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# Influence of Least Restrictive Environment and Community Based Training on Integrated Employment Outcomes for Transitioning Students with Severe Disabilities

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Running head: Variables Integrated Employment

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**Abstract**

Least restrictive environment and community-based training that includes on the job instruction were correlated with integrated employment outcomes for 104 transitioning students with severe disabilities. The participants of this three-year study included students with severe disabilities in the Orange County, California, public school system that exited school at 21 or 22 years of age. The variables that predicted successful integrated employment at the time of transition (a paid job with non-disabled co-workers at graduation) were: duration of community-based training (CBT) that included on-the-job training, and age appropriate physical integration with non-disabled peers. Mental ability as measured by intelligence quotient (I.Q.), behavior problems, physical disability and participant demographics did not correlate with integrated employment outcome. Transitioning students in integrated age appropriate school settings, receiving CBT and on-the-job training demonstrated a 69.2% integrated employment rate post-graduation.

**Keywords**: Community based training, vocational training, transition, severe disabilities, natural contexts, employment, least restrictive environment.

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Unemployment rates for 2 million working age adults with developmental disabilities have been estimated at 75% to 92% [28, 46]. In response to this high unemployment rate, the federal government initiated investigation of transition and its employment outcomes for students with disabilities two decades ago [27]. In addition, formal transition employment requirements for all high school students in special education have since been added to federal law: IDEA, 1997, [14] and the 1998 amendments of the Vocational Rehabilitation Act.

Even with federally mandated transition planning, there has been no perceivable increase in integrated employment patterns for graduating students with severe disabilities [23, 29]. Certo, Pumpian, Fisher, Storey & Smalley [30] question current special education efforts from a financial investment perspective. They estimate that after spending a quarter of a million dollars on each student's education tenure, 83% of students in special education are unemployed at graduation transition. Unemployed graduates with severe disabilities then enter the next level of the publicly funded welfare system of adult segregated, non-work oriented programs. In a pivotal study [12], it was determined that once a graduating student enters one of these adult segregated programs, they are more likely to die of old age than enter the competitive job market [42]. These non-work programs conservatively spend $10,000 annually on each individual from age 22 until 65, or an estimated four hundred and fifty thousand dollars in lifetime costs while maintaining an unemployment status. Therefore, the current cost to a taxpayer of unsuccessful employment placement, added to the cost per individual of the adult day program, approaches

three quarters of a million dollars. Add to this the cost of needed Social Security Income (SSI) payments and Medicare, and conservatively a taxpayer could spend one and one half million dollars for an unemployed individual with significant disabilities 22 to 65 years of age.

In response to this failure to prepare and transition graduates labeled with severe disabilities into employment, innovative reforms like supported employment have resulted in community employment for over 139,000 individuals with significant disabilities over the past two decades [35, 37]. Supported employment outcomes for persons with significant disabilities have included higher wages, reduced dependence on welfare, fringe benefits, inclusion, skill development and job satisfaction [7, 19]. Further, a highly successful "Model for Seamless Transition" to integrated employment for graduating students with severe disabilities has been implemented in 14 school districts in California and Maryland since 1996. This model makes use of a highly collaborative service delivery model of school and integrated supported employment adult service providers prior to graduation and reported a 63% employment rate for 234 transitioning students [30].

Coupled with a political and financial argument in favor of supported employment is the theoretical background of how individuals with severe educational learning needs acquire and maintain knowledge. The traditional developmental and readiness models [10, 44] of special education have been demonstrated in the literature to be ineffective in producing a generalizable and maintainable employment skill base for individuals with moderate to severe disabilities [8]. However, traditional classroom based programs endure, failing to prepare these individuals to enter the workforce [5]. A more efficacious approach of community-based instruction, introduced in the 70's, promises better outcomes for sustained employment [21]. Nonetheless, administrators supporting students with the very most significant needs are reluctant to risk

placement in more age-appropriate college and community-based settings, even though those settings are most hospitable [15, 16, 17, 28, 30, 31].

A transition program in the public school system is federally mandated and designed to begin planning for students with disabilities as early as 14 years of age to function as ~~a~~ members of the ~~typical~~ mainstream community (Individuals with Disabilities Education Act Amendments of 1997, 20 U.S.C. [section] 1401 (26)). Preparation should include training in the following: on-the-job paid employment, independent living, social skills, and self-advocacy [1, 5, 31].

