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Exploring Correlates of Paid Early Work Experiences for Youth With Autism Using NLTS2012 Data

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Abstract

Prior research has demonstrated that paid work experience while in school is a predictor of postschool employment outcomes for youth with disabilities. For youth with Autism Spectrum Disorder (ASD), early paid work experience in high school can provide a place to learn occupational skills as well as develop communication, problem solving and interpersonal skills and behaviors that are essential for obtaining and maintaining employment. In the present study, we examined the extent to which youth with ASD have engaged in early paid work experiences while in school and factors associated with such experiences, using data from the National Longitudinal Transition Study 2012 . We found that approximately 24.4% of youth with ASD reported having been involved in a paid work experience during high school at some point within the past year. Further, age, social engagement, household income, and parent expectations were significant predictors of early paid work experience. Implications for practice and research are discussed.

Keywords

autism spectrum disorders, employment, social competence, socialization, transition

The goals of special education mandated by the Individuals with Disability Education Act (IDEA) center on equal opportunity, full participation, independent living, and economic self-sufficiency. Having a paid job in an integrated setting is one indicator of having achieved these goals. Despite the attention directed to improving employment outcomes for youth with disabilities and the emergence of research-based practices to prepare youth for paid employment after graduation (Certo & Luecking, 2011; Schall et al., 2012; Test et al., 2016), the majority of youth with autism spectrum disorder (ASD) have a difficult time achieving employment that pays a sustainable wage. In the United States, a recent study found that only 14% of adults with ASD had a paid job in the community, and the majority of individuals with ASD were unemployed or participated in an unpaid activity in a facility (Roux et al., 2017). Collectively, these results call for further investigation into the factors associated with successful employment outcomes for youth with ASD to guide the development of effective transition programs for these youth. The purpose of this exploratory study is to identify factors related to early paid work experiences during high school among youth with ASD. Examples of such experiences may include working in a restaurant or other local companies during high school.

Youth with disabilities, including those with significant support needs, who have a paid job in school are significantly more likely to earn above minimum wage after graduating from high school (Fabian, 2007; Mamun et al., 2017). Recognizing the importance of work experience during high school, recent changes in federal transition policy have been designed to promote such experiences. Section 110(d)(1) of the Rehabilitation Act of 1973, as amended by the Workforce Innovation and Opportunity Act (WIOA) of 2014, requires states to reserve at least 15% of their state allotment for pre-employment transition services (Pre-ETS), such as job exploration and counseling, for youth with disabilities who are still receiving special education services. Pre-ETS covers five areas: job exploration counseling, work-based learning experience, counseling on opportunities for enrollment in post-secondary education, workplace readiness, and instruction in self-advocacy.

To date, several systematic reviews have been conducted to examine predictors of post-school outcomes for youth with disabilities, including employment outcomes (Mazzotti

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et al., 2016). These reviews focused on correlational studies due to the lack of experimental studies connecting in-school transition practices with post-education outcomes. In the first review, results from several studies indicate that school-based paid work experience is a predictor of successful post-school employment outcomes for students with disabilities (e.g., Bullis et al., 1995; Doren & Benz, 1998). The effect sizes of these studies ranged from 0.220 to 0.540. In another review (Mazzotti et al., 2016), additional studies were examined that focused on students with disabilities (e.g., Carter et al., 2012; Wagner et al., 2014) with effect sizes ranging from 0.097 to 0.440. These studies provided further evidence of paid work experience as a predictor of post-school employment and education outcomes.

In addition to systematic reviews, Carter and colleagues (2011), using data from the National Longitudinal Transition Study 2 (NLTS2), examined the high school work experiences of students with ASD, intellectual disability (ID), and multiple disabilities. These researchers found that students with ID were 4 times more likely to have a paid job during high school compared with students with ASD. Few studies have focused on youth with ASD exclusively. In addition, students' communication ability, household income, parent expectations, and youth participation in school and community-based internships were positively related to the likelihood of getting a paid work experience in high school. Furthermore, the higher the level of parent/family expectations and household income, the greater the likelihood of the youth participating in paid employment opportunities. A limitation of this study is that youth with ASD were combined with youth with ID and multiple disabilities. Given that youth with ASD may face unique challenges in social-communication skills and the scarcity in research on early paid work experience specific to students with ASD, additional studies are needed to understand specific predictors that influence the participation of youth with ASD in paid work experiences.

