2015

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This is an accepted manuscript in the journal Rehabilitation Counseling Bulletin, the version of record can be found at https://doi.org/10.1177/0034355215595515.

Impacts of School Structural Factors and Student Factors on Employment Outcomes for Youth with Disabilities in Transition: A Secondary Data Analysis

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Abstract

This study aimed to examine school structural factors (i.e. free/reduced lunch percentage, proportion of minority student enrollment, and student-teacher ratio) that may contribute to employment outcomes for transitioning youth with disabilities beyond individual student factors through hierarchical linear modeling (HLM) analyses. The secondary data for 3,289 students were obtained from the Bridges from School to Work Program, and the school structural data for121 schools were drawn from the Common Core of Data. The major types of disabilities for the student participants included learning disabilities (73.1%), emotional and behavioral disabilities (4.7%), sensory disabilities (2%), and others (20.2%). Around 41% of participants were female. The study found that employment outcomes (i.e., whether a participant secured a paid job and weekly job earnings) were primarily attributed to student individual factors rather than school structural factors, particularly prior paid work experience. The finding suggests the potential importance of effective transition interventions to improve employment outcomes for all youth with disabilities. Implications for rehabilitation professionals are discussed.

Keywords: school structural factors, youth, transition, employment outcomes

Impacts of School Structural Factors and Student Factors on Employment Outcomes for Youth with Disabilities in Transition: A Secondary Data Analysis

Several national studies conducted over the past decade highlight the persisting employment disparities for youth with disabilities after they leave high school compared to their nondisabled peers. For example, the National Longitudinal Transition Study (NLTS), a longitudinal investigation of a nationally representative sample of youth receiving special education services, reported post school employment rates for youth with disabilities as 60% compared to 66% for their nondisabled peers eight years after leaving high school (Newman et al., 2011). For minority youth and young women the gap is even larger; with the NLTS report finding that African American men had a 48% employment rate eight years after high school, and women a 52% employment rate. Those youth who reported being employed eight years after leaving high school, both minority and non-minority, worked fewer hours for lower earnings compared to their nondisabled counterparts

A growing body of research has identified numerous individual, programmatic and systemic factors associated with post-school outcomes for youth with disabilities. Individual variables, such as sex (being female), race (being minority), having lower socio-economic status, and receiving social security benefits have all been associated with poor post-school transition outcomes (e.g., Doren, Gau, & Lindstrom, 2011; Fabian, 2007; Hemmeter, Donovan, Cobb, & Asbury, 2015; Honeycutt, Thompkins, Bardon, & Stern, 2013). On the other hand, a paid work experience prior to high school graduation was found an important factor of post-school employment outcomes (Luecking & Fabian, 2000; Test et al., 2009). Programmatically, pre-employment experiences, and comprehensive school-based transition programs have been found to contribute significantly to post-school employment outcomes for youth with disabilities (e.g.,

Carter, Austin, & Trainor, 2012; Fraker, 2013; Luecking & Fabian, 2000;). Although several systems-level variables, such as inter-agency collaboration and state vocational rehabilitation agencies prioritizing transition services are also associated with better outcomes (e.g., Honeycutt, Bardos, & McLeod, 2014; U.S. General Accountability Office, 2012), the empirical support for these factors remains modest (Landmark, Ju, & Zhang, 2010).

As discussed above, considerable attention has been focused on individual and programmatic/systemic variables affecting youth transition outcomes. However, there has been little if any attention paid to school structural characteristics and how they might influence employment outcomes for youth in special education in US. In fact, our review of the extant literature revealed only one international study which used hierarchical linear modeling to explore the effect of school characteristics (such as types of school and school denomination) on youth transition outcomes (Iannelli, 2001), which found that individual and school structural factors played significant roles in transition to education and employment for students in the Netherlands.

The lack of attention to school structural factors in the transition literature is surprising for a couple of reasons. First, a variety of school structural characteristics, such as proportion of minority enrollment, socio-economic status of the school, and student-teacher ratio have received considerable attention in the general education research examining the causes (and proposed solutions) of the achievement gap between minority and non-minority students both during and post-school (e.g., Card & Rothstein, 2007; Hanushek & Rivkin, 2006; Rivkin, Hanushek, & Kain, 2005). Within the achievement gap literature, four school-based characteristics have emerged as contributing to increasing the gap between minority and non-minority youth: (1) school size (McMillen, 2004), (2) teacher/student ratios (Rivkin et al., 2005), (3) proportion of

minority enrollment, and (4) socio-economic status of the students enrolled in the school (e.g., Card & Rothstein, 2007; Ferguson, 1998).

