

Running Head: EMPLOYMENT PREDICTORS FOR YOUTH WITH VISION LOSS

Factors Predicting Post-High School Employment for Young Adults with Visual Impairments

Abstract

Although low levels of employment among transition-age youth with visual impairments (VI) have long been a concern, empirical research in this area is very limited. The purpose of this study was to identify factors that predict future employment for this population, and to compare these factors to the factors that predict employment for the general population. Participants in the study were young adults between the ages of 18 and 23 in 2002 whose data was obtained from the National Longitudinal Survey of Youth 1997. Multilevel modeling for longitudinal data was the technique used to analyze five years of employment data for the participants. Two models were developed and tested: one for persons with VI and one for the general population. Independent variables found to significantly predict employment for young adults with VI were number of jobs held as a teenager, math and verbal aptitude, parental support, and self-reported health. Participation in school-to-work programs and educational level did not significantly predict employment for this population. Results are compared and contrasted with results for the general population. The importance of having a number of early work experiences while also focusing on academic skills for youth with VI is discussed.

KEYWORDS: visual impairment, youth, transition, employment, predictors

Factors Predicting Post-High School Employment for Young Adults with Visual Impairments

Low levels of employment among transition-age youth with blindness or low vision (i.e., visual impairments [VI]) have long been a concern of professionals who work with this population. Recent data documents the severity of the problem. The Current Population Survey reflects that only a small percentage of persons aged 16 to 19 with VI¹ are in the labor force (29.7%), and that unemployment for this group is high (33.3%) (Bureau of Labor Statistics, 2009). The proportion of this population that is working (the employment-population ratio) is 19.8. This compares to 29.2 for the general population. The situation is slightly better for youth aged 20 to 24 years: their participation rate is 49.0% and their unemployment rate is 20.0%. The proportion that is working is 39.5, which compares to 63.8 for the general population. The second National Longitudinal Transition Study (NLTS2), provides current information about the employment status of youth with VI who received special education services in high school. Only 43% of out-of-high school youth reported being employed, while 60% reported being employed at some time since leaving high school (Newman, Wagner, Cameto, & Knokey, 2009).

Clearly, a large percentage of youth with VI are not working. Their labor force participation rates are lower and their unemployment rates are higher than the general population. Yet research has been very limited in this area. Little empirical research has been conducted to study the factors that predict employment for this population. Most federal-state vocational rehabilitation programs provide a special program for youth with VI to help prepare them to transition to work. However, program curricula are generally not based on empirical evidence and the results of the programs are not subjected to empirical scrutiny. Identifying factors associated with future employment for this population is essential to planning effective

transition programs. Using a large national database, the National Longitudinal Survey of Youth 1997, several factors that predict future employment for a sample of young adults with self-reported VI were identified.

Literature Review

As mentioned, empirical research on employment outcomes of transition-age youth with VI is very limited. Much of our knowledge in this area has come from the NLTS and NLTS2 studies, anecdotal reports, and expert opinions in the field. Reports from the NLTS studies have provided valuable information about the employment status of youth with VI, but they have not provided analyses of relationships between employment and other variables for this population.

Other than NLTS reports, only a handful of empirical research articles have focused on employment of transition-age youth with VI. Of these, only two evaluated relationships between employment and other variables (McDonnall & Crudden, 2009; Shaw, Gold, & Wolffe, 2007). Shaw et al. provided descriptive information about the employment-related experiences of youth with VI in Canada. They reported that correlational analyses documented an association between employment and higher levels of education, greater levels of functional vision, performance of activities of daily living, and higher parental expectations, but actual data on these relationships was not provided. The McDonnall and Crudden study investigated the relationship between several variables and successful employment of transition-age consumers of the federal-state vocational rehabilitation (VR) system. It documented an association between employment and work experience (having worked since disability began and number of jobs held prior to VR), academic achievement in reading and mathematics, use of assistive technology, self-determination, and locus of control. These variables can be considered predictors of

employment, as all independent variables were measured prior to evaluating employment status. Limitations of the study were the small sample size and the use of univariate analyses.

Some of the findings from McDonnall and Crudden's study are supported by research involving transition-age youth with other disabilities. Stodden and colleagues (2001) conducted a review of factors that influence post-school outcomes for youth with disabilities, including employment. They reported that a large number of studies provide support for the importance of gaining work experience during high school, including paid work, work-study jobs, and vocational education experiences. A long-lasting relationship between high school and future employment has also been established for the general population (Carr, Wright, & Brody, 1996). In addition, research has supported the value of school-to-work programs for the future employment of youth with disabilities (Burgstahler, 2001; Shandra & Hogan, 2008). Some of these programs are work-based and some are school-based, and both have been found beneficial for different aspects of employment (Shandra & Hogan, 2008).

