**Transition-Age Youths With Visual Impairments in Vocational Rehabilitation:**

**A New Look at Competitive Outcomes and Services**

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Abstract

**Introduction:** Given low employment closure rate, our propose was to identify consumer characteristics and services that predict competitive employment for transition-age youths with visual impairments in the VR Program.

**Methods:** Using FY 2010 RSA-911 data on 2,282 consumers under age 22, closed after receiving services, we conducted descriptive and logistic regression analyses to determine what client and service factors predicted competitive employment.

**Results:** Gender, race, education, disability, severity of visual impairment, receipt of SSI, earnings at application, indicative of early work experiences, and four of five service clusters were significantly related to employment outcomes.

**Discussion:** This research provided new knowledge regarding influences, "risk factors," and predictors of competitive employment—what works—for youths with visual impairments.

**Implications for practitioners:** We make recommendation for VR service provision, transition programs, policy regarding "at risk" groups, and future research.

Transition-Age Youths With Visual Impairments in Vocational Rehabilitation:

A New Look at Competitive Outcomes and Services

The state-federal vocational rehabilitation (VR) program is the largest employment

program for adolescents and young adults with visual impairments (VI) (are legally blind or have

other visual impairments) in the U.S. Administered by the Rehabilitation Services

Administration (RSA), all states and territories receive federal grants to implement

comprehensive VR programs providing individuals with disabilities, including those with VI, a

wide range of services to prepare them to engage in employment.  Approximately 2,000

transition-age youths (those applying for services before age 22) are closed annually from VR

nationwide after receiving services. Unfortunately, less than half are employed, i.e., working

full- or part-time in integrated settings making at least minimum wage at time of VR closure

(Cavenaugh, 2011).

The Rehabilitation Act of 1973, authorized under the Workforce Investment Act of 1998,

emphasizes the importance of quality transition services by requiring the state VR agency to

enter into a formal interagency agreement with the state education agency in the planning and

delivery of transition services to students with disabilities. VR agencies are required to use

information from education officials in developing the consumer's individualized plan for

employment (IPE). The IPE must be developed and approved before the student leaves

secondary school. In a recent assessment of the impact of the Rehabilitation Act on employment

outcomes, the National Council on Disability (2008) reported a lack of empirical research

supporting the efficacy of VR services in enhancing employment outcomes of transition-age

youth. Given nationwide access to the VR program and the large number of young adults with

VI exiting the program nationally without being employed, it is crucial to identify factors that

influence outcomes—including "risk" factors—and identify "what works" (predicts) successful

employment of transition-age consumers in order to inform policy and to improve program

effectiveness. This was the main purpose of our study.

National data on all consumers closed annually by VR agencies is available from RSA as

the RSA-911 databases. We found only one empirical study using this source to investigate

outcomes of *transition-age youths* with VI. Although there has been considerable research  using

RSA-911 data to identify factors related to employment outcomes of adults with VI, results were

not disaggregated by age groups.

**Employment Factors for Adults with Visual Impairments**

Findings are based on a series of investigations over more than three decades (e.g.,

Capella-McDonnall, 2005; Giesen et al., 1985; Hill, 1989, Giesen & Cavenaugh, 2003, 2008;

Giesen & D'Amato, 1992, Leonard, D'Allura, & Horowitz, 1999; Kirchner & Peterson, 1982;

Kirchner et al., 1999). General findings are that positive employment outcomes are influenced by

age factors (age at onset of VI, age at referral), gender, race/ethnicity, race-gender interaction,

education, severity of VI, number and severity of secondary disabilities, and type of services

(e.g., training and directly job-related services), work-history indicators, receipt of transfer

payments (e.g., SSI, SSDI), work motivation (whether the consumer applied to VR for

employment help), quality of counselor-consumer relationship, and whether education services

resulted in a postsecondary degree or certificate.

