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ORIGINAL PAPER

Predictors of Referral to Supported Employment Among Consumers with Co-Occurring Mental and Substance Use Disorders

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Abstract Clinical trials demonstrate that Supported Employment is effective in assisting persons with severe mental illness in obtaining competitive employment. However, little is known about the factors related to consumers' decisions to pursue employment, especially for consumers with co-occurring substance and mental disorders. This study examines the demographic, socioeconomic and illness characteristics of consumers referred for Supported Employment services. Consumers were drawn from Integrated Dual Diagnosis Treatment programs in four community mental health agencies. Study participants included 113 consumers referred for Supported Employment services and 78 randomly selected non-referred consumers as the comparison group. Results suggest that consumers who have past work experience are more likely to be referred to Supported Employment, while consumers who perceive themselves as disabled or who are diagnosed as substance dependent are less likely to be referred to Supported Employment. Implications for agency practice and future research are discussed.

Keywords Supported employment · Co-occurring disorders · Referral · Employment history

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Introduction

Individuals experiencing mental illness have many obstacles to overcome on the road to recovery. Recovery is even more difficult for consumers with co-occurring mental illness and substance use disorders. Findings from the National Comorbidity Study (NCS) document a high prevalence of co-occurring mental and addictive disorders. In the NCS, 51% of those with a lifetime occurrence of a mental disorder reported a lifetime occurrence of at least one addictive disorder as well (Kessler et al. 1996). Numerous studies report high rates of substance abuse among consumers in treatment for severe psychiatric disorders (Mueser et al. 1990; Mueser et al. 2000). Individuals with co-occurring disorders gain the most confidence with their ability to recover or develop independent living skills and to meet their daily living needs when they experience incremental successes. One such success is the attainment of gainful employment (Drake et al. 1996). The President's New Freedom Commission on Mental Health called for a fundamental transformation of the mental health care delivery system in the United States. It articulated specific objectives designed to "… move the Nation's public and private mental health service delivery system toward the day when all adults with serious mental illnesses…will live, *work,* learn, and participate in their communities" (U.S.D.H.H.S. 2005, p. 3).

Employment is an important facet of life. It helps to define who we are and is an avenue to develop friendships.

Positive mental health outcomes from employment that have been identified in previous research include: increased quality of life, higher self-esteem, better control of psychiatric symptoms, reductions in substance use, and decrease in isolation (Bond et al. 2001a, b; Rosenheck et al. 2006). Work can become a motivator in reducing substance abuse or avoiding relapse (Becker et al. 2005).

Unfortunately, the current rate of employment among persons with severe and persistent mental illness is very low. Nationally, less than one out of five (17%) individuals with serious mental illness is employed (Cook et al. 2007). Similarly, in Ohio, where the present study was conducted, only 16% of mental health consumers reported that they received income from working despite the fact that 59% of mental health consumers reported a desire to work (Ohio's Mental Health Commission 2001). Vocational assistance was ranked the top unmet need by mental health consumers in the Ohio Department of Mental Health's Longitudinal Consumer Outcomes Study (Ohio's Mental Health Commission 2001), with only 32% of consumers reporting that they received any assistance with employment, skills training, or education (Crane-Ross et al. 2000).

A number of obstacles may hinder a mental health consumer's ability to work in a competitive atmosphere, including work history, stress, stigma, and reduced work performance due to mental illness (Honey 2003). For consumers with co-occurring mental and substance use disorders, barriers to employment may be even harder to overcome (Mitchell et al. 2002). Individuals with co-occurring disorders are likely to experience higher rates of unemployment (Littrell and Littrell 1999) and to have fewer experiences with working (Pickett-Schnek et al. 2002).

Supported Employment programs are designed to address barriers to employment for persons with mental illness through a focus on assisting mental health consumers to rapidly find competitive employment and through the provision of ongoing and necessary supports to help assure employment success. Supported Employment is comprised of seven major components: (1) all consumers who express an interest in working are eligible for services; (2) consumer preferences for employment are taken into consideration; (3) the focus is on rapid job search; (4) employment is competitive, not sheltered; (5) employment services are integrated with mental health services; (6) the support provided to consumers is unlimited; and (7) benefits counseling is provided (Bond 2004; Bond et al. 2001a, b).

Research findings demonstrate that, in comparison to other vocational programs, Supported Employment programs increase competitive employment for mental health consumers (Bond 2004; Cook et al. 2007; Drake et al. 1994; Drake et al. 1996; Lehman et al. 2002; Mueser et al. 2001, 2004; Wong et al. 2008). In fact these employment differences were large. Findings from the employment intervention demonstration program (EIDP) eight site randomized implementation effectiveness trial of Supported Employment found that participants in the experimental Supported Employment condition had significantly higher earnings and average hours worked as well as a higher employment rate, 39% as compared to a 29% rate for those in the control condition (Cook et al. 2007). A total of eleven randomized control trials comparing high-fidelity Supported Employment programs to other vocational interventions have been conducted thus far, with over half (61%) of the consumers entering competitive employment as compared with only 23% of consumers in traditional employment programs (Bond et al. 2008). Traditional vocational programs that have been converted to Supported Employment have also achieved higher employment rates when compared to rehabilitative day treatment programs (Becker et al. 2001). In an analysis of four studies that examined the conversion of day treatment programs to Supported Employment, Bond (2004) reported that 40–60% of the consumers enrolled in Supported Employment obtained competitive employment versus less than 20% of the consumers who were not enrolled in Supported Employment programs.