Much research has supported self-determination's association with positive outcomes for students with disabilities (e.g., Benz, Lindstrom, & Yovanoff, 2000; Bremer, Kachgal, & Schoeller, 2003). Stodden et al. (2001) reported that a number of studies support the importance of academic competence for positive transition outcomes of youth with disabilities. There is a concern that students with disabilities are often not held to the same academic standards as the general student population. This is believed to result in lower occupational aspirations and poorer outcomes. When students with disabilities are placed in lower-level mathematics and English courses, they may never achieve the academic skills that have been shown to be related to better transition outcomes (Benz et al., 2000).

Although not included in McDonnall and Crudden's (2009) study, parental support is another variable that has received attention in the literature on transition outcomes of youth, both with and without disabilities. Research has supported the importance of parental support for the career self-efficacy of youth in the general population (Allisman-Brissett, Turner, & Skovholt, 2004; Turner & Lapan, 2002), and higher parental expectations have been linked to positive employment outcomes for young women with disabilities (Lindstrom & Benz, 2002). Research on parental support of youth with VI has documented its importance to their well-being, but has not been related specifically to employment (e.g., Chang & Schaller, 2000; Kef, 2002).

Employment Research Involving Adults with VI

Although empirical research on employment of transition-age youth with VI is limited, research with this focus is more common among adults with VI. Some of these studies included transition-age youth in addition to adults. Older research (conducted 20 years ago or more) documented an association between employment for adults with VI and several variables: male gender, higher educational level, no additional disabilities, work experience, not receiving financial assistance, less severe vision loss, and current age (Giesen & Ford, 1986; Giesen et al., 1985; Hill, 1989; Kirchner & Peterson, 1982). More recent research has supported the importance of some of these variables but has also uncovered additional factors important to employment: higher level of education, including having received an educational certificate or degree; work experience; good self-rated health; lower functional disability; and better social support, including wider supportive social networks and more helpful family support (Capella-McDonnall, 2005; Cimarolli & Wang, 2006; Kirchner, Schmeidler, & Todorov, 1999; Roy, Dimigen, & Taylor, 1998). Other research has supported the importance of social support and computer technology skills in helping persons with VI retain employment (Crudden, 2002).

The Current Study

Considering the well-documented low levels of employment for youth and young adults with VI, it is important to identify factors that predict employment for this population. Knowledge of these factors can be used to develop or refine transition programs that assist this population in transitioning from school to work. It is also relevant to determine whether factors predicting employment for young adults with VI are the same as factors predicting employment for youth in general. Research has documented that some variables are associated with employment for both the general population and youth with disabilities (e.g., early work experience, parental support, participation in school-to-work programs). However, few studies utilizing the same database and variables have been conducted to allow a comparison of factors predicting employment for transition-age youth. The NLSY97 allows for such an assessment by providing a point of comparison for youth with VI to help recognize areas of concern and bring deeper meaning to the findings (Chambers, Rabren, & Dunn, 2009). The following research questions were addressed in this study:

1. What factors predict employment for young adults with VI?
2. Are the factors that predict employment the same for young adults with VI and the general population of young adults?

Method

Data Source

Data taken from the National Longitudinal Survey of Youth 1997 (NLSY97) was used for this study. NLSY97, so named because data were initially collected in 1997, is part of the National Longitudinal Surveys program, sponsored by the United States Department of Labor, Bureau of Labor Statistics (BLS). The focus of these surveys is collecting detailed information

about the labor-market experiences of diverse groups of men and women. The NLSY97 is used to investigate the transitions from school to employment for youth in the United States. Because questions related to visual impairment are available in the dataset, it was possible to utilize it to evaluate the school-to-work experiences of this population.

The NLSY97 was designed to be representative of United States residents in 1997 who were born between the years 1980 and 1984 (ages 12 to 16 as of December 31, 1996) and originally included 8,984 participants. Data collection is ongoing, and new data are collected every year from the continuing participants through in-person or telephone interviews. Response rates have decreased over time: 7,756 persons were interviewed in 2002 and 7,559 persons were interviewed in 2006, representing 86.3% and 84.1% of the original sample. Additional data have also been obtained from parent interviews, school surveys and transcripts, and an aptitude assessment. A wide range of employment, education, and family and community background information is available in the database. At the time of these analyses, data were available from the first ten rounds of data collection (1997 through 2006). More detailed information about the survey and its methodology is available from BLS's website (www.bls.gov/nls/nlsy97.htm).

