

# The Hartford Study of Supported Employment for Persons With Severe Mental Illness

Kim T. Mueser, Robin E. Clark, Michael Haines,  
Robert E. Drake, and Gregory J. McHugo  
Dartmouth Medical School

Gary R. Bond  
Indiana University–Purdue University Indianapolis

Susan M. Essock  
Mt. Sinai School of Medicine and Bronx Veterans Affairs  
Medical Center, New York

Deborah R. Becker, Rosemarie Wolfe, and  
Karin Swain  
Dartmouth Medical School

The authors compared 3 approaches to vocational rehabilitation for severe mental illness (SMI): the individual placement and support (IPS) model of supported employment, a psychosocial rehabilitation (PSR) program, and standard services. Two hundred four unemployed clients (46% African American, 30% Latino) with SMI were randomly assigned to IPS, PSR, or standard services and followed for 2 years. Clients in IPS had significantly better employment outcomes than clients in PSR and standard services, including more competitive work (73.9% vs. 18.2% vs. 27.5%, respectively) and any paid work (73.9% vs. 34.8% vs. 53.6%, respectively). There were few differences in nonvocational outcomes between programs. IPS is a more effective model than PSR or standard brokered vocational services for improving employment outcomes in clients with SMI.

Unemployment is common in persons with severe mental illness such as schizophrenia and bipolar disorder, with rates of competitive work typically ranging between 10% and 20% (Anthony & Blanch, 1987; Mueser, Salyers, & Mueser, 2001). Despite the high rate of unemployment, most clients with severe mental illness want to work (Mueser, Salyers, & Mueser, 2001; Rogers, Walsh, Massotta, & Danley, 1991). Abundant evidence indicates that a variety of factors related to mental illness interfere with work, including cognitive impairment, psychotic symptoms, and negative symptoms (McGurk & Meltzer, 2000; Mueser, Salyers, & Mueser, 2001; Racenstein et al., 2002), as well as fear of losing benefits, stigma, and lack of access to services (MacDonald-Wilson, Rog-

ers, Ellison, & Lyass, 2003; National Association of State Mental Health Program Directors, 1998; New Freedom Commission on Mental Health, 2003; Wahl, 1997). Interest in improving the vocational outcomes of persons with severe mental illness has been spurred by the goal of addressing this broadly accepted important functional outcome, as well as by the hypothesis that work is good therapy (Strauss, Harding, Silverman, Eichler, & Liberman, 1988). Limited evidence suggests that clients with severe mental illness who return to work experience modest benefits in terms of symptoms and life satisfaction (Arns & Linney, 1993; Bell, Milstein, & Lysaker, 1993; Bond, Resnick, et al., 2001).

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Kim T. Mueser, Robert E. Drake, Gregory J. McHugo, and Deborah R. Becker, New Hampshire–Dartmouth Psychiatric Research Center, Department of Psychiatry, and the Department of Community and Family Medicine, Dartmouth Medical School; Robin E. Clark, Michael Haines, Rosemarie Wolfe, and Karin Swain, New Hampshire–Dartmouth Psychiatric Research Center and Department of Community and Family Medicine, Dartmouth Medical School; Gary R. Bond, Department of Psychology, Indiana University–Purdue University Indianapolis; Susan M. Essock, Department of Psychiatry, Mt. Sinai School of Medicine and the Mental Health Intervention, Research, and Clinical Center, Bronx Veterans Affairs Medical Center, New York.

Robin E. Clark is now at the Department of Family Medicine and Community Health, University of Massachusetts Medical School; Michael Haines is now at the Louis de Parte Florida Mental Health Institute, University of South Florida.

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Correspondence concerning this article should be addressed to Kim T. Mueser, New Hampshire–Dartmouth Psychiatric Research Center, Main Building, 105 Pleasant Street, Concord, NH 03301. E-mail: kim.t.mueser@dartmouth.edu

A variety of vocational rehabilitation models have been developed to improve work outcomes, with the supported employment model receiving the most empirical support (Bond, Becker, et al., 2001; Crowther, Marshall, Bond, & Huxley, 2001). Supported employment helps clients get competitive work in integrated settings with nondisabled workers in the community, and provides ongoing support to help them succeed on the job or transition to another job. Supported employment emphasizes rapid job search and attainment by matching clients who want to work to jobs based on their interests and skills, rather than teaching them new skills to prepare for future jobs. Such programs eschew sheltered workshops and work enclaves, which pay below minimum wage or lack community integration (Bond, Becker, et al., 2001).

The most widely studied approach to supported employment is the individual placement and support (IPS) model (D. R. Becker & Drake, 1993). In IPS, employment specialists serve on clients' treatment teams alongside other members of the team, including case managers and psychiatrists, in order to integrate vocational services with psychiatric treatment. Each employment specialist provides the full range of vocational services to each client, including engagement in services, identifying job interests and vocational assessment, job finding, and job support. IPS uses assertive outreach, based on the assertive community treatment case-management model for severe mental illness (Stein & Santos, 1998), to deliver most vocational services in clients' natural settings in the community rather than at mental health or rehabilitation agencies (Bond, Becker, Drake, & Vogler, 1997). The emphasis on providing community-based services in IPS may be especially critical for the retention of clients in vocational services, whose motivation to work may fluctuate over time (Mueser, Salyers, & Mueser, 2001), and for whom assertive outreach may provide a critical bridge to maintaining continuity of services.

Research supports the effectiveness of the IPS model compared with other approaches to vocational rehabilitation. Several quasiexperimental studies have shown that IPS is superior to day treatment (Bailey, Ricketts, Becker, Xie, & Drake, 1998; D. R. Becker et al., 2001; Drake, Becker, Biesanz, Wyzik, & Torrey, 1996; Drake et al., 1994), and randomized controlled trials have documented that IPS improves employment outcomes more effectively than group skills training (Drake, McHugo, Becker, Anthony, & Clark, 1996), sheltered workshops (Drake et al., 1999), and psychosocial rehabilitation (PSR) based on prevocational training (Lehman et al., 2002). Studies of other supported employment approaches for people with severe mental illness also have been reported (Bond, Drake, Mueser, & Becker, 1997). In general, the overlap in program models between IPS and other supported employment approaches is substantial, and the findings for these other studies are consistent with those of the IPS studies.

Several questions regarding the effectiveness of supported employment remain. First, limited research has compared supported employment to traditional PSR approaches, which have been regarded over the past several decades as "best practices" in vocational services for people with severe mental illness (Baron, 1997). *PSR* refers to a set of approaches that share common values and a pragmatic orientation toward helping people with severe mental illness achieve their recovery goals (Cnaan, Blankertz, Messinger, & Gardner, 1990), usually through affiliation with a PSR center that includes social, recreational, educational, and vocational elements (Dincin, 1975; Pratt, Gill, Barrett, & Roberts, 1999). Al-

though PSR approaches vary widely, one basic value is that people with severe mental illness can work and that PSR programs should assist them in that endeavor. One key vocational component found in many such programs is *transitional employment*, which consists of paid, part-time community jobs filled by clients for limited periods of time, in which the agency (not the client) secures the job and contracts with the employer. Clients typically move on from one transitional job to another and eventually progress on to independent jobs (i.e., jobs in which they have a direct contract with the employer; Macias, Kinney, & Rodican, 1995). Originally pioneered by Fountain House in New York (Beard, Propst, & Malamud, 1982), transitional employment has been widely adopted and adapted among PSR centers throughout the United States (Lucca & Allen, 2001; Rutman & Armstrong, 1985).