Concerning co-occurring substance disorders, most previous studies suggest that having a substance disorder does not predict how a consumer will fare in employment. Several studies found that substance use disorders do not impair capacity to work beyond the already significant impairments due to severe mental illness (Bell et al. 2002; Cook et al. 2007; Drebing et al. 2002; Laudet et al. 2002; Pickett-Schnek et al. 2002; Sengupta et al. 1998). Drebing and colleagues found no added risk of non-compliance with vocational rehabilitation associated with a co-occurring substance use disorder compared to individuals with psychiatric disorders. The authors hypothesize that work may be a dimension of functioning that is not negatively affected by an existing substance use disorder beyond the risk to work functioning that is already compromised by a psychiatric disorder.

Despite the strong evidence to date of the effectiveness of Supported Employment programs, gaps in knowledge remain, especially for persons with co-occurring mental and substance disorders (Laudet et al. 2002). There has been little examination concerning which consumers get referred to Supported Employment programs and which mental health consumers do not get referred. This is an important question since the existence of an evidence-based practice, such as Supported Employment, at a mental health agency, does not mean that all consumers have equal access to that program.

Previous research with a variety of population groups has demonstrated that consumer and/or agency related variables may either serve to facilitate or serve as barriers

to use of particular programs or services (Biegel et al. 1997; Biegel and Leibbrandt 2006; Miller and Stull 1999). The identification of such facilitators and barriers can provide useful information to mental health agencies in enhancing utilization of Supported Employment programs. Factors affecting consumers' willingness to work and consumers' perceived difficulty in obtaining work, and thus interest in being referred to Supported Employment programs, that have been identified in the literature include: previous work experience, work motivation, mental health symptomatology, substance use problems, consumer self-efficacy, consumer perception of unmet needs for vocational assistance, and receipt of entitlement income by consumers (Anthony 1994; Braitman et al. 1995; Crane-Ross et al. 2000; Estroff 1997; Fabian 1992; Laudet et al. 2002; Linhorst 2006; Macias et al. 2001; Van Dongen 1996). Agency level factors that may impact referral to Supported Employment pertain to differences between consumers and practitioners regarding consumers' need for employment and need for vocational assistance (Casper and Carloni 2006; Crane-Ross et al. 2000). This study examines the following research question: What are the effects of consumers' demographic and socioeconomic characteristics, mental health and substance use status, functioning and life status, work history and work interest, and agency organizational characteristics on referral of consumers for Supported Employment services?

Methods

Design

The study utilized a quasi-experimental longitudinal design with a randomly selected non-equivalent comparison group. Mental health consumers involved in the study were assigned to one of two conditions: an intervention group of consumers who expressed a desire to work and were referred to the Supported Employment treatment group and a randomly selected comparison group of mental health consumers who met the criteria for the study, but did not express a desire to work and were not referred to the Supported Employment program during the course of the study, nor had they previously been referred to Supported Employment. Consumers in both conditions were tracked for a twelve month period.

Participating Agencies

The study was carried out in cooperation with four community mental health centers (CMHCs) located throughout Ohio. These four CMHCs were selected because all four agencies had existing integrated dual diagnosis treatment (IDDT) teams for consumers with co-occurring mental and substance use disorders and all four agencies had existing Supported Employment programs. The four CMHCs represent a diverse range of geographic settings from urban to suburban to rural.

Study Sample Eligibility Criteria

The criteria for consumers in the intervention group were that: (1) they had been diagnosed with co-occurring substance use and mental illness disorders and were receiving IDDT services; (2) they expressed a desire to engage in competitive employment; (3) they were being referred for Supported Employment services; and (4) they had not previously received Supported Employment services. If these four criteria were met, the IDDT case manager asked the consumer if they were interested in participating in the study. The agencies began enrolling consumers into the intervention group in October 2005 and continued enrolling consumers through January 2007.

The sampling criteria for the consumers in the comparison group were that: (1) they had been diagnosed with co-occurring substance use and mental illness disorders; (2) they had not received Supported Employment services in the past; and (3) they did not express an interest in competitive employment. To select the comparison group, consumers were randomly selected from lists of active consumers at each CMHC by means of unique identifiers that were provided to the study investigators. The IDDT case managers asked the selected consumers if they were willing to enroll in the study. Comparison group consumers began enrolling in September 2006 and continued through February 2007.

Procedures for Referral to Supported Employment Services

Referral for Supported Employment services for the purpose of this research project is defined as referral to the Supported Employment program through self-referral or referral from their IDDT case manager within 12 months of the start of this research study. Prior to the start of the study, the research team met with administrators (e.g., clinical director, IDDT Program Leader and Supported Employment program leader) at each agency to review the study procedures for data collection, enrollment of subjects into the study, and referral of consumers to the Supported Employment program, at which time the need for uniformity of entry of subjects into the study and referral for Supported Employment was discussed. This was followed by half day training sessions at each agency with all IDDT and Supported Employment staff involved in this research study focusing on the role of work in recovery, study

procedures, data collection forms, and the protection of human subjects. Throughout the course of the study, we emphasized that agencies were expected to follow the second principle of Supported Employment, which states that "the only requirement for admission to a supported employment program is a desire to work in a competitive job" (Bond 2004, p. 346). Thus, as part of their regular work with consumers, case managers discussed consumers' interest in being referred for Supported Employment services.

Data Collection Procedures

Data for the study was generated through four sources: consumer and provider questionnaires already in use by the study agencies, data collection forms designed specifically for this research project which were completed by case managers and Supported Employment staff at the study agencies, data from agency administrative records, and IDDT and supported employment (SE) fidelity scores from a state-funded training and consultation center. Prior to the beginning of data collection, approval of data collection procedures and consent forms was received from the Case Western Reserve University IRB.