Samples

Data obtained from interviews in 2002 were used to identify persons with VI. Participants were asked if they had problems seeing. If they responded yes, they were asked to identify the problem, from options of blindness in one eye, blindness in both eyes, or other vision difficulty. Respondents were also asked if the vision problem currently limits their activities. The sample was identified by a response of (a) blindness in both eyes or (b) blindness in one eye or other vision difficulty in addition to an indication that the vision problem caused limitations to activities. This resulted in a sample of 178 individuals with a visual impairment; due to missing

data, the usable sample size was reduced to $N=140$ (623 observations). All participants who did *not* indicate that they had problems seeing (7,205 individuals) were included in the comparison sample; the usable sample size was 5,734 (25,538 observations) due to missing data. Five years of outcome data (2002 through 2006) was used to create the employment models.

Dependent Variable

The outcome of interest to this study was employment. Rather than utilize a dichotomous employment variable as is often done in research with this population, employment was measured by the annual number of hours worked. This variable was created by BLS from several other variables and is available in each year's dataset. It provides all the information a dichotomous employment variable does and more. Although it does not provide information about the quality of the job a person has, it does provide information about the quantity of work a person performed each year.

Independent Variables

Six independent variables, in addition to time in years, were included in the models to assess their impact on employment. Variables available in the data that were previously found to be predictors of employment for youth or adults with VI were selected. The *number of jobs held as a teenager* was a variable created by BLS from several other variables and was available each year in the data. It included all jobs held with an employer (including internship positions) from age 14 to 19, but did not include self-employment or volunteer positions. This variable was modeled as time-variant, as some of the participants were 18 or 19 at the start of the study. When a participant reached the age of 20, this variable remained constant each subsequent year.

Participation in school-to-work (STW) programs was a time-invariant variable created from data taken from all the years participants were in junior high or high school. At each wave,

participants in grades 7 to 12 were asked whether they had participated in one of six STW programs (mentoring, job shadowing, internship, tech prep, school-sponsored enterprise, and cooperative education). A detailed description of the STW programs is available in the NLSY97 codebooks, which are available from BLS's website. Preliminary analyses indicated that participation in each of the individual STW programs were not significant predictors of employment for youth with VI; therefore, one variable was created to document total number of STW programs the person had participated in during high school. Each person could participate in up to six STW program each year; the total number of programs they participated in during each year of junior high and high school was summed. This variable ranged in value from 0 to 11 for the VI group and 0 to 18 for the comparison group.

Two variables associated with educational achievement were included in the models. The first was the participants' percentile score on the math and verbal portion of the *Armed Services Vocational Aptitude Battery (ASVAB)*, which is a measure of aptitude. Similar to the Armed Forces Qualification Test (AFQT), the score was developed based on four subscales: mathematical knowledge, arithmetic reasoning, word knowledge, and paragraph comprehension. Scores ranged from 0 to 100, representing percentile ranks. Detailed information about how this variable was created is available in the NLSY97 User's Guide. A significant amount of research has documented the reliability and validity of the ASVAB and the AFQT (Defense Manpower Data Center, 2006; Welsh, Kucinkas, & Curran, 1990). This assessment was administered once during the summer or fall of 1997 or the winter of 1998, with the score available in 1999, and was therefore a time-invariant variable. The second variable was the *number of years of education* that the person had completed. This variable was updated each year as necessary in the NLSY97 data, and was consequently modeled as time-variant.

Parental support was a time-invariant variable that was developed based on respondents' answers to a question about how supportive, in general, their mothers and/or fathers were, with the option of responding very supportive, somewhat supportive, and not very supportive. Scores ranged from 0 to 2, with higher scores indicating lower levels of parental support. These variables were available in 1997, 1998, 1999, 2000, and 2002 for both mothers and fathers. Not all participants had data available at each time point, and some had data available for only one parent. This variable was created as an average across all data points available for each person. The number of data points available for this variable ranged from 1 to 12, with the majority of the samples having 6 or more data points.

Self-reported health was a time-variant variable that was measured with participant's response to a single question each year: "In general, how is your health?" There were five response options, ranging from excellent to poor. A dichotomous variable was developed to identify persons in sub-optimal health, with those reporting fair or poor health given a value of 1 and those reporting good, very good, or excellent health given a value of 0.