Second, the above-mentioned school structural characteristics could exert considerable impacts not only on academic achievement but also post school outcomes, such as post-secondary education and employment. For example, schools with predominantly lower income students enrolled exhibit significant disparities in assessments of achievement compared to more affluent school districts, and tend to offer fewer academic resources (e.g., Horn & Kojuku, Carroll, 2001; Martinez & Klopott, 2005), thus potentially inhibiting the career readiness of all students, particularly those youth with disabilities. Moreover, youth spend a great deal of their time in schools where related school activities and structural characteristics play key roles in the socialization of students and serve as the primary social setting (Brown & Even, 2002). Under-resourced schools, such as those enrolling youth from predominantly lower socio-economic backgrounds, having fewer enhanced academic opportunities, and less access to highly qualified staff affect the college and career readiness of all youth (e.g., Burchinal et al., 2011), but perhaps particularly those youth with disabilities who already exhibit disparate post-school outcomes.

Knowledge of how school structural characteristics influence transition outcomes for youth with disabilities beyond individual demographic and background information can contribute to building more effective transition programs that mitigate some of these school-based factors that might impede student success. Alternatively, knowledge that students can succeed despite inadequate schools can offer support for intensifying federal and state efforts to offer effective transition programs to improve the likelihood of long-term success for youth with disabilities (National Council on Disability (NCD), 2011). Finally, the extent to which school-based transition programs and practices are equally effective when offered to students with

disabilities enrolled in schools where structural characteristics, such as inadequate resources, high student-teacher ratios, and high minority enrollments, remains unknown.

Thus, this study aimed to examine school structural characteristics associated with employment outcomes above and beyond the individual level factors among students with disabilities in a multi-site transition intervention through a secondary data analysis approach. Hierarchical linear modeling technique was used with data from the Marriot Foundation's Bridges from School to Work Program, and the National Center for Educational Statistics (NCES) Common Core database (NCES, 2011) to explore how school structural characteristics (i.e., free/reduced lunch percentage, proportion of minority student enrollment, and student-teacher ratio), and individual-level covariates influence employment outcomes (i.e., whether a participant secured a paid job and weekly job earnings) among a sample of 3289 students with disabilities from 121 high schools.

Research questions guiding the study were:

(1) To what extent do school structural factors contribute to getting a job for students with disabilities participating in a multi-site transition intervention?

(2) To what extent do school structural factors contribute to weekly job earnings for those students who secured jobs?

Methods

Data Sources and Setting

The data for this study were obtained from two sources. The student-level data were drawn from the database of the Marriot Foundation's Bridges from School to Work Program, and the school level data were from the National Center for Educational Statistics (NCES) Common Core database (NCES, 2011).

The Marriott Foundation has operated the Bridges from School to Work (Bridges) since 1989, with more than 20,000 students participating across eight program sites to date (Marriott Foundation for People with Disabilities, 2013). The time-limited vocational intervention is offered to students in the last year of secondary school, with the vast majority of students participating in the Bridges program being minority youth residing in large urban metropolitan areas (Gold, Fabian, & Luecking, 2013). The primary emphasis of the intervention is on finding and securing competitive, integrated part-time jobs in the community for youth with disabilities; with the goal of youth retaining these jobs after secondary school exit.

The Bridges Program cooperates with local school districts to recruit and enroll eligible youth, who are students with disabilities in the last year prior to school exit and express a desire to work (Marriott Foundation, 2014). The highly standardized intervention includes three components: (1) vocational counseling and assessment; (2) job development and placement; and (3) planning, evaluation and follow-along (Marriott Foundation) Fidelity to implementation of the Bridges model is monitored through the headquarters office of the Bridges program, and includes data monitoring, site visits, staff professional development and training, and frequently scheduled site director meetings.

The Marriott Foundation's Bridges from School to Work Program's administrative dataset records individual demographic and background information, including information on whether the youth secured a job. Throughout the program, Bridges staff (employer representatives) collect and report on these data at their individual sites, which are then aggregated by the Marriott Foundation headquarters office, where administrative staff checked the consistency and reliability among program sites and staff at each site. Approval to gain access to the Marriott Foundation's student data was obtained through a subcontract to a federal

grant from the U.S. Department of Education awarded to TransCen, Inc. This study was approved by the University of Maryland Institutional Review Board.