Consumer and Provider Questionnaires

Consumers completed the Ohio Adult Form A, an instrument designed for adults with severe and persistent mental illness, at study entry (Ohio Department of Mental Health 2004). The Ohio Adult Form A is a 67 item questionnaire measuring consumer empowerment, quality of life, symptomotology, and financial adequacy. The instrument also gathers demographic data on the age, race, gender, education, marital status, and disability status of the consumer.

Agency case managers completed the Ohio Provider Form A at baseline (Ohio Department of Mental Health 2004). The Provider Form A gathers the case manager's observations and clinical judgments about experiences and activities of the consumer in comparison to other consumers with serious and persistent mental illness. The Provider Form A includes measures on activities of daily living, community functioning, and victimization.

Case Manager and Supported Employment Staff Data Collection Forms

A second group of data was collected at baseline from agency case managers and Supported Employment staff. This data included information about the consumer's employment history, current employment status, housing status, psychiatric hospitalization, incarceration, school enrollment, and current substance use.

Agency Administrative Records Data

A third set of data was extracted from consumer charts at the study agencies. This data included information on the consumer's substance use and mental illness diagnoses, total monthly income, income from entitlement programs, and chronic physical illnesses.

Fidelity Data

Fidelity scores for the agencies IDDT and SE programs was obtained from a state-funded training and consultation center that conducted fidelity reviews of these programs on a regular basis.

Measures

The mental health and substance use literature pertaining to Supported Employment was used to identify five categories of predictor variables—*Demographic and Socioeconomic Status*, *Mental Health and Substance Use Status*, *Consumer Functioning and Life Status*, *Work History and Work Interest*, and *Organizational Characteristics*—that might impact referral to Supported Employment services.[1]

Demographic and Socioeconomic Status

Race

Race was a dichotomous variable categorized as White (0) or Non-White (1). The Non-White category was principally composed of African-Americans.

Housing Status

Categorized as Lives Independently (1), defined as living alone or with a significant other, or Doesn't Live Independently (0), defined as living with family, supervised housing, homeless/shelter, or living in an AODA/residential care facility.

Entitlement Income

Categorized as Receives Entitlement Income (1) or Doesn't Receive Entitlement Income (0). Entitlement Income is an important factor as previous studies have found that consumers with greater entitlement income are less likely to enter competitive employment (McGurk et al. 2003).

[1] Due to space limitations, only operationalization of variables significant at the bivariate or multivariate levels will be presented here. Information on the operationalization of all study variables is available from the first author.

Mental Health and Substance Use Status

Mental Illness Diagnosis

Eligibility for the study was contingent upon the consumer being diagnosed with a serious mental illness. Data on the consumer's primary mental diagnosis was collected from each agency's administrative records. The primary diagnosis for each consumer was recoded to one of the following five categories: Schizophrenia, Schizoaffective, Bipolar, Depression, or other. Each of the four named diagnoses were dummy-coded.

Substance Use Diagnosis

The primary substance use diagnosis was collected from each agency's administrative records. The primary substance use diagnosis was recoded as either substance dependence or substance abuse, reflecting the severity of the diagnosis of record. All consumers fit one of these two criteria.

Consumer Functioning and Life Status

Financial Adequacy

The financial adequacy measure is a self-rated, three-item scale that asks the consumer their feelings about their financial status. Items ask how consumers feel about the amount of money they get, how comfortable and well-off they are financially, and how much money they have to spend for fun. Each item has a range from 1 to 5 with response options ranging from Terrible (=1) to Very Pleased (=5). The measure is calculated by averaging the three scores. A higher score reflects more positive feelings about financial status. The measure has high internal consistency (Cronbach's alpha = .85) in the current study.

Work History and Work Interest

Previous Work History

Consumers were asked to identify their last three jobs, including information on their job duties, salary, approximate dates of employment, and reasons for leaving this position. Based upon the collected information, a dichotomous variable was constructed to represent previous work history. Previous work experience was coded as 1, consumers without previous work experience were coded as 0.

Perceived Disability

Each consumer in the study was asked at baseline about their current employment status. The response options to this question include employed, unemployed, homemaker, retired, or disabled. This variable was dichotomized to represent those who perceive themselves as disabled and those who do not (Disabled = 1). This item is important because it may reflect consumers' perception of their ability to be employed and even though disability beneficiary status has been found to not influence employment outcomes (Cook et al. 2005), consumers' perceptions of their status may discourage some consumers from seeking employment.

Organizational Characteristics

Supported Employment Fidelity

Each agency in the study participates in fidelity reviews conducted by the Ohio Supported Employment Coordinating Center of Excellence (Biegel et al. 2007). Supported Employment services are measured for programmatic fidelity using a 15-item scale (Bond et al. 1997). Scale items were generated by the developers of the Supported Employment Model, following published descriptions of the model (Becker and Drake 1993). The Supported Employment Fidelity scale has been shown to discriminate between programs which adhere to evidence-based Supported Employment as compared to other vocational models (Bond et al. 1997; Bond et al. 2001a, b). A recent analysis by a SAMHSA Work Group found that that the reliability and validity of the scale was high (Trabin et al. 2006). Each item in the scale is ranked from a value of 1–5 for a range of 15–75 points. A higher score on the scale reflects higher fidelity of implementation of the Supported Employment model.

Because the consumers are enrolled into the study on an on-going basis and the fidelity of the program can change over time, an average of two scores were used to represent the fidelity of each agency. The first score was from the time period closest to the start of the study (a 3-month window either before or after the first enrollment). The timing of the collection of second score varied by agency, ranging from 6 to 10 months after the initial measure.