**Factors Affecting Outcomes of Transition-Age Youths**

Empirical knowledge about factors affecting transition of youths with VI is available

from only a handful of studies, including a study of Canadian youths, and three studies using

nationally-representative datasets. One of these used augmented RSA-911 VR data, and the other

two used data from national studies that included youths with VI. Shaw, Gold, and Wolffe

(2007) reported results from 328 Canadian youths with VI. McDonnall and Crudden (2009) used

augmented RSA-911 VR data from the Longitudinal Study of the Vocational Rehabilitation

Services Program (LSVRSP) (1995-2000) to study transition-age youths with VI ($N = 41$).

McDonnall (2010) used the National Longitudinal Survey of Youth (NLSY97) to identify youths

who self-reported difficulties with vision that resulted in limitations ($N = 140$). McDonnall

(2011) used a database of youths that received special education services in high school,

National Longitudinal Transition Study (NLTS2) (2001- 2009), and identified those that had VI

($N = 250$).

**Summary of Findings**

   *Demographics.* Hispanic ethnicity was a positive predictor in one study, but effects for

other race categories or gender were not detected.

   *Education.* Effects for education, academic competencies, or completion of a

postsecondary educational program were found in multiple studies. Academic competency and

degree program completion appear most important, probably because they represent educational

or VR service "outcomes."

   *Health and disability.* A health measure was significant in one study but not in another.

An effect for severity of VI was found in one study but not investigated in others.

   *Personal characteristics.* Effects for motivational indicators (e.g., self-determination,

locus of control) were found in one study but not detected in another.

   *Social supports.* An effect for parental support or expectations was found in two studies.

*Skills and technology.* Effects for skills (activities of daily living, social skills, independent travel skills) were found in two studies. Effects for use of assistive technology was found in one study but not detected in another.

*Work experience and economic supports.* In spite of study differences, effects for various types of work experience (including early work experiences, number of work experiences) were found in all three major studies.

An effect for receipt of SSI was investigated in only one study and not detected in analyses with multiple predictors. Receipt of SSDI was not investigated in any study.

*Situational and other factors.* An effect for transportation difficulties was detected in one study.

**Methodological issues and other concerns.** Studies differed in source (e.g., whether youths were in VR, a special education program, or the general population), how VI was defined, type, availability, and specificity of predictors, and type of employment outcome. Two of the three major studies had limited power and employed adjusted alpha levels; results were based on both simple and multivariable relationships, which sometimes were inconsistent. Given these conditions, it is not surprising that effects were sparse, inconsistent, and sometimes contradictory. Only one study used any data from the VR system, and that sample was small ($N$=41) and somewhat dated.

Given the shortcomings of previous investigations regarding factors affecting employment outcomes in VR for transition-age youths with VI and the importance of improving the performance of the VR program with respect to this group, our purpose was to more comprehensively investigate influences and effects of services in a current VR population of transition-age youths. Knowledge of influences (risk factors) and effects of services ("what

works") can be applied to identify which consumers may need special attention and to help know what services and interventions can be most effective in achieving competitive employment.

Hypotheses based on previous research:

1. *Demographic and educational factors*: We expected negative effects for being female or African American. More education was expected to be positive. An effect for having an Individualized Education Program (IEP) was open.

2. *Disability factors*: We expected negative effects for more severe VI, significant disability, and secondary disabilities.

3. *Work experience and economic support factors*: We expected evidence of work experience would be a strong positive factor, whereas being a Social Security beneficiary would be negative.

4. *Service Factors*: We generally expected positive effects for services directly related to employment (e.g., training, acquisition, and support), technology, and educational advancement (e.g., college). Other effects for services were open.

## Method

### Data Source

Data were from the annual RSA Case Service Report (RSA-911) for FY 2010. Each consumer record included demographic, socioeconomic, and disability information at referral, and service and outcome information for all cases closed during the fiscal year. We selected consumers closed in VR who had Primary Disability codes 01 Blindness (legally blind) or 02 Other Visual Impairments (visually impaired), age 21 or younger at application, and who received services (Type of Closure 3 [had employment outcome] or 4 [no employment outcome after receiving services]) as the initial analysis population for this fiscal year ($N = 2,282$).

