

Spillover Effects: Impact of Vocational Training on
the Lives of Severely Retarded Clients

Russell Gersten

Fred Crowell

Thomas Bellamy

University of Oregon

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Abstract

This evaluation study examined the effects of vocational training on the lives of 22 severely retarded adults. The adults were enrolled in what was then a new program, the Specialized Training Program, for one full year. Although no training time was devoted to social skills or independent living skills, we hypothesized the work experience might have some impact on how the clients were perceived by caretakers and on how clients behaved in social settings. Three instruments were used in the evaluation: a) a naturalistic observation of leisure behavior, b) the Becker (1960) Adjective Checklist (a measure of caretakers' perceptions of the client), and c) the Adaptive Behavior Scale (ABS). No significant growth was observed for the entire sample on any of the dependent measures. However, secondary analyses revealed significant growth on three measures for those clients who were most successful in vocational training. The areas of growth were perceived competence on the Becker Adjective Checklist and the ABS factor scores of Independence and Social Responsibility.

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By the mid seventies, the University of Oregon's Specialized Training Program had demonstrated that adults with severe and profound mental retardation could learn complex work tasks and earn surprisingly high wages performing these tasks in a specially supervised work setting (Bellamy, Horner, & Inman, 1979; Boles, Bellamy, Horner, & Mank, 1984). The Specialized Training Model was then field tested in three other northwest communities between 1977 and 1980. Forty-eight adults with severe and profound mental retardation participated in these field test sites, learning a variety of small-parts and electronics assembly tasks. Although development of a market for the products of this work was tediously slow in each site, the average monthly wage across all participants in the three sites was \$43.50 by 1980, nearly double the national average for all adults with mental retardation in Work Activities Centers (U. S. Department of Labor, 1979).

The present research was conducted to evaluate whether the experience of working for wages would have a positive impact on these individuals' lives outside the employment setting. Following logic described elsewhere (Bellamy, O'Connor, & Karan, 1979), we thought this improvement would be reflected in changes in independent living skills and social behavior. Since the purpose of the evaluation was to explore the impact of working on these adults' day to day lives, we examined their behavior in a situation far removed from the work setting; all data were collected in and from the participants' current residential settings. In addition to direct

observation, we examined alterations in the way other adults (parents, caretakers at a community living facility) perceived these workers. We hypothesized that those workers who experienced the greatest success at work (as evidenced in the highest monthly wages) might show the most growth in normative behavior. Secondary analyses addressed this issue.

METHOD

Subjects

Only workers who were involved in a field test site for at least 12 months and resided in a facility with the same primary caregiver were included in the evaluation. These decision rules were necessary because there seemed no point in examining effects for persons served in the program for less than a year. Further, there seemed to be no meaningful way to trace patterns for individuals with changes in either the primary caregiver or facility. For those subjects, it would be unclear whether fluctuations were due to differing perceptions of the new staff or to changes in the individuals' behaviors. With these criteria, the sample size was reduced to 22 workers; ten females and twelve males. The average age of this group was 31 and the average full range of I. Q. was 29. Prior to entering the training programs, 12 of these workers had lived in state institutions and 10 lived with their families. At the conclusion of the evaluation, two still resided in state institutions, twelve were living in group homes and eight lived with parents or relatives.

Measures

Three instruments were utilized in the evaluation. The NOLE or Naturalistic Observation of Living/Leisure Environments (Crowell, Weissman-Frisch, Lamson, & Boomer, 1980) was a direct observation measure, examining workers' social interactions during leisure-time activities in their home or living facility. Data were aggregated into two behavioral categories—Total Social and Total Deviant.

The Adaptative Behavior Scale (Nihira et al, 1974) is a broader range measure; the caretaker is asked to summarize all pertinent information concerning an individual's social behavior and independent living skills. The finding of several factor analytic studies (Nihira, 1969, 1976; Lambert & Nicoli, 1976) suggested the use of five Adaptive Behavior Scale (ABS) factor scores. These five factors were combined into three composites to parallel the three constructs measured by the NOLE and Becker Adjective Checklist: Self-Sufficiency (Factors 1 & 2) Social Responsibility (Factor 3), Maladaptive Behavior (Factors 4 & 5).

The Becker (1960) Adjective Checklist (BAC) measures how the workers were perceived by significant adults in their lives. The factor scores used in this evaluation were derived from factor scores on the Becker Adjective Checklist. The original BAC was used with children. However, Bellamy and Irvin (1976) performed a factor analysis on BAC scores collected on a sample of 604 retarded adults. Two of these factor scores were used as subscales in the evaluation, Perceived Competence and Perceived Social. The first factor assesses perceptions of a clients' overall competence, and the second, perceptions of skills in relating with other people.

The three instruments were selected so that each of three major constructs (social skills, independence, maladaptive behavior) would be assessed by at least two different measures. Technical characteristics of the instruments and the process of instrument development are reported in Gersten (1980). Median internal consistency (coefficient alpha) reliability was .86, median temporal reliability was .83.