Transitional employment differs from supported employment in three basic ways. First, because jobs in supported employment programs are held by the client and not the program, clients can keep their jobs for as long as they and their employer want, in contrast to transitional employment, in which a client is placed in a particular job for a limited period of time (e.g., 6–9 months), after which the job is transferred to the next client. Second, in transitional employment, the program assumes responsibility for fulfilling the expectations of the job if the client does not, whereas in supported employment clients alone are responsible for doing the job. Thus, if a client fails to appear for work at a transitional employment job, a program staff member fills in, whereas in supported employment staff members do not substitute for clients who are unable to work. Third, because transitional employment jobs are contracted by the program, after a client's placement has ended, the position reverts back to the program so that another client can try the job. In contrast, because jobs in supported employment are developed for specific clients, a client's job position is rarely filled by another client when he or she leaves that job.

A second question regarding supported employment, which has previously been studied with White and African American clients, concerns its effectiveness with Latinos. Compared with other ethnic groups in the United States, Latinos have lower levels of education and participation in the labor force, and higher levels of unemployment (Therrien & Ramirez, 2000). Lower levels of education, which predict vocational outcomes in clients with severe mental illness (Lorei & Gurel, 1973; Mueser, Salyers, & Mueser, 2001), may be a particular problem for Latinos with severe mental illness because of the additional effects of their psychiatric disorder on reducing their educational attainment (Kessler, Foster, Saunders, & Stang, 1995). Thus, the vocational prospects of these Latinos may be worse because of the effects of their mental illness combined with the challenges experienced more broadly within the Latino culture, including language barriers, discrimination, and lack of resources, which have contributed to a cycle of low education, low work rates, and poverty (Falicov, 1998). Improving employment of Latino clients may be further hampered because they are less likely than other ethnic groups to receive services for their psychiatric disorders (Hough et al., 1987; Jaco, 1960; Padgett, Patrick, Burns, & Schlesinger, 1994), leading to problems of engagement and retention in vocational services. IPS may be an especially suitable model for Latino clients because of its focus on providing services to clients in natural settings in the community, thereby minimizing the chances of clients dropping out of voca-

tional services. Thus, as a second goal of the study, we evaluated whether IPS would be more effective than other approaches in improving the employment outcomes of Latinos with severe mental illness.

A third question we addressed was the effectiveness of IPS compared with standard vocational services. Although prior research on IPS has compared it with other specific models of vocational rehabilitation (Drake et al., 1999; Drake, McHugo, et al., 1996; Lehman et al., 2002), in many settings a variety of different vocational services is available to clients, with no single model predominating (Bond, Drake, Becker, & Mueser, 1999; Rollins, Mueser, Bond, & Becker, 2002). In this study, we evaluated whether IPS was more effective than a broad array of vocational services for clients with severe mental illness.

Thus, we conducted this study in order to compare the IPS model to a PSR program using transitional employment, and to standard vocational services involving an array of vocational programs in a group of inner-city clients with mainly African American or Latino backgrounds. In addition, we extended prior research on supported employment by evaluating effects on social outcomes as well as vocational ones. Psychosocial rehabilitation programs typically focus much more on social activities than do supported employment services, but prior research has rarely examined the impact of such rehabilitation on social outcomes.

## Method

Two hundred four clients with severe mental illness were randomly assigned to one of three vocational programs: IPS, PSR, or standard services. Comprehensive employment data were collected for 2 years, and interviews were conducted at baseline and every 6 months for 2 years thereafter.

### Participants

Study participants were clients with severe mental illness receiving services at the lead community mental health center serving Hartford, Connecticut. Eligibility criteria included (a) severe mental illness, as defined by the State of Connecticut Department of Mental Health and Addiction Services (*Diagnostic and Statistical Manual of Mental Disorders—4th Edition [DSM-IV]*, American Psychiatric Association, 1994) Axis I diagnosis or borderline personality disorder and severe impairment in psychosocial functioning or self-care; (b) lack of competitive employment; (c) desire for competitive work; (d) attendance at two research introduction meetings in which the project was explained; and (e) willingness and capability of giving informed consent to participate in the study.

Clients were recruited through weekly research introduction groups conducted between April 1996 and May 1998, according to the approach described by Drake, Becker, and Anthony (1994). Comparisons between the 204 clients who consented and the 79 who did not indicated no statistically significant differences in age, gender, or chart diagnosis ( $ps > .05$ ). However, ethnicity was related to participation, with Latino clients most likely to participate ( $n = 64$  consents/74 total; 86%), followed by African-American clients ( $n = 91/112$ ; 81%), followed by White clients ( $n = 43/65$ ; 66%),  $\chi^2(2, N = 251) = 9.27, p = .01$ . After completion of the baseline interview, clients were randomly assigned to one of three vocational programs on the basis of a computer-generated randomization list, stratified by work history (competitive work in past 5 years or not), ethnicity, and gender.

### Vocational Programs

*IPS.* This program was based on the principles in the IPS manual (D. R. Becker & Drake, 1993) described in the introduction. The program

was staffed by three employment specialists, two of whom were bilingual in English and Spanish, and a supervisor.

*PSR.* The PSR program, located off-site from the mental health center, incorporated transitional employment into its vocational rehabilitation approach. Clients participated in a series of preparatory training activities (with training focused on clerical and janitorial skills), followed by transitional employment jobs, followed by help obtaining competitive work. The PSR's vocational program was staffed by three employees, including one who was bilingual in Spanish and English. In addition, the PSR program offered a drop-in center, skills training and support groups, recreational outings, and residential services. So that all study clients could be provided with access to psychosocial services available to clients with severe mental illness living in the Hartford area, clients in all three vocational programs in the study were eligible to participate in the non-vocational services provided by the PSR program.

In 1996–1997, during the first year of the study, Lucca and Allen (2001) surveyed 22 of the 24 PSR centers in Connecticut. This survey included on-site interviews supplemented with information provided by the sites to the state quality improvement database. The survey instruments included a 75-item program components checklist, with 25 items assessing general program characteristics (e.g., hours of operation) and 50 items assessing the presence or absence of specific services and activities. Regarding vocational services, 50% of the sites offered prevocational activities (similar to the study site), characterized as client involvement in food service, maintenance, and other work activities at the PSR center, and 36% offered transitional employment (also similar to the study site). Their survey also included a new scale, the Principles of Psychosocial Rehabilitation Scale. This scale consists of 20 items rated on a 6-point Likert scale and had good internal consistency (coefficient  $\alpha = .88$ ; Lucca, 1998). The study site was found to provide slightly more PSR services than the mean for the state-wide sample, and to score slightly below the mean for the state on the Principles of Psychosocial Rehabilitation Scale (Lucca, personal communication, October 5, 2000). Overall, Lucca and Allen's (2001) survey suggested that the services and program philosophy of the PSR program in this study were typical of other PSR programs operating in the state of Connecticut during the time of the study. It should be noted that although the PSR program was similar to other PSR programs in Connecticut, it was not certified by the International Center for Clubhouse Development (ICCD; Macias, Barreira, Alden, & Boyd, 2001), and therefore the program is not referred to as a "clubhouse" in this article. Interested readers should see Macias (2001) for the results of a recently completed study comparing an ICCD-certified clubhouse program with a vocational approach based on the Program for Assertive Community Treatment model (R. E. Becker, Meisler, Stormer, & Brondino, 1999).