**Characteristics of sample.** Average age was 17.30 ($s = 2.20$), and 46.8% were female. For race/ethnicity, 63.7% were White, 15.7% African American, 1.6% American Indian, 2.0% Asian American, 0.5% Hawaiian or Pacific Islander, 14.9% Hispanic of any race, and 1.6%

multiple race. Regarding disabilities, 54.0% were blind (vs. VI, not legally blind), 96.5% had a

RSA-defined significant disability, 11.2% cognitive secondary disability, 21.2% noncognitive

secondary disability. For earnings and supports, 9.8% had some earnings at application, 32.4%

received SSI, and 5.6%, SSDI.

**Analysis Variables**

**Competitive employment criterion measures.**

*RSA Competitive Employment (CE) indicator.* This measure, provided in the RSA-911,

was coded (1) –indicating competitive employment–when RSA variable Employment Status At

Closure was coded (1) employment without supports in an integrated setting, (3) self-

employment, (4) state-managed Business Enterprise Program (BEP), and (7) employment with

supports in an integrated setting; and was full or part-time, and compensated at the maximum of

the State or Federal minimum wage (RSA Case Service Report, 2008, applicable to FY2010).

The RSA CE indicator was coded (0) for noncompetitive employment when Employment Status

at Closure was coded (5) homemaker, (6) unpaid family worker, or when the above income

criterion was not met. (Note that Employment Status at Closure Code 2–Extended Employment

is no longer considered an employment outcome and is thus excluded from the RSA CE

indicator.) The rate of competitive employment with this indicator was 91.3%. We believe this

measure is problematic because it is available only for cases closed with some employment

outcome. It is not available (missing) for consumers closed *after services* with Employment

Status at Closure Code 2, extended employment, and all those closed without an employment

outcome (RSA Type of Closure Code 4, exited without an employment outcome, after receiving

services). These were termed *unsuccessful* closures. Problems with using the RSA CE indicator

include substantial exclusion of data (54.8% excluded who were unsuccessful) and resulting

analytic sample-size reduction, restriction in outcome categories being considered, and distortion of the competitive closure success rate. An educational analogy for the concern for use of this indicator is that it is like evaluating the percentage of As in a course out of the number passing, rather than out of the number completing the course (passing and failing).

*The Objective Competitive Employment (CE) indicator.* To avoid these problems, we developed the Objective CE indicator, which has exactly the same *competitive* closure criteria but expands the noncompetitive ("0" code) category to include Extended Employment (Employment Status at Closure – Code 2) and those *not employed after services* (RSA Type of Closure – Code 4 – Exited without an employment outcome, after services). The rate of Objective CE was 41.3%. Our analyses will compare these two outcome measures.

**Predictors of competitive employment.** We define "predictors" as factors known early in the VR process (i.e., at application) or during the service delivery process (e.g., type of services received), and not to include "outcome" information known at closure (e.g., education at closure).

*Demographic and education factors.* *Gender* (1 = female) and *Race/ethnicity* categories White, African American, American Indian or Alaskan Native, Asian or Pacific Islander, Hispanic of any race, and having and IEP were indicator coded. Education at application was recoded, due to small $n$s in the extreme categories, to a 1 (No formal schooling or elementary [grades 1-8]) to 7 (Bachelor's degree or higher) scale.

*Disability factors.* Indicators were used for *significant disability* [ impairment(s) resulting in substantial functional limitations and requiring multiple services over extended time (RSA, 2008, p. 48)], and two types of *secondary disability—noncognitive* and *cognitive* (based on RSA

Code for Impairments 17) (RSA, 2008, p. 13). *Blind vs. VI* indicated legal blindness vs. visually

impaired, not legally blind.

   ***Work-related and economic support factors.*** We considered weekly earnings at

application (indicator coded) and found it was the best measure to reflect prior work experience

and avoid multicollinearity with SSI and SSDI indicators.

   ***Service factors.*** Available information was used to develop indicators for receipt of

twenty-two different services (see RSA, 2008, pp. 22-30). A study objective was to

systematically investigate services, service patterns, and their relationship to employment

outcomes. We followed the strategy of Giesen and D'Amato (1992) who identified dimensions

of service delivery to VR consumers and related those dimensions to employment outcomes.