Data Collection Procedures

NOLE observations were made during unstructured leisure time periods in the clients' living facility for a 15-minute period on each of three consecutive days. The BAC and ABS were completed by primary residential caregivers of each participant in the field-test sites. Instruments, complete with written instructions, were distributed to caregivers by site staff and collected during visits by NOLE observers to the residence. To increase reliability, the posttest was the mean of two observations, one conducted after the client had been in the program for 8 months and one conducted after 12 months in the program. Pretest was the mean of all observations conducted prior to program entry for each individual.

RESULTS

Estimation of Effects for no Intervention

In order to establish some estimate of the growth made by clients not undergoing treatment and provide some control for the conventional threats to internal validity (maturation, history), clients at one site were assessed during a 12-month period prior to the intervention. The data for this period allowed us to test the hypothesis that, without an intervention, there would be no discernable growth in social and adaptive

behavior of severely retarded persons in any of the domain tested. These data are reported in Table 1. Correlated t-tests indicated no significant change in any measure. The reader will note that the mean pre and post scores are virtually identical for each measure.

Insert Table 1 about here

Effects of Participating in Field Test Sites

The primary purpose of the evaluation was to examine whether workers involved in the STP program did demonstrate any change in the domains of social functioning assessed by the three measures. A secondary but important question was whether there was any relationship between wages earned and growth in social/adaptive behavior.

Table 2 reports the pre and post performance of the 22 workers over a 12-month treatment period on the eight measures. These measures are categorized into three major domains or constructs: Independence, Social Behavior, and Inappropriate Behavior. For the Independence and Social scales, the higher the scores the more normative the behavior. However, for the two Inappropriate Behavior scales, the lower the score, the more normative the performance. Correlated t-tests were performed on each subscale; none of these changes were significant.

Insert Table 2 about here

The magnitude of the treatment differences for Maladaptive Behavior exceeds commonly accepted levels of educational or practical significance (Cohen &

Hyman, 1980; Tallmadge, 1977). The other dependent variables do not show any significant differences.

Relationship Between Wages Earned and Growth in Adaptive Behavior.

To examine the second hypothesis, correlations were computed between a worker's average monthly wages and his or her growth in adaptive behavior. An exploratory multiple regression procedure was used, with two predictor variables—pretest score and wages earned—and one criterion variable—posttest score. This procedure is mathematically equivalent to correlating wages with residualized gain in social behavior. The analysis is exploratory in nature, because of the sample size. Results are reported in Table 3.

Insert Table 3 about here

Significant correlations between wages earned and social growth were found in four dependent variables: Perceived Competence (BAC), Independence (ABS), Social Responsibility (ABS), and Deviant Behavior (NOLE). For the remaining four dependent variables, the relationship between wages and growth in social behavior was not significant.

Although these findings are exploratory, there is a discernible trend. Both measures of perceived competence (BAC and ABS) were significantly related to vocational outcomes. This makes some sense. We might expect individuals who never worked, but now work, to be perceived as more competent. Interestingly, no discernible relationship was found between wages earned and growth in social behavior (on the ABS and BAC). This is unsurprising. Increasing pro-social behavior during leisure time was not

an element in the vocational training program. The effect on observed deviant behavior (as measured by NOLE) perhaps reflects some generalization of the behavior management aspects of the vocational training program.

To give the reader a sense of the differential growth patterns, workers were divided into three groups based on monthly earnings. Table 4 presents the descriptive statistics for a) the upper third (those earning at least \$33 per month) and the lower third (those earning less than \$5 per month). The purpose for presenting this descriptive data is to give the reader a more concrete sense of what the multiple regression analysis indicated.

Insert Table 4 about here

As can be seen, those who were more successful in the employment program tended to show more growth in their living situation than their peers. It is unsurprising, but nonetheless revealing, that for high wage earners, the strongest effect is in the domain of perceived competence and independence. These findings are exploratory, of course, and require substantiation in other evaluations.

CONCLUSIONS

Our hypothesis was that performing work and earning wages would improve many other aspects of a worker's life. In some way, this was an overly optimistic hypothesis. Many would argue that without specific training in social and communication skills, one should not hope for a

miraculous "spillover" effect. There is certainly more than a little truth to that view, as much of the data presented showed.

Results for the entire sample showed no significant improvement, although observed decreases in maladaptive behavior and perceived increases in social responsibility approached conventional significance levels. However, secondary analyses indicated that workers who experienced the most success in the vocational component showed some improvement in the areas of independence and perceived competence. The results tend to support our conviction that pre-vocational training that focuses on behaviors for personal independence may not be a necessary prerequisite for vocational training and employment. In contrast, the data suggest there is a need to teach social skills to these individuals in a systematic way if one expects growth in this area.