Control Variables

Several variables thought to be associated with employment, but not of primary interest to this study, were included in the models as control variables. Some of these variables were demographic: *age* (in 2002), *gender*, and *race/ethnicity*, modeled as two dichotomous variables representing *African American race* and *Hispanic ethnicity*, were included in the models. Two dichotomous variables related to other disabling conditions were also included. If participants reported having asthma, diabetes, cancer, epilepsy, HIV/AIDS, cardiovascular or heart condition, or some other chronic health condition in 2002, *chronic conditions* was given a value of 1; otherwise it was given a value of 0. If participants' parents reported that they had a learning

disability, attention disorder, emotional/behavioral disorder, mental retardation, or other learning, emotional, or mental condition that limited their ability to attend school regularly, do regular school work, or work for pay in 1997, *learning/emotional disorder* was given a value of 1; otherwise it was given a value of 0. *Number of college credits* taken by the participant during that year was the final control variable included in the models, as work hours could be expected to be fewer for those taking more college credits. This time-variant variable was created by summing the number of credits taken across different colleges attended each year.

Statistical Technique

The statistical technique used to analyze the data was multilevel modeling, also known as individual growth curve modeling. The statistical models have two levels: (a) the level-1 model, referred to as the individual growth model, which represents the change in the outcome measure experienced by each respondent over time and (b) the level-2 model which represents differences in changes in the outcome measure across respondents. Multilevel modeling is a regression technique that involves incorporating a data's nested structure into the analyses; in the case of longitudinal data such as this, the observations taken over time are nested within people. It also allows for the estimation of random as well as fixed effects. Advantages to this method over other longitudinal methods, such as traditional repeated-measures, are that one can determine the average rate of change and individual variability in change over time and all observations can be utilized in the estimation of parameters, if they include at least one time point (Raudenbush & Bryk, 2002). This technique generally provides for a greater level of power compared to alternative methods, such as repeated-measures ANOVA or multiple regression (Hox, 2002; Fitzmaurice, Laird, & Ware, 2004). In addition to sample size, the total number of observations used in the analyses are important considerations for power. Unfortunately, determination of

power for multilevel longitudinal studies is complex and simple formulas are not available (Fitzmaurice et al., 2004). SAS version 9.2 (SAS Institute, Inc., Cary, NC), specifically the PROC MIXED procedure with full maximum likelihood estimation, was used for the analyses.

Results

Sample Demographics

Demographic characteristics for both samples are provided in Table 1. Note that these numbers represent unweighted estimates, as unweighted estimates were used in the multilevel models as recommended by Winship and Radbill (1994) for regression analyses. Obvious differences in the two samples exist, with youth with VI more disadvantaged. This is a common finding in research involving adults with VI (e.g., Horowitz, Brennan, & Reinhardt, 2005; Klein, Klein, & Jensen, 1994). Youth with VI were more likely to: be female and of Hispanic origin, have lower educational attainment, have a learning or emotional disorder, have a health condition, and report fair or poor health.

<Table 1 here>

Descriptive Analyses

Descriptive statistics for the key variables used in the study are also provided in Table 1 for each sample. The largest difference exhibited between the two groups was in the dependent variable, number of hours worked. Youth with VI consistently had lower average hours worked per year. In 2002, there was an almost 200-hour difference in number of hours worked, but the size of the difference decreased slightly over time. In 2006, the size of the difference decreased dramatically due to a large increase in the average number of hours worked for youth with VI. Given the noticeable differences in the groups on demographic characteristics, the groups were surprisingly similar on three of the other key variables: average number of teen jobs, ASVAB

math/verbal score, and parental support. Youth with VI were slightly less likely to have participated in STW programs.

Model Fitting

The model-fitting method recommended by Singer and Willett (2003) was followed to investigate the hypotheses. Two simple models, the unconditional means model and the unconditional growth model, were examined first. The unconditional means model, which does not include any predictors, partitions the total variance in the dependent variable, number of hours worked. The unconditional growth model, which includes time as its only predictor, determines whether number of hours worked significantly changes over time and whether between-person differences in change are due to individual differences in initial status or rate of change. Both models served as baselines for comparison to later models. Independent variables were entered into the models next, followed by the control variables. Interactions between the independent variables and time were tested. Variables not significant at $p < .05$ were removed from the models to arrive at the final models. Random effects included in the models were time and initial status (intercept), and both were significant in all models. Results for three of the models tested during the model fitting process (the unconditional growth model, an intermediate model, and the final model) are reported in Table 2. The final model for youth with VI explained 30.8% of the variance in initial status and 17.7% of the variance in rate of change in number of hours worked, while the final model for the general population of youth explained 23.8% and 10.4% of the variance in these areas respectively. The values presented in Table 2 are regression coefficients and their associated standard errors (in parentheses). Fixed effects can be interpreted in essentially the same way regression coefficients are interpreted in multiple regression models

(i.e., each one unit increase in X variable results in an estimated increase of Y in the outcome variable), and standard errors can be used to evaluate precision of the estimates.