A curriculum that demonstrates the best and most promising practice of transition for students with severe disabilities involves community-based training and integration with age-appropriate non-disabled peers [6, 15, 16, 24, 25, 38]. In addition, employment training at non-school community job sites is recommended for transition age students [21, 24, 39]. On-the-job training following placement helps offset the generalization challenges of students with severe disabilities [32]. Another approach, on-the-job training near the time of graduation, also eliminates the need to generalize to a new job placement after graduation [9,30, 31, 39].

The present study attempts to extend the research of identifying variables in the transitional public school setting that most successfully predict integrated employment outcome for students with severe disabilities. The specific variables measured in this study included: the influence of duration of community-based training (CBT) that included on-the-job training, on-the-job training as a subset of CBT, the least restrictive environment (LRE), or the degree of integration with non-disabled peers during the school day, demographics (gender, ethnicity, home setting, behavior problems, physical disability and mental ability as measured by intelligence quotient (I.Q.).

The label of severe disabilities was defined as “cognitive challenges coupled with other diagnoses such as autism, dual sensory impairment and physical and health challenges,

individuals that demonstrate severe deficits in learning rate, attention to relevant stimuli, maintenance and generalization of acquired responds and in combining chains of responses [4, 10, 32]."

Integrated employment was defined as placement in a paid community based job with non-disabled peers at the time of graduation, with post graduation follow up support by an adult agency that provides supported employment services.

## Method

### School Settings

Students with severe disabilities in the sample attended 20 different school sites representing twelve school districts in Orange County, California. Orange County is a suburban community of 800 square miles located directly south of Los Angeles County California. The current population exceeds 3 million, with an annual median family income of $71,200.

### Participants

Participants were included from all school districts in Orange County, California. The participants, 104 students with severe disabilities, ages 18-22, exited school at 21 or 22 years of age at various. Ten of the students exited school during the first year of the study, 11 students exited in the second year, and 83 students exited in the final year of the study. None of the participants received diplomas at graduation. ~~rather~~ They reached the age at which they were no longer eligible for educational services and were terminated.

Characteristics of disability. Used for student comparison (see Table 1), mental ability was measured by intelligence quotient (I.Q.). If student records did not provide an I.Q., a formula was used that was recommended by the Stanford-Binet Intelligence Scale [18] to obtain missing data.

Insert Table 1 about here

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Twenty-five percent of the students were identified with a secondary physical disability. Twenty-two percent were defined as having behavior challenges.

Demographics. Five major ethnic groups were represented in the study. This ethnic distribution of the students was comparable to other students with disabilities based on district school census data.

Gender representation of the study group was 53.8% male and 46.2% female. The majority of students lived at home with parents (see Table 2).

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Insert Table 2 about here

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LRE or Degree of Physical Integration

The number of 18-22 year old students at each school site ranged from 100 to 6. For the measurement purposes of this study, transitional school settings were categorized into four settings by LRE characteristics: (a) Segregated (a school site composed of only students with disabilities), (b) Segregated adjacent (a classroom adjacent to a regular high school or on the same campus separated by a fence), (c) Integrated Non-Age Appropriate (classrooms interspersed on a high school campus), and (d) Integrated Age Appropriate (a classroom or meeting room located on a college campus). Of the 104 participants, 34 attended segregated sites, 20 attended segregated adjacent sites, 24 attended integrated non-age appropriate high school sites, and 26 attended integrated age appropriate sites on college campuses.

Transition Program

A transition program is defined by this study as a public school program that prepares students with severe disabilities to function in typical community settings and maintain typical lifestyles after exiting the school program. Transition training targeted by this study occurred during the last three years of public school. Depending on the students' needs, transition training occurred in community settings that included: learning job skills through non-paid work experience and paid employment, communication skills, independent living skills, public transportation mobility transportation skills, social skills and self-determination skills.

Seven transition~~al~~ classrooms in this study from four separate school districts used age appropriate integrated settings on college sites. The overwhelming majority of school instruction at these locations occurred in natural non-school settings. As their students approached graduation age, a paid job near the students' home was developed. An informal collaboration was also developed with an employment agency to plan for ongoing support after graduation. One author of this study provided administrative support for two these classrooms. One author provided informal consultation, student teacher supervision and job development support for four of the classrooms.