Integrated Dual Disorders Treatment Fidelity

Each agency in the study participates in fidelity reviews conducted by the Ohio Substance Abuse and Mental Illness Coordinating Center of Excellence. Integrated dual disorders treatment (IDDT) services are measured using the IDDT Fidelity Scale (SAMHSA 2002). The scale consists of two components: general organizational characteristics (GOI) that measures 12 variables on a scale from 1 to 5 and treatment characteristics that measures 14 variables on a scale from 1 to 5. The full range of the combined scale is

from 26 to 130, with a higher score reflecting higher fidelity of implementation of the IDDT model. Given the lack of published studies of psychometric properties of this fidelity scale, the SAMHSA Work Group reported low reliability and validity for both the GOI and treatment characteristics components of the scale. (Trabin et al. 2006). A more recent study of the treatment characteristics portion of the scale reported good inter-rater reliability but mixed results of validity analyses (Wilson and Crisanti 2009). IDDT fidelity was measured for each agency at the beginning of the study period, defined as within 3 months prior to or following the initial enrollment of consumers into the study.

Dependent Variable

Referral to Supported Employment

The dependent variable is Referral to Supported Employment, measured as a dichotomous variable (referred/not referred) based upon the consumer's status in either the treatment or comparison group.

Analysis Plan

Data was entered into SPSS, double-entered, compared and cleaned prior to analysis. The univariate data was reviewed for dispersion, variation, and normalcy of the distribution of the data. Bivariate tests were utilized to detect variables that had a significant relationship to referral to supported employment. Significant variables were then tested for multi-collinearity. Logistic regression was used to represent the relationship between the significant independent variables and the dependent variable, Referral to Supported Employment.

Results

Study Sample

Three hundred and 27 consumers met eligibility criteria for the study, 151 from the Supported Employment intervention group and 176 in the comparison group. Ninety percent of the eligible consumers in the Supported Employment intervention group were able to be contacted for participation in the study, and 94% of these consented for an intervention group sample of 131 consumers. Almost two-thirds (62.5%) of comparison group consumers were able to be contacted for participation in the study and 84% of these consented for a comparison group of 91 consumers. Consumers in the intervention group represented from 12 to 21% of all consumers on IDDT teams at each of the four agencies. There were no significant differences in age, race, or gender of consumers in the intervention group as compared with all IDDT consumers who were not in the study sample at the study agencies. Comparison group consumers represented from 6 to 19% of all IDDT team consumers at each of the four agencies who were not referred to Supported Employment. There were no significant differences in age, race, or gender between consumers in the comparison group and IDDT consumers who were not selected to be in the study sample at the study agencies.

Since there was a fairly large difference between the treatment and comparison groups in the proportion of eligible consumers able to be contacted for the study, analyses were conducted to see if there were any statistically significant differences by age, race, or gender between the individuals able to be contacted and those not able to be contacted in the comparison group. Analyses of the data confirmed that, based on these three variables, there were no significant differences between the two groups.

For the analyses of the presented research question, 18 consumers from the Supported Employment group and 13 from the comparison group were excluded due to missing data or because they were employed at baseline. Consumers who were employed at baseline were excluded from analysis as it was assumed their interests in being referred to Supported Employment would differ from those who were unemployed and may bias the findings. The final sample for these analyses was 191 consumers (SE Treatment Group—$N = 113$; Comparison Group—$N = 78$).

Consumer and Organizational Characteristics

Study participants ranged in age from 18 to 68, with a mean age of 40.0 years (SD = 9.96). Almost two-thirds (61.8%) of study participants had a high school education or greater. Most (59.7%) of the study participants were White, the remaining were African American (35.6%) or of other origin (4.5%). Males were 61.8% of the study population. Almost two-thirds (65.4%) of the consumers lived independently, while 19.4% lived with a significant other and the rest lived in residential care (9.4%) or some other arrangement (5.8%). Three-fifths (60.7%) of the study population received monthly entitlement income. Of those who did receive entitlement income, the median amount was $603.00 per month. The most common primary mental illness diagnosis was Bipolar disorder (26.2%), followed by Schizoaffective disorder (24.6%), Major Depressive disorder (20.9%), and Schizophrenia (17.3%). The most common co-occurring substance use diagnosis was related to alcohol use only (34.6%). IDDT fidelity scores for the study agencies ranged from 74 to 105 with a mean of 90.2 for the combined four study agencies. One agency scored in the high fidelity implementation range of the IDDT

fidelity scale, two in the moderate fidelity range and one in the low fidelity implementation range as defined by McHugo et al. (2007). SE fidelity scores for the study agencies ranged from 50 to 62.5 with a mean of 57.2 for the four study agencies combined. None of the agencies scored in the high fidelity implementation range of the SE fidelity scale, with the scores of three agencies in the low fidelity implementation range and the fourth agency having very low fidelity implementation as defined by Bond et al. (2008). Focusing on the relationship between IDDT and SE fidelity by agency, one agency scored in the high range of the IDDT scale and low range of the SE scale, two agencies scored in the moderate range of the IDDT scale and low range of the SE scale, with the fourth agency scoring in the low range of the IDDT scale and very low range of the SE scale.

Bivariate Analyses

As a first step in the data analyses, bivariate analyses was conducted on all potential predictor variables by conceptual groups, exploring differences between the Supported Employment group and the comparison group. Means and percents of significant variables are presented in Table 1.

Demographic and Socioeconomic Status

Three variables in this category were found to have a significant relationship with the dependent variable. Consumers in the Supported Employment group were more likely to be White, were significantly less likely to receive entitlement income, and were less likely to live independently than consumers in the comparison group.

Mental Health and Substance Use

Consumers in the comparison group were twice as likely to have a diagnosis of Schizophrenia as consumers in the Supported Employment group and were also more likely to have to have a DSM-IV diagnosis of substance dependence (as opposed to a diagnosis of substance abuse) as compared to the Supported Employment group members.