Research Question 1: Factors that Predict Employment for Young Adults with VI

The majority of independent variables entered into the model were significant (i.e., time [measured in years], number of teen jobs, self-reported health, parental support, and ASVAB math/verbal score), but most of the control variables were not. The only significant control variables retained in the final model were number of college credits earned and being of Hispanic origin. There were no significant interactions between the independent variables and time. Over time, youth with VI worked an average of 138 extra hours per year. The number of jobs held as a teen was one of the most important predictors. For each job held as a teen, youth worked an average of 99 extra hours per year. The ASVAB math/verbal score was also an important predictor of future number of work hours, with higher ASVAB scores being associated with more work hours. Higher levels of parental support were also associated with a greater number of work hours, as was being in better health. Independent variables that were not significantly associated with number of hours working were participation in STW programs and education level.

<Table 2 here>

Research Question 2: Comparison of Factors that Predict Employment for the General Population and Youth with VI

Results for the general population model will be presented first, then the answer to the second research question will be addressed. The majority of both independent and control variables entered into this model were significant. Only two variables were not found to be significant predictors of number of work hours: parental support and being of Hispanic origin.

There was, however, a significant interaction between parental support and time. This means that parental support did have an influence on number of hours worked, but that this effect was greater as the study progressed than initially. There was also a significant interaction between number of teen jobs and time, with more teen jobs being associated with fewer additional work hours over time. Number of jobs held as a teen was one of the strongest predictors in this model, adding an average of 94.5 hours of work per job, as was time. Over time, youth in the general population worked an average of 145 additional hours per year.

To answer research question 2, results for independent variables in the final models for each population were compared. Although there were several similarities between the groups, there were also notable differences. Because the general population model had a higher level of power, given the much larger sample size available for the analyses, a comparison of t-values was not appropriate. Instead the size of the estimate for each independent variable was compared. Two variables with similar effects for the two groups were number of teen jobs held and time. One key difference noted between the groups was the effect of the ASVAB score on hours worked: it had a fairly strong positive effect for youth with VI, but it had a small *negative* effect for the general population of youth. Two variables predicted work hours for the general population of youth but not for youth with VI: participation in STW programs and education level. Although poor health was a predictor for both groups, the effect was larger for youth with VI. This was also true of parental support, but the effect of parental support was greater over time for the general population of youth while its effect was consistent for youth with VI.

Discussion

This study investigated factors that are predictive of employment for young adults with VI and compared these factors to factors that predict employment for the general population of

young adults. As other research has documented, work experience while young was an important predictor of employment in early adulthood. In this study, it was the strongest predictor for both youth with VI and for the general population.

There are several reasons why early work experiences with an employer may be important for future employment. Teenagers gain important knowledge about the world of work through their early work experiences, knowledge that is difficult to obtain outside of a work setting. A better understanding of employer expectations, appropriate workplace conduct and dress, and appropriate interactions with coworkers and supervisors can be obtained best through a work experience. Also important are the skills obtained working – almost any job will provide a few transferrable skills. A third reason that early work is important is that employers often prefer to hire someone with work experience. Employers may value experience because they can assume the person has general work knowledge and understanding of employer expectations, and they can have some confidence that the person will perform well for them if other, particularly multiple, employers have hired and employed that person in the past. Finally, having work experiences also makes it more likely that a young person will have valuable employer references available. Essentially, work experience makes a potential employee less of an “unknown quantity” and therefore less of a risk to hire.

As has already been documented, many youth with VI do not work, or have very limited work experiences. Why is it difficult for many youth with VI to gain work experience? Most youth find their first jobs in entry-level, low-skill positions. It may be that fewer of these kinds of positions are available to someone with a severe visual impairment. For example, many of the first jobs that youth perform – fast food worker, delivery driver, retail salesperson, convenience store clerk, lawn maintenance – are not readily accommodated for someone with a significant

visual impairment. In addition, most employers for these types of entry-level jobs have more than enough applicants to choose from; they may be less inclined to select someone with a visual impairment. Youth with VI may also be less aware of available jobs, either due to a general lack of knowledge about types of jobs people do (e.g., cannot see people working in daily life to learn about different jobs) or due to lack of knowledge about specific job openings (e.g., are not able to see the sign at the local café advertising for a worker).

