AN ANALYSIS OF THE PROCEDURAL COMPONENTS OF SUPPORTED EMPLOYMENT PROGRAMS ASSOCIATED WITH EMPLOYMENT OUTCOMES

JOHN McDONNELL, DIANE NOFS, AND MICHAEL HARDMAN

UNIVERSITY OF UTAH

CATHY CHAMBLESS

UTAH STATE OFFICE OF REHABILITATION

This study examined the relation between the procedural components of supported employment programs and employment outcomes for 120 individuals with disabilities. These individuals were involved in supported employment programs established through the Utah Supported Employment Project. The results suggest that successful implementation of supported employment services led to ongoing employment of study participants in community work sites, increased wages, and ongoing opportunities for workers to interact with nondisabled peers. In addition, several procedural components were found to be strongly associated with successful employment outcomes for workers. Results of the study are discussed in terms of the training needs of supported employment program staff and future research for the dissemination of a cohesive technology of supported employment.

DESCRIPTORS: supported employment, employment outcomes, procedural components, developmental disabilities, program evaluation

Supported employment services for individuals with disabilities have expanded dramatically in the last 5 years. This rapid growth has been fueled by increasing consumer and professional awareness of the benefits of supported employment for individuals with disabilities (Hill, Wehman, Kregel, Banks, & Metzler, 1987; Mank, Rhodes, & Bellamy, 1986; Nobel & Conley, 1987; Vogelsberg, 1986; Wehman, 1986) and by a substantial federal investment in the expansion of supported employment programs nationally (*Federal Register*, 1987). The supported employment initiative has created the first real opportunity for many individuals with disabilities to find paid community employment.

Two variables seem to contribute to the success of supported employment (Bellamy, Rhodes, Mank,

& Albin, 1988; Wehman & Moon, 1988). First, supported employment programs have the flexibility to provide whatever services are necessary to ensure that the individual is successful on the job. These services may include direct training in work and work-related skills, modifying maladaptive behavior, modifying the stimulus conditions in the work site, coordinating training and production demands with the employer and co-workers, coordinating training activities with guardians and other service providers, and many others. Second, supported employment programs are structured to provide services for as long as necessary to ensure the ongoing success of the individual on the job. These expanded functions have allowed programs to provide employment opportunities to individuals who previously would not have benefited from traditional rehabilitation services.

Accomplishing these outcomes, however, has required programs to adopt and implement procedures from a wide range of professional disciplines including applied behavior analysis, rehabilitation, social work, marketing, and small business management. Some of the procedures that have been identified as being the most important to the successful implementation of supported employment are (a) using systematic marketing strategies to de-

The authors wish to express their gratitude to Barrie Nielson, Rob Jenson, Pam Lodefink, Pat Sanchez, and Tamar Lenowitz for their assistance in carrying out this study.

Development of this report was supported in part by GOO8535187, funded through the Rehabilitation Services Administration, U.S. Department of Education. The opinions expressed herein do not necessarily reflect policies or positions of the U.S. Department of Education.

Correspondence (including requests for copies of the Utah Supported Employment Project Implementation Checklist) should be sent to John McDonnell, Department of Special Education, University of Utah, Salt Lake City, Utah 84112.

velop job opportunities (Bellamy et al., 1988; Gardner, Chapman, Donaldson, & Jacobson, 1988; Johnsen & Schalock, 1989; Kiernan, Carter, & Bronstein, 1989; Shafer, Parent, & Everson, 1988), (b) matching worker strengths and weaknesses to the demands of the job (Johnsen & Schalock, 1989; Martin, 1986; Moss, Dineen, & Ford, 1988; Vogelsberg, Spaulding, Patterson, Schenck, & Phillips, 1984; Wehman & Kregel, 1985), (c) basing the design of training programs on a comprehensive analysis of the job site (Bellamy, Horner, & Inman, 1979; Connis, Sowers, & Thompson, 1981; Hanley-Maxwell, 1986; Rusch & Mithaug, 1980; Wehman, 1981), (d) using systematic training procedures to bring the individual's responses under control of the natural antecedent and consequent stimuli found in the job site (Bellamy et al., 1979; Connis et al., 1981; Hanley-Maxwell, 1986; Rusch & Mithaug, 1980; Wehman, 1981), (e) using observational data to modify training procedures and to maintain job performance (Bellamy et al., 1979; Connis et al., 1981; Rusch & Mithaug, 1980; Wehman, 1981) and (f) using program management and accounting procedures that meet the unique needs of small businesses (Bellamy et al., 1988; Boles, Wald, & Xiaoyan, 1989; Gardner et al., 1988). Unfortunately the relative importance of these and other procedural components in achieving employment outcomes for individuals with disabilities has not been thoroughly examined.