**Comment [1]:** No extra space here.

Community-based Training (CBT)

For this study, community-based training involved instruction in non-school natural environments. Skill development focused on social skills, domestic skills, accessing public transportation, and included on-the-job training. Thirty-seven percent of the students received less than 25% of instructional time in CBT and all of those individuals attended segregated or adjacent settings; Twenty-five percent of the students received 26 to 50% of CBT and all attended segregated, adjacent, or integrated high school; Ten percent received 51 to 75% of CBT and all attended segregated sites or High School sites; Thirty-eight percent of the students received 76 to 100% of CBT and 93% attended integrated age appropriate college settings (see Table 3).

Insert Table 3 about here

Data Collection

Data were collected for this study by structured interview with teachers and administrators, record review and site observations. The instrument addressed three areas: demographic information, student characteristics (i.e. Intelligence Quotient, physical disability, and behavior challenges) from records, and degree of integration, community based training and post high school employment outcomes from teacher/administration interviews and site observations.

Design

Correlations were used to examine predictive relationships between the independent variables and the dependent variable of post-school integrated employment. Cross tabulations and chi-square analyses of correlated variables were then used to identify significance of specific variables on employment outcome.

Data were entered on a Microsoft EXCEL spreadsheet. The spreadsheet was put into SPSS format for ease of statistical analysis. A cross tabulation table compared the frequencies of various combinations of values. In addition to frequencies, a correlation coefficient was used to examine the relationship between variables. Frequencies were the basis for the chi-square (x2) non-parametric test of independence. Frequency counts were used to examine a potential relationship between the dependent variable of employment and the independent variables: quantity of time spend in community based training (CBT), LRE or quantity of time spent physically integrated with typical peers, intelligence, physical disability, behavior disability, and duration of time spent in on-the-job training. The greater the difference between the expected observed frequencies, the larger the chi-square value. The level of significance for this study is .05.

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## Results

The primary purpose of this study was to identify variables that are correlated with successful integrated employment outcomes for transitioning students with severe disabilities. Variables considered to be possible predictors of employment were: (a) Disability characteristics--mental ability as measured by intelligence quotient (I.Q.), physical disability, and behavior disability; (b) demographics--gender, ethnicity, and home setting; (c) community-based training time that included quantity of time spent at on-the-job training (CBT), which consisted of the percentage of time during the school day; (d) amount of time that students receive on-the-

job training; (e) and LRE or degree of physical integration at the four school site categories based on physical integration labels. The data in Table 4 represent the intercorrelations of these variables and the outcome of transitioning to successful employment after exiting the school program. These data indicate significant intercorrelations between community based training (r=.387, p<.001), degree of integration with typical peers (r=.360, p<.001), and on-the-job training (r=.305, p=.001) and employment outcome. There were also strong intercorrelations among the three variables of CBT, degree of integration or LRE and on-the-job training.

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Insert Table 4 about here

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Characteristics of disability and employment outcome. The correlation between employment and I.Q. was insignificant (r=.088, p.<.372). A chi-square analysis of this correlation showed no relationship (x2=4.860,p=.182). In fact transitioning students labeled Profound were the more commonly employed at graduation than those labeled Severe. The correlation between both physical and behavior disabilities and employment outcome was also found to be insignificant.

Demographic characteristics and employment outcome. Ethnicity was not found to be associated to employment outcomes (x2 = .194, p =<907). Although a larger percentage of males (39.3%) were employed at graduation than females (29.2%), chi-square was insignificant (p<.487). The analysis of the relationship of living at home with parents or living in a group home to employment was not significant (p<.183).

CBT including on-the-job training and employment outcome. CBT was divided into quartiles. The first quartile (0-25%) in CBT contained the largest number of students (38.5%). This lower quartile had the lowest employment rate (15%). The highest CBT quartile (75-100%)

also represented the highest employment rate (64.3%). Time spent in CBT is positively correlated with employment, and was found to be statistically significant ($x2=17.989$, $p<.001$). (See Table 5).

Insert Table 5 about here

Duration of on-the-job training with less CBT and employment outcome. When the percentage of on-the-job training increased and resulted in a lower percentage of training in other CBT skills, the likelihood of employment after transition was reduced. The value of $x2=5.296$ for the length of time spent in training on the job was not statistically correlated ($p=.071$) with successful employment transition.