Another major barrier to gaining work experience while a teenager is that school work generally takes longer to complete for youth with VI than normally sighted youth. Youth with VI are capable of performing at the same level academically as the general population, but it often takes them extra time and effort to do so. Therefore they may not have the time available to them for a job, at least during the school year. In the summer youth who are visually impaired often take part in transition programs. Unless these transition programs involve a work experience, they may not be able to have summer employment either. Youth with VI often experience the same difficulty while in college: completing assignments and keeping up with class work will often require them more time than sighted students, making it difficult for them to find time for employment.

An interesting finding in this study was that education level did not predict employment for youth with VI, but ASVAB math and verbal scores did. Previous research has supported the importance of education level to employment for adults with VI (e.g., Cimarolli & Wang, 2006; Kirchner et al., 1999), and this variable was in fact a significant predictor of employment for the general population in this study. Higher scores in math and verbal areas while in junior high or high school were associated with a greater number of hours worked for youth with VI who were out of secondary school. This relationship was also found in a recent study of transition age

youth with VI (McDonnall & Crudden, 2009). The association found in this study could be considered moderate in size, as each one point increase in score on the ASVAB was associated with more than an additional 6 hours of annual work. For example, a youth who scored at the 80th percentile would have been estimated to work approximately 370 hours more per year than a youth who scored in the 20th percentile. Conversely, for youth from the general population, higher ASVAB scores were associated with working *fewer* hours, although this association was weak. It appears that for youth with VI, just obtaining additional years of education does not support employment, but that obtaining academic skills does. Skills may be more important for youth with VI because the jobs available to them are more limited, or because it makes them more competitive against other workers with similar education levels.

Another important finding was the positive association between early parental support and future employment for youth with VI. This relationship was different for youth from the general population, as parental support was only predictive of employment over time, not initially, and the relationship was not as strong. The importance of parental support to youth with VI's well-being has been documented, but this is the first study to document its positive association with employment for this population. A significant relationship was also found between employment and self-rated health. Youth from both groups who were in fair or poor health were likely to work fewer hours, as expected. The association with employment was much larger for youth with VI than it was for the general population. This may indicate that overcoming fair or poor health to work is easier for someone without a vision loss, or it may be associated with the fact that many young adults with VI are eligible for Social Security payments. Persons not in good health may prefer to receive these full payments rather than work.

Finally, the lack of a significant association between STW programs and employment for young adults with VI was also an important finding. No published research could be located that evaluated the benefit of these programs; therefore, this is the first study to specifically address the value of STW programs for this population. As mentioned, results of preliminary analyses between the specific STW activities and employment (not presented here) indicated that none of the individual activities were associated with employment. Even the combined variable (total number of STW programs) did not exhibit a relationship with employment for persons with VI. Although this variable was a significant predictor of employment for the general population, its effect size was very small. Some individual STW activities exhibited a greater relationship with employment than the combined variable did for the general population (results not presented).

Limitations and Future Research

A limitation of this study was the need to rely on self-reported vision loss rather than a documented vision loss. Persons in the study reported whether they had problems seeing and whether this caused activity limitations for them, which is a self-perceived functional vision loss. This sample may differ from a sample of students with VI who receive special education services, such as those in the NLTS2 data, or from a sample identified by documented visual acuity deficits. Another limitation is that the importance of *quality* of the early work experiences was not assessed. The question of the value of quantity versus quality of early work experiences is important and should be pursued in future studies. The work experiences variable used in this study only included work with an employer, and did not consider self-employment (freelance jobs such as babysitting or lawn care) or volunteer experiences. It would be valuable to evaluate the effect of these kinds of work experiences on future employment for this population also. Finally, other factors that were not available to include in the analyses may also predict

employment for this population, such as social skills and self-determination. If those variables had been available, results for the variables included in the analyses may have been different.

Implications and Recommendations for Professionals Working with Youth with VI

The results indicate that obtaining work experience during high school and/or college is vital for youth with VI. Although this has been considered important among professionals in the field of blindness services, little empirical evidence has been available to support its significance. The results also indicate that the more work experiences obtained, the better for future employment. This is the second study to document the importance of number of early work experiences for this population, and it is something that has not necessarily been common knowledge among professionals. Professionals working with this population should encourage youth in high school and college to work during the summer or even over holiday breaks, such as Christmas, to increase the number of work experiences they obtain while in school. Vocational rehabilitation counselors should encourage their clients to find jobs on their own, but should provide assistance in this area if necessary. Even though the client's case will likely not be closed for many years (until schooling is completed), helping the person obtain short-term, part-time employment while in school will help them obtain permanent employment upon graduation. These findings also indicate the importance of work experiences being part of summer transition programs. All summer programs for this population should allow for the obtainment of work experience, as the summer may be the best, or only, time youth can participate in employment.

