas (1997) found in their population sample analysis of mental disorders and employment. Older people with psychiatric disabilities are a group in need of specialized vocational attention. Jeste and colleagues (1999) point out that the number of older people with psychiatric illnesses will increase disproportionately to the general

population as our entire society ages. Yet, according to Twamley and colleagues (2003), middle-aged and older people with mental illnesses are understudied and underserved in the field of vocational rehabilitation.

The importance of having, at a minimum, a high school level education also was demonstrated by this study. Labor market analyses indicate that the fastest growing occupations are those requiring 2- or 4-year college degrees or technical training (Cook & Burke, 2002). Clearly, there is an important role for vocational rehabilitation in supporting completion of secondary and post-secondary education for people with psychiatric disabilities. Findings from studies of supported education could be used to address this widespread need among people with psychiatric disabilities. The role of supported education in the lives of people with severe mental illness, especially young people following first episodes of illness has been described by Cook and Solomon (1993), Mowbray, Korevaar, & Bellamy, (2002), and Unger, Pardee, and Shafer (2000). Further, factors such as age, education, and work history are of particular relevance to this population, whose life trajectories are often interrupted at crucial stages in education and career attainment. Thus, supported employment programs would benefit from paying particular attention to factors specific to the life experiences of people with psychiatric disabilities, such as premorbid functioning, and age at disease onset (Mueser, Salyers, & Mueser, 2001).

The gender and race findings from this analysis suggest the potential benefits of tailoring supported employment programs to the needs of men and women, as well as race/ethnic minority and non-minority group members. The lack of a gender difference in attaining competitive employment is in keeping with Yelin and Cisternas' finding (1997) that the labor market advantage for males in the general population is reduced to the point of non-significance among people with mental illnesses. This may mean that vocational programs are equally successful in placing women and men, or it may reflect some of the unique issues of stigma and discrimination that people with psychiatric disabilities face. In their study of race and sex discrimination in the earnings of people with disabilities, Baldwin and Johnson (1998) identified variation in the amount of discrimination attached to different types of disabling impairments. For example, men with mental illness were thought to evoke "greater prejudice" than men with impairments arising from diabetes or back problems. At the same time, the present study found that men were more likely to work a greater number of

hours than women, which may reflect childcare or other caregiving demands on women's time (Mowbray, Nicholson, & Bellamy, 2003).

The finding that whites were more likely to obtain competitive employment is again in keeping with the kinds of racial disparities found in the general labor market. The related finding that non-whites were more likely to work more hours in a month may reflect the lower pay of jobs which did not meet the competitive employment criterion of being above minimum wage. Tailoring employment programs to participants' gender and race requires giving additional thought to the type of jobs that individuals want regardless of gender stereotypes, to the kind of stigma that men in particular may face, to the general labor market disparities faced by racial minorities, and to the childcare or other time, money, and transportation needs of people who are parents.

There are limitations to the generalizability of these study results given that the EIDP participants were not sampled to be representative of all adults in the United States with severe mental illness. In addition, this study is one part of a larger demonstration program of supported employment interventions and their comparisons; although study condition, hours of services received, and study site were controlled for in the multivariate models, there may still have been unmeasured differences in these programs or sites related to participant demographics. Finally, the benefits of a hypothesis-driven and parsimonious use of covariates in these analyses in terms of understanding of overall effects of demographic groups may be offset by limitations in describing more complex intersections of demographic characteristics. These caveats require that caution should be taken in interpreting and applying the results presented here. However, to date, this is the largest multisite sample of people with severe mental illness in a randomized controlled trial to be studied over 24 months using a comprehensive and rigorously monitored data collection protocol including employment outcomes.

CONCLUSION

Research has shown that supported employment models are effective in helping people with psychiatric disabilities obtain employment, and our results confirm these findings. However, such supported employment programs are as yet not widespread and, even among the most successful models, unemployment rates remain relatively high. Therefore, this study responds to recent calls to begin to identify individual

characteristics of people with severe mental illnesses associated with employment status, so that evidence-based supported employment and other best practices models can be tailored to meet subgroup needs and improve outcomes (Drake et al., 2003; Twamley et al., 2003; Weweiorski & Fabian, 2004).