The school level data were drawn from the Common Core of Data, a program of the U.S. Department of Education's National Center for Educational Statistics that annually collects data from all U.S public schools and school districts, which includes descriptive information about students, staff, and schools.

Participants

The student sample was drawn from the Bridges from School to Work Program dataset from the years 2005-2010, consisting of 6,240 students who were enrolled in the program during that time frame across eight sites. Students were enrolled in 525 different schools, although 299 schools (2,487 students) were dropped because school information was incomplete and could not be located on the Common Core Data set. In addition, another 105 schools (464 students) were dropped because less than 10 bridges participants were enrolled in these schools during the timeframe of the study, leaving 3,289 students enrolled in 121 different schools in the analyses. Among 3,289 participants, 1,972 (from 121 schools) had information on weekly earnings (i.e. the product of hourly wage and hours worked weekly). A missing data analysis found no statistically significant differences in student characteristics between the initial sample of 6,240 students and the sample of 3,289 students, and the sample of 3,289 students and the sample of 1,972 students. In addition, missing data analysis found no statistically significant differences in school characteristics between the 121 schools in the final analysis and 105 schools that were dropped due to the schools having less than 10 participants in the schools.

Among these 121 schools, the average student teacher ratio was 17.71 (with 17 students to one teacher; the range was 5-29 with a standard deviation (SD) of 4.3). The average

free/reduced lunch percentage was 63.3%, with a range of 6%-100% and a SD of .22. The average minority student percentage in these schools (excluding Asian students) was 77.6%, with a range of 6%-100% and a SD of .24.

Table 1 shows the demographics of the 3,289 students. Among these participants, 58.8% were male and 41.2% were female. The largest subgroup of the student sample was African American (63.9%), followed by Hispanic (21.1%), White (8.5%), Asian (3.5%) and others (3%). Students with learning disabilities were the largest category, making up 2404 or 73.1% of the participants. Of the remaining participants, 4.7 % had emotional/behavioral disabilities, 2.0% had sensory impairments, and 20.2% had other disabilities (such as chronic health impairments, orthopedic impairments and others without being specified). In terms of geographical location, 731(22%) were from Atlanta, 633 (19.2%) from Los Angeles, 471(14.3%) from Chicago and San Francisco, 452(13.7) % from Philadelphia, 295(9%) from Washington DC, and 236 (7.2%) from Dallas. Among the participants, 76.6% were placed in a job during their tenure at Bridges from School to Work Program.

Insert Table 1 about here

Variables and Measures in the Study

Two dependent variables in this study were collected from the job placement form in the Bridges dataset. The first dependent variable in the analyses is whether or not the student had secured a job, coded as a dichotomous yes/no variable**.** Successful job placement is defined as obtaining a job either part or full time during the participants' tenure at Bridges from School to Work Program. In this sample, 76.6% of students secured a job, a rate consistent with prior studies of the Bridges database (Fabian, 2007; Gold et al., 2013). The highest job placement rate was Dallas (83.1%), and the lowest rate was Los Angeles (67.8%). The placement rates for

Atlanta, Chicago, Oakland, Philadelphia, San Francisco, and Washington DC were 77%, 80.7%, 78%, 79.2%, 79.3% and 75% respectively. The second dependent variable in the analyses is weekly earnings. The mean of weekly earnings is $172.51, with a standard deviation of $83.40. The mean of hours worked per week for the sample is 22 hours (SD: 8.914). Though the skewness and kurtosis of these variables did not indicate problems, we transformed the variables into standardized form and used the standardized form in the analysis.

Eight student-level (level-1) prediction variables were collected from application form, enrollment form/participant profile in the Bridges dataset. All of these data are either self-reported and/or by the parent or family member during the intake process. The eight variables include: (1) sex, (2) ethnicity (White/Asian students and others), (3) receipt of Supplemental Security Income (SSI), (4) prior competitive work experience; (5) certified as significantly disabled by vocational rehabilitation criteria; (6) type of disability; (7) educational placement during school; and (8) project site. The three variables not dichotomously coded were: educational placement, type of disability, and project site. For educational placement, the database reports five levels: (a) segregated special education school, (b) special education classroom in regular school, (c) regular classroom with resource room, (d) regular classroom with in-class support services resource room, and (e) regular classroom without special support services. Type of disability is self-reported on the Bridges application form, and was recoded from the 10 categories in the Bridges' dataset to 4 categories considering the categorization strategies commonly used in federally sponsored large-scale studies (e.g., National Longitudinal Transition Study-2) and category distribution of the sample data. Two of these four categories appeared as a discrete categories in the Bridges from School to Work Program data set. Category 1: Learning Disabilities; Category 2: Emotional and Behavioral Disorder. We constructed

Category 3, Sensory Disorders, consisting of visual impairment, hearing impairment, and speech/language impairments. Category 4 included all remaining categories such as "autism spectrum disorders," "orthopedic impairments," and "chronic health impairment and "others" in which type of disability was not specified.