Consumer Functioning and Life Status

The Supported Employment group perceived having a lower financial status than did comparison group members. In addition, work history and disability status were both significantly related with referral. More than twice as many consumers in the Supported Employment group as consumers in the comparison group had previously worked. Also, consumers who self-identified as disabled were less likely to be referred to Supported Employment than those who did not identify as disabled.

Organizational Characteristics

Supported Employment and IDDT fidelity scores were both significantly higher for the Supported Employment group than for the comparison group.

Table 1 Predictor variables of consumers referred to Supported employment and consumers in comparison group ($N = 191$)

Variables	Referred $n = 113$		Comparison $n = 78$	
	% or *M*	SD	% or *M*	SD
Demographic and socioeconomic characteristics				
Race (white = 0)*	66.4%		50.0%	
Entitlement income (yes = 1)**	53.1%		71.8%	
Housing status (lives independently = 1)*	54.9%		75.6%	
Mental health and substance use				
Diagnosed with schizophrenia (yes = 1)*	11.5%		25.6%	
Substance use diagnosis (dependent = 1)*	60.2%		75.6%	
Consumer functioning and life status				
Financial adequacy scale (range 1–5)**	1.797	0.898	2.23	0.906
Work history/work perception				
Employment history (previous work = 1)***	82.3%		35.9%	
Self-identify as disabled (yes = 1)***	31.0%		60.3%	
Organizational characteristics				
IDDT fidelity**	92.51	11.75	86.88	12.89
Supported employment fidelity**	58.25	5.36	55.74	5.81

* $P < .05$, ** $P < .01$, *** $P < .001$

Table 2 Summary of logistic regression analysis for variables predicting referral to supported employment ($n = 191$)

Variables	B	SE	Odds ratio
Demographic and socioeconomic characteristics			
Race (white = 0)	−0.177	0.436	0.838
Entitlement income (yes = 1)	−0.245	0.414	0.783
Housing status (lives independently = 1)	−0.512	0.369	0.600
Mental health and substance use			
Diagnosed with schizophrenia (yes = 1)	−0.471	0.514	0.624
Substance use diagnosis (dependent = 1)	−1.139**	0.422	0.320
Consumer functioning and life status			
Financial adequacy scale	−0.373	0.215	0.688
Work history/work interest			
Employment history (previous work = 1)	1.715**	0.384	5.554
Self-identify as disabled (yes = 1)	−0.978*	0.381	0.376
Organizational characteristics			
Supported employment fidelity	0.043	0.038	1.044

* $P < .05$, ** $P < .01$, based on Wald X^2 test

Logistic Regression Analysis

A logistic regression model included all of the variables that were found to have a significant relationship at the bivariate level, with the exception of IDDT fidelity, which was excluded from the regression model after it was identified as being highly correlated with the SE fidelity measure ($r = .91$). A test of the full model versus the model with intercept only was statistically significant $\chi 2$ (9, $N = 194$) = 69.483, $P < .001$. The model was able to correctly classify 62.8% of those who were assigned to the comparison group and 85% of those who were referred to Supported Employment, for an overall success rate of 75.9%.

Table 2 shows the logistic regression coefficient, Wald test and odds ratio for each of the predictors. Three coefficients were significant predictors controlling for other variables. First, consumers with previous work experience were five and a half times more likely to be referred as consumers with no previous competitive employment experience. Second, consumers who self-identified as disabled were less than two-thirds as likely to be referred. Finally, consumers who had a substance use diagnosis of dependence as opposed to a diagnosis of abuse were 68% less likely to be referred to Supported Employment.

Discussion

The strongest predictor of consumers being referred to Supported Employment services was a history of previous work experience. The role of previous employment has also been found in previous research to be a significant predictor of employment among consumers who have been referred to Supported Employment services (Anthony et al. 1990; Campbell 2007). Consumer and agency level barriers may help explain why consumers without previous work experience are less likely to be referred. Consumers without previous experience in competitive employment may be less likely to accept referrals for Supported Employment services because of fear that having a job will be too stressful, because they don't believe they can be successful in competitive employment, or because they lack motivation for employment (Braitman et al. 1995). Such consumers without previous work experience may have been in a "contemplation stage" (Connors et al. 2001) about employment; that is, interested, but not yet ready for referral to Supported Employment services.

Alternatively or simultaneously, agency case management staff may be less likely to refer consumers without previous work experience because of concerns of consumers' employability, because they don't fully embrace their role in making referrals, or because they may be insufficiently skilled in motivational techniques which can be utilized to assist consumers move through stages of change. Furthermore, perceptions by case managers that stigma against people with mental illness and substance use disorders may be a barrier to employment can limit their motivation to refer such consumers to Supported Employment (Gowdy et al. 2004).

There are several strategies that agencies can use to address these potential barriers to employment. First, agencies can hold educational sessions for consumers about employment to discuss potential fears and concerns of consumers about employment. These sessions can utilize consumers who have been successful in competitive

employment to tell their stories about how they overcame fears and concerns about employment. Second, the SE model does not have a pre-requisite that consumers should have previous work experience before being referred to the program, so it's essential that case managers' beliefs about employability of consumers not prevent consumers who want to work from being referred to this program. Therefore, agencies should monitor case managers' understanding of and commitment to the SE model and evaluate and advance case managers' knowledge and skills in applying appropriate motivational techniques on a regular and consistent basis. This becomes particularly important given the high turnover of mental health case managers (Aarons and Sawitzky 2006). For example, in our study, only one-third of the IDDT case managers who were trained at the beginning of the study remained in their position as a case manager for study consumers at the end of the study period. In addition, the agency with the highest turnover among their case manager staff had the lowest SE and IDDT Fidelity scores, suggesting that turnover may negatively effect successful implementation of these evidence-based models.