Given the number of services and expected correlations in patterns of receipt, we conducted

factor analyses (FA) to determine clusters of services. Because of indicator coding of services,

the correlation matrix computed during FA consisted of phi coefficients. Because of assumption

violation concerns related to use of phi correlation (e.g., Parry & McArdle, 1991), we used the

tetrachoric correlation matrix computed by PRELIS 2.80 (Jöreskog & Sörbom, 2006) as matrix

input for SPSS for conduct of an exploratory factor analysis using ULS extraction and Oblimin

rotation. A five-factor final solution was indicated based on eigenvalue, scree test, and

interpretability criteria, with 67.4% variance explained.

   *Factors obtained. Factor (F)1, Remedial skills & assistance,* had highest loadings for

interpreter (.72), remedial/literacy training (.71), personal attendant (.60), and reader* (.36) ("*"

indicates item cross-loading). *F2, General/Vocational Supports,* had highest loadings for

services related to maintenance (.80), vocational training (.73), transportation (.66), Other

Services (.54), and rehabilitation technology* (.40). *F3, Adjustment,* had highest loadings for

information and referral (.74), assessment (.66), VR counseling (.60), technical assistance (.54), and disability related augmentative skills training (.41). *F4, Job Placement,* had highest loadings for assistance related to job placement (.94) and job search (.87), on-job supports (.74), on-the-job training (OJT) (.65), and job readiness training (.56). *F5, College,* had highest loadings for reader* (.83), college training (.76), and rehabilitation technology* (.54).

Because factor scores are not available with correlation matrix input, we created factor sums from the four highest loading variables for each factor above and used these in subsequent analyses. (F5, *College*, was prorated to yield a maximum sum of 4.)

**Data Analysis**

Multiple logistic regression (MLR) (using SPSS v18) was employed because the criterion measure (competitive employment) was dichotomous, and MLR is preferred in this context. A sequential block approach was taken such that the demographic and education measures were entered first, then other blocks, and service-related measures, last. Multicollinearity was checked for all blocks and overall, and no difficulties were present. All predictors were retained in the analysis through all entry blocks. The analysis sequence was repeated for each of the two competitive employment measures, for comparison.

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**Results**

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**Descriptive Statistics**

For descriptive reporting, three groups were formed: (a) Competitive closure, with employment outcome (*Competitive*); (b) Noncompetitive closure, with employment outcome (*Noncompetitive*); and (c) No employment outcome but received services (*Unsuccessful*). Descriptive statistics for all measures by these outcome categories are shown in Table 1. Based on crosstabulation of race groups by the three outcome groups (not shown), there was a higher

percentage of African Americans (19%) in the Unsuccessful group compared to 10% and 12% in

the Noncompetitive and Competitive groups, respectively.  Also, there was a lower percentage of

Hispanics (12%) in the Unsuccessful group compared to 18% in both the Noncompetitive and

Competitive groups. Otherwise, race group percentage profiles were similar.

Table 1

*Descriptive Statistics for Predictor Variables by Outcome Group*

| | Outcome Groups | | |
|---|---|---|---|
| | Competitive | Noncompetitive | Unsuccessful |
| Measure | $n = 942$ | $n = 90$ | $n = 1250$ |
| Gender (female) | 0.448 | 0.589 | 0.474 |
| | 0.016 | 0.052 | 0.014 |
| Education level mean | 2.994 | 2.867 | 2.650 |
| | 0.044 | 0.127 | 0.033 |
| Blind vs. VI | 0.446 | 0.667 | 0.602 |
| | 0.016 | 0.050 | 0.014 |
| Significant disability | 0.945 | 0.978 | 0.978 |
| | 0.007 | 0.016 | 0.004 |
| Cognitive disability | 0.093 | 0.244 | 0.116 |
| | 0.009 | 0.046 | 0.009 |
| Noncognitive disability | 0.162 | 0.200 | 0.250 |
| | 0.012 | 0.042 | 0.012 |
| Any earnings at application | 0.167 | 0.056 | 0.049 |
| | 0.012 | 0.024 | 0.006 |
| SSI at application | 0.212 | 0.411 | 0.402 |
| | 0.013 | 0.052 | 0.014 |
| SSDI at application | 0.046 | 0.044 | 0.064 |
| | 0.007 | 0.022 | 0.007 |
| IEP | 0.452 | 0.489 | 0.537 |
| | 0.016 | 0.053 | 0.014 |
| Remedial Skills/Assistance | 0.124 | 0.156 | 0.169 |
| | 0.012 | 0.042 | 0.016 |
| General/Vocational Supports | 1.598 | 1.311 | 1.226 |
| | 0.041 | 0.119 | 0.034 |
| Adjustment Services | 1.845 | 2.422 | 1.814 |
| | 0.035 | 0.114 | 0.028 |
| Job Placement Services | 0.858 | 0.778 | 0.394 |
| | 0.037 | 0.122 | 0.024 |
| College & Related Services | 1.500 | 1.437 | 1.126 |
| | 0.040 | 0.106 | 0.033 |