The finding of this study that demographic factors are related to employment outcomes is not surprising, since this is the case for patterns of employment in the general U.S. labor force. These findings support the understanding that vocational rehabilitation for people with psychiatric disabilities does not occur in a vacuum, but is part of a complex phenomenon that goes beyond individuals' level of impairment or functional limitations (Cook & Burke, 2002). Clearly, participant age, gender, race, and other social characteristics are related to work outcomes in terms of the larger context of vocational rehabilitation programs, including social and institutional contexts, and systemic labor market influences.

NOTES

1. Under this definition, transitional employment placements (TEs) such as those provided through International Center for Clubhouse Development (ICCD) Clubhouses, were not coded as competitive employment. Multisite analyses (not shown) using an alternative definition of competitive employment that included TEs did not substantially alter the results reported here. See the Final Report for the Massachusetts site of the EIDP at http://www.files.fountainhouse.org/samhsa_final.pdf for further details on the site-specific analysis using this alternative definition.

REFERENCES

Anthony, W. A. (1994). Characteristics of people with psychiatric disabilities that are predictive of entry into the rehabilitation process and successful employment. *Psychosocial Rehabilitation Journal*, *17*, 3–13.

Anthony, W. A., & Jansen, M. A. (1984). Predicting the vocational capacity of the chronically mentally ill: Research and policy implications. *American Psychologist*, *39*, 537–544.

Baldwin, M. L., & Johnson, W. G. (1998). Dispelling the myths about work disability. In T. Thomason, J. F., Burton Jr., & D. E. Hyatt (Eds.), *New Approaches to Disability in the Workplace* (pp. 39–62). Industrial Relations Research Association, Madison, WI.

Bond, G. R., Dietzen, L. L., McGrew, J. H., & Miller, L. D. (1995). Accelerating entry into supported employment for persons with severe psychiatric disabilities. *Rehabilitation Psychology*, *40*, 75–94.

Cook, J. A., Leff, H. S., Blyler, C. R., Gold, P. B., Goldberg, R. W., Mueser, K. T., Toprac, M. G., McFarlane, W. R., Shafer, M. S., Blankertz, L. E., Dudek, K., Razzano, L. A., Grey, D. D., & Burke-Miller, J. (2005). Results of a multi-site randomized trial of supported employment interventions for individuals with severe mental illness. *Archives of General Psychiatry 62*, 505–512.