LRE and employment outcome. Interrelationships between the quantity of integration or LRE and employment were statistically significant ($x2(6,N=104)$ +30.18, $p=.001$). Students in the most integrated setting with age appropriate peers e.g. college sites, while composing 25% of the sample, represented 50% of all employment outcomes. 69.2% of the students who attended the most integrated site category of colleges were the most likely to be employed at graduation (see Table 6). These findings suggest that the degree of integration with age-appropriate peers ($r=.360$, $p<.001$) and the duration of CBT/on-the-job training ($r=.387$, $p<.001$) are the most important transition variables to post school integrated employment. It appears from these data that those students, who attended more age appropriate integrated sites, college sites, were more likely to be employed after exiting their transition school program.

Insert Table 6 about here

## Discussion

Settings or least restrictive environments that provide high degrees of integration with similar age typical peers and community-based training that includes on-the-job training were significantly correlated to successful employment at transition for students with severe disabilities. These results in no way suggest causality and further research is strongly recommended to pursue causal empirical analysis.

This study did, however, indicate that the duration of on-the-job training had a weaker association with employment outcomes. The location of the on-the-job work site related to the school site may be the influencing factor for this finding. For example, it would be in the graduating students' interest to train in a final paid job site near their home, rather than their school site. On-the-job training close to home would require more public transportation time and reduce on-the-job training time. Further research is warranted on this issue to determine post graduation and individualized student logistical considerations that influence on-the-job training time.

The relationship between disability characteristics and demographics and employment outcome was not supported by this study's data. No statistical significance was established in the correlation of intellectual capacity, physical or behavior characteristics and employment outcome. This may be due to the small number of participants in this study. The data did, however, indicate that employment outcome was related to training in integrated settings regardless of intellectual functioning level.

The authors would like to note that the definition of disability in terms of I.Q. was simply for reliability purposes. The authors are aware of the more recent defining characteristics described by the AAMR in terms of strengths, challenges, and support needs [3].

This study contributes to previous research in transition curriculum for students with severe disabilities regarding community-based training, on-the-job training and integration with non-disabled age-appropriated peers (2, 6, 17, 21, 24, 25, 38, 41].

As noted in the methods section, seven teachers in this study from four school districts used age appropriate integrated settings on college sites. Each of these teachers was independently instrumental in the initiation of these age appropriate college-based settings for their students, often with challenges from the administration. Based on their knowledge of best practice, they developed CBT and on-the-job training where school instruction occurred in natural non-school settings. As their students approached graduation age they developed a job near the students home. As part of the IEP process they collaborated with an adult employment agency to plan for post school job coach services. Their college based integrated program's curriculum of integration with age appropriate peers, CBT and on-the-job support demonstrated a 69.2% employment rate for their graduates. The assumption of this study is that opportunity for relationships with typical similar aged peers was a critical aspect of the integrated age appropriate sites, however, given the nature of this study, it is impossible to make that conclusion. Further research in this area is warranted.

## Conclusion

If our goal for students with severe disabilities is the dignity of work and not welfare, this study and previous research sited is a clear road map to the former. The combinations of least restrictive environments, CBT/on-the-job training, and innovative teacher advocacy are potent predictors of post school employment for students with severe disabilities, regardless of intellectual functioning.

Many states, and school districts in the country have been found to be out of compliance with IDEA in the areas of least restrictive environment and transition IEP components. The

majority of students in this study who successfully transitioned to employment experienced LRE and CBT for the first time at integrated college sites. An even more positive employment impact on the students and their families in the study might be made if they had access to LRE, transition IEP efforts and CBT for their entire school career, rather than their last 12 to 36 months.

The California State Institutions of Higher Education (IHE) providing teacher preparation have required demonstration of both LRE and CBT competencies of their student teachers for over a decade. In addition, federally funded research initiatives in the region have promoted similar best practice efforts [20, 30, 42]. However, local school districts appear to be out of compliance with LRE and CBT implementation.

National systemic barriers to implementation of LRE, CBT and related integrated employment transition make it clear that school district accountability of outcome goals of employment for graduates are sorely needed. General education high schools and colleges are held accountable for student outcomes of transition to college or employment. Special education similarly should be held accountable for employment transition for their graduates as well [30].