*Note.* For each measure, SE is given below each proportion or mean. Means indicated for Service Factors.

**Results for Logistic Regression Models**

The likelihood ratio test for the full model using Objective CE as the dependent variable was significant, $\chi^2$ (21, $N$ = 2,266) = 533.048, $p < .001$. Because of hypersensitivity due to the large $N$, we emphasize effect size measures for evaluating the models. The Nagelkerke $R^2$ was .282, indicating a very large effect. The Hosmer and Lemeshow test (also hypersensitive), $\chi^2$ (8, $N$ = 2,266) = 12.61, $p = .126$, indicated acceptable fit between the overall model and the data. (Logistic regression results when using the RSA CE indicator also were significant, $p < .001$.) Full-model logistic regression results including odds ratios for the two CE measures are shown in Table 2.

**Results for Objective Competitive Employment measures.**

*Education and demographic factors.* Expectations were generally confirmed. Odds of CE were less for females and African Americans but greater for Hispanic consumers compared to White, and greater for more education at application. IEP was not significant.

*Disability factors.* As expected, the odds of CE were lower for consumers with more severe visual impairment (blind vs. VI), for those with a cognitive and noncognitive secondary disability, but significant disability was not statistically significant and high in all outcome groups (see Table 1).

*Work and support factors.* Odds of CE were much higher for those who had some earnings at application, and lower for beneficiaries of SSI but not SSDI ($p = .103$).

*Service factors.* Odds of CE were lower for Remedial Services; higher for General / Vocational Supports, Job Placement, and College Services.

**Importance of predictors.** We used odds ratios (OR) as measures of effect size and importance of predictors. However, ORs are problematic for comparisons when some predictor are dichotomous and some are continuous, and when some effects are positive and some, negative (Cohen et al., 2003, p. 511). Given these difficulties, we created an OR index (not shown) in which we took the reciprocals of only the ORs less than 1.00  and used that index to rank our predictors in terms of importance. The largest six effects were: having  income at application (positive), receipt of SSI (negative), receipt of remedial services (negative), receipt of job placement services (positive), blind vs. VI (negative), and Hispanic ethnicity (positive).

**Comparison of results based on the RSA CE outcome measures.** Results for the RSA indicator can be compared to those for the Objective CE indicator by examination of panels (a) and (b) in Table 2. The RSA indicator did show the same gender effect but did not show any race effects: no effect on competitive outcome for being African American or Hispanic ethnicity. Neither were effects shown for education level. See Table 2 for other comparisons.

Table 2

*Logistic Regression Results for Objective and RSA Measures of Competitive Employment*