Cook, J., & Burke, J. (2002). Public policy and employment of people with disabilities: Exploring new paradigms. *Journal of Behavioral Science and the Law*, *20*, 541–557.
Cook, J. A., Carey, M. A., Razzano, L. A., Burke, J., & Blyler, C. (2002). The pioneer: The employment intervention demonstration program. *New Directions for Evaluation*, *94*, 31–44.
Cook, J. A., & Razzano, L. A. (1995). Discriminant function analysis of competitive employment outcomes in a transitional employment program for persons with severe mental illness. *Journal of Vocational Rehabilitation*, *5*, 127–139.
Cook, J. A., & Razzano, L. A. (2000). Vocational rehabilitation for persons with schizophrenia: Recent research and implications for practice. *Schizophrenia Bulletin*, *26*, 87–103.
Cook, J. A., & Solomon, M. L. (1993). The Community Scholar Program: An outcome study of supported education for students with severe mental illness. *Psychosocial Rehabilitation Journal*, *17*, 84–97.
Crowther, R. E., Marshall, M., Bond, G. R., & Huxley, P. (2001). Helping people with severe mental illness to obtain work: Systematic review. *British Medical Journal*, *322*, 204–208.
Drake, R. E., Becker, D. R., & Bond, G. R. (2003). Recent research on vocational rehabilitation for persons with severe mental illness. *Current Opinion in Psychiatry*, *16*, 451–455.
Employment Intervention Demonstration Program: Common Protocol and Documentation. (2001). University of Illinois at Chicago Center on Mental Health Services Research. Available online at: http://www.psych.uic.edu/eidp.
Gibbons, R. D., Hedeker, D., Elkin, I., Waternaux, C., Kraemer, H. C., Greenhouse, J. B., Shea, M. T., Imber, S. D., Sotsky, S. M., & Watkins, J. T. (1993). Some conceptual and statistical issues in analysis of longitudinal psychiatric data: Application of NIMH Treatment of Depression Collaborative Research Program dataset. *Archives of General Psychiatry*, *50*, 739–750.
Hedeker, D., & Gibbons, R. D. (1996). MIXOR: A computer program for mixed-effects ordinal regression analysis. *Computer Methods and Programs in Biomedicine*, *49*, 157–176.
Hedeker, D., & Mermelstein, R. J. (1996). Application of random-effects regression models in relapse research. *Addiction*, *91*, S211–S229.
Jeste, D. V., Alexopoulos, G. S., Bartels, S. J., Cummings, J., Gallo, J. J., Gottlieb, G. L., Halpain, M. C., Palmer, B. W., Patterson, T. L., Reynolds, C. F., & Lebowitz, B. D. (1999). Consensus statement: The upcoming crisis in geriatric mental health: Challenges and opportunities. *Archives of General Psychiatry*, *56*, 848–853.
Mowbray, C. T., Korevaar, L., & Bellamy, C. D. (2002). Supported education: An innovation in psychiatric rehabilitation practice. *Results from the United States and the Netherlands. Canadian Journal of Community Mental Health*, *21*, 111–129.
Mowbray, C. T., Nicholson, J., & Bellamy, C. D. (2003). Psychosocial rehabilitation service needs of women. *Psychiatric Rehabilitation Journal*, *27*, 104–113.
Mueser, K. T., Salyers, M. P., & Mueser, P. R. (2001). A prospective analysis of work in schizophrenia. *Schizophrenia Bulletin*, *27*, 281–296.
Rogers, E. S., Anthony, W. A., Toole, J., & Brown, M. A. (1991). Vocational outcomes following psychosocial rehabilitation: A longitudinal study of three programs. *Journal of Vocational Rehabilitation*, *1*, 21–29.
Sturm, R., Gresenz, C. R., Pacula, R. L., & Wells, K. B. (1999). Labor force participation by persons with mental illness. *Psychiatric Services*, *50*, 1407.
Tsang, H., Lam, P., Ng, B., & Leung, O. (2000). Predictors of employment outcomes for people with psychiatric disabilities: A review of the literature since the mid '80s. *Journal of Rehabilitation*, *66*, 19–25.
Twamley, E. W., Jeste, D. V., & Lehman, A. F. (2003). Vocational rehabilitation in schizophrenia and other psychotic disorders: A literature review and meta-analysis of randomized controlled trials. *Journal of Nervous and Mental Disease*, *191*, 515–523.
Unger, K. V., Pardee, R., & Shafer, M. S. (2000). Outcomes of postsecondary supported education programs for people with psychiatric disabilities. *Journal of Vocational Rehabilitation*, *14*, 195–199.
Weweiorski, N. J., & Fabian, E. S. (2004). Association between demographic and diagnostic factors and employment outcomes for people with psychiatric disabilities: A synthesis of recent research. *Mental Health Services Research*, *6*, 9–21.
Willis, A. G., Willis, G. G., Male, A., Henderson, M., & Manderscheid, R. W. (1998). Mental illness and disability in the U.S. adult household population. In R. W. Manderscheid., & M. J.

Henderson (Eds.), *Mental health, United States, 1998.* (pp. 113–122). Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services, Rockville, MD.

Yelin, E. H., & Cisternas, M. G. (1997). Employment patterns among persons with and without mental conditions. In R. J. Bonnie., & J. Monahan (Eds.), *Mental Disorder, Work Disability, and the Law. John D. and Catherine T. MacArthur Foundation Series on Mental Health and Development.* University of Chicago Press, Chicago.