Three school-level (level-2) variables were collected from the Common Core of Data: (1) percentage of minority students enrolled; (2) the combined free/reduced lunch percentage; and (3) student-teacher ratio. All these variables were converted to standardized z scores for the consistency of metrics of each variable and ease of interpretation. The percentage of minority students enrolled in the school (i.e., African Americans, Hispanics, Native Americans, etc.) was significantly associated with free/reduced lunch percentage (.684, $p<.01$), and also with student teacher ratio (-.215, $p<.05$). The correlation between free/reduced lunch percentage was negatively associated (-.237) with student teacher ratio, though not significant.

Data Analysis

Because we were interested in exploring the contribution of school structural variables to placement outcomes and weekly earnings above and beyond individual level variables, hierarchical linear modeling (HLM) was used in the analysis. Because one of the dependent variables (job placement) is binary, the assumption of normality and linearity could not be established, so hierarchical generalized linear modeling (HGLM) was adopted (Raudenbush, Bryk, Cheong, & Congdon, 2001). We used regular HLM for the other dependent variable (weekly earnings).

Prior to conducting the prediction model in HLM, we conducted a fully unconditional model, which contained only the dependent variable (job placement outcomes or weekly earnings) without Level 1(student) and Level 2 (school) variables. The null model provides

baseline information for subsequent analyses and provides an initial estimate for the intraclass correlation (ICC, i.e. the proportion of variance in outcome variables attributed to Level 2 variables). Before the HLM analysis, chi-square and regression analyses were conducted to better understand the data and the variables deemed suitable to be included in the HLM analysis.

Results

Preliminary Analyses

The followings are results from chi-square and regression analyses.

Chi-square analyses. Out of the eight student-level independent variables, four variables were found statistically significant or marginally statistically significant with the dependent variable (job placement) in chi-square tests: (a) sex was found statistically significant in that male participants were more likely to be placed compared with female participants (79.4% vs. 72.7%), p<. 000; (b) Project site was found statistically significant, i.e. Dallas with highest placement (83.1%) vs. LA with lowest (67.8%), p<.000; (c) Prior work experience in that participants having prior competitive work experience (i.e. employment in an integrated setting with minimum prevailing wage) were more likely to be placed than those who did not, 82.3% vs. 75.6%, p<.001); (d) Having a significant disability was found marginally significant in that participants who were identified as significantly disabled were more likely to be placed compared to participants not identified as significantly disabled (78.5% vs. 75.6%), p<.058. The other predictor variables (receiving SSI, ethnicity, primary disability type, and educational placement) were not statistically significantly related to the placement outcome.

Regression analyses. To determine which variables to include HLM analyses, a backward stepwise logistic regression was run. The eight student level independent variables were entered into the logistic regression equation. All four of the predictor variables that were

found statistically significant in the chi-square analyses were also found significant in the logistic regression: sex, project site, competitive work experience, and identified as significantly disabled.

For participants identified as having a significant disability, there was about a 22% increase in the odds of being placed at a job compared with those not significantly disabled when holding other variables constant. Participants who had prior competitive work experiences had about a 38% increase in the odds of being placed at a job compared with those without prior competitive work when holding other variables constant. Being a female would represent a 31% decrease in the odds of being placed at a job compared with male counterparts.

We also examined the impact of the above eight student level variables on weekly earnings through logistic regression. Similar findings were found: sex ($p<.001$), competitive work experience ($p<.001$), and identified as significantly disabled ($p<.005$) were statistically significant with weekly earnings (i.e. being male, have paid work experience and significantly disabled were associated with higher weekly earnings).

HLM Analyses

Fully unconditional model. First, a fully unconditional model (FUM) was run to determine between-school effects and the need to conduct HLM through examining the ICCs. Calculating the ICCs, which is the proportion of variance of job placement and weekly earnings accounted for by school-level variables, yielded a value of 6.5% and 7% respectively when considering the Lamda reliability estimate. Though the ICC value is considered low, we decided to run the HLM (Raudenbush & Bryk, 2001). Our decision is based on the following reasons: (1) Our data structure is a nested structure, an aspect that cannot be ignored in the analyses; and (2) no previous research has been conducted to examine the impacts of school structural factors

on youth employment outcome. Therefore, we thought it methodologically sound to use HLM in this study.