*Standard services.* Typical of supported employment services provided in many other states (Bond et al., 2002), standard services were offered off-site from the mental health center. This condition involved access to all other vocational services in Hartford for clients with severe mental illness, most of which were provided by one of two programs that contracted directly with the Connecticut Department of Mental Health and Addiction Services: a supported employment program located off-site from the mental health center (standard-supported), and a vocational program in which clients worked in jobs paying subminimum wage or competitive wages in supervised janitorial enclaves in the community, fulfilling contracts obtained by that program (standard-enclave). Clients in standard services were also eligible to receive services from the Connecticut Bureau of Rehabilitation Services. Clients who were randomly assigned to standard services met with the vocational services coordinator at the mental health center and then were assigned to the program of their choice.

### Measures

A comprehensive range of assessments was obtained, including diagnosis, background information, employment outcomes, and nonvocational

outcomes. Interview-based assessments were obtained by one of three trained research staff. Ongoing interrater reliability checks were conducted throughout the study by having approximately 15% of all interviews rated by two people, either live during the same interview or on the basis of an audiotaped interview. Instruments not previously available in Spanish (all except the Structured Clinical Interview for *DSM-IV* [SCID; First, Spitzer, Gibbon, & Williams, 1996] and the Positive and Negative Syndrome Scale [PANSS; Kay, Opler, & Fiszbein, 1987]) were translated into Spanish and back-translated into English, with the translators resolving any discrepancies.

**Diagnostic and background information.** Psychiatric and substance use disorder diagnoses were determined on the basis of the SCID (First et al., 1996). Background information, including demographics, work history, and psychiatric history, was gathered at the baseline interview and by review of medical records.

**Employment outcomes.** Work outcomes, including the type and characteristics of each job, hours worked, wages earned, and tenure, were assessed weekly either through direct interviews with clients or through logs completed by vocational program staff or case managers. Jobs were categorized in binary fashion (yes/no) according to each of the following characteristics: paid competitive wages, job in an integrated setting in the community (i.e., afforded regular contact with nonclients), contracted by the client (i.e., not filled at the discretion of the vocational program), and set aside for persons with a disability. Two definitions of work were used in analyses: competitive work (i.e., jobs paying competitive wages in integrated settings, contracted by clients, and not reserved for persons with disabilities), and any paid work. Job type codes were based on the *Dictionary of Occupational Titles* (U.S. Department of Labor and Employment and Training Administration Affairs, 1991). Job satisfaction was rated with the Indiana Job Satisfaction Scale (Resnick & Bond, 2001), which was administered 2 weeks after the client started a new job and bimonthly thereafter for as long as the client held the job.

**Nonvocational outcomes.** Psychiatric symptoms, overall functioning, social functioning and social networks, quality of life, and self-esteem were assessed with interviews conducted at baseline and every 6 months for 2 years. Interviewers were not blind to vocational program assignment. Symptoms were assessed over the past month with the PANSS (Kay et al., 1987). The PANSS was modified to be based entirely on client self-report and did not include other information from clinicians or charts. Five factors from the PANSS were identified in an exploratory factor analysis of PANSS data drawn from the eight sites participating in the collaborative project. These factors (and their coefficient alphas at this site) included Negative Symptoms (.80), Positive Symptoms (.74), Excitement (.65), Depression (.67), and Cognitive Impairment (.85). Interrater reliability for the PANSS subscales was acceptable, with intraclass correlation coefficients (ICCs), based on 48 cases, ranging between .72 for Cognitive Impairment and .82 for Positive Symptoms.

Overall functioning was rated at the end of each interview with the Global Assessment Scale (GAS), which has a possible range between 0 and 100, with high scores reflecting better adjustment (Endicott, Spitzer, Fleiss, & Cohen, 1976). Interrater reliability of the GAS was acceptable, with ICC = .81, based on 77 interviews.

Social and leisure functioning were assessed with the Social–Leisure subscale and global rating from the Social Adjustment Scale—II (Schooler, Hogarty, & Weissman, 1979). The Social–Leisure subscale includes four items rating the extent of leisure activities, social contacts, and comfort with relationships on a 1 (*good*) to 5 (*poor*) scale. The interviewer also made a global rating of social adjustment on a 5-point scale. Clients' social skills were rated on the basis of observation of their behavior during the interview, on a behaviorally anchored 5-point scale ranging from 1 (*poor*) to 5 (*excellent*; Bellack, Morrison, Wixted, & Mueser, 1990). Interrater reliabilities for the Social–Leisure subscale, global rating, and social skills ratings were acceptable, with ICCs ranging between .73 (social skill) and .97 (Social–Leisure subscale) based on 75–77 interviews.

Social network information was obtained at baseline, 12 months, and 24 months with a variant of the Social Support and Social Network Interview (Lovell, Barrow, & Hammer, 1984). Clients gave names of persons with whom they interacted on a regular basis. A follow-up question ascertained the functions that each network member played in their relationship with the client (e.g., friendship, advice, financial support). Clients reported how many network members each other member knew. Clients also rated how supportive each member was, on a 5-point scale ranging from 1 (*not supportive*) to 5 (*very supportive*). The following social network variables were computed for each participant: size (total number of persons named), density (ratio of actual to potential interpersonal linkages in the network, exclusive of the respondent), support (average support rating for each network member), and multiplexity (average number of functions performed by each network member).

Quality of life was assessed with the Brief Version of the Quality of Life Interview (Lehman, Kernan, & Postrado, 1995). For this report, client satisfaction ratings for four areas were examined: General Life, Social, Leisure, and Financial. Each subscale was based on multiple items that were rated on a 7-point scale ranging from 1 (*terrible*) to 7 (*delighted*), as well as the number of leisure activities over the past week (possible range = 0–8). Self-esteem was assessed with the Rosenberg Self-Esteem Scale (Rosenberg, 1965), with higher scores indicating greater self-esteem (possible range = 10–40).

In addition to SCID diagnoses of substance use disorder over the past year at baseline, substance use was assessed at baseline and follow-ups by means of client self-reports and clinician ratings. Clients reported the number of days they abused alcohol and the number of days they used drugs over the past 30 days. We obtained clinician ratings by using the Alcohol Use Scale (AUS) and the Drug Use Scale (DUS; Mueser et al., 1995) in interviews with case managers about their clients' use of alcohol and drugs over the past 6 months. The AUS and DUS are 5-point scales based on the *DSM-IV* criteria for alcohol and drug use disorders: 1 = no use, 2 = use without impairment, 3 = abuse, 4 = dependence, and 5 = severe dependence. At baseline, for the AUS and DUS, 26 clients (13%) had a current alcohol use disorder and 41 (20%) had a current drug use disorder. For the SCID (198 clients had valid SCIDs for substance abuse), 36 clients (18%) had a current alcohol use disorder and 46 (23%) had a current drug use disorder.