Youth with ASD represent a heterogeneous group with a wide range of characteristics in adaptive functioning, cognitive, and language abilities (American Psychiatric Association, 2013). For example, some youth with ASD are nonverbal, whereas others have no ID. Furthermore, great variations exist in the daily living skills required to meet daily challenges, such as dressing oneself in cold weather, setting a reminder in one's phone, or making a doctor appointment (Kanne et al., 2011). In addition, recent prevalence data suggest that only 31% of children with ASD have IQs below 70 (Baio et al., 2018). As such, the majority of students with ASD have a different profile from students with ID and multiple disabilities, which are often collapsed with ASD into "students with severe disabilities" (Carter et al., 2011). The heterogeneous nature of ASD presents many challenges to applying research findings to practice, as it is not clear whether certain study findings apply to youth with mild or more severe impairments or both. This study focused on a sample of students with ASD, and not those with ID or multiple disabilities.

This study included additional potential factors that may be related to paid work experiences during high school for youth with ASD but are not addressed in the current literature. One such factor is self-determination (SD), which has been shown to influence the school and post-school outcomes of youth with disabilities (Konrad et al., 2007; Shogren & Ward, 2018). For example, Shogren and colleagues (2015) conducted a follow-up analysis of 779 transition-aged youth with disabilities who received the Self-Determined Learning Model of Instruction (SDLMI) and found that youth who showed higher SD skills upon high school exit had better employment outcome 1-year post–high school. Of 779 youth, only 47 (6%) had ASD and the majority of the sample were youth with a learning disability (37.4%) or ID (29.95%). This study extends the work of Shogren et al. (2015) by examining the relationship between SD and early paid work experience in middle and high school for youth with ASD. However, a comprehensive direct measurement of SD skills (e.g., *Arc Self-Determination Scale* [SDS]) was not provided in the data set analyzed in this study. In the National Longitudinal Transition Study 2012 (NLTS 2012), 21 items were selected from three of the four subscales of SDS: autonomy (seven of 32 items), psychological empowerment (seven of 16 items), and self-realization (seven of 15 items). These items differed from the NLTS2, given more recent research that examined the psychometric properties of a short form of the SDS (Wehmeyer et al., 2011), necessitating a reexamination of measurement invariance across disability groups in this study as the items differed.

The purpose of this exploratory study was to identify factors associated with paid work during high school for middle and high school youth with ASD using data from NLTS 2012. The NLTS 2012 collected data from youth receiving special education across the United States in all disability categories, including ASD, concerning their characteristics, secondary school experiences, and work experiences during high school. Using nationally representative NLTS 2012 data, this study was conducted to identify factors that contributed to or inhibited the participation of youth with ASD in early paid work experiences in high school. This study addressed the following questions:

Research Question 1 (RQ1): What were the paid work experiences of youth with ASD while in high school?
Research Question 2 (RQ2): What youth, family, and school-related variables were associated with early paid work experiences for youth with ASD?

Method

Data Source and Sample

The NLTS 2012 data were gathered in 2012 and 2013 from youth with and without disabilities who were 13 to 23 years of age during the 2011–2012 school year. The NLTS 2012 was commissioned by the U.S. Department of Education and conducted by Mathematica Policy Research, Inc. and the Institute on Community Integration at the University of Minnesota. The purpose of the NLTS 2012 study was to obtain nationally representative information on the characteristics, expectations, and special education and related services received as students transition through secondary school into adulthood. Researchers surveyed 8,960 students with disabilities and 10,459 parents of these youth. Additional information on the study design and methodology can be found at https://ies.ed.gov/ncee/nlts/ and in specific project publications (e.g., Lipscomb et al., 2017).

Participants were selected using a two-stage sampling process. First, a stratified random sample of local education agencies was selected, with stratification based on geographic region (Northeast, Southeast, Midwest, and West), district size (enrollment in Grades 7–12), and community wealth (proportion of district living below poverty level). Second, youth were randomly selected from each of the special education disability categories. Sampled youth were weighted to create a nationally representative sample by disability category and type of school district. Both parent and youth surveys were administered. A proxy was allowed when a study participant was unable to complete the survey. Across the 2 years of data collection, 1,078 surveys from the parents of youth with ASD were completed, representing a 65% response rate. A total of 954 surveys were completed by students with ASD, representing a response rate of 58% (Lipscomb et al., 2017).

Current Study Sample

This study included youth between 14 and 21 years of age with ASD, as determined by the primary disability category provided by the school district, who were enrolled in high school at the time of the survey ($n = 870$). We selected this age range because some states start transition planning when students are 14 years old even though federal law requires that the transition planning begins at the age of 16 years (Cimera et al., 2013). We determined enrollment status using two variables (whether youth were enrolled at the time of the study [*c_enroll* = 1] or were receiving instruction now [*B4c* = 1]). A description of the sample is provided in Table 1. As shown in Table 1, the majority of participants were male (83%) and almost half of the sample came from families with a household income less than US$40,000. Approximately 30% of students were 14 or 15 years old.