HLM for job placement. After the FUM, separate analyses were conducted using variables at both the student and school levels. The school level variables included all three described earlier (percentage of minority students enrolled, combined free/reduced lunch percentage, and student teacher ratio); the student-level variables included those four found statistically significant in the chi-square and logistic regression analyses (sex, prior work experience, significantly disabled, and project site). Initially each independent variable was added to the model group centered and variance freed. Any variables found not statistically significant were changed to grand-mean centered and variance fixed. The project site variable had seven categories, requiring re-coding as a dummy variable for HLM analysis. To prevent the model from being over-identified, the Level-1 intercept was excluded (Models without a level-1 intercept, 2007).

Only those variables demonstrating statistical significance are reported in the analysis. At the school level, the two variables (percentage of minority students enrolled and student teacher ratio) were not statistically significant in accounting for job placement outcomes for participants in this study. At the student level, the project site variable was not statistically significant in explaining the job placement outcome, nor was the variable, significantly disabled. Significantly disabled was found significant across schools. Thus, significantly disabled was retained in the final model so estimates of the impact on the random slope would not be biased (Randenbush & Bryk, 2001).

Significantly disabled. Having a significant disability was the first variable entered into the model (p=. 01). Free/reduced lunch percentage was not statistically significant in accounting

for variance of successful job placement when holding the variable, significantly disabled, constant, and therefore was dropped from the model.

Sex and job placement outcome. Sex was the next variable entered into the model. A negative effect ($\gamma_{20,}$ =-.070, p<.000) is indicated for significantly disabled female participants in terms of being successfully placed in a job, i.e. female students had less likelihood of being successfully placed. Free/reduced lunch percentage was not statistically significant in accounting for the variance of successful job placement while holding significantly disabled and sex variables constant, and was therefore dropped from the model.

Prior competitive work experience. The prior competitive work experience variable was added to the model. The log-odds of being successfully placed for individuals who had prior competitive work experience were higher than their counterparts without competitive work experience. Free/reduced lunch percentage was not found statistically significant in accounting for the variance of successful job placement while holding other variables constant, and was therefore dropped from the model.

Comparisons of models for job placement. This section presents the findings on comparison of the estimation of fixed effects for three models. Model 1 introduces the fixed effects of having a significant disability. Model 2 includes the fixed effect of having a significant disability and sex; Model 3 are the fixed effects of significantly disabled, sex, and competitive work experience.

The log-odds of job placement for non-significantly disabled students, while holding the school average free/reduced lunch percentage constant, was γ_{00}=.7631 (with equivalent of probability of .68). The free/reduced lunch percentage accounted for no statistically significant variance on job placement outcome when the variable significantly disabled was included.

The effect of student sex varies slightly between Model 2 and Model 3. The log-odds of being successfully placed at a job for significantly disabled male participants was .7638 (γ_{00}, p<.000), with equivalent of probability of .682. A negative effect (γ_{20} =-.070, p<. 000) is indicated for significantly disabled female participants in terms of being successfully placed at a job, i.e. female students had less likelihood of being successfully placed. The free/reduced lunch percentage accounted for no statistically significant variance on job placement outcome while holding the significantly disabled variable constant. In adding the prior competitive work experience variable to Model 3, the log odds of successful job placement for significantly disabled female participants slightly increased (-.693, p<. 000), with equivalent of probability of .333. This means that female participants, who had competitive work experience fare a little better than their female counterparts without competitive work experience though still lagged behind their male counterparts in being placed on a job even holding the free/reduced lunch percentage constant. The free/reduced lunch percentage did not contribute statistically significant variance on job placement outcome while holding significantly disabled and sex variables constant.

The log-odds of being successfully placed at a job for significantly disabled male participants who had prior work experience in competitive environments was .7635, with equivalent of probability of .682. The log-odds of being successfully placed for individuals who had prior competitive work experience was statistically significant higher than their counterparts without competitive work experience. Prior work experience accounted for job placement notwithstanding the free/reduced lunch variable.