Finally, support for the theory of learning characteristics for individuals with severe disabilities must not be ignored. Extant research strongly suggests that generalization and maintenance of priority behavior can and will be accomplished through careful planning in instructional methodology and context [4, 10, 21, 40, 44]. In light of the data supporting the education of individuals with severe disabilities in natural contexts, it stands to reason that programs would no longer provide training in contexts other than those that result in durable employment opportunities.

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Participants' Mental Ability Measures

| Category | Percentage of Participants |
|---|---|
| Profound (I.Q. below 25) | 25 |
| Severe (I.Q. 26 to 39) | 23.1 |
| Moderate (I.Q. 40 to 50) | 26 |
| Mild (I.Q. 51 to 69) | 26.9 |

Table 1. Percentage of participants within each mental ability category.

Participants Demographics

| | Ethnicity | | | | | Gender | | Residence | |
|---|---|---|---|---|---|---|---|---|---|
| **Category** | Ang | Hisp | Asian | Afro | Pac | Male | Fem | Home | Grp Home |
| **%** | 53 | 28 | 13 | 4 | 2 | 53.8 | 46.2 | 79.8 | 20.2 |

Table 2. Percentage of participants within each demographic area by ethnicity (Anglo, Hispanic, Asian, African-American, Pacific), gender (Male, Female) and residence (living at home or in a group home).

CBT and Degree of Integration (LRE)

| | Physical Integration Category | | | |
|---|---|---|---|---|
| % of CBT | Segregated | Segregated Adjacent | Integrated Non Age/ HS | Integrated Age Appropriate |
| 0-25 | 26 | 14 | 0 | 0 |
| 26-50 | 4 | 6 | 16 | 0 |
| 51-57 | 4 | 0 | 6 | 0 |
| 76-100 | 0 | 0 | 2 | 26 |
| Total | 34 | 20 | 24 | 26 |

Table 3. Percentage of community-based training time by physical integration category.

Intercorrelations

| Subscale | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. Employment (job/ workshop/no job) | -- | .152 | -.038 | -.047 | .387** | .305** | .360** |
| 2. IQ | | -- | -.248* | .012 | .215* | .330** | .231* |
| 3. Physical disability (n=26) | | | -- | -.147 | .076 | -.011 | .122 |
| 4. Behavior challenge (n=23) | | | | -- | .163 | .227* | .191 |
| 5. CBT | | | | | -- | .856** | .853** |
| 6. On-the-job training | | | | | | -- | .695** |
| 7. Integration w/ peers (LRE) | | | | | | | -- |

**Correlation is significant at the .001 level.

* Correlation is significant at the .01 level.

Table 4. Intercorrelations between employment and independent variables for students with severe disabilities.

CBT and Employment Post School

| % Time CBT | Unemployed | | Employed | | Total | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| 0-25 | 34 | 85 | 6 | 15 | 40 | 100 |
| 25-50 | 18 | 69.2 | 8 | 30.8 | 26 | 100 |
| 51-75 | 6 | 60 | 4 | 40 | 10 | 100 |
| 76-100 | 10 | 35.7 | 18 | 64.3 | 28 | 100 |
| Total | 68 | 65.4 | 36 | 34.6 | 104 | 100 |

Table 5. Outcomes of employment status as a result of time spent during transition program in community based training. The more time spent in CBT the higher the percentage of graduates who were employed upon exiting their school based transition program.

| | Employment Status | | | | | |
|---|---|---|---|---|---|---|
| Quantity of Integration (LRE) | Unemployed | | Employed | | Total | |
| | N | % | N | % | N | % |
| Segregated | 29 | 85.3 | 5 | 14.7 | 34 | 32.7 |
| Segregated Adjacent | 15 | 75 | 5 | 25 | 20 | 19.2 |
| Integrated Non-age appropriate (High School) | 16 | 66.6 | 8 | 33.3 | 24 | 23.1 |
| Integrated Age Appropriate (College) | 8 | 30.8 | 18 | 69.2 | 26 | 25 |
| Total | 68 | 65.4 | 36 | 34.6 | 104 | 100 |

Table 6. The type and quantity of physical integration or LRE during school program compared with employment outcome after exiting school based transition program. A higher percentage of those students attending college sites were employed after exiting school.