We found that consumers who had a diagnosis of substance dependence were 68% less likely to be referred to Supported Employment services. Consistent with other research (Sengupta et al. 1998), findings from this study (but not presented here) showed that substance dependence was not a barrier to actual employment. Of consumers who were referred for Supported Employment services, a diagnosis of substance dependence did not predict employment outcome (Biegel et al. in press). Yet, substance dependence was a predictor of *referral* for Supported Employment services.

Explanations of the lower levels of consumers with substance dependence who are referred for Supported Employment services are likely due to a combination of consumer and agency level barriers. Consumers with a diagnosis of substance dependence may be less interested in working or they may see themselves as less capable of working. Anecdotally, we received reports from some of the case managers in our study that such consumers are more likely to miss community-based or office-based appointments with their case managers and thus the case managers had fewer opportunities to discuss potential employment interests with them. Mental health case managers may be less likely to refer consumers with a diagnosis of substance dependence for Supported Employment services because they do not embrace the program's zero exclusion policy of fostering work interests with all consumers, or as was suggested above in the case of lower referrals of consumers without previous work experience, mental health case managers may believe that employers are less likely to hire these consumers. It is important that agencies help consumers to discuss and address their potential ambivalence, fears, or concerns about employment as well as helping case managers develop the positive attitudes and obtain the necessary skills to properly motivate consumers' behavior that may be discrepant with work goals. In addition, mental health agency supervisors should reinforce principles of behavioral change in supervision with staff observation and through competency-based training.

Consumers who self-identify as disabled were more than half as likely to be referred to Supported Employment as consumers who didn't self-identify as disabled. Further examination of this variable showed that self-identification as disabled was not related to their functioning, symptomatology, substance use, or quality of life. However, consumers who self-identified as disabled were more likely to receive entitlement income, were more likely to be satisfied with their financial status than consumers that did not self-identify as disabled, and were less likely to have been previously employed. Therefore, they may not have employment as a goal.

The lower number of referrals for Supported Employment services by consumers that self-identify as disabled also may be related to their viewing themselves as not, or less, capable of employment or that they and or their families might be concerned about jeopardizing their benefits status. It is suggested that agencies can address the fact that some consumers may believe themselves as less capable of work than other consumers in similar situations through psychosocial programs designed to increase self-efficacy and empowerment (Anthony 1993; Linhorst 2006). Consumers who have entitlement income often believe that employment would inevitably result in loss of benefits. This is one reason why benefits counseling is one of the essential services provided by Supported Employment programs. It is suggested that agencies offer materials and educational sessions highlighting basic benefits information and benefits counseling for consumers and their families to address potential concerns about the effects of employment on entitlement income.

Limitations of the current study include the limited number of agency study sites and small sample size, the representativeness of the randomly selected comparison group, and the data collection mechanisms. The small sample size did not allow for a fuller examination of the impact of agency and community characteristics on predictors of referral for supported employment. Furthermore, the IDDT and SE fidelity scores showed a lack of full implementation of these evidence-based practices, suggesting that key clinical and/or organizational components important to increasing the rate of consumer employment had been inadequately implemented at the time of the study. The sample size and limited number of agencies did not allow for a nested analysis that could inform our understanding about the relationship between fidelity and

consumer referral to Supported Employment. Concerning representativeness of the sample, as noted, there were no significant differences on age, race, or gender between consumers able and not able to be contacted for comparison group participation and no significant differences on age, race, or gender of intervention and comparison groups respectively as compared with all IDDT consumers at the study agencies who were not in the study sample. We do not have data on whether or not there were other potential differences between our study sample and all IDDT clients at the agencies. As noted, data for the project was triangulated with data sources including consumer questionnaires, data collection forms completed by case management and Supported Employment staff, and agency records. However, the need to incorporate data collection mechanisms for this project into normal clinical practice required some compromises in the extent of data that practically could be collected.

Future research is needed to obtain a fuller understanding of consumer and agency level barriers to referral to Supported Employment suggested by the current study. First, future studies should use larger sample sizes and include a larger number of agency sites. In order to more fully examine the role of fidelity in impacting referrals to supported employment, future studies should include a larger number of agencies representing a fuller range of fidelity scores, including agencies that have reached and maintained high SE fidelity, than was realized in the present study. A larger sample size would allow for a nested design that could detect important differences between agency sites. Such differences may be influenced by organizational structure, staff characteristics, or environmental characteristics within the community-based mental health agencies or the larger community. In addition, an increased sample size would improve sensitivity among individual characteristic differences that the current study may be too small to detect. Third, incorporation of a mixed methods model utilizing qualitative techniques would provide richer data and improve insights as to the barriers that consumers face and the roles of case managers as they interact with consumers.

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References

Aarons, G. A., & Sawitzky, A. C. (2006). Organizational climate partially mediates the effect of culture on work attitudes and staff turnover in mental health services. *Administration and Policy in Mental Health and Mental Health Services Research, 33*(3), 289–301.

Anthony, W. A. (1993). Recovery from mental illness: The guiding vision of the mental health service system in the 1990 s. *Psychosocial Rehabilitation Journal, 16*(4), 11–23.

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

Anthony, W. A., Cohen, M. R., & Farkas, M. D. (1990). *Psychiatric rehabilitation*. Boston, MA: Boston University, Center for Psychiatric Rehabilitation.

Becker, D. R., Bond, G. R., McCarthy, D., Thompson, D., Xie, H. Y., McHugo, G. J., et al. (2001). Converting day treatment centers to supported employment programs in Rhode Island. *Psychiatric Services, 52*(3), 351–357.

Becker, D. R., & Drake, R. E. (1993). *A working life: The individual placement and support (IPS) program*. Concord, NH: New Hampshire-Dartmouth Psychiatric Research Center.