| | (a) | | | | | (b) RSA Competitive Employment | | |
| | Objective Competitive Employment | | | | | | | |
| Variable | $b$ | $SE$ | Wald $\chi^2$ | $p$ | $Exp(b)$ | Wald $\chi^2$ | $p$ | $Exp(b)$ |
|---|---|---|---|---|---|---|---|---|
| Gender | -.202 | .098 | 4.309 | .038 | .817 | 8.163 | .004 | .497 |
| Race | | | 25.120 | .000 | | 3.710 | .716 | |
|   African American | -.352 | .146 | 5.827 | .016 | .703 | .120 | .729 | 1.148 |
|   American Indian | .131 | .367 | .128 | .720 | 1.140 | .156 | .693 | 1.526 |
|   Asian American | .260 | .344 | .571 | .450 | 1.297 | .186 | .666 | 1.415 |
|   Hawaiian or Pacific Islander | -1.068 | .788 | 1.838 | .175 | .344 | 2.927 | .087 | .155 |
|   Hispanic-any race | .501 | .145 | 11.949 | .001 | 1.650 | .138 | .710 | .884 |
|   Multiple race | .251 | .379 | .439 | .508 | 1.285 | .001 | .979 | .978 |
| Education level | .140 | .040 | 11.940 | .001 | 1.150 | .000 | .990 | 1.001 |
| Blind vs. VI | -.551 | .103 | 28.531 | .000 | .577 | 6.959 | .008 | .488 |
| Significant disability | -.347 | .272 | 1.627 | .202 | .707 | .003 | .956 | .958 |
| Cognitive disability | -.418 | .171 | 6.002 | .014 | .658 | 16.393 | .000 | .257 |
| Noncognitive disability | -.439 | .126 | 12.043 | .001 | .645 | .891 | .345 | .741 |
| Any earnings at application | 1.170 | .168 | 48.426 | .000 | 3.222 | 5.534 | .019 | 3.190 |
| SSI at application | -.881 | .114 | 59.251 | .000 | .415 | 7.825 | .005 | .483 |
| SSDI at application | -.358 | .219 | 2.657 | .103 | .699 | .162 | .687 | 1.261 |
| IEP | -.038 | .104 | .137 | .711 | .962 | .771 | .380 | 1.259 |
|   Remedial Skills/ Assistance | -.867 | .116 | 56.005 | .000 | .420 | .095 | .758 | .898 |
|   General/ Vocational Supports | .163 | .042 | 15.175 | .000 | 1.177 | 2.860 | .091 | 1.201 |
|   Adjustment Services | -.068 | .051 | 1.751 | .186 | .934 | 18.902 | .000 | .575 |
|   Job Placement Services | .674 | .056 | 147.117 | .000 | 1.961 | 10.915 | .001 | 1.464 |
|   College & Related Services | .364 | .048 | 56.704 | .000 | 1.440 | 3.184 | .074 | 1.249 |
| Constant | -.632 | .318 | 3.961 | .047 | .532 | 17.502 | .000 | 40.724 |

*Note.* IEP = Individualized Educational Program. Reference category for race was White. American Indian also includes Alaskan Native. Race $df = 6$, otherwise $df = 1$.

## Discussion

This study documented factors—predictive and related to—competitive employment outcomes for a national population of transition-age youths in VR who are blind or visually impaired, heretofore unavailable. There were two unique aspects. First, we brought attention to and compared two different definitions of competitive employment. Second, we examined service clusters (factors) and how they relate to competitive employment. A comprehensive,

multivariate approach to the relationship between clusters of services and outcomes has not been undertaken in decades, and these relationships for transition-age youths have not heretofore been available.

**Results differences and definitions of competitive outcome.** The range of competitive/noncompetitive proportions differ sharply [RSA CE (.91; .09) vs. Objective CE (.41; .59) ] as well as sample sizes ($N_{\text{RSA-CEI}} = 1026$  vs. $N_{\text{OCEI}} = 2266$ ). Both affect analysis power. Further, choice of indicator changes the research question. Using the RSA CE indicator asks what predictors discriminate between the competitive outcome group and the group closed with a *noncompetitive* outcome. The Objective CE indicator asks what predictors discriminate between the same competitive group and a group that combines noncompetitives and unsuccessfuls. Aanswers to these questions are different. Researchers need to specify their outcome measure carefully, and consumers of research literature need to be keenly aware of which competitive outcome measure is being used because findings may be different. We believe that findings based on the Objective CE indicator are most valid, of most interest, and more likely to show consistencies with previous research. Therefore, we focus on results base on the Objective CE indicator.