Although obtaining early work experience is extremely important for this population, the importance of obtaining academic skills should not be overlooked. As discussed, youth with VI often need more time to complete school assignments than sighted peers, resulting in less free time that could be used for employment. Based on the findings of this study, youth should not be

encouraged to work at the expense of their school work, as both work experience and academic skills are very important to future employment. Math, one of the areas of academic skills found important in this study and in previous research (McDonnall & Crudden, 2009), is an area that youth with VI are known to have difficulty with (e.g., Blackorby, Chorost, Garza, & Guzman, 2003). It is particularly important for professionals, and parents and students themselves, to recognize the importance of math skills to future employment. Professionals should share these results with youth, as they may help motivate them to focus more on achievement rather than just completion of assignments and passing grades.

It is important to acknowledge that focusing on both achievement and gaining work experience while in high school and even college may be difficult. This research documents that both are important to the future employment of youth with VI, and therefore identifying a way to allow them to do both is important. Some schools for the blind are providing an extra year of high school for their students (sometimes referred to as “super senior” year) that focuses on employment, in addition to any academic courses that still need to be completed and the expanded core curriculum recommended for students with VI (Hatlen, 1996). Given the difficulty youth with VI have with employment, an additional year of high school that allows them to focus on obtaining some work experience may be very valuable for them. It is possible that students attending regular high schools could also add another year of school. This would allow them to either take fewer classes during the earlier years of school, thereby providing them more time for part-time employment experiences, or to have a final year that focuses on employment, assuming support for this would be available from the school and/or the vocational rehabilitation counselor. Students attending regular schools may even consider attending a school for the blind for a fifth year if a quality program is available to them.

References

- Alliman-Brissett, A. E., Turner, S. L., & Skovholt, T. M. (2004). Parent support and African American adolescents' career self-efficacy. *Professional School Counseling, 7*, 124-132.
- Benz, M. R., Lindstrom, L., & Yovanoff, P. (2000). Improving graduation and employment outcomes of students with disabilities: predictive factors and student perspectives. *Exceptional Children, 66*(4), 509-529.
- Blackorby, J., Chorost, M., Garza, N., & Guzman, A. (2003). The academic performance of secondary school students with disabilities. In *The achievement of youth with disabilities during secondary school* (chap. 4). Available from <http://www.nlts.org>
- Bremer, C. D., Kachgal, M., & Schoeller, K. (2003). Self determination: Supporting successful transition. In Research to Practice Brief (2), 1. National Center on Secondary Education and Transition. Available from <http://www.ncset.org/publications/viewdesc.asp?id=962>
- Bureau of Labor Statistics (2009). Unpublished data tables of specific disability questions in the Current Population Survey. Washington, DC: Author.
- Burgstahler, S. (2001). A collaborative model to promote career success for students with disabilities. *Journal of Vocational Rehabilitation, 16*, 209-215.
- Capella-McDonnall, M. E. (2005). Predictors of competitive employment for blind and visually impaired consumers of vocational rehabilitation services. *Journal of Visual Impairment and Blindness, 99*, 303-315.
- Carr, R. V., Wright, J. D., & Brody, C. J. (1996). Effects of high school work experience a decade later: Evidence from the National Longitudinal Survey. *Sociology of Education, 69*, 66-81.

- Chambers, D., Rabren, K., & Dunn, C. (2009). A comparison of transition from high school to adult life of students with and without disabilities. *Career Development for Exceptional Individuals*, 32(1), 42-52.
- Chang, C., & Schaller, J. (2000). Perspectives of adolescents with VI on social support from their parents. *Journal of Visual Impairment & Blindness*, 94(2), 69-84.
- Cimarolli, V. R., & Wang, S. (2006). Differences in social support among employed and unemployed adults who are visually impaired. *Journal of Visual Impairment and Blindness*, 100(9), 545-556.
- Crudden, A. (2002). Employment after vision loss: Results of a collective case study. *Journal of Visual Impairment & Blindness*, 96(9), 615-621.
- Defense Manpower Data Center (2006). *CAT-ASVAB forms 1 & 2* (Technical Bulletin No. 1). Seaside, CA: Author. Available from http://www.official-asvab.com/docs/asvab_techbulletin_1.pdf
- Fitzmaurice, G. M., Laird, N. M., & Ware, J. H. (2004). *Applied longitudinal analysis*. Hoboken, NJ: John Wiley & Sons.
- Giesen, J. M., & Ford, K. L. (1986). *The unsuccessfully closed blind client: Characteristics of a nonemployment outcome* (Technical Report). Mississippi State University: Rehabilitation Research and Training Center on Blindness and Low Vision.
- Giesen, J. M., Graves, W. H., Schmitt, S., Lamb, A. M., Cook, D., Capps, C., & Boyet, K. (1985). *Predicting work status outcomes of blind/severely visually impaired clients of state rehabilitation agencies* (Technical Report). Mississippi State University: Rehabilitation Research and Training Center on Blindness and Low Vision.
- Hatlen, P. (1996). The core curriculum for blind and visually impaired students, including those

- with additional disabilities. *RE:view*, 28(1), 25-32.
- Hill, M. A. (1989). Work status outcomes of vocational rehabilitation clients who are blind or visually impaired. *Rehabilitation Counseling Bulletin*, 32, 219-230.
- Horowitz, A., Brennan, M., & Reinhardt, J.P. (2005). Prevalence and risk factors for self-reported visual impairment among middle-aged and older adults. *Research on Aging*, 27, 307-325.
- Hox, J. (2002). *Multilevel Analysis: Techniques and Applications*. Mahwah, NJ: Lawrence Erlbaum Assoc.
- Kef, S. (2002). Psychosocial adjustment and the meaning of social support for visually impaired adolescents. *Journal of Visual Impairment & Blindness*, 96(1), 22-37.
- Kirchner, C., & Peterson, R. (1982). Vocational and rehabilitation placements of blind and visually impaired clients: U.S. 1980. *Journal of Visual Impairment and Blindness*, 76(10), 426-429.
- Kirchner, C., Schmeidler, E., & Todorov, A. (1999). *Looking at employment through a lifespan telescope: Age, health, and employment status of people with serious visual impairment*. Mississippi State: Mississippi State University, RRTC on Blindness and Low Vision.
- Klein, R., Klein, B.E., & Jensen, S.C. (1994). The relation of socioeconomic factors to eye-related cataract, maculopathy, and impaired vision. The Beaver Dam Eye Study. *Ophthalmology*, 101, 1969-1979.
- Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology*, 47, 36-49.
- Lindstrom, E. L., & Benz, M. R. (2002). Phases of career development: Case studies of young women with learning disabilities. *Exceptional Children*, 69, 67-83.

- McDonnall, M.C., & Crudden, A. (2009). Factors impacting employment success for transition-age youth with VI, *Journal of Visual Impairment and Blindness*, 103, 329-341.
- Newman, L., Wagner, M., Cameto, R., & Knokey, A. M. (2009). *The Post-High School Outcomes of Youth with Disabilities up to 4 Years After High School*. Menlo Park, CA: SRI International. Available from http://www.nlts2.org/reports/2009_04/nlts2_report_2009_04_complete.pdf
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Roy, A.W.N., Dimigen, G., Taylor, M. (1998). The relationship between social networks and the employment of visually impaired college graduates, *Journal of Visual Impairment & Blindness*, 92(7), 423-432.
- Shandra, C. L., & Hogan, D. P. (2008). School-to-work program participation and the post-high school employment of young adults with disabilities. *Journal of Vocational Rehabilitation*, 29, 117-130.
- Shaw, A., Gold, D., & Wolffe, K. (2007). Employment-related experiences of youths who are visually impaired: How are these youths faring? *Journal of Visual Impairment & Blindness*, 101(1), 7-21.
- Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford University Press.
- Stodden, R. A., Dowrick, P., Gilmore, S., & Galloway, L.M. (2001). *A review of secondary school factors influencing postschool outcomes for youth with disabilities*. A report from the National Center for the Study of Postsecondary Educational Supports [online]. Available from <http://www.rrtc.hawaii.edu/documents/products/phase1/043-H01.pdf>

Turner, S. & Lapan, R. T. (2002). Career self-efficacy and perceptions of parent support in adolescent career development. *The Career Development Quarterly*, 51, 44-55.

Welsh, J. R., Kucinkas, S. K., & Curran, L. T. (1990). *Armed Services Vocational Battery (ASVAB): Integrative review of validity studies* (Technical Report No. 90-22). Brooks Air Force Base, TX: Air Force Systems Command. Available from http://www.official-asvab.com/documentation_res.htm

Winship, C., & Radbill, L. (1994). Sampling weights and regression analysis. *Sociological Methods and Research*, 23(2), 230-257.

Notes

¹Persons with VI were identified with an answer of yes to the following question: “Is anyone blind or does anyone have serious difficulty seeing even when wearing glasses?”

Funding

The contents of this publication were developed under a grant from the Department of Education, NIDRR grant number H133A070001. However, these contents do not necessarily represent the policy of the Department of Education, and readers should not assume endorsement by the Federal Government.