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THE EFFECTS OF CONSUMER CHARACTERISTICS AND TYPE OF EMPLOYMENT MODEL ON INDIVIDUAL OUTCOMES IN SUPPORTED EMPLOYMENT

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Although recent federal legislation has led to a proliferation of supported employment programs throughout the country, little information is available that documents the success of these programs. In the present study, we examined the effect of different consumer characteristics and alternative supported employment service delivery models on key employment outcomes including hourly wage, hours worked per week, increase in earnings after supported employment participation, and level of integration on the job. The employment outcomes of a sample of 1,550 individuals receiving supported employment services through 96 local programs in eight states were analyzed to determine the effects of the key independent variables of primary disability and type of employment model. Results indicate that all groups of individuals, regardless of their primary disability, benefited significantly from supported employment participation. Further, data indicate that the individual placement model generated employment outcomes superior to those resulting from group employment options, particularly work crews. Implications of the results for future program development activities are discussed.

DESCRIPTORS: supported employment, developmental disabilities

The supported employment movement represents an attempt to integrate individuals with developmental and other severe disabilities into the economic and social fabric of local communities and the mainstream of our nation's work force. The movement has stimulated a national policy that designates community-based work environments as the appropriate employment alternative for many persons traditionally served in segregated, congregate facilities such as sheltered workshops and work activity centers (Bates, 1989; Kregel & McDonald, 1988; Kregel & Wehman, in press).

The incorporation of supported employment into the Rehabilitation Act Amendments of 1986 (P.L. 99-506) has effectively led to a nationwide proliferation of local supported employment programs. In a national survey of supported employment implementation in 27 states, Wehman, Kregel, Shafer, and West (1989) found that 25,000 individuals were participating in supported employment in over 1,400 local programs. Early implementation focused on individuals with mental retardation, but recent efforts have attempted to include individuals with long-term mental illness, cerebral palsy, traumatic brain injury, and other physical and sensory disabilities (Kreutzer & Morton, 1988; Wood, 1988).

Four distinct supported employment service delivery models—the individual placement, enclave, work crew, and small business models—have been frequently described in the literature (Mank, Rhodes, & Bellamy, 1986; Moon & Griffin, 1988). Although it has been argued that these approaches are not the only appropriate supported employment service delivery models (Bellamy, 1985; Kregel & Wehman, in press), over 90% of all individuals participating in supported employment in 27 states are served by one of the four models (Wehman et al., 1989).

The individual placement model (Wehman & Kregel, 1985) focuses on placing a single individual in a community-based job. Typically, job site training is provided by an employment specialist until the individual is able to perform the job to the satisfaction of the employer, at which time on-site support is faded. Ongoing support services are then

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provided as needed throughout the course of the individual's employment.

In contrast to the individual placement model, the enclave, work crew, and small business models all provide services to groups of individuals with disabilities who work together in community-based employment settings. These models may be viewed as less preferable (Brown, 1989) because working with a group of other persons with disabilities identifies or stigmatizes the individual worker, thereby limiting the opportunity for social integration with nonhandicapped co-workers and supervisors. However, they may be justified by the assertion that individuals with more significant disabilities, who would be unable to succeed in a more independent, individual placement, could successfully participate in community-based employment through a group employment option (Rusch, Trach, Winking, Tines, & Johnson, 1989).

An enclave (Rhodes & Valenta, 1985) consists of a small group of individuals working in a single community business or industry, earning wages based on productivity. Continuous full-time supervision and training are provided by a supervisor who is employed by the host company or a local human services agency. In the work crew approach (Bourbeau, 1989) a small number of workers travel to different locations in the community performing specialized contract services. Crew members are generally employees of a nonprofit agency that secures the contracts and provides continuous training and supervision. In the small business or entrepreneurial model (O'Bryan, 1989), a manufacturing or subcontract operation is established that employs individuals with severe disabilities as well as workers without handicaps and provides one type of product or service.

Very little is presently known about the relative effectiveness of the various supported employment models. Most supported employment research has focused on the outcomes generated by a single supported employment model (individual placement) for consumers with a single disability (mental retardation). As supported employment programs expand in terms of number, variety, and the types of individuals served, efforts should be made to investigate the relative success of the different models currently in practice and the extent to which they affect employment outcomes for individuals with various disabilities.

The purpose of the present investigation was to examine the relative efficacy of different supported employment models in providing meaningful employment outcomes for individuals with disabilities. Specifically, this investigation addressed the relationship between an individual's primary disability and the key employment outcomes achieved through participation in supported employment (i.e., wages, hours worked, and level of integration). Additionally, the relation between the type of employment model in which an individual is served and the key employment outcomes achieved by the individual was investigated.