Becker, D. R., Drake, R. E., & Naughton, W. (2005). Supported employment for people with co-occurring disorders. *Psychiatric Rehabilitation Journal, 28*(4), 332–338.

Bell, M., Greig, T., Gill, P., Whelahan, H., & Bryson, G. (2002). Work rehabilitation and patterns of substance use among persons with schizophrenia. *Psychiatric Services, 53*(1), 63–69.

Biegel, D. E., Johnsen, J. A., & Shafran, R. (1997). Overcoming barriers faced by African-American families with a family member with mental illness. *Family Relations, 46*(2), 163–178.

Biegel, D. E., & Leibbrandt, S. (2006). Social work practice with elders living in poverty. In B. Berkman & S. Ambruoso (Eds.), *Handbook of social work in health and aging* (pp. 167–180). New York: Oxford University Press.

Biegel, D. E., Stevenson, L., Beimers, D., Ronis, R. J., & Boyle, P. (in press). Predictors of competitive employment among consumers with co-occurring mental and substance use disorders. *Research on Social Work Practice*.

Biegel, D. E., Swanson, S., & Kola, L. (2007). The Ohio supported employment coordinating center of excellence. *Research on Social Work Practice, 17*(1/2), 504–512.

Bond, G. R. (2004). Supported employment: Evidence for an evidence-based practice. *Psychiatric Rehabilitation Journal, 27*(4), 345–359.

Bond, G. R., Becker, D. R., Drake, R. E., Rapp, C. A., Meisler, N., Lehman, A. F., et al. (2001a). Implementing supported employment as an evidence-based practice. *Psychiatric Services, 52*(3), 313–322.

Bond, G. R., Becker, D. R., Drake, R. E., & Vogler, K. M. (1997). A fidelity scale for the individual placement and support model of supported employment. *Rehabilitation Counseling Bulletin, 40*, 265–284.

Bond, G. R., Drake, R. E., & Becker, D. R. (2008a). An update on randomized controlled trials of evidence-based supported employment. *Psychiatric Rehabilitation Journal, 31*(4), 280–290.

Bond, G. R., McHugo, G. J., Becker, D. R., Rapp, C. A., & Whitley, R. (2008b). Fidelity of supported employment: Lessons learned from the national evidence-based practice project. *Psychiatric Rehabilitation Journal, 31*(4), 300–305.

Bond, G. R., Vogler, K. M., Resnick, S. G., Evans, L. J., Drake, R. E., & Becker, D. R. (2001b). Dimensions of supported employment: Factor structure of the IPS fidelity scale. *Journal of Mental Health, 10*, 283–393.

Braitman, A., Counts, P., Davenport, R., Zurlinden, B., Rogers, M., Clauss, J., et al. (1995). Comparison of barriers to employment for unemployed and employed clients in a case management program: An exploratory study. *Psychiatric Rehabilitation Journal, 19*(1), 3–8.

Campbell, K. (2007). *Consumer predictors of competitive employment outcomes in supported employment*. Unpublished doctoral dissertation, Purdue University, Indianapolis, IN.

Casper, E. S., & Carloni, C. (2006). Increasing utilization of supported employment services with the need for change scale. *Psychiatric Services, 57*(10), 1430–1434.

Connors, G. J., Donovan, D. M., & DiClemente, C. C. (2001). *Substance abuse treatment and the stages of change: Selecting and planning interventions*. New York: Guilford Publications, Inc.

Cook, J. A., Lehman, A. F., Drake, R., McFarlane, W. R., Gold, P. B., Leff, H. S., et al. (2005). Integration of psychiatric and vocational services: A multisite randomized, controlled trial of supported employment. *American Journal of Psychiatry, 162*(10), 1948–1956.

Cook, J. A., Razzano, L. A., Burke-Miller, J. K., Blyler, C. R., Leff, H. S., Mueser, K. T., et al. (2007). Effects of co-occurring disorders on employment outcomes in a multisite randomized study of supported employment for people with severe mental illness. *Journal of Rehabilitation Research and Development, 44*, 837–850.

Crane-Ross, D., Roth, D., & Lauber, B. G. (2000). Consumers' and case managers' perceptions of mental health and community support service needs. *Community Mental Health Journal, 36*(2), 161–178.

Drake, R. E., Becker, D. R., Biesanz, J. C., Torrey, W. C., McHugo, G. J., & Wyzik, P. F. (1994). Rehabilitative day treatment vs. supported employment: I. Vocational outcomes. *Community Mental Health Journal, 30*(5), 519–532.

Drake, R. E., Becker, D. R., Biesanz, J. C., Wyzik, P. F., & Torrey, W. C. (1996). Day treatment versus supported employment with persons with severe mental illness: A replication study. *Psychiatric Services, 47*(10), 1125–1127.

Drebing, C. E., Fleitas, R., Moore, A., Krebs, C., Ormer, A. V., Penk, W., et al. (2002). Patterns in work functioning and vocational rehabilitation associated with coexisting psychiatric and substance use disorders. *Rehabilitation Counseling Bulletin, 46*, 5–13.

Estroff, S. (1997). No other way to go: Application for disability income among persons with severe mental illness. In R. Bonnie & J. Monahan (Eds.), *Mental disorder, work disability and the law*. Chicago: University of Chicago Press.

Fabian, E. S. (1992). Longitudinal outcomes in supported employment: A survival analysis. *Rehabilitation Psychology, 37*, 23–36.

Gowdy, E. A., Carlson, L. S., & Rapp, C. A. (2004). Organizational factors differentiating high performing from low performing supported employment programs. *Psychiatric Rehabilitation Journal, 28*, 150–156.

Honey, A. (2003). The impact of mental illness on employment: Consumers' perspectives. *Journal of Prevention, Assessment & Rehabilitation, 20*(3), 267–276.