### *Research Attrition, Program Exposure, and Program Retention*

Among the 204 clients randomly assigned to programs, 195 (96%) completed at least one follow-up interview: 182 (89%) completed the 6-month interview, 176 (86%) the 12-month interview, 174 (85%) the 18-month interview, and 166 (81%) the 24-month interview. Chi-square analyses indicated that interview completion rates did not differ significantly across vocational programs at any assessment point.

We assessed retention in the vocational programs by examining the number of clients who received vocational services from their assigned program for each 6-month interval of the study. Clients in IPS were most likely to receive vocational services, with 100% receiving services in the first 6 months of the program, 100% in Months 7–12, 96% in Months 13–18, and 91% in Months 19–24, followed by clients in PSR (85%, 60%, 54%, and 54%, respectively), and clients in standard services (75%, 64%, 33%, and 17%, respectively). Chi-square tests revealed significant group differences for each time period,  $\chi^2(2, N = 204) = 18.35, 35.19, 57.28,$  and  $77.71,$  respectively;  $ps < .01$ . The standard–enclave and standard–supported programs did not significantly differ from each other in client retention.

Because we were interested in whether clients in PSR had better social outcomes as a result of that approach's focus on social rehabilitation, we also examined exposure to nonvocational services provided at the PSR program across the three vocational programs. Clients in PSR were most

likely to receive nonvocational services from the PSR program (32/67; 48%), followed by clients in standard services (22/69; 32%), and clients in IPS (17/68; 25%),  $\chi^2(2, N = 204) = 8.10, p < .02$ .

### Statistical Analysis

Intent-to-treat analyses of the employment outcomes were conducted on the entire randomized sample ( $N = 204$ ).<sup>1</sup> A second set of analyses was conducted to evaluate whether clients who had accessed their assigned program, as reflected by actual contacts between the client and program staff, differed in vocational outcomes. For these analyses, two definitions of exposure to vocational program were used: receipt of *any* services from assigned program ( $N = 180, 88%$ ), and receipt of services during both the first and second 3-month periods of the study ( $N = 147, 72%$ ). These definitions of exposure were used as proxy measures of access to the assigned program, and not to control for amount of exposure to vocational services between the programs. We did not attempt to statistically control for amount of exposure to vocational program in the analysis of outcomes because retention and exposure to vocational services are inextricably related to program effectiveness and hence to employment outcomes.

Employment outcomes were cumulated over the 2-year period.<sup>2</sup> Analyses comparing the three groups on time to first job were restricted to clients who obtained competitive work or any paid work. Chi-square tests were used to analyze categorical variables, and analyses of variance (ANOVAs) were used for continuous variables. Employment data were log-transformed because of many zeros and positive skewness. Tukey's honestly significant difference tests were computed for post hoc tests of continuous variables. To examine interactions between client variables (e.g., gender, ethnicity) and work in the different vocational programs, we included interaction terms between each client variable and vocational program in subsequent analyses predicting work.

Changes in nonvocational outcomes over time were examined by computing mixed-effects regression models with vocational program as the independent variable, each nonvocational variable at baseline as a covariate, and the nonvocational variable at the 6-, 12-, 18-, and 24-month follow-ups as the repeated measures dependent variable. Time was treated as a class variable and a fixed effect. For these analyses, group effects reflect differences between the vocational programs, with baseline controlled for; time effects reflect changes in nonvocational functioning between the 6- and 24-month follow-ups; and Group  $\times$  Time interactions reflect differential changes during the study period between the vocational programs. Only intent-to-treat analyses were performed on the nonvocational outcomes.

## Results

The sample characteristics at baseline for the three programs are summarized in Table 1. One-way ANOVAs, MANOVAs, and chi-square analyses indicated no group differences at baseline. Clients in the programs also did not differ significantly at baseline on any of the nonvocational measures (data available upon request).

### Vocational Program Fidelity

Fidelity to the IPS model was evaluated yearly for each of the four vocational programs (IPS, PSR, standard-supported, and standard-enclave) by means of the IPS Fidelity Scale (Bond, Becker, et al., 1997), on the basis of interviews with program staff and review of vocational logs. This scale contains 15 items, each rated on 5-point scales, and includes three subscales: Staffing (e.g., employment specialists perform only vocational services), Organization (e.g., integration of vocational and rehabilitation ser-

vices), and Services (e.g., rapid and individualized job search). Comparisons of the total fidelity score and the three subscales indicated that IPS ( $M = 70.00, SD = 2.77$ ) had the highest score, standard-supported ( $M = 61.00, SD = 4.58$ ) the next highest, and PSR ( $M = 47.67, SD = 5.51$ ) and standard-enclave ( $M = 46.00, SD = 3.60$ ) the lowest. A score of 70 or higher is considered high fidelity to the IPS model.

### Employment Outcomes

Table 2 summarizes the results of the intent-to-treat analyses comparing employment outcomes for the three vocational programs. For competitive work, post hoc pairwise comparisons indicated that IPS had significantly better outcomes than PSR or standard services, which did not differ. For measures of all paid employment, post hoc analyses indicated that IPS had better outcomes than PSR, whereas IPS sometimes had significantly better outcomes than standard services, which sometimes had significantly better outcomes than PSR. The only vocational outcome that did not differ between the groups was job satisfaction. Two sets of analyses of the treatment-exposed subgroups, one for 88% of clients exposed to any vocational service over the course of the study and another for the 72% of clients exposed to vocational services during the first and second 3-month periods, yielded similar findings to the intent-to-treat analyses, and the results are not presented here.

Rates of monthly competitive work and any paid work for each program are depicted in Figures 1 and 2, respectively. Rates of

<sup>1</sup> Vocational services for all three programs were tracked by service logs completed by employment service providers weekly (IPS, PSR) or monthly (standard services), and through direct client inquiries during the interviews every 6 months. We evaluated whether clients were exposed to vocational services from programs other than their assigned one. No clients in standard services were exposed to IPS or PSR vocational services. Three clients in IPS were exposed to standard services, but in all cases the preponderance of their vocational services were provided by IPS. The average hours and wages of competitive and paid work of these 3 clients did not differ from the other clients in IPS who received no standard vocational services. Eight clients in PSR also received standard services, whereas none received services from IPS. Of these 8 clients, 2 received more standard services than PSR. Comparisons of the 8 clients in PSR who also received standard vocational services with the remaining 59 clients in PSR indicated no differences in hours or wages of competitive work, but significant differences in total paid work, including hours worked,  $t(65) = 2.51, p = .04$ , and wages earned,  $t(65) = 2.67, p = .03$ . Clients who received vocational services from PSR and through standard services worked more total hours and earned more wages than clients who received services from only PSR.