METHOD

Sample

Through a series of cooperative agreements, the Rehabilitation Research and Training Center on Supported Employment tracks the efforts of 96 local supported employment programs across eight states. Among the programs submitting information to the data base are large statewide supported employment programs operated by vocational rehabilitation agencies in Virginia, North Dakota, and Nevada, secondary school-based programs in Florida, a large regional program in California, and United Cerebral Palsy affiliates in New Jersey, Alabama, and Illinois.

A total of 1,608 individuals were represented in the data base at the time of the study. Of those, 1,550 (96%) were served in either the individual, enclave, work crew, or small business model of supported employment and as such comprised the sample for the investigation. The 58 individuals served in other types of supported employment models were not included in the subsequent analyses.

The primary disabilities of the individuals participating in supported employment were grouped into six categories. Individuals with mental retardation were classified based on their most recent

psychological evaluation as severe or profound (8.2% of the sample), moderate (27.4%), mild (36.2%), or borderline (9.2%) according to AAMD criteria (Grossman, 1983). The two other categories consisted of persons with long-term mental illness (10.2% of the sample) and persons with physical and sensory disabilities. The category of persons with physical and sensory disabilities, which represented 8.8% of the entire sample, consisted primarily of persons with cerebral palsy (42%) and traumatic brain injury (39%). The remaining individuals in this category were persons with sensory impairments (11%) and other physical disabilities (8%).

Most individuals were served in the individual placement model (78.4%), whereas the enclave model served 9.4%, the work crew model 8.5%, and the small business model 3.7%. The average age of individuals in the sample was 29.6 years, with individuals with moderate mental retardation being slightly younger and individuals with long-term mental illness slightly older than other groups. About half of all individuals (49.5%) lived with their parents or other relatives, 16.8% lived independently, and the remainder (33.7%) lived in some type of community residential alternative.

Over three quarters of all individuals (81.4%) earned over the federal minimum wage of $3.35 per hour. The vast majority of individuals worked part time (71.8%) according to the Bureau of Labor criterion of 35 hours per week for full-time employment. Individuals with severe or profound mental retardation were less likely to earn minimum wage or work full time than any other group. Thirty-six percent received no fringe benefits, with annual leave (45.6%), sick leave (34.0%), and medical insurance (33.2%) being the most frequently reported benefits.

A preliminary analysis was conducted to examine the relation between an individual's primary disability and the type of employment model in which the individual was likely to be served. Table 1 indicates the percentage of individuals in each of the six categories of primary disabilities served in the four employment models. Chi-square analysis indicated a significant difference in the models in which individuals with various primary disabilities were served: $\chi^2(15, N = 1{,}550) = 74.518, p < .0001$. An examination of individual cell chi squares indicated that individuals with severe or profound mental retardation were more likely to be served in enclaves and less likely to be served in the individual placement model. Individuals with moderate mental retardation, long-term mental illness, and physical and sensory disabilities were less likely to participate in the small business model.

Instrumentation

The Supported Employment Management Information System is an individual consumer tracking system that consists of 243 distinct data elements that are obtained at various stages of each individual's employment experience. Nine different data forms collect information on consumer demographics, preemployment work history and functional characteristics, characteristics of the specific job or jobs held by the consumer, employment outcome information (including wages earned, hours worked, benefits received, level of integration in the workplace, reasons for separation, and supervisor evaluation of work performance), and the amount and type of service provided to the consumer by the employment specialist.

Reliability

Numerous steps were taken to ensure and verify the accuracy and reliability of the data obtained for the analysis. All employment specialists were given 6 hours of training in the completion of the data forms and the use of the management information system prior to initial data collection. Follow-up training was then provided as necessary, and staff from the RRTC Data Management Unit were available to answer questions on a daily basis. In addition, a comprehensive Data Management System Operations Manual (RRTC, 1987) was developed and disseminated to all employment specialists; the manual provided definitions of all data elements and precise directions for form completion.