Measures

Employment outcome variables. The outcome variable in this study was whether or not youth held a paid job during the past 12 months. Although the NLTS 2012 youth survey had other items assessing paid employment in school including whether the young person had a job at the time of the interview and whether the youth had a paid school-sponsored job, these variables were not selected as outcome variables because data were missing for more than 90% of the study participants. Previous NLTS2 studies have used current employment status as the employment outcome. Because this variable has a large amount of missing data in the NLTS 2012, we used whether youth had a paid job experience in the past year.

Predictor variables. We included the youth, parent/family, and school-related variables previously found in earlier studies to influence paid experiences during high school.

Youth-related variables. Demographic variables included the youth's gender, age, and ethnicity/race. Personal autonomy was assessed using an autonomy index, based on the autonomy subscale of the SDS (Lipscomb et al., 2017). This index is available in the restricted-use NLTS 2012 data set. Autonomy refers to the extent to which an individual acts according to their preferences, interests, and abilities (Wehmeyer, 1999).

The autonomy index is composed of seven categorical measures: how often the youth chooses his or her activities with friends; chooses to communicate with friends and family; chooses gifts to give family and friends; chooses to go to restaurants that he or she likes; chooses to go to movies, concerts, and dances; chooses to plan weekend activities that he or she likes to do; and chooses to volunteer in activities of interest. Each component measure has categorical values from 0 to 3. The index is the average rating on each of the seven component measures and, therefore, ranges from 0 to 3, with higher values representing greater personal autonomy index scores. This index showed adequate internal consistency ($\alpha = .78$) based on data from the 934 youth with ASD in this sample.

We used the functional abilities index (caregiver report) already computed in the NLTS 2012 data under the Institute of Education Sciences (IES)-restricted data use agreement. This composite is an average of 0, 1, 2, or 3 on each parent-reported measure, with 0 indicating *no ability* and 3 indicating *unaffected ability*. This index measures how well youth: (a) communicate by any means, (b) speak clearly, (c) carry on a conversation, (d) understand what others say to them, (e) see with glasses or contacts, and (f) use both arms and hands, legs and feet. Cronbach's alpha of this index was .79, indicative of adequate internal consistency. On average, students scored 2.5 on this index, indicating mild to no trouble.

Table 1. Descriptive Statistics for Sample Characteristics.

Variables	Weighted percentage	Percentage of having a paid job during high school (95% CI)
Age (years)		
14	16.3	16.0 [11.3, 23.3]
15	12.4	19.0 [13.8, 25.8]
16	19.1	22.9 [18.6, 33.1]
17	9.7	33.5 [22.3, 39.8]
18	17.6	26.7 [18.3, 34.2]
19	9.2	33.0 [20.5, 47.7]
20	6.6	40.1 [10.0, 50.0]
21	9.1	36.7 [13.3, 60.0]
Gender		
Female	16.8	25.2 [14.0, 27.9]
Male	83.2	24.3 [21.5, 28.4]
Missing		
Race/ethnicity		
Black	15.8	13.8 [8, 22]
Hispanic	19.6	22.3 [14, 29.8]
White, Asian, or other[O cap] race	64.7	26.6 [22.6, 30.1]
Household income		
<US$40,000	44.6	22.0 [17.0, 26.7]
US$40,001–US$80,000	24.1	23.7 [19.2, 31.3]
US$80,001–US$120,000	15.0	22.1 [14.3, 27.8]
>US$120,000	16.3	37.4 [24.5, 42.6]
Parental education		
Less than high school	5.4	24.7 [9.3, 34.9]
High school diploma or GED	23.1	26.0 [19.7, 30.6]
Technical or trade school degree	7.9	8.0 [2.9, 22.9]
Two-year college degree	16.6	24.0 [16.1, 31.3]
Four-year college degree	29.8	26.0 [18.9, 31.1]
Graduate degree	17.2	26.3 [20.7, 35.6]

Source. U.S. Department of Education, National Center for Education Statistics, National Longitudinal Transition Study 2012 (NLTS2012).
Note. CI = confidence interval; GED = general educational development.

Finally, to measure the extent to which youth with disabilities were socially engaged outside of school compared with their peers, youth were asked how often they got together with friends outside of school at least weekly (1 = *never*, 2 = *sometimes*, 3 = *1 day per week*, 4 = *2 or 3 days per week*, 5 = *4 or 5 days per week*, 6 = *6 or 7 days per week*). Because certain cells have very few students, we recoded the variable as 0 (*never*) or 1 (*sometimes or more*).