Since 1985 the Utah Supported Employment Project (USEP) has developed a number of supported employment programs throughout the state of Utah. The design and implementation of these programs was guided by a compilation of "best practice" procedures that appeared to, based on previous research, contribute to the overall success of supported employment programs. As part of its overall evaluation, the USEP, in cooperation with the Department of Special Education at the University of Utah, attempted to isolate the procedures and program features that contributed to the efficacy of these supported employment programs. The purpose of the present study was to examine the relation between the procedures included in the

USEP implementation framework and the employment outcomes achieved for individuals with disabilities served in supported employment programs in the state of Utah.

METHOD

Participants

The study included 120 individuals with disabilities. Sixty-two percent (74) of the participants were male and 38% (46) were female. The participants ranged in age from 22 to 66 years old, with an average age of 33 years. The primary classifications of the study participants were mental retardation (93.2%; 112), traumatic brain injury (6.7%; 8), and physically disabled (0.1%; 1). The average IQ of study participants was 54.9 (range, 10 to 82).

Eighty-seven percent (105) of the individuals had previously been served in day programs funded by state social service agencies. Approximately 83% (99) of these individuals had been served in sheltered workshop programs, 2.5% (3) served in work activity programs, and 0.8% (1) had been placed in transitional employment programs. Of the remaining participants, 10% (12) had been on waiting lists for employment services, 2.5% (3) were recent high school graduates, and 0.8% (1) had recently been terminated from a competitive employment placement.

Service Alternatives

Participants were served in 11 supported employment programs. These programs were funded jointly by the USEP and the Utah Division for Services to the Handicapped (DSH). Participating programs were selected by staff from the USEP, DSH, and the University of Utah based on their potential capacity to provide supported employment services to individuals with disabilities. To the greatest extent possible, programs were also selected to sample the functioning level and primary classifications of workers and geographic location. Seven programs were established during the 1986–1987 fiscal year and four were established in the 1987–1988 fiscal year. The programs used one of

three supported employment models: supported jobs, enclaves, and mobile work crews (Mank et al., 1986).

In the supported jobs model individuals with disabilities are employed by a local business. A job coach, who is employed by the supported employment program, provides job training and ongoing support to workers. In the enclave model, a small number of individuals with disabilities (fewer than 8 as prescribed by federal regulation) are placed together for employment in a local industry or business. They are trained to complete jobs and are given ongoing support by a job coach or enclave supervisor who is usually employed by the supported employment program. Finally, the mobile work crew model creates employment for a small group of individuals with disabilities (fewer than 8 as prescribed by federal regulation) through multiple service contracts with individual community members or local businesses. Training and ongoing support are provided by a job coach or work crew supervisor who is usually employed by the supported employment program. Fifty-three percent (64) of the study participants were served in the supported job programs, 25% (30) were served in enclave programs, and 22% (26) were served in work crew programs.

Dependent Variables

The dependent variables in this study reflected the expected outcomes of supported employment programs serving individuals with disabilities (Bellamy et al., 1988; *Federal Register*, 1987; Wehman & Moon, 1988). These included (a) the average number of hours an individual worked per week, (b) the average weekly wages earned by individuals receiving supported employment services, (c) job retention, and (d) the level of integration achieved by workers in the job site.

During the first year of a program's operation, data on the dependent variables were gathered for all individuals receiving supported employment services from the agency every 3 months. During the second year of a program's operation, data were gathered on these variables every 6 months.

Average work hours per week. This measure reflected the average number of hours of paid work that an individual completed each week while receiving supported employment services. Average hours of work per week were calculated by dividing the total number of hours of paid work completed by an individual by the total number of calendar weeks in which the individual had received supported employment services.

Average weekly wages. This measure reflected the average number of dollars earned by a worker each week. Average weekly wages were calculated by dividing the total wages earned by a worker by the total number of calendar weeks in which the individual had been employed.

Job retention. This measure reflected the number of calendar days that a worker remained on a job and was summarized as a simple frequency count. This measure did not reflect the actual number of days of work completed by an individual.

Level of integration. Level of integration was assessed through a 6-point rating scale (Galloway & O'Brien, 1981). The scale was designed to describe the potential opportunities for contact between individuals with disabilities and their non-disabled peers. The scale did not describe the actual frequency or quality of interactions. For example, a rating of 1 described a worker's level of integration as "the person experiences no contact with non-disabled people other than service workers, immediate family members, or volunteers." A rating of 6 described the worker's level of integration as "the person has contact with nondisabled workers within and outside of the work site."