Completed forms were sent to the RRTC for processing and analysis. Each form was first visually

Table 1
Percentage of Individuals in Various Employment Models

Primary disability	Type of employment model*			
	Individual placement (n = 1,215)	Enclave model (n = 145)	Work crew model (n = 132)	Small business model (n = 58)
Severe/profound mental retardation (n = 127)	64.4	22.6	6.1	6.9
Moderate mental retardation (n = 424)	82.7	8.0	8.3	1.0
Mild mental retardation (n = 561)	74.4	9.5	10.3	5.8
Borderline mental retardation (n = 143)	78.1	6.3	7.1	8.5
Long-term mental illness (n = 158)	93.4	0.0	3.3	3.3
Physical and sensory disabilities (n = 137)	87.6	4.4	4.4	3.6

* χ^2 (15, N = 1,550) = 74.52, $p < .0001$.

inspected by a data management specialist for completeness and consistency with any other information already available regarding the consumer. If necessary, the data management specialist contacted the employment specialist who submitted the form to obtain missing information, verify particular responses, or request additional information. The forms were then entered for computer analysis using data entry programs that contained error check procedures; these procedures prohibited the entry of values that were out of range for a particular data element or were inconsistent with previously entered information regarding a specific consumer. Finally, key information on each consumer was summarized and returned to the local agency on a quarterly basis to allow the local employment specialists to review and confirm the accuracy of the information.

Data Analysis

The independent variables for the investigation were the primary disability of the consumer and the type of employment model in which the individual participated. Key dependent variables examined were wages in supported employment, hours worked per week, preemployment work histories, functional characteristics of the individual, and level of integration provided by a particular job setting. Level of integration was measured by employment specialists using a 5-point rating scale that focused on physical proximity, opportunities for interaction, and task interdependence.

Chi-square analyses were completed to investigate the relation between primary disability and type of employment model and categorical variables such as functional characteristics. When significant differences were discovered, individual cell chi squares were examined to determine the contribution of a particular cell to the total chi square. To examine the relation between primary disability and type of employment model and the continuous variables of wages earned, hours worked, and level of integration, one-way analyses of variance (ANOVA) were performed to determine the effect of the independent variable. Where differences were detected, Student-Newman-Keuls post-hoc tests were conducted to identify the group means that were significantly different.

RESULTS

Relation Between Primary Disability and Employment Outcomes

The hourly wage and hours worked per week for individuals with various primary disabilities are contained in Table 2. Significant effects for primary disability were found for both hourly wage, $F(5, 1549) = 29.80$, $p < .0001$, and hours worked per week, $F(5, 1549) = 8.50$, $p < .0001$. Post-hoc tests revealed that persons with long-term mental illness and physical and sensory disabilities earned significantly higher hourly wages than individuals

Table 2
Wage Outcomes for Individuals with Various Primary Disabilities (N = 1,550)

Primary disability	Hourly wage	Hours worked per week	Monthly earnings prior to supported employment	Monthly earnings during supported employment	Percentage change
Severe/profound mental retardation	$3.09*	22.7**	$45	$286***	536
Moderate mental retardation	3.30	26.8	55	372	576
Mild mental retardation	3.15	26.5	95	361	280
Borderline mental retardation	3.27	27.6	80	392	390
Long-term mental illness	3.74	28.0	102	454	345
Physical and sensory disabilities	4.28	29.6	87	556	539

* $F(5, 1549) = 30.75, p < .0001$.
** $F(5, 1549) = 29.80, p < .0001$.
*** $F(5, 1549) = 8.50, p < .0001$.

with any level of mental retardation. Post-hoc tests also revealed that persons with physical and sensory disabilities worked a significantly greater number of hours per week than individuals with severe or profound mental retardation.

To determine the change in individuals' monthly earnings prior to and during supported employment participation, mean monthly earnings for individuals prior to referral to supported employment and during supported employment participation were computed for each primary disability. Analysis of variance failed to yield significance between primary disability and monthly wage prior to supported employment. Significance was found between primary disability and monthly wage during supported employment participation, $F(5, 1549) = 30.75, p < .0001$. Post-hoc tests revealed that persons with long-term mental illness and physical and sensory disabilities earned more per month than all other groups and persons with severe or profound mental retardation earned less than all other groups.

The effect of supported employment participation on the monthly earnings of individuals with various primary disabilities is also summarized in Table 2. Supported employment participation had a dramatic increase on the monthly wage of participants in all groups. The largest percentage increases were found for individuals with moderate mental retardation (576%), physical and sensory disabilities (539%), and severe or profound mental retardation (536%). Individuals with mild mental retardation experienced the smallest increase (280%), less than half that experienced by persons with moderate mental retardation.

Relation Between Type of Model and Employment Outcomes

As indicated in Table 3, analysis of variance revealed a significant relation between type of employment model and hourly wage, $F(3, 1549) = 243.27, p < .0001$. Post-hoc tests indicated that persons in individual placements earned significantly higher hourly wages than persons served in any other model, and persons in the small business option earned significantly lower hourly wages when compared to all other groups. Analysis of variance did not yield significance between type of model and monthly wages earned prior to supported employment. Significant differences were found between employment model and wages earned during supported employment, $F(3, 1549) = 69.16, p < .0001$.