As indicated in table 2, the variance component for Bridges students who are significantly disabled in Model 1 (τ_{23}=. 415), decreased in Model 3 (τ_{23}=. 170). The variance

component for sex in Model 2 (τ_{22}=. -.0700, p<. 001) remains the same in Model 3 (τ_{22}=. -.0693, p<. 001). In addition, the intercept variance in the log-odds of being successfully placed remained almost the same between the null model (τ_{20}=. 00488) and Model 3 (τ_{20}=. 0051), p<. 001). This finding indicates that student level variables explain more of the variation in job placement outcomes despite or beyond school-level variables.

Insert table 2 about here

HLM for weekly earnings. The results of within-school model are reported in Table 3. The within-school model allows us to explore how student-level characteristics are associated with youth weekly earnings adjusted for the other variables in the model. We entered the following student-level variables: sex, ethnicity, significant disabilities, prior work experience in competitive environment, and academic integration level into the within-school model.

Insert Table 3 about here

The fixed effects in Table 3 indicate that competitive work experience ($Work_{ij}$) is a statistically significant predictor for weekly earnings, after controlling for the other variables in the model, t = 3.865 ($p < 0.01$). The weekly earnings (M=188.38/SD=89.80) for those who have competitive work experience is statistically significant higher than those without (M=169.22/SD=81.64). In addition, sex and ethnicity are significant predictors for weekly earnings, after controlling for the other variables in the model, t=-4.407 (p<.001 and t = 2.562 ($p < 0.05$) respectively. The weekly earnings (M=180.10/SD=86.80) for males are significantly higher than females (M=160.59/SD=76.28); the weekly earnings (M=174.00/SD=79.65) for Others are statistically significant higher than White and Asian (161.76/79.64). As per the random effects in Table 3, the relationship between competitive work experience and weekly earnings vary significantly across schools, $\chi^2 = 123.30$ ($p < 0.05$).

The between-school model in HLM allows us to examine the effects of level-2 variables on the intercept (mean weekly earnings). In the between school model, we entered all three level-2 variables to the intercept. Free-reduced lunch percentage and percentage of minority students on the school level were not found to be statistically significant predictors for mean weekly earnings, so we removed those variables from the model. Only the variable student teacher ratio was found to be a statistically significant contributor to the mean weekly earnings, $t=2.152$ ($p<.005$). The result indicated that higher wages were positively related to higher student-teacher ratios. The results of the final between-school model are reported in Table 4.

Insert Table 4 about here

Discussion

This study explored the effects of school structural factors on employment outcomes for transitioning youth when accounting for individual demographic and background characteristics. For this sample, none of the school structural characteristics contributed to getting a job, and only one, student-teacher ratios were associated with weekly earnings, and that in the opposite direction than anticipated; higher wages were positively related to higher student-teacher ratios. It is important to note that the average free and reduced lunch percentage across the 121 schools for the enrolled sample was 63%, compared to 45% for all students enrolled in public schools in 2009 (National Center for Educational Statistics, 2011). To some extent, the finding that school structural characteristics did not exert a major contribution to employment outcomes is surprising. We speculated, based on the "achievement gap" literature reviewed earlier, that disadvantaged schools (i.e. those with higher percentage of students receiving free or reduced lunch, higher proportion of minority enrollment, and higher student-teacher ratio) would be associated with poorer employment outcomes for this sample. That these factors did not

significantly influence transition outcomes offers both positive and negative perspectives on the implications for transition programs for youth with disabilities.

In terms of the achievement gap literature discussed earlier, the lack of significance of the school structural characteristics in this study might suggest that a targeted vocational transition intervention can significantly improve youth employment outcomes notwithstanding the characteristics of the youth receiving services such as race and SES. Numerous evaluation studies of transition programs in the literature support this hypothesis (e.g., Benz, Lindstrom, & Latta, 1999; Gonzalez, Rosenthal, & Kim, 2011; Hart, Zimbrich, & Ghiloni, 2001), although these studies have been limited by relatively small sample sizes, demographic and geographic limitations of the samples, and lack of adequate comparison groups to test the counterfactual (Honeycutt et al., 2013), which is also a limitation of the current study. The fact that the majority of this minority sample were enrolled in under-resourced schools and still exhibited robust placement rates (almost 77%) may suggest the considerable benefits of effective transition interventions, particularly for a subgroup of youth who tend to exhibit the most disparate employment outcomes when compared to non-minority, higher income peers (Newman, Wagner, Cameto, & Knokey, 2009).