Kessler, R. C., Nelson, C. B., McGonagle, K. A., Edlund, M. J., Frank, R. G., & Leaf, P. J. (1996). The epidemiology of co-occurring addictive and mental disorders: Implications for prevention and service utilization. *American Journal of Orthopsychiatry, 66*, 17–31.

Laudet, A. B., Magura, S., Vogel, H. S., & Knight, E. L. (2002). Interest in and obstacles to pursuing work among unemployed dually diagnosed individuals. *Substance Use and Misuse, 27*(2), 145–170.

Lehman, A. F., Goldberg, R., Dixon, L. B., McNary, S., Postrado, L., Hackman, A., et al. (2002). Improving employment outcomes for persons with mental illnesses. *Archives of General Psychiatry, 59*(1), 165–172.

Linhorst, D. M. (2006). *Empowering people with severe mental illness*. New York: Oxford University Press.

Littrell, K. H., & Littrell, S. H. (1999). Schizophrenia and comorbid substance abuse. *Journal of the American Psychiatric Nurses Association, 5*(2), S17–S24.

Macias, C., DeCarlo, L. T., Wang, Q., Frey, J., & Barreira, P. (2001). Work interest as a predictor of competitive employment: Policy implications for psychiatric rehabilitation. *Administration and Policy in Mental Health, 28*(4), 279–297.

McGurk, S. R., Mueser, K. T., Harvey, P. D., LaPuglia, R., & Marder, J. (2003). Cognitive and symptom predictors of work outcomes for clients with Schizophrenia in supported employment. *Psychiatric Services, 54*(8), 1129–1135.

McHugo, G. J., Drake, R. E., Whitley, R., Bond, G. R., Campbell, K., Rapp, C. A., et al. (2007). Fidelity outcomes in the national evidence-based practices project. *Psychiatric Services, 58*, 1279–1284.

Miller, B., & Stull, D. (1999). Perceptions of community services by African American and White older persons. In M. L. Wykle & A. B. Ford (Eds.), *Serving minority elders in the 21st century* (pp. 267–287). New York: Springer.

Mitchell, D. P., Betts, A., & Epling, M. (2002). Youth employment, mental health and substance misuse: A challenge to mental health services. *Journal of Psychiatric and Mental Health Nursing, 9*, 191–198.

Mueser, K. T., Becker, D. R., & Wolfe, R. S. (2001). Supported employment, job preferences, job tenure and satisfaction. *Journal of Mental Health, 10*(4), 411–417.

Mueser, K. T., Clark, M., Haines, R. E., Drake, G. J., Bond, D. R., Becker, S. M., et al. (2004). The Hartford Study of supported employment for severe mental illness. *Journal of Consulting and Clinical Psychology, 72*, 479–490.

Mueser, K. T., Yarnold, P. R., Levinson, D. F., Singh, H., Bellack, A. S., Kee, K., et al. (1990). Prevalence of substance abuse in schizophrenia: Demographic and clinical correlates. *Schizophrenia Bulletin, 16*, 31–56.

Mueser, K. T., Yarnold, P. R., Rosenberg, S. D., Swett, C., Miles, K. M., & Hill, D. (2000). Substance use disorder in hospitalized severely mentally ill psychiatric patients: Prevalence, correlates, and subgroups. *Schizophrenia Bulletin, 26*, 179–192.

Ohio Department of Mental Health [ODMH] (2004). *The Ohio mental health consumer outcomes system: Procedure manual.* Columbus, OH.

Ohio's Mental Health Commission (2001). *Changing lives: Ohio's action agenda for mental health. Report of Ohio's mental health commission.* Columbus, OH.

Pickett-Schnek, S. A., Cook, J. A., Grey, D., Banghart, M., Rosenheck, R. A., & Randolph, F. (2002). Employment histories of homeless persons with mental illness. *Community Mental Health Journal, 38*(3), 199–211.

Rosenheck, R., Leslie, D., Keefe, R., McEvoy, J., Swartz, M., Perkins, D., et al. (2006). Barriers to employment for people with Schizophrenia. *American Journal of Psychiatry, 163*, 411–417.

Sengupta, A., Drake, R. E., & McHugo, G. J. (1998). The relationship between substance use disorder and vocational functioning among people with severe mental illness. *Psychiatric Rehabilitation Journal, 22*(1), 41–45.

Substance Abuse and Mental Health Services Administration [SAMHSA] (2002) *Co-occurring disorders: Integrated dual disorders treatment implementation resource kit* [Draft]. Rockville, MD.

Trabin, T., Minden, S. L., EBP Technical Expert Workgroup, DS2000+Team. (2006). *Decision support 2000+: Report on fidelity measures for evidence-based practices*. Retrieved from http://www.dhs.iowa.gov/mhdd/docs/EP-2-7.pdf May 30, 2009.

US Department of Health and Human Services (2005). *new freedom commission on mental health, subcommittee on evidence-based practices: Background paper.* DHHS Pub. No. SMA-05-4007. Rockville, MD.

Van Dongen, C. J. (1996). Quality of life and self-esteem in working and nonworking persons with mental illness. *Community Mental Health Journal, 32*(6), 535–539.

Wilson, D. C., & Crisanti, A. S. (2009). Psychometric properties of the Dual-Disorder Treatment Fidelity Scale: Inter-rater reliability and concurrent validity. *Community Mental Health Journal*, *45*(3), 171–178.

Wong, K. K., Chiu, R., Tang, B., Mak, D., Liu, J., & Chiu, S. N. (2008). A randomized controlled trial of a supported employment program for persons with long-term mental illness in Hong Kong. *Psychiatric Services, 59*(1), 84–90.