Table 3 also summarizes the effect of supported employment participation on the monthly wages earned by individuals in the four employment models. Participants in all models experienced substantial increases in their monthly earnings. Work crew participants experienced a relatively small increase of 164%.

Table 3
Wage Outcomes for Individuals in Various Employment Models (N = 1,550)

Employment model	Hourly wage	Hours worked per week	Monthly earnings prior to supported employment	Monthly earnings during supported employment	Percentage change
Individual placement	$3.68*	26.5	$80	$424**	430
Enclaves	3.25	28.7	67	301	349
Work crews	2.32	27.6	96	253	164
Small business	1.30	25.4	46	149	224

* $F(3, 2549) = 243.27$, $p < .0001$.
** $F(3, 1549) = 69.16$, $p < .0001$.

Level of Integration

The potential of a supported employment setting to provide participants the opportunity for physical and social integration with nonhandicapped coworkers and the public at large was assessed by specialists using a 5-point rating scale. Mean ratings were computed for each of the primary disability categories and employment models. Analysis of variance did not identify a significant relation between primary disability and level of integration. However, a significant relation was found between type of employment model and level of integration, $F(3, 1549) = 64.85$, $p < .0001$. Post-hoc tests indicated that both enclaves ($M = 2.82$) and work crews ($M = 2.07$) provided a significantly lower opportunity for physical and social integration than individual placement ($M = 3.19$) or small business ($M = 3.07$) models, with work crews in particular lower than all other models.

Functional Characteristics

In view of the fact that type of employment model was found to be a significant determinant of level of integration and of monthly wages earned during supported employment, additional analyses were performed to examine the functional characteristics of individuals participating in each of the four models. The percentage of individuals in each model possessing significant impairments in five key functional areas is contained in Table 4. Chi-square analyses were performed to investigate the relationship between type of employment model and functional characteristics. A significant relationship was found between type of employment model and the presence of an ambulation impairment, $\chi^2(3, N = 1,550) = 38.115$, $p < .0001$. Significant relations were not found between type of model and vision, hearing, fine motor, or communication impairments.

DISCUSSION

The results of the present study clearly document that supported employment is fulfilling its major purpose. Large numbers of individuals previously unemployed or underemployed are earning wages three to five times greater than they were prior to entering supported employment. They are also working in community-based settings providing substantial opportunities for interaction with coworkers and other members of the community. Supported employment appears to be effective for individuals with a variety of primary disabilities. However, not all supported employment programs appear to be equally effective. Group employment options, particularly work crews, do not provide earnings or integration opportunities available to participants in the individual placement model.

Increased Wages Earned by Participants

As stated previously, the intent of the federal/state supported employment initiative is to provide paid employment for individuals who have been traditionally unable to obtain or maintain such employment. If wages earned prior to supported em-

Table 4
Percentage of Individuals in Various Employment Models Possessing Key Functional Characteristics ($N = 1,550$)

Characteristic	Type of employment model			
	Individual placement ($n = 1,215$)	Enclave model ($n = 145$)	Work crew model ($n = 132$)	Small business model ($n = 58$)
Ambulation impairment*	13.1	14.8	12.2	47.5
Visual impairment	9.6	8.4	13.0	15.0
Hearing impairment	6.8	8.5	7.6	5.0
Fine motor impairment	12.1	12.8	6.1	17.5
Communication impairment	5.1	10.6	7.0	5.0

Note: The percentages reported indicate the percentage of individuals in each type of employment model possessing any type of functional impairment in each of the categories.
* χ^2 (15, $N = 1,550$) = 74.52, $p < .0001$.

ployment participation are accepted as a valid indicator of unemployment or underemployment, the results of the present study clearly provide powerful evidence of the effectiveness of supported employment in the 96 programs comprising the study sample. When monthly earnings prior to supported employment were compared to earnings during supported employment, individuals in all disability groups experienced dramatic increases, ranging from 280% to 574%.

It is interesting that the individuals who reported the lowest monthly earnings prior to supported employment (persons with severe, profound, or moderate mental retardation, along with persons with physical and sensory disabilities) experienced the greatest increase in earnings after supported employment participation (539% for persons with severe or profound mental retardation; 574% for persons with moderate mental retardation). The results clearly document that individuals with moderate, severe, or profound mental retardation, until recently thought to be unable to participate in competitive work settings or earn meaningful wages, experience dramatic increases in their earning power after participation in supported employment.