On the other hand, it appears that individual student characteristics, particularly sex, disability, and priori competitive work experience did influence whether the youth secured a job and wages earned. Not surprisingly, these variables have emerged in the majority of studies examining employment outcomes for transitioning youth. For example, Fabian (2007), and Gold et al. (2013) consistently found that women participating in the Bridges program were less likely to secure a job than young men, as did Newman et al. (2009) in their analyses of NLTS-2 data. In their analysis, men earned significantly more per hour than did women, as did those with less

significant disabilities, similar to the findings of the current study. As validated in this study, prior paid work experience is a robust enabler of vocational engagement. Of course, this study did not explore school-factors beyond a few structural characteristics that may influence individual youth outcomes, such as the quality of special education or transition programming within the school, and staff outreach and engagement with youth and their families, which other studies have found contributing significantly to post-school outcomes..

Limitations

The findings of this study provided the basis for continuing to build systemic models for transition success. A number of limitations should be noted. First is that even though the sample size was quite large, study findings should be interpreted with caution in non-experimental research such as this. Second, the student data were derived from an administrative database, which included several variables used in the analyses that are based on student or family self-report, factors that potentially introduce measurement error and reduce confidence in the study's findings. Third, students who voluntarily enroll in the Bridges program may have attributes and characteristics, such as a desire to work or find a job, that bias the sample and limit the generalizability of the study findings. Fourth, the school structural variables in this study could highly confound with community characteristics and school milieu, and interact with student individual factors. Effects of critical structural factors variables (such as work opportunity structures) for understanding adolescents' post school employment outcomes may have been overlooked. Thus, the findings of this study should be interpreted with caution. Still, in terms of exploratory research, other researchers may use these findings to conduct more rigorous, randomized clinical trials that can isolate the differential effects of programmatic, individual, and environmental factors on employment outcomes for transitioning youth.

Implications

This study was the first we could find in the U.S. literature that investigated the effect of school structural characteristics on youth employment outcomes in transition, finding little support for the hypothesis that under-resourced schools, that is schools serving predominantly minority youth in low socio-economic areas influenced youth employment related outcomes when youth with disabilities are offered effective transition interventions. The strongest implication arising from this study is the need for continuing investment in transition programs and interventions to attempt to close the gap in employment outcomes for youth with disabilities, particularly minority youth. Although offering comprehensive and multi-site vocational intervention such as the Bridges program might be prohibitively expensive for school districts and/or state vocational rehabilitation agencies to fund, some of the findings from this study suggest scaled-down services that might productively benefit the target population of youth. For example, in this study, youth who had a prior competitive work, not simply a vocational experience, were more likely to secure a job at a higher wage when controlling for school factors than other youth. Vocational rehabilitation counselors, particularly those with specialized transition caseloads (Honeycutt et al., 2013), are able to develop competitive employment options for transitioning youth, via, for example summer youth employment in integrated settings for prevailing wages, starting as early as possible. A second implication, related to this one is the need to ensure that eligible youth with disabilities are referred for vocational rehabilitation services prior to their school exit (Luecking & Luecking, 2013). Although this study did not explore whether youth enrolled in Bridges were also eligible and receiving state vocational rehabilitation services, it might help explain the surprising finding that youth designated as having a “significant disability” by local vocational rehabilitation (VR) offices

were more likely to secure a job, suggesting that this subgroup of youth in the study were receiving VR service prior to school exit. This hypothesis is in line with a recent national study of VR outcomes for transitioning youth, concluding that the earlier the referral to VR services, the more likely the youth was to have a successful outcome (Honeycutt et al., 2014). The recent enactment of the Workforce Innovation and Opportunity Act of 2014, with its new mandates regarding transitioning youth and vocational rehabilitation, will emphasize the significant role that VR can play in improving work outcomes for this population. The findings of this study shed some light on the potential effectiveness of improving VR practices in order to benefit the most under-served of these youth.

Conclusion

Youth with disabilities, particularly low-income minority youth, exhibit significant disparities in transition outcomes compared to non-minority more advantaged youth. The results of this study suggest that the under-resourced circumstances of the schools in which they are enrolled do not make a difference in employment outcomes for youth with disabilities who are benefitting from effective vocational interventions, although certain student characteristics, notably sex and prior competitive work experience, do exert an influence on employment outcomes. Although the availability of comprehensive vocational interventions such as exemplified by the Bridges program are unevenly available to the target population, local school districts, operating collaboratively with state vocational rehabilitation agencies, can deliver transition strategies and practices that can eventually address the employment gap these youth experience as they exit school.