**Predictors of competitive employment.**

*Demographic and education factors.* Reduced likelihood of competitive employment for females and African Americans is consistent with previous research for adults with VR (e.g., Giesen, et al., 1985) but was not detected before for transition-age youths with VI (McDonnall, 2010). However, the positive effect on CE for being Hispanic is consistent with (McDonnall, 2010). Our finding of a positive effect for more education at application has mixed consistency with McDonnall (2010) who did not detect an effect for education level but did find an effect for

academic competency. Sample and methodological differences may account for these

inconsistencies. A reasonable conclusion seems to be that education is important for competitive

employment for youths with VI if it leads to increased academic competency.

*Disability factors.* We confirmed that greater severity of VI and having additional

disabilities (both cognitive and noncognitive) are negative factors for competitive employment.

Vision loss and health factors have either mixed support or have not been studied with this

population (McDonnall, 2010, 2011).

*Work and support factors.* We corroborated the importance of early work experience for

transition-age youths, reported by McDonnall, by our strong finding of increased likelihood of

CE for those with earnings at application. As expected, receipt of SSI was a negative factor

because these consumers have, by eligibility, significant disabilities and a financial disincentive

for employment. SSDI receipt was not a significant disincentive.

*Service factors.* Previous VR system outcome research with adults with VI (e.g., Hill,

1989) has reported relationships between specific services and employment. We grouped

services through factor analysis and thus showed that services are provided in clusters,

presumably according to the needs of consumers. We found that services related to job

placement, college attendance, and general/ vocational services were important predictors of

competitive employment for youths with VI, when controlling for demographic, educational,

disability, and socioeconomic factors. These finding were consistent with adult consumers with

VI (Giesen & D'Amato, 1992).

Receipt of "remedial skills and assistance" services (i.e., interpreter, remedial/literacy

training, personal attendant, and reader services) was a negative predictor for CE and was one of

the three most important predictors. This finding emphasizes that we are examining

relationships; consumer needs and goals are most likely driving services provided. Consumers receiving such services would be expected to have multiple additional disabilities such as hearing impairments, more severe disabilities, perhaps mobility impairments, lower educational levels, and may not be native English speakers.

**Limitations.** Measures are limited in the RSA-911 data. Proxies or indicators must be used as we did for early work experience. Other important measures are simply not available, including personal, social-environmental, motivational, and VR process measures (e.g., parental involvement, consumer-counselor relationship). Outcome research using other databases will be needed to complete the "big picture" of factors influencing employment outcomes. Nevertheless, the RSA-911database, due to its size, national population scope, and annual availability provides an important ongoing data source for understanding the factors that impact employment outcomes for transition-age youths with visual impairments.

**Recommendations for Practice, Policy, and Research**

Recommendations based on most important influences:

- For VR, emphasis should be placed on job placement, college-related (including rehabilitation technology), and vocational training-related services.

- For transition programs/practices targeting secondary-age students, incorporate efforts to achieve early work experiences; include elements related to job readiness, broadly defined.

- For policy, consumers who are female, African American, have more severe visual impairments, additional disabilities, are SSA beneficiaries, or did not graduate from high school are at greater risk and will need extra efforts to achieve competitive employment.

- For future research, consider parental involvement. Also, subgroups of race/gender and SSI recipients need to be examined to identify risk factors, barriers, and determine services that are most effective with these groups.

Early planning is crucial to the successful transition of students with VI to work. Unfortunately, VR counselors may have minimal involvement with students while they are in secondary school settings. Interagency agreements between VR agencies and local education agencies can provide a framework enabling VR counselors to identify students with VI and to be actively involved early in transition planning. Minimally, this would include VR counselors participating in IEP or 504 meetings to identify opportunities for youths for work experiences and start planning VR services related to post-secondary education, employment, and independent-living. Importantly, VR counselors would have opportunities to address with students and their parents the unrealistically low societal expectations about the work capacity of people with VI and to generate a high expectation for work. This is especially important for students who are SSI recipients who may assume that they cannot work. Finally, VR agencies must provide individualized programs that incorporate advances in technologies and that will motivate and enable youths with VI to participate more fully in the economic mainstream.

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