Parent/family-related variables. Family-related variables included (a) household income (1 = *US$0–US$40,000*; 2 = *US$40,000–US$80,000*; 3 = *US$80,000–US$120,000*; 4 = *more than US$120,000*); (b) whether the parent who responded to the survey had a college degree or not; (c) whether the parent who responded to the survey was employed or not at the time of the survey; and (d) parent expectations. Parent expectations are a composite score created by summing two dichotomous variables: whether the parent expects their child to be able to live independently by the age of 30 years and whether the parent expects their child to be financially independent by the age of 30 years. This score ranges from 0 to 2.

School-related variables. We included the following school-related variables: (a) having been suspended (parent-reported), (b) participating in a vocational or career club in school during the past year (youth-reported), and (c) repeating a grade (parent-reported). We used these variables as a proxy for student engagement given the association between school engagement and post-school outcome in students with ASD. All these variables were dichotomous (1 = yes; 0 = no).

Data Analysis

Weighting. The NLTS 2012 data set has two sets of weights for the parent and youth surveys: all youth weights and enrolled youth weights (Burghardt et al., 2017). All youth weights are designed for analyses using the full respondent sample and are appropriate for analyzing measures that do

Table 2. Logistic Regression of Youth, Family, and School Variables on Early Work Experience.

Variable	*B*	*SE*	*p*	Odds ratio (95% CI)
Youth variables				
Age (years)	0.26	0.07	<.001**	1.29 [1.14, 1.45]
Gender	0.04	0.26	.88	1.07 [0.65, 1.77]
Hispanic	0.21	0.43	.62	1.28 [0.57, 2.88]
African American	0.44	0.55	.43	0.67 [0.24, 1.91]
White	0.31	0.42	.47	1.35 [0.60, 3.06]
Level of functioning	0.57	0.35	.10	1.76 [0.90, 3.47]
Autonomy	0.32	0.19	.09	1.52 [1.09,2.11]
Social engagement	0.77	0.27	<.001**	1.98 [1.18,3.35]
Family variables				
Household income				
US$40,000–US$80,000 vs. US$0–US$40,000	0.15	0.27	.58	1.21 [0.73, 1.98]
US$80,000–US$120,000 vs. US$0–US$40,000	0.02	0.34	.96	1.01 [0.54, 1.88]
US$120,000 or more vs. US$0–$40,000	0.86	0.35	.01	2.42 [1.25, 4.66]
College education	0.19	0.24	.43	1.22 [0.78, 1.92]
Parental expectation				
Expected either vs. none	0.45	0.33	.17	1.77 [0.98, 3.20]
Expected both vs. none	0.63	0.29	.03*	1.75 [1.01, 3.04]
Parent employment status	0.18	0.23	.43	0.84 [0.54, 1.32]
School variables				
School suspension	0.09	0.26	.72	0.96 [0.59, 1.57]
Career activity in school	0.31	0.41	.45	1.34 [0.62, 2.94]
Repeat a grade	0.10	0.25	0.68	1.09 [0.68,1.76]

Source. U.S. Department of Education, National Center for Education Statistics, National Longitudinal Transition Study 2012 (NLTS2012).
Note. CI = confidence interval.
*$p < .05$. **$p < .01$.

not depend on youth age or grade at the time of the survey. The other weights—enrolled youth weights—are designed for analyses using the population of youth who were enrolled in school in the reference school year (2011–2012 school year for those surveyed in 2012 and 2012–2013 school year for those surveyed in 2013). These are appropriate for analyzing measures where youth's age or grade at the time of the survey is important for interpreting the response. For this study, we used the all youth weights because the time of the survey is not related to the research questions addressed in this analysis.

Missing data. The percentage of missing data was 0% for youth demographic variables (age, sex, and race/ethnicity), 20% for the employment outcome variable, 41% for the autonomy measure reported by the youth, 8% for the parent income variable, 2% for parent education, and 6% for parent expectations. One problem with missing data is that it tends to produce larger standard errors for the estimated parameters, resulting in nonsignificant results (Enders, 2010). In this analysis, we used multiple imputation by fully conditional specification (FCS) to impute missing data. The FCS method produces estimates comparable with the multivariate normal (MVN) method (Lee & Carlin, 2010).

Analysis procedure. Logistic regression was used to examine the association of youth-, family-, and school-related variables with work experience during high school. Table 2 lists the variables included in this study. Descriptive statistics were presented for both the