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Table 1 Demographic Information for Participants

Category		N	Percentage
Job Placement	Placed	2521	76.6%
	Not placed	768	23.4%
Sex	Male	1935	58.8%
	Female	1354	41.2%
Race	African Americans	2101	63.9%
	Hispanic	694	21.1%
	White	280	8.5%
	Asians	114	3.5%
	Others	100	3%
Disability Type	Learning Disability	2404	73.1%
	Emotional/Behavioral Disorders	153	4.7%
	Sensory	66	2.0%
	Others	666	20.2%
Significantly Disabled	Yes	1156	35.1%
	No	2133	64.9%
Receiving SSI	Yes	512	15.6%
	No	2777	84.4%
Geography	Atlanta	731	22.2%
	Chicago	471	14.3%
	Dallas	236	7.2%
	Los Angeles	633	19.2%
	Oakland	85	2.6%
	Philadelphia	452	13.7%
	San Francisco	386	11.7%
	Washington DC	295	9.0%
Educational Placement	Segregated special education	119	4.2%
	Special Education classroom in regular school	1399	49.4%
	Regular classroom with resource room	563	19.9%
	Regular classroom with in-class support services resource room	593	20.9%
	Regular class room without special services	160	5.6%
Prior competitive work	Yes	519	15.8%
	No	2770	84.2%

Table 2 Comparison of HLM Models on Job Placement

	Model 1		Model 2		Model 3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Fixed effects						
Intercept, γ_{00}	.7631***	.0102	.7638***	.0101	.7635***	.0099
FreeReducedLunch, γ_{01}	-.00030	.0104	.0002	.0104	.00028	.0102
Paid work experience, γ_{10}					.0550**	.0203
Gender, γ_{20}			-.070***	.0172	-.0693***	.0171
FreeReducedLunch, γ_{21}						
SignificantDis, γ_{30}	.029*	.0208	.0256*	.0204	.0268*	.0203
FreeReducedLunch, γ_{31}						
Random effects						
			Variance component			
τ_{20}	.0732		.00539***		,0051***	
τ_{21}					.0058	
τ_{22}						
τ_{23}			.0102*		.0097**	
	.4150		.1692		.170	
Deviance	3664.204, df=4		3650.633, df=7		3651.166, df=7	

*** p<.001; **<.05; *<.1

τ_{20}=tau

Table 3 Within-School Model of Mean Weekly Earnings (N = 1972 Students Nested Within 121 Schools)

Fixed effect	Coefficient	Standard error	t-ratio	p-value
Mean weekly earning, β_0				
INTRCPT2, γ_{00}	173.04	2.857	60.566	<.001
Ethnicity slope γ_{10}	14.653	5.720	2.562	0.01
Sex slope γ_{20}	-16.647	3.778	-4.407	<0.001
SigDis slope γ_{30}	-5.826	4.598	-1.267	0.205
CompVoc slope γ_{40}	21.1410	5.470	3.865	<0.001
AcadIntegr γ_{50}	0.505	2.527	0.200	0.842

Random Effect	Reliability (λ)	Variance Component	χ^2	p-value
Mean weekly earning, u_0	0.555	526.401	230.564	<0.001
CompVoc slope u_3	0.137	419.487	123.300	0.043
level-1, r		6272,672		

Deviance = 22914.518 Number of estimated parameters =4

Table 4 Between School Model of Mean Weekly Earnings (N = 1972 Students Nested Within 121 Schools)

Fixed Effect	Coefficient	Standard error	t-ratio	Approx. d.f.	p-value
Mean weekly earning					
INTRCPT2, γ_{00}	173.064	2.847	60.787	119	<0.001
StudentTeacherRatio, γ_{01}	5.482	2.548	2.152	119	0.033
Ethnicity, γ_{10}	14.903	5.757	2.588	1726	0.010
Gender, γ_{20}	-16.924	3.880	-4.362	1726	<0.001
SigDis, γ_{30}	-3.921	4.886	-0.803	1726	0.422
CompetVoc, γ_{40}	20.656	5.431	3.803	120	<.001
AcademInteg, γ_{50}	1.086	2.438	0.445	1726	0.656

Random Effects	Reliability (λ)	Variance Component	χ^2	p-value
Mean weekly earning, u_0	0.551	518.456	228.864	<.001
CompetVoc	0.127	381.506	123.208	0.043
level-1, r		6274.351		

Deviance = 22906.842 Number of estimated parameters = 4