Another important finding is the fact that individuals with long-term mental illness and physical and sensory disabilities also experienced significant wage increases through supported employment participation. Efforts to include persons with long-term mental illness, cerebral palsy, traumatic brain injury, and other physical and sensory disabilities have been hampered by conflicting program goals and funding policies that limit the availability of ongoing support services (Noble & Collignon, 1987). Results indicating that supported employment is able to improve the earning capacity and promote the vocational integration of these individuals should reinforce efforts to increase their level of participation in supported employment.

The Effectiveness of Various Employment Models

The results document that group employment models, particularly work crews, generate employment outcomes clearly inferior to those generated by the individual placement model. Work crew participants earned $1.36 less per hour, and $171 less per month, on average, than persons in the individual placement model. The increase in wages earned by persons in work crews prior to and during supported employment was less than that for any other model and less than half of the increase generated by the enclave and individual placement approaches. Work crew participants were placed in employment settings that provided far less opportunity for physical and social integration with coworkers and the public at large. When evaluated in light of the basic premise of supported employment—paid work in integrated work settings—the findings of the present study indicate that work

crews are clearly less effective than other supported employment alternatives and lend support to the efforts of Brown (1989) and others to discredit work crews as a viable supported employment service delivery model. It should be noted that the small business model also generated relatively poor employment outcomes. However, the small business model actually provided more integration than the work crew model, and there was some evidence to indicate that the small business model was serving individuals with more severe disabilities.

The unfavorable outcomes generated by the work crew model could perhaps be justified if the individuals served in the model were found to possess characteristics that would limit their participation in models that produce more positive employment outcomes. Although the present study did not address all potential characteristics, the results presented do not support this justification. Work crews were not made up of a preponderance of individuals with severe or profound mental retardation; in fact, the largest group of work crew participants consisted of individuals with mild mental retardation. The previous employment histories of work crew participants, in terms of work activity center attendance, previous community-based employment experience, and amount of public financial support at the time of supported employment placement, were no different than those of individuals in any of the other models. Also, they were no more likely than any other group to possess significant functional limitations in areas such as ambulation, vision, hearing, fine motor skills, or communication.

The present study found that work crews generate employment outcomes inferior to those of other supported employment models and failed to identify any characteristics of the individuals participating in the work crew model that would account for these outcomes. In light of these findings, it falls upon proponents of the work crew model to present (a) evidence that documents employment outcomes generated by work crew participation that exceed those found in the study sample (i.e., the work crews in the present sample do not reflect the outcomes of other work crews in operation in other parts of the country, such as work crews operated under the provisions of the Javits, Wagner, O'Day Act) or (b) evidence that refutes the notion that work crew participants do not possess functional limitations or any other characteristics that would preclude their participation in more effective supported employment alternatives.

Implications for Program Development

The findings of the present study are limited in that they are derived from only those individuals and programs that contribute data to the Supported Employment Management Information System. Further, two variables used in the analysis, key functional characteristics and level of integration, involve clinical judgments on the part of individual employment specialists. Although steps were taken to maximize the reliability of the information provided, some variability in the way individual employment specialists rated these items may remain.

However, the size of the sample for the study was quite large, and the data were generated from numerous programs in several states. Further, the rate of participation by individuals with various primary disabilities and the types of employment models represented in the sample are consistent with those reported in national studies of supported employment implementation (Wehman et al., 1989). Based on the results presented above, two recommendations are made for future research and program development efforts.

First, current efforts to include persons with severe or profound mental retardation, long-term mental illness, and physical or sensory disabilities such as cerebral palsy or traumatic brain injury in supported employment programs should be significantly expanded. Funding barriers in many states make it difficult at the present time to provide supported employment services to persons with cerebral palsy, traumatic brain injury, and other physical and sensory disabilities. Individuals with severe or profound mental retardation have yet to be fully served in supported employment due to a number of factors, including attitudinal barriers and lack of effective training technologies (Kregel & Wehman, in press). However, these individuals were among those who benefited most from supported

employment participation. The obvious benefits of supported employment participation for these individuals indicate an urgent need for a concerted federal, state, and local effort to overcome funding and programmatic barriers to provide supported employment services to these underserved populations.

Second, the role of group employment options, particularly mobile crews, should be critically examined. The results of the present study indicate that the most significant predictor of an individual's supported employment outcomes is the type of employment model into which an individual is placed. In light of these findings, several steps should be taken. The individual placement model should be viewed as the preferred supported employment alternative for all individuals able to succeed in the model. Group employment options, when used, should be reserved for individuals who have demonstrated an inability to succeed in the individual placement approach. Significant research and development efforts must focus on the development of assessment strategies that will prevent individuals from being inappropriately placed in group employment options.

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