There is a clear possibility that the results underestimate the spillover benefits that can be expected from long term participation in successful employment programs. Like many small businesses, the three field test sites found the development of regular customers and a steady work supply to be a slow and difficult process. Wages earned during the limited time frame of this study are considerably lower than those attained after two to three years of additional training and business development. For example, seven of the workers in the original study are still STP workers in 1984. Their mean annual wage at the time of the study was \$739.11; it is currently \$1,728.50. Their current wages are thus 2.41 times their wages in the 1979-1980 period. A second limiting factor may have been the chance for regular contact with workers without disabilities.

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With recent commercial success, many sites have added workers without disabilities to work alongside those with severe and profound mental retardation. We do not know whether the opportunities for social interaction this presents will alter the current negative results concerning changes in social competence.

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Table 1
 Test-Retest Reliabilities and Stability of Measures
 over a Four Month Period for a
 No-Intervention Control Group (N = 11)

<u>Variable</u>	<u>r_{tt}</u>	<u>First Observation</u>		<u>Four Months Later</u>	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
<u>Independence</u>					
Perceived Competence (B ₃)	.81	22.5	5.6	22.8	8.0
Independence (ABS)	.82	102.9	19.5	101.6	17.4
<u>Social</u>					
NOLE Total Social	.92	1.16	.73	.96	.62
NOLE Social Initiation	.78	.64	.54	.50	.47
Perceived Sociability (B ₁)	.82	34.2	6.72	35.4	7.05
Social Responsibility (ABS)	.92	40.1	11.1	44.8	7.4
<u>Inappropriate Behavior</u>					
NOLE Total Deviant	.70	.87	.57	.60	.57
Maladaptive Behavior (ABS)	.81	26.0	24.6	18.3	12.5

Table 2

Pre and Post Performance of STP Workers in the Program for a

Twelve Month Period ($N = 22$)

	<u>Pre</u>		<u>Post</u>		$\bar{t}_{(21)}$
	<u>M</u>	SD	<u>M</u>	SD	
<u>Independence</u>					
Perceived Competence	21.56	6.62	22.95	7.87	.95
Independence (ABS)	100.72	19.65	101.50	16.65	.27
<u>Social</u>					
NOLE Total Social	.92	.81	.96	.84	.32
NOLE Social Initiation	.45	.47	.39	.41	-.86
Perceived Social	35.10	6.10	35.95	7.44	.68
Social Responsibility (ABS)	41.30	9.64	43.50	7.87	1.34
<u>Inappropriate</u>					
NOLE Total Deviant	.79	.64	.68	.64	1.03
Maladaptive Behavior (ABS)	20.10	19.62	15.60	13.41	1.59

Table 3

Exploratory Multiple Correlations: Relationship between
Pretest and Wages Earned and Posttest Scores

Quality-of-life variables with significant proportion of the variance explained
by monthly wages:

<u>Variable</u>	<u>Variance Explained by Pretest (r^2)</u>	<u>Variance (R^2) Explained by Pretest & Wages</u>	<u>Adjusted^a R^2</u>	<u>Unique Variance Explained by Wages</u>
Perceived Competence (Becker)	.31	.49	.43	.18*
Independence (ABS)	.54	.77	.74	.23*
Social Responsibility (ABS)	.42	.62	.58	.20*
Total Deviant (NOLE)	.53	.60	.57	.17*

Quality-of-life variables with no significant variance explained by wages:

<u>Variable</u>	<u>Variance Explained by Pretest (r^2)</u>
Total Social (NOLE)	.64
Social Initiation (NOLE)	.60
Perceived Social (Becker)	.39
Maladaptive Behavior (ABS)	.53

* $p < .05$

^a Adjusted for shrinkage

Table 4

Contrasted Groups: Descriptive Statistics for Highest and Lowest Wage Earners
on Selected Variables (N = 7 per group)

	<u>Pretest</u>		<u>Posttest</u>		<u>Gain</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Perceived Competence (Becker)					
High Wage ^a	24.7	4.5	28.3	6.3	3.6
Low Wage ^b	20.3	4.6	16.2	5.4	-4.1
Independence (Adaptive Behavior Scale)					
High Wage	110.4	19.5	115.0	8.2	4.6
Low Wage	87.4	19.4	84.4	11.4	-3
Social Responsibility (Adaptive Behavior Scale)					
High Wage	44.7	6.4	49.9	4.1	5.2
Low Wage	32.9	7.1	34.9	3.7	2.0

^a Monthly Wages over \$33 per month

^b Monthly wages less than \$5 per month

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Author Notes

This research was supplied by U. S. Office of Education Bureau of Education for the Handicapped Grant Number G00 7605455.

The authors wish to thank Robert Taylor, W. A. T. White, Dan Close, Thomas Keating, Phil Bourbeau, and JoAnn Sowers for their thoughtful feedback on earlier versions of this manuscript; Dan Boomer, Tom Heiry and Carl Hauser for their assistance in various phases of the data analysis; Nancy Weissman-Frisch for the data collection; and Rob Horner and Shawn Boles for their support during the formative periods.

Requests for reprints and inquiries should be addressed to Russell Gersten, Follow Through Project, 1751 Alder Street, University of Oregon, Eugene, OR 97403.