Procedures

All staff in programs providing supported employment services through the USEP were provided comprehensive training on the best practice procedural components of supported employment programs. Progress towards successful implementation of these procedural components was assessed through a standardized implementation checklist. Additional training and technical assistance provided to programs were identified through a discrepancy

Table 1
Illustrative Evaluation Criteria

Program component	Criteria
Design of training programs	<ol style="list-style-type: none"> 1. Written training programs are developed for each work assignment. 2. Training programs must include: <ol style="list-style-type: none"> a. A task analysis specifying discriminative stimuli and response components. b. Time and quality requirements of each job component. c. Assistance strategies and methods for fading prompts. d. Strategies for reinforcing correct responses and correcting errors. e. A data collection system.

analysis between identified best practice procedures and actual program operation.

Procedural components. Supported employment programs established through the USEP were required to use a prescribed set of procedures in providing supported employment services to individuals with disabilities (see Nofs, McDonnell, & Hardman, 1986). These procedural components were based on the previous work of several demonstration projects that had successfully placed individuals with disabilities in paid community employment (see Bellamy et al., 1988; Moon, Goodall, Barcus, & Brooke, 1986; Rusch & Mithaug, 1980; Vogelsberg et al., 1984). The Appendix presents these components and describes the general requirements that were established for supported employment programs participating in the USEP. More specific criteria for successful implementation of each procedural component were developed to aid in the evaluation of participating programs. An example of these criteria is presented in Table 1.

The evaluation criteria for each procedural component were included in a standardized implementation checklist (Paine, Bellamy, & Wilcox, 1984). The fidelity of implementation of each procedural component was rated on a 3-point scale ranging from 0 to 2. (A 0 indicated that the program did not meet any of the criteria developed for the procedural component, a 1 indicated that the program met some but not all of the criteria, and a 2 indicated that the program had met all the criteria established for the procedural component.)

Training procedures. Job coaches were given 32 hr of training on procedural components rele-

vant to their job (see Bellamy et al., 1988; Inge, Barcus, & Everson, 1988; Renzaglia, 1988). Training for job coaches emphasized four specific areas including developing Individualized Program Plans (IPP), client assessment and job matching, job analysis, and design and implementation of training programs. The training focused on the criteria contained in the standardized implementation checklist and incorporated a variety of formats including lectures, small group activities, and on-site observations.

Program directors were given 16 hr of training on the procedural components relevant to their roles in implementing supported employment programs (see Bellamy et al., 1988; Inge et al., 1988; Renzaglia, 1988). Directors were given an overview of IPP procedures, client assessment and job matching, job analysis, and design and implementation of training programs. They also received specific training in the areas of program management including marketing, development of services contracts, accounting procedures, and staff management and evaluation. This training also focused specifically on the criteria contained in the standardized implementation checklist and incorporated a variety of formats.

Data collection procedures. The extent to which each participating program achieved successful outcomes and implemented required procedural components was assessed quarterly during the first year of its operation and semiannually during the second year. The supported employment programs established during the 1986–1987 fiscal year received a preimplementation evaluation, four quarterly

evaluations, and two semiannual evaluations. Supported employment programs established during the 1987–1988 fiscal year were given one preimplementation evaluation and four quarterly evaluations.

Each evaluation was conducted by a group of staff members from the USEP, DSH, and the University of Utah. Following data collection, the accuracy of the information was reviewed by all team members and the program's performance on each dependent and independent variable was summarized. The evaluation team used the discrepancy between the criteria included in the standardized implementation checklist and the program's actual performance to identify specific objectives to improve the implementation of supported employment services. Training and technical assistance were provided by one or more of the members of the evaluation team to assist the agency in meeting these objectives.

Interrater reliability. Data on interrater reliability were gathered during 28% (19) of all implementation reviews conducted between July 1, 1986 and June 30, 1988. During the reliability session, two members of the evaluation team independently assessed all dependent and independent variables. Interrater reliability was calculated for the dependent variables by dividing the number of agreements between raters on the values obtained for each outcome (i.e., hours of paid work, average weekly wages, days of employment, and level of integration) for each participant by the number of agreements plus disagreements multiplied by 100. Interrater reliability was also calculated for each of the independent variables (i.e., required procedural components) using the same procedure. Interrater reliability for the dependent variables ranged between 90% and 100% across all participants and reliability sessions with an average of 99%. Interrater reliability for the independent variables ranged between 81% and 100% with an average of 98%.

Data analysis. Analysis of the data was conducted in three phases. First, descriptive statistics for each outcome were calculated. Second, Pearson-product correlations were calculated between outcomes and the program's level of implementation of required procedural components. Both of these

analyses were based on data gathered during the second semiannual evaluation conducted with programs established during the 1986–1987 fiscal year and the fourth quarterly review conducted with programs established in the 1987–1988 fiscal year.

Additional correlations were calculated between outcomes and selected demographic characteristics of the study participants. These demographic characteristics included (a) the sex of the worker, (b) the IQ of worker, (c) the previous employment placement of the participant (placements were ordered on a 5-point scale in terms of their general emphasis in achieving paid community employment for individuals with disabilities), (d) the participant's residential program (programs were ordered on a 5-point scale in terms of conventional perceptions of their restrictiveness for adults with disabilities), and (e) the type of transportation used by the worker to get to and from the job site (this variable rated modes of transportation on a 4-point scale in terms of the participant's relative independence).

In the third phase of data analysis, a regression analysis was conducted for each outcome. The purpose of this analysis was to determine the overall contribution of required procedural components to the variance associated with each outcome. This analysis used a repeated measures design (Pedhazur, 1982). Data entered into these analyses were obtained from the fourth quarterly evaluation and semiannual evaluations for programs established in 1986–1987 and from the preimplementation, second, and fourth quarterly evaluations for programs established in 1987–1988.

RESULTS

Employment Outcomes

Descriptive statistics on average weekly wages, average weekly work hours, job retention, and level of integration for workers are presented in Table 2. The average weekly wage across all individuals was \$72.63 with a range of \$10.00 to \$240.00 per week, and the average hourly wage for individuals receiving supported employment services was \$2.86 (range, \$1.30 to \$6.00). Fifty-two per-

Table 2
Descriptive Statistics for Weekly Wages, Weekly Work Hours, Job Retention and Level of Integration (*N* = 120)

Outcome	<i>M</i>	Range
Weekly wages	\$72.63	\$10.00–\$240.00
Weekly hours	25.2	4–40
Job retention (days)	234	21–459
Level of integration	4.0	3–6

cent (62) of the participants were receiving hourly wages at or above the minimum wage level.

The average number of hours of paid work completed each week by participants was 25.2 (range, 4 to 40); 88% (106) of the participants worked 20 hours or more per week and 16% (19) of the participants worked 40 hours per week.

The ratings of the opportunities for study participants to interact with nondisabled peers in the workplace was 4.0 (range, 3 to 6). Thirty-four percent (41) of the participants received a rating of 3, which indicated that the contacts that the participant had with nondisabled workers were incidental to their assigned tasks and did not provide opportunities for the development of ongoing social relationships. Thirty-seven percent (44) of the participants were given a rating of 4; the worker had ongoing opportunities to interact with nondisabled workers throughout the day in nonwork activities (e.g., breaks and lunch), but their assigned job tasks did not require direct interaction with other workers. Twenty-five percent (30) of the participants were given a rating of 5. This rating indicated that the individual had opportunities to interact with nondisabled workers in work and work related activities in the job site. Finally, 4% (5) of the participants received a rating of 6. This rating indicated opportunities for the participant to interact with nondisabled workers during and after work hours.

Pearson-Product Correlations

Table 3 presents the correlation coefficients for each outcome and the required procedural components. Average weekly hours worked was significantly correlated with all but one procedural

component (i.e., board of directors). The magnitude of several of the correlation coefficients is noteworthy. These are client assessment and job matching procedures ($r = .72, p \leq .001$), job analysis procedures ($r = .64, p \leq .001$), and design of training programs ($r = .68, p \leq .001$).

Average weekly wages were significantly correlated with 13 of the required 14 procedural components. The procedural components most strongly associated with average weekly wages were client assessment and job matching procedures ($r = .78, p \leq .001$), job analysis procedures ($r = .67, p \leq .001$), design of training programs ($r = .68, p \leq .001$), and progress in training programs ($r = .70, p \leq .001$).

Nine procedural components were significantly correlated with job retention. Finally, the correlation coefficients for level of integration were significant for 13 of the 14 required procedural components. However, the magnitude of the correlation coefficients for these variables was modest for both job retention and level of integration.

Table 4 presents the correlation coefficients between each supported employment outcome and the selected demographic variables for workers. Two variables were significantly correlated with average weekly work hours. These were residential placement ($r = .45, p \leq .001$) and transportation ($r = .61, p \leq .001$).

Worker IQ ($r = .24, p \leq .05$), current residential placement ($r = .26, p \leq .01$), and transportation ($r = .34, p \leq .001$) were significantly correlated with average weekly wages. Three demographic variables were significantly correlated with level of integration, including worker IQ ($r = .21, p \leq .05$), previous employment placement ($r = .39, p \leq .001$), residential placement ($r = .64, p \leq .001$), and transportation ($r = .45, p \leq .001$).

Regression Analysis

The regression analysis for average weekly hours worked was significant ($F = 12.7, p \leq .001, R^2 = .43$). Approximately 43% of the variance associated with number of hours worked by participants receiving supported employment could be accounted for by the required procedural compo-

Table 3

Pearson-Product Correlation Coefficients Between Supported Employment Outcomes and USEP Model Components
($N = 120$)

Model components	Hours worked	Average weekly wages	Job retention	Level of integration
Individualized program planning procedures	.53*	.46*	.40*	.48*
Client assessment and job matching procedures	.72*	.78*	.39*	.50*
Job analysis procedures	.64*	.67*	.37*	.50*
Design of training programs	.68*	.68*	.35*	.53*
Progress in training programs	.59*	.70*	.32*	.35*
Supervisor observation of training programs	.42*	.30**	.07	.59*
Board of directors	.10	.06	.02	.10
Nonprofit status	.33*	.30**	.18	.28**
Workshop certification	.53*	.58*	.34*	.55*
Formal marketing plan	.41*	.36*	.23***	.44*
Accounting procedures	.49*	.48*	.10	.46*
Formal services contracts	.40*	.41*	.18	.53*
Standard job descriptions	.43*	.41*	.27**	.40*
Weekly staff meetings	.45*	.58*	.40*	.51*

* $p \leq .001$.

** $p \leq .01$.

*** $p \leq .05$.

nents. The required procedural components whose individual T values were significant included individualized program planning ($T = 2.8$, $p \leq .01$), client assessment and job matching ($T = 3.8$, $p \leq .001$), progress in training programs ($T = 2.0$, $p \leq .05$), and weekly staff meetings ($T = 2.2$, $p \leq .05$).

The regression analysis for average weekly wages was also significant ($F = 17.7$, $p \leq .001$, $R^2 = .51$). The required procedural components accounted for approximately 51% of the total variance associated with average weekly wages. The individual procedural components whose T values were significant were individualized program planning ($T = 2.4$, $p \leq .05$), client assessment and job matching procedures ($T = 4.2$, $p \leq .001$), job analysis ($T = 3.0$, $p \leq .01$), design of training programs ($T = 2.0$, $p \leq .05$), formal accounting procedures ($T = 2.5$, $p \leq .05$), specific job descriptions ($T = 3.8$, $p \leq .001$), and weekly staff meetings ($T = 4.3$, $p \leq .001$).

The regression analysis conducted between job retention and the required procedural components was significant ($F = 4.9$, $p \leq .001$, $R^2 = .23$). The required procedural components accounted for approximately 23% of the variance associated with

job retention. The procedural components that were most strongly associated with job retention included individualized program planning ($T = 4.8$, $p \leq .001$), formal services contracts with employers ($T = 3.9$, $p \leq .001$), and weekly staff meetings ($T = 2.3$, $p \leq .05$).

The final regression analysis conducted for level of integration was also significant ($F = 58.8$, $p \leq .001$, $R^2 = .77$). The required procedural components accounted for approximately 77% of the variance associated with client's contact with nondisabled peers in the workplace. The procedural components whose T values were significant included individualized program planning ($T = 18.9$, $p \leq .001$), design of training programs ($T = 2.1$, $p \leq .05$), development of a formal marketing plan ($T = 4.1$, $p \leq .001$), formal services contracts ($T = 2.8$, $p \leq .01$), and specific job descriptions ($T = 2.2$, $p \leq .05$).

DISCUSSION

This study examined the relation between the procedural components of supported employment programs established through the Utah Supported Employment Project and employment outcomes for

Table 4
Pearson-Product Correlation Coefficients Between Supported Employment Outcomes and Selected Demographic Variables
(N = 120)

Demographic variable	Dependent variable			
	Hours worked per week	Average weekly wages	Job retention	Level of integration
Sex	.07	.06	.07	.06
IQ	-.17	.24***	.11	.21***
Previous employment placement	.05	-.02	.06	.39*
Residential placement	.45*	.26**	.33*	.64*
Transportation	.61*	.38*	.18	.45*

* $p \leq .001$.

** $p \leq .01$.

*** $p \leq .05$.

individuals with disabilities served by these programs. The results are consistent with other research that has demonstrated the effectiveness of supported employment in achieving successful employment outcomes for individuals with disabilities (Mank et al., 1986; Vogelsberg, 1986; Wehman, 1986).

Results of this study provide insight into the procedural components of supported employment programs that are associated with worker wages, number of hours of paid employment, job retention, and level of integration in the work site. One of the procedural components most strongly associated with employment outcomes was the development of comprehensive Individualized Program Plans structured to improve outcomes for workers across time. The planning process was designed to ensure that program providers continually focused resources on enhancing the outcomes of employment for the individuals they served, rather than simply using acquisition of job skills or job placement as the criterion for evaluating program success. Programs successfully implementing these procedures achieved better outcomes for the individuals they served than programs that did not.

Another component that was strongly associated with successful outcomes was the implementation of functional assessment and job matching procedures. The number of hours worked and the wages earned by individuals were positively correlated with the program's use of systematic procedures to match

jobs to the specific interests and skills of workers. This result indicates that the benefits of supported employment were improved when programs attempted to match the needs of the individual to a specific job. In contrast, programs that did not match jobs to individual needs, or simply placed people into available jobs or contracts, were less successful in achieving positive outcomes for workers.

The success of workers was also positively correlated with the training procedures used by program staff to establish performance of job tasks by workers. Three procedural components were strongly associated with employment outcomes: (a) conducting a comprehensive analysis of the job to identify the demands that will be placed on the worker prior to the initiation of training, (b) developing written training programs that specify how the job coach will bring the individual's responses under control of the antecedent and consequent stimuli found in the job site, and (c) frequent review of worker performance data by staff to improve the efficacy of training. These results support best practice recommendations that employment training for individuals with disabilities should be systematically designed and implemented (Bellamy et al., 1979; Hanley-Maxwell, 1986; Wacker & Berg, 1986).

Several components related to the overall management of supported employment programs were also associated with worker outcomes, including (a)

conducting weekly staff meetings that are structured to allow the program to assess its performance in achieving successful outcomes for all workers and then to use this information to develop interventions that will improve overall effectiveness; (b) the development of a specific marketing plan that guides program efforts to develop employment opportunities for workers; (c) the development of formal service contracts with employers that define the expected outcomes of job placement for the worker and the roles and responsibilities of the employer and supported employment program in carrying out job training and follow-up activities; and (d) developing clear job descriptions that define the role assignments for all staff in carrying out job development, job placement, job training, and follow-up activities.

Another important finding of this study was that worker IQ was only marginally associated with positive outcomes. Other demographic variables that were more strongly associated with successful outcomes included the relative restrictiveness of the worker's residential placement and his or her means of transportation used to get to and from the job site. One implication of this finding is that state agencies charged with providing supported employment services should focus efforts on developing the capacity of local programs to meet the needs of all workers rather than establishing eligibility criteria that will identify individuals who can benefit from supported employment.

Finally, it also appears that standardization of procedures for supported employment programs is a viable method for achieving successful employment outcomes for large numbers of individuals with disabilities. The regression analyses indicate that the procedural components required of participating programs in this study explained significant amounts of variance associated with positive outcomes. In addition, these standardized procedures were successful across a wide variety of operating conditions, including (a) the type of supported employment model adopted by programs, (b) the functional level of individuals served by programs, (c) the geographic areas in which programs operated, and (d) the expertise and experi-

ence of staff. This may provide credence to efforts by state agencies to develop specific outcome and procedural standards for all funded programs.

The results of this study must be interpreted in light of several important limitations. First, the analyses do not allow inferences concerning direct cause and effect relationships between individual procedural components and successful outcomes. Further validation of the impact of these procedures on the effectiveness of supported employment programs will be required. Second, the correlation analyses conducted between worker outcomes and the procedural components could have been attenuated by the measurement system used. The 3-point scoring system used to assess the implementation of the procedural components restricted the variability of scores. The restricted variability in the independent variables may have artificially inflated or deflated the correlation coefficients. Finally, the results of the study may have been influenced by the process used to select programs participating in the USEP. These programs were selected based on their perceived ability to implement successfully supported employment services for individuals with disabilities. Consequently, the programs included in this study may not be representative of all programs providing supported employment services nationally.

Despite these limitations, the present study provides an important first step in developing a cohesive technology of supported employment. Future research will be needed to validate the impact of these procedures and to ascertain their cumulative effect on employment outcomes. In addition, the variables that influence the effectiveness and efficiency of training and technical assistance strategies used to disseminate supported employment technology should be examined. Some of the areas for potential research include (a) the relative effectiveness of various approaches to training job coaches and program directors (i.e., competency-based vs. noncompetency-based programs), (b) the relation between successful implementation of procedural components and various strategies of technical assistance, (c) the influence of ongoing formative systems of evaluation on successful implementation

of supported employment programs, and (d) the impact of standardized outcomes and procedural criteria on statewide implementation of supported employment services.

REFERENCES

- Bellamy, G. T., Horner, R. H., & Inman, D. P. (1979). *Vocational habilitation of severely retarded adults: A direct service technology*. Baltimore: University Park Press.
- Bellamy, G. T., Rhodes, L. E., Mank, D. M., & Albin, J. M. (1988). *Supported employment: A community implementation guide*. Baltimore: Paul H. Brookes.
- Boles, S. M., Wald, B. A., & Xiaoyan, Y. (1989). Designing decision support systems. In W. E. Kiernan & R. L. Schalock (Eds.), *Economics, industry, and disability: A look ahead* (pp. 265-274). Baltimore: Paul H. Brookes.
- Connis, R. T., Sowers, J., & Thompson, L. E. (1981). *Training the mentally handicapped for employment: A comprehensive manual*. New York: Human Sciences Press.
- Federal Register. (1987). Part 4: Department of Education, Office of Special Education and Rehabilitative Services, 34 CFR, Part 363. The State Supported Employment Services Program; final regulations, 52(157), 30547.
- Galloway, C., & O'Brien, J. (1981). *Mapping vocation services accomplishments*. Decatur, GA: Responsive Systems Associates.
- Gardner, J. F., Chapman, M. S., Donaldson, G., & Jacobson, S. G. (1988). *Toward supported employment: A process guide for planned change*. Baltimore: Paul H. Brookes.
- Hanley-Maxwell, C. (1986). Curriculum development. In F. R. Rusch (Ed.), *Competitive employment: Employment issues and strategies* (pp. 187-198). Baltimore: Paul H. Brookes.
- Hill, M. L., Wehman, P., Kregel, J., Banks, P. D., & Metzler, H. M. D. (1987). Employment outcomes for people with moderate and severe disabilities: An eight-year longitudinal analysis of supported competitive employment. *The Journal of the Association for Persons with Severe Handicaps*, 12, 182-189.
- Inge, K. J., Barcus, M., & Everson, J. M. (1988). Developing inservice training programs for supported employment personnel. In P. Wehman & M. S. Moon (Eds.), *Vocational rehabilitation and supported employment* (pp. 145-162). Baltimore: Paul H. Brookes.
- Johnsen, D. A., & Schalock, R. L. (1989). Meeting consumer needs by developing a marketing orientation. In W. E. Kiernan & R. L. Schalock (Eds.), *Economics, industry, and disability: A look ahead* (pp. 57-66). Baltimore: Paul H. Brookes.
- Kiernan, W. E., Carter, A., & Bronstein, E. (1989). Marketing and marketing management in rehabilitation. In W. E. Kiernan & R. L. Schalock (Eds.), *Economics, industry, and disability: A look ahead* (pp. 49-56). Baltimore: Paul H. Brookes.
- Mank, D. M., Rhodes, L. E., & Bellamy, G. T. (1986). Four supported employment alternatives. In W. E. Kiernan & J. A. Stark (Eds.), *Pathways to employment for adults with developmental disabilities* (pp. 139-154). Baltimore: Paul H. Brookes.
- Martin, J. E. (1986). Identifying potential jobs. In F. R. Rusch (Ed.), *Competitive employment: Issues and strategies* (pp. 165-186). Baltimore: Paul H. Brookes.
- Moon, S., Goodall, P., Barcus, M., & Brooke, V. (1986). *The supported work model of competitive employment for citizens with severe handicaps: A guide for job trainers*. Richmond, VA: Virginia Commonwealth University, Rehabilitation Research and Training Center.
- Moss, J. W., Dineen, J. P., & Ford, L. H. (1988). University of Washington employment training program. In F. R. Rusch (Ed.), *Competitive employment: Issues and strategies* (pp. 77-88). Baltimore: Paul H. Brookes.
- Noble, J. H., & Conley, R. W. (1987). Accumulating evidence on the benefits and costs of supported and transition employment training for persons with severe disabilities. *The Journal of the Association for Persons with Severe Handicaps*, 12, 163-174.
- Nofs, D., McDonnell, J., & Hardman, M. (1986). *The Utah supported employment implementation manual*. Salt Lake City, UT: University of Utah.
- Paine, S. C., Bellamy, G. T., & Wilcox, B. (1984). *Human services that work: From innovation to standard practice*. Baltimore: Paul H. Brookes.
- Pedhazur, E. J. (1982). *Multiple regression in behavioral research: Explanation and prediction*. New York: Holt, Rinehart, & Winston.
- Renzaglia, A. (1988). Preparing personnel to support and guide emerging contemporary service alternatives. In F. R. Rusch (Ed.), *Competitive employment: Issues and strategies* (pp. 303-316). Baltimore: Paul H. Brookes.
- Rusch, F. R., & Mithaug, D. E. (1980). *Vocational training for mentally retarded adults: A behavior analytic approach*. Champaign, IL: Research Press.
- Shafer, M. S., Parent, W. S., & Everson, J. M. (1988). Responsive marketing by supported employment programs. In P. Wehman & M. S. Moon (Eds.), *Vocational rehabilitation and supported employment* (pp. 235-252). Baltimore: Paul H. Brookes.
- Vogelsberg, R. T. (1986). Competitive employment in Vermont. In F. R. Rusch (Ed.), *Competitive employment: Issues and strategies* (pp. 35-50). Baltimore: Paul H. Brookes.
- Vogelsberg, R. T., Spaulding, P., Patterson, D., Schenck, R., & Phillips, R. (1984). Project Transition: Competitive employment case management system. *Center for Developmental Disabilities Monograph Series*, 4, 1-127.
- Wacker, D. P., & Berg, W. K. (1986). Generalizing and maintaining work behavior. In F. R. Rusch (Ed.), *Competitive employment: Issues and strategies* (pp. 129-140). Baltimore: Paul H. Brookes.
- Wehman, P. (1981). *Competitive employment: New horizons for severely disabled individuals*. Baltimore: Paul H. Brookes.
- Wehman, P. (1986). Competitive employment in Virgin-

- ia. In F. R. Rusch (Ed.), *Competitive employment: Issues and strategies* (pp. 23–34). Baltimore: Paul H. Brookes.
- Wehman, P., & Kregel, J. (1985). A supported work approach to competitive employment of individuals with moderate and severe handicaps. In P. Wehman & J. W. Hill (Eds.), *Competitive employment for persons with mental retardation: From research to practice* (pp. 20–45). Richmond, VA: Virginia Commonwealth University, Rehabilitation Research and Training Center.
- Wehman, P., & Moon, M. S. (1988). *Vocational rehabilitation and supported employment*. Baltimore: Paul H. Brookes.

Received December 20, 1988

Initial editorial decision June 2, 1989

Revision received August 2, 1989

Final acceptance August 16, 1989

Action Editor, Brandon F. Greene

APPENDIX

Procedural Components of the USEP

1.0. Individualized program plan (IPP)

- 1.1. IPP goals target improved employment outcomes including job placement, hours worked, wages earned, and opportunities to interact with nondisabled co-workers.

- 1.2. Participants in the development of the IPP include the worker, their guardian (if appropriate), caseworker from the Mental Retardation/Developmental Disabilities Agency, caseworker from Vocational Rehabilitation Agency, residential service provider, and employment service provider.

2.0. Client assessment and job matching procedures

- 2.1. Assessment of the worker's social communication, academic, physical, personal hygiene, and community mobility skills.
- 2.2. Description of job tasks and demands.
- 2.3. Systematic matching of worker skills to job demands.

3.0. Job analysis procedures

- 3.1. Detailed analysis of the demands of

the job including identification of generic response components, environmental cues, speed criteria for each job task, quality criteria for each job task, and events that might prevent the worker's successful completion of the job.

4.0. Design of training programs

- 4.1. A *written* training program including a detailed task analysis, specific response prompting and fading procedures, specific correction procedures, specific reinforcement procedures, and methods for tracking and summarizing worker performance.

5.0. Progress in training programs

- 5.1. Up-to-date summary of the worker's performance on assigned job tasks.
- 5.2. Modification of training procedures after 10 training sessions with no worker progress.

6.0. Supervisor observation of training programs

- 6.1. Monthly observations of the job coach's effectiveness in implementing the written training program.

7.0. Board of directors

- 7.1. An advisory board is established by the supported employment program to set policy and review operating procedures.

8.0. Nonprofit status

- 8.1. The supported employment program establishes itself legally as a nonprofit organization.

9.0. Workshop certification

- 9.1. The supported employment program obtains a work activity and/or sheltered workshop certificate from the U.S. Department of Labor.

10.0. Formal marketing plan

- 10.1. The supported employment program develops a formal marketing plan to serve as a framework for obtaining employment opportunities for workers.

11.0. Formal services contacts

- 11.1. The supported employment program establishes formal service contracts with each employer specifying the responsibilities of the employer and supported employment program during job placement, training, and follow-up.

12.0. Formal accounting procedures

- 12.1 Accounting procedures include mechanisms for tracking all accounts receivable, accounts payable, and state and federal taxes.

13.0. Standard job descriptions

- 13.1. Written descriptions are developed by

the supported employment program specifying the roles and responsibilities of the program director, job developer, and/or job coach.

14.0. Weekly staff meetings

- 14.1 The supported employment program conducts weekly staff meetings to review employment outcomes (i.e., wages, work hours, progress in training programs, and integration), staff activities (i.e., job development efforts, employer contact and satisfaction, contact with parents/residential providers), administrative issues, and fiscal issues.