<sup>2</sup> Some vocational data were missing on 6 clients, including 2 who were missing data over the full 2 years, 3 who were missing data during the 2nd year of the study, and 1 who was missing data for the last 6 months. Three of these clients were in IPS, 2 in standard services, and 1 in PSR. These clients were included in the intent-to-treat analyses, with zeros substituted for work during periods of missing data. We conducted a sensitivity analysis to determine whether the results of the intent-to-treat analyses changed if these same clients were assumed to be working (at the same rate as employed clients in the same program) during periods of missing vocational data. The results of this sensitivity analysis were essentially unchanged, suggesting that the small amount of missing vocational data had a negligible effect on the findings from the intent-to-treat analyses.

Table 1  
 Summary Statistics Comparing Participant Characteristics in Three Treatment Conditions ( $N = 204$ )

Characteristic	Standard ( $n = 69$ )	IPS ( $n = 68$ )	PSR ( $n = 67$ )
Gender (% male)	63.8	61.8	59.7
Ethnicity			
% African American	44.9	45.6	43.3
% Hispanic	31.9	30.9	31.3
% Caucasian non-Hispanic	17.4	22.1	23.9
% all other	5.8	1.5	1.5
Age, $M$ ( $SD$ )	40.9 (9.3)	41.7 (8.8)	41.1 (9.5)
Educational level			
% < high school graduate	49.3	50.0	58.2
% $\geq$ high school graduate	50.7	50.0	41.8
Marital status			
% never married	78.3	73.5	65.7
% married or living as married	4.3	4.4	14.9
% divorced, separated, or widowed	17.4	22.1	19.4
PANSS factors			
Negative, $M$ ( $SD$ )	2.3 (.9)	2.3 (1.0)	2.4 (.8)
Positive, $M$ ( $SD$ )	2.2 (1.0)	1.8 (.8)	2.0 (.8)
Excitement, $M$ ( $SD$ )	1.7 (.8)	1.5 (.5)	1.7 (.7)
Depression, $M$ ( $SD$ )	2.0 (.9)	1.9 (.7)	2.1 (.8)
Cognitive, $M$ ( $SD$ )	2.3 (.8)	2.3 (.9)	2.4 (.8)
Diagnosis, primary SMI			
% schizophrenia	56.5	54.4	49.3
% schizoaffective	18.8	22.1	22.4
% bipolar	2.9	1.5	10.4
% major depression	15.9	20.6	14.9
% personality disorder	1.4	0.0	1.5
% other	4.3	1.5	1.5
Diagnosis, secondary			
% anxiety disorder	18.8	16.2	14.9
% personality disorder	20.3	23.5	25.4
% current alcohol use disorder	14.7	11.8	11.9
% current drug use disorder	22.4	19.1	19.4
Mos. lifetime psychiatric hospitalization, $M$ ( $SD$ )	15.3 (22.2)	18.8 (30.6)	21.7 (52.3)
Employment			
% competitive in past 5 years	40.6	42.6	29.9
% noncompetitive in past 5 years	13.0	13.2	17.9
% sheltered in past 5 years	2.9	5.9	6.0
Mos. competitive in past 5 years, $M$ ( $SD$ )	5.8 (12.1)	5.5 (11.6)	5.6 (12.4)
Mos. noncompetitive in past 5 years, $M$ ( $SD$ )	0.7 (2.4)	0.7 (2.3)	2.1 (6.7)
Mos. sheltered in past 5 years, $M$ ( $SD$ )	0.1 (0.5)	0.3 (1.4)	0.6 (3.1)

Note. IPS = individual placement and support; PSR = psychosocial rehabilitation; PANSS = Positive and Negative Syndrome Scale; SMI = severe mental illness; Mos. = months.

competitive employment increased over the first several months for all the programs, with 30%–40% of the clients in IPS working each month, compared with less than 10% for PSR and standard services.

Because one of the two programs included in the standard service condition was a free-standing supported employment program (standard-supported), in contrast to IPS which was located at the mental health center, we repeated the analyses of vocational outcomes comparing these two programs to explore the possible effect of program location. These analyses were limited to competitive work, as both programs focused on this outcome. Clients in IPS were significantly more likely to obtain work than clients in standard-supported (75.0% vs. 45.2%),  $\chi^2(1, N = 204) = 8.41, p < .04$ , although the groups did not differ significantly in the proportion of clients who worked over 20 hr per week (33.8% vs. 25.8%),  $\chi^2(1, N = 204) = 0.63, ns$ . Clients in IPS also had significantly better competitive work outcomes than clients in

standard-supported for all continuous variables, including hours worked ( $M_s = 372.57$  vs. 176.02),  $t(58.7) = 3.32, p < .02$ ; wages earned ( $M_s = \$2,078.41$  vs.  $\$967.12$ ),  $t(56.8) = 3.27, p < .02$ ; weeks worked ( $M_s = 29.72$  vs. 8.48),  $t(69.2) = 4.11, p < .01$ ; average job tenure ( $M_s = 20.04$  weeks vs. 7.03 weeks),  $t(69.6) = 3.56, p < .07$ ; and longest job ( $M_s = 25.54$  weeks vs. 1.20 weeks),  $t(68.6) = 3.84, p < .03$ .

Further analyses (see Method, *Statistical Analysis* section) explored the interactions between employment (competitive work or not) in the different vocational programs and the following client characteristics: gender, education, ethnicity, diagnosis (schizophrenia or schizoaffective disorder vs. all others), work history (employed in the past 5 years or not), and substance use disorder at baseline (based on the SCID, AUS, and DUS). None of these interactions were significant, suggesting that client characteristics did not differentially affect employment across the three vocational programs.

Table 2  
Employment Outcomes During 24-Month Study Period ( $N = 204$ )

Employment outcome	Standard services participants ( $n = 69$ )	IPS participants ( $n = 68$ )	PSR center participants ( $n = 67$ )	Pairwise comparisons	
				$p^a$	$p < .05^b$
<b>Competitive employment</b>					
Days to first job, $M$ ( $SD$ )	218.84 (137.60)	196.63 (188.55)	369.42 (241.81)	.019	P > I
No. in any competitive job ( $n = 82$ )	19 (27.5%)	51 (75.0%)	12 (17.9%)	<.001	I > S&P
No. who worked more than 20 hr/week	9 (13.0%)	23 (33.8%)	3 (4.5%)	.001	I > S&P
Total hours worked, $M$ ( $SD$ )	102.84 (338.27)	372.57 (515.60)	39.96 (124.35)	<.001	I > S&P
Total wages earned (\$), $M$ ( $SD$ )	617.59 (1,943.25)	2,078.41 (2,891.36)	239.39 (730.58)	<.001	I > S&P
Total weeks worked, $M$ ( $SD$ )	5.45 (14.98)	29.72 (33.18)	3.37 (11.47)	<.001	I > S&P
Tenure (average weeks per job), $M$ ( $SD$ )	4.79 (14.68)	20.04 (29.30)	2.50 (8.10)	<.001	I > S&P
Weeks at longest job, $M$ ( $SD$ )	5.30 (14.89)	25.54 (31.05)	3.07 (10.23)	<.001	I > S&P
Satisfaction with first job ( $n = 66$ ), $M$ ( $SD$ )	2.74 (0.25)	2.86 (0.33)	2.76 (0.42)	.41	
<b>Any employment</b>					
Weeks at longest job, $M$ ( $SD$ )	17.99 (27.71)	25.74 (30.95)	10.61 (21.76)	.006	I > P
No. in any job ( $n = 111$ )	37 (53.6%)	51 (75.0%)	23 (34.4%)	.001	I > S&P, S > P
No. who worked more than 20 hr/week	13 (18.8%)	23 (33.8%)	6 (9.0%)	.002	I > S&P
Total hours worked, $M$ ( $SD$ )	235.42 (453.18)	375.71 (515.03)	141.21 (351.28)	.010	I > P
Total wages earned (\$), $M$ ( $SD$ )	1,124.24 (2,277.08)	2,094.94 (2,888.25)	720.72 (1,621.27)	.002	I > S&P
Total weeks worked, $M$ ( $SD$ )	19.07 (28.43)	30.18 (33.04)	11.40 (23.28)	.001	I > P
Tenure (average weeks per job), $M$ ( $SD$ )	15.56 (25.65)	19.75 (29.17)	9.08 (19.49)	.048	I > P
Days to first job, $M$ ( $SD$ )	163.24 (140.04)	190.86 (179.89)	333.87 (208.25)	.001	P > I&S
Satisfaction with first job ( $n = 97$ )	2.82 (0.3)	2.86 (0.3)	2.74 (0.3)	.42	

Note. Degrees of freedom for analysis of variance (ANOVA) are (2, 201) unless otherwise noted. IPS = individual placement and support; PSR = psychosocial rehabilitation.

<sup>a</sup>  $p$  values based on chi-square tests for categorical outcomes and on ANOVAs for continuous variables. Degrees of freedom for ANOVAs are (2, 201) except competitive work days to first job (2, 79), competitive work satisfaction with first job (2, 63), any employment days to first job (2, 108), and any employment satisfaction with first job (2, 94).  $N$  for chi-square comparisons: IPS–standard (137), IPS–PSR (135) and standard–PSR (136). Bonferroni bounds correction for overall  $p < .05 = .0028$ .

<sup>b</sup> Based on chi-square tests for binary outcomes and Tukey's honestly significant difference tests for continuous outcomes. I = IPS; S = standard services; P = PSR.

Across the three programs, most job types were in three categories: services (55.2%), clerical (21.9%), and miscellaneous other (15.7%). Job type differed as a function of program,  $\chi^2(4, N = 204) = 16.51, p < .03$ . Clients receiving IPS had fewer service jobs (48.6%) than clients in PSR (78.1%) or standard services (69.6%), and clients in PSR had fewer miscellaneous jobs (0%) than those in IPS (21.5%) or standard services (17.9%), whereas the programs were more similar in terms of clerical jobs, with IPS highest (29.9%), followed by PSR (21.9%), and standard services (12.5%).

### Nonvocational Outcomes

Because of the large number of tests conducted (three tests for each of 20 variables), we computed the  $p < .05$  Bonferroni bounds significance level ( $.05/60 = .00083$ ). Because the Bonferroni bounds correction is quite conservative, we report both effects that are significant at the conventional  $p < .05$  level, which we regard as "trends," as well as effects significant with the Bonferroni correction, which we regard as "significant." Only two effects were significant: the time effects for GAS and the PANSS Cognitive factor. GAS tended to improve over time (baseline  $M = 50.9$ , 2-year  $M = 53.8$ ), whereas cognitive functioning tended to worsen (baseline  $M = 2.3$ , 2-year  $M = 2.5$ ). There was also a trend for clients in PSR to show more satisfaction with their social relationships over time than clients in IPS or standard services (for PSR: baseline  $M = 4.5$ , 2-year  $M = 4.7$ ; for IPS: baseline  $M = 4.9$ ,

2-year  $M = 4.7$ ; for standard: baseline  $M = 5.1$ , 2-year  $M = 4.8$ ; data available upon request). No other time or Time  $\times$  Group effects were significant at the Bonferroni-corrected or trend level.

### Discussion

Clients who participated in the IPS program had significantly better work outcomes, especially competitive work, than clients who participated in the PSR program or who received standard vocational services. The positive effects of IPS appear to be at least partly due to its greater ability to retain clients in vocational services, by using strategies such as individualized and rapid job search, assertive outreach, and integration of clinical and vocational services, than the other two programs. Rates of retention over 2 years remained over 90% for IPS, compared with 50%–60% for PSR and less than 40% for standard services in the 2nd year. Although it is possible for a program to retain clients in services that are not effective at improving targeted outcomes (e.g., work) by offering other incentives (e.g., food, socialization), clients participating in ineffective services often "vote with their feet" by dropping out of those services. Thus, retention in vocational services may be a necessary, but not sufficient, condition for improving employment in persons with severe mental illness. IPS was effective at both retaining clients in services and improving employment outcomes.

This study contributes to the research literature on the effectiveness of the IPS model in several ways. First, this is the first

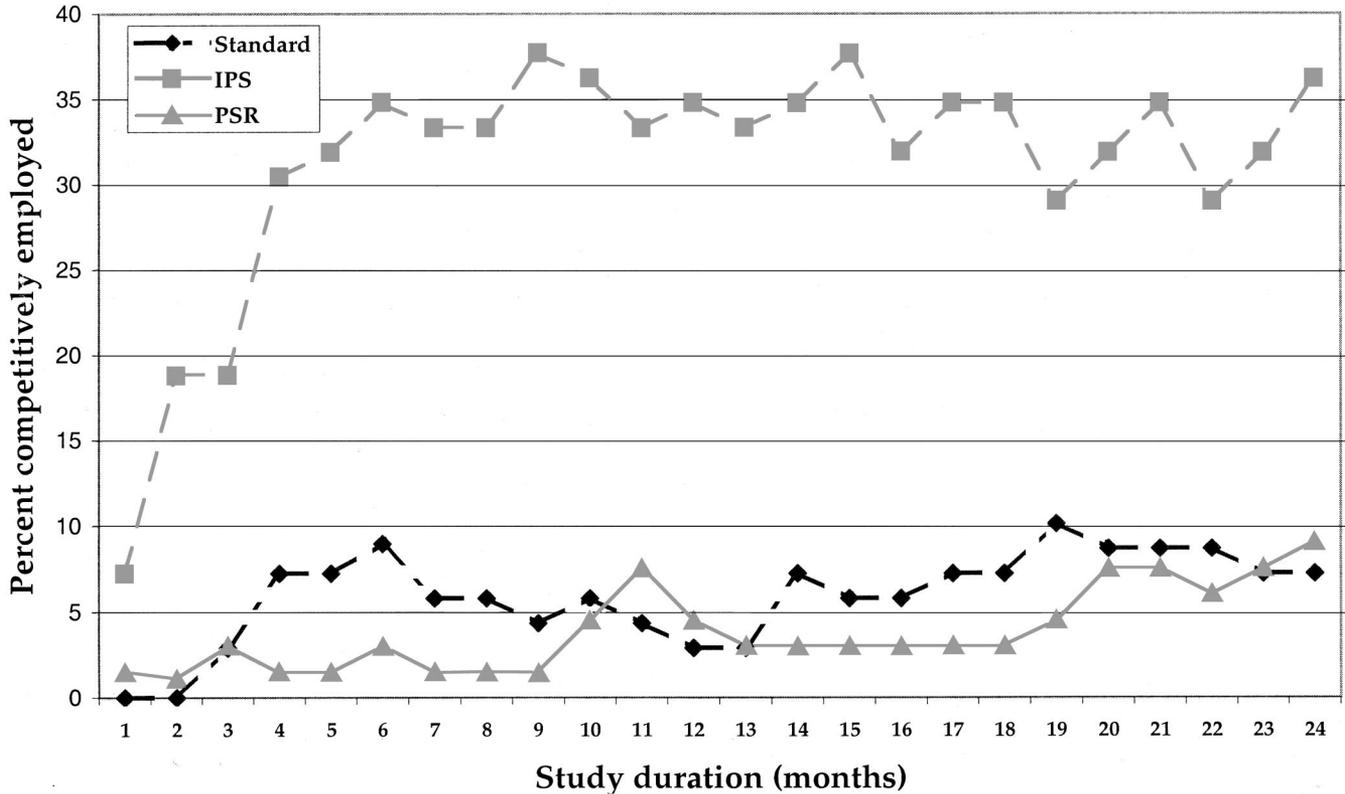


Figure 1. Monthly rates of competitive employment for clients in the standard services (Standard), individual placement and support (IPS), and psychosocial rehabilitation (PSR) programs.

controlled study of IPS to include a standard services condition in which clients had access to all the usual vocational services available to them. Prior research has compared IPS to single-model exemplars, such as group skills training (Drake, McHugo, et al., 1996), sheltered workshops (Drake et al., 1999), or prevocational training (Lehman et al., 2002). The fact that clients who received standard services in this study were free to join and quit these services at will, without artificial constraints or efforts to ensure long-term retention in a single service that would ordinarily be absent in such settings, makes this condition highly generalizable to typical “real-world” clinical settings (i.e., *effectiveness* rather than *efficacy* research; Clark, 1995; Wells, 1999), and provides an informative contrast with IPS. The inability of standard services, including the standard-supported program, to retain clients in services over the long term may have been due to limitations such as the lack of integration with mental health services and assertive outreach, core components of the IPS model (Drake, Becker, Bond, & Mueser, 2003).

A second contribution of this study is the evaluation of the IPS model in Latino clients. Latinos in the United States are especially disadvantaged with respect to the levels of education, work, and earnings (Therrien & Ramirez, 2000). These challenges may be compounded by the problems of severe mental illness, which could be further complicated by the tendency of Latino clients to receive fewer mental health services (Padgett et al., 1994). A question this study sought to address was whether the IPS model would be effective at engaging and retaining Latino clients in vocational

services, and thereby improving their employment outcomes. The study provided strong evidence that for Latino clients, IPS was more effective at improving vocational outcomes than PSR or standard services. Although it is unclear what components of IPS were most critical to the improved outcomes, it would appear that outreach may have been one critical feature in retaining clients in vocational services, similar to its role in assertive community treatment programs (Bond, Drake, Mueser, & Latimer, 2001). Indeed, an ethnographic study conducted as part of this study found that employment specialists in IPS were successful at reaching out to Latino clients and families, which was perceived to be of great benefit to engaging and retaining these clients in vocational services (Alverson, Carpenter, & Drake, 2003).

A third contribution of this study was the light shed on the relative effectiveness of IPS compared with a psychosocial program using transitional employment. Although the PSR program did not meet ICCD certification standards for a clubhouse (Macias et al., 2001), a survey of PSR programs funded by the Connecticut Department of Mental Health and Addiction Services, conducted contemporaneously with this study, indicated that the PSR program was similar to many other such programs operating in the state (Lucca & Allen, 2001). Thus, the findings comparing PSR with IPS may be generalizable to other PSR programs that use transitional employment. At the same time, because fidelity to the psychosocial model of vocational rehabilitation was not formally evaluated, it is possible that lower fidelity of the PSR program to those principles could have contributed to worse outcomes.

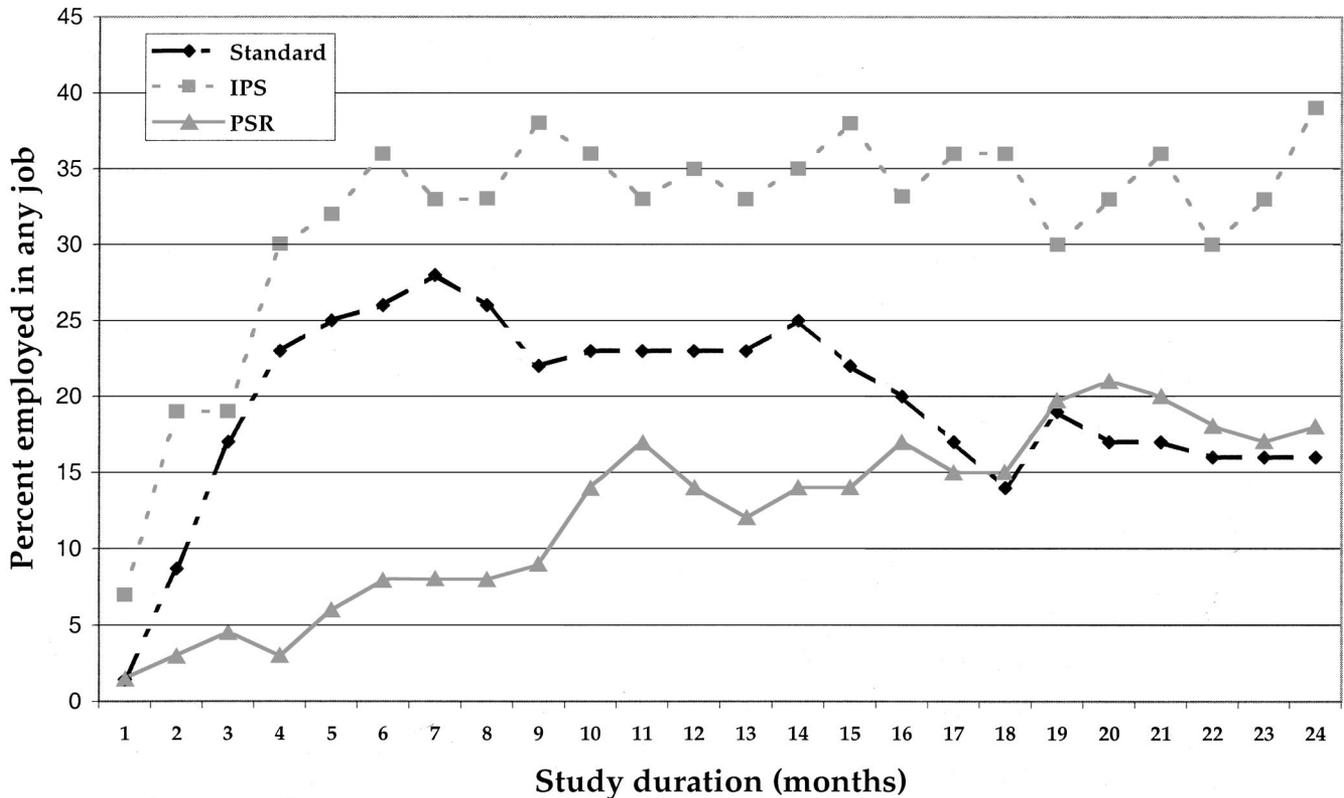


Figure 2. Monthly rates of all paid employment for clients in the standard services (Standard), individual placement and support (IPS), and psychosocial rehabilitation (PSR) programs.

The substantially lower employment rates in PSR compared with IPS suggest that the emphasis in PSR on developing work skills and transitional jobs was not as effective at helping clients obtain competitive jobs (or, for that matter, any paid employment) as the rapid individualized job search and support approach of IPS. The results are consistent with other research indicating that delaying the search for competitive employment in clients with severe mental illness reduces the overall likelihood of clients obtaining competitive work (Bond, Dietzen, McGrew, & Miller, 1995). Furthermore, extensive evidence indicates that only a minority of clients who participate in transitional employment progress to competitive work (Bond & Dincin, 1986; Cook & Razanno, 1995; Henry, Barreira, Banks, Brown, & McKay, 2001; Laird & Crown, 1991; Malamud & McCrory, 1988).

The higher rate of retention in the PSR program compared with standard services, despite comparable employment rates, indicates that factors other than location may contribute to maintaining clients in vocational services. One possibility is the availability of the social and recreational activities in the PSR program. Although clients in all programs were eligible to attend the social program at PSR, clients in PSR were more likely to attend than clients in standard services or IPS. Furthermore, there was a trend ( $p < .05$ , not Bonferroni corrected) for clients in the PSR program to report increased satisfaction with social relationships compared with clients in standard services or IPS, who did not change. Thus, participation in the social activities that were easily accessible at the PSR program may have helped to retain clients. The findings

also suggest one limitation of IPS—that it does not fully address the social needs of clients—and concomitantly the recommendation that IPS clients have access to drop-in centers and other social outlets (Torrey, Meade, & Ross, 1998).

One previously unreported finding concerned the type of jobs obtained by clients enrolled in the different programs. Significantly fewer IPS clients worked in service industry jobs (i.e., readily available entry-level jobs that some critics have suggested often lead to low job satisfaction, such as a cashier at a fast food restaurant) than clients in PSR or standard services. These findings suggest that the IPS program was more attentive to client preferences in occupations, given that clients generally prefer clerical jobs and generally dislike service jobs (Gervey & Kowal, 1995; Priebe, Warner, Hubschmid, & Eckle, 1998). Considering the individualized job search that is part of IPS, this finding, if replicated, provides a new substantive difference between vocational rehabilitation approaches.

There were few differences between the programs on nonvocational outcomes, consistent with other studies of supported employment (Bond, Becker et al., 2001). Because analyses were based on the experimental design—preserving randomized groups and all participants (intent-to-treat)—they are not likely to show nonvocational effects because not all participants worked, and those who worked did so at low rates. These factors make it unlikely that nonvocational differences would emerge between study groups, consistent with what others have argued (Bond, Resnick, et al., 2001; Mueser et al., 1997). Thus, the results are

consistent with the general observation that psychosocial interventions for persons with severe mental illness tend to have domain-specific effects limited to areas that are the focus of intervention (Mueser, Bond, & Drake, 2001).

On a final note, although the findings from this study provide support for IPS, the actual employment outcomes were modest in terms of hours worked and wages earned (see Table 2). Furthermore, 25% of clients who expressed an interest in work never worked, and many clients who worked had difficulty retaining their jobs. We have shown, on the basis of these data, that job retention in IPS was related to successfully matching clients to jobs based on their personal preferences (Mueser, Becker, & Wolfe, 2001). In addition, other illness-related impairments, such as cognitive impairment (Bell & Bryson, 2001; McGurk & Meltzer, 2000) and symptoms (Mueser, Salyers, & Mueser, 2001; Racenstein et al., 2002), may limit employment outcomes in persons with severe mental illness, including participants in supported employment programs (Gold, Goldberg, McNary, Dixon, & Lehman, 2002; McGurk, Mueser, Harvey, Marder, & LaPuglia, 2003).

The findings suggest a number of possible avenues for future research. Interventions that attempt to address factors that limit clients' response to supported employment could be examined, such as cognitive remediation (Bell, Bryson, Greig, Corcoran, & Wexler, 2001), motivational interviewing to address negative symptoms (Corrigan, McCracken, & Holmes, 2001), and cognitive-behavioral therapy for psychosis (Gould, Mueser, Bolton, Mays, & Goff, 2001). There is also a need to address the problem of short job tenure for many clients; social skills training has been proposed as a solution to address limitations in interpersonal skills that are hypothesized to contribute to unsatisfactory job endings (Wallace, Tauber, & Wilde, 1999). Another area in need of research is how clients can be more supported in pursuing and enhancing their career goals and obtaining jobs that may be more interesting than the typical entry-level jobs they obtain. A key to helping clients develop such careers may be to apply the principles of supported employment to improving clients' educational level. Although principles of supported education have been articulated (Mowbray, 2000; Unger, 1998), rigorous evaluations of supported education programs have not been published.

Several limitations of this study need to be acknowledged. First, although the IPS and PSR programs had Spanish-speaking vocational staff, standard services did not, suggesting a more limited capacity to serve Latino clients who were not fluent in English. Second, interviewers were not blind to vocational program assignment, thereby introducing the possibility of rater bias. However, employment outcomes are quite objective (requiring almost no rater judgment) and were obtained from a variety of sources (e.g., clients, vocational programs, case managers). With respect to interview-based assessments of nonvocational functioning, we established excellent interrater reliabilities. Thus, that interviewers were not blind to program condition likely had a negligible effect on the assessment of outcomes, especially vocational outcomes. Third, although the PSR program was similar to other PSR programs operating in Connecticut, it was not an ICCD-certified clubhouse, and therefore the results cannot be generalized to such clubhouse programs. Research is needed that directly compares the IPS model with an ICCD-certified clubhouse for improving employment outcomes.

Overall, the results add to the growing support for the IPS model of supported employment, and include a new, previously unstudied group of clients with severe mental illness: Latinos. The results, along with an ethnographic study (Alverson et al., 2003), indicate that IPS workers were easily able to adapt the model to the special needs of Latino clients. The findings suggest that IPS is superior to PSR using transitional employment, as well as to brokered vocational services, including services brokered to an off-site supported employment program. IPS had strong effects on improving work across different psychiatric diagnoses and ethnic minorities. Considering the evidence supporting the IPS model, the time is ripe to turn attention to research on new issues about supported employment, including those previously discussed, and dissemination of the rehabilitation practices embodied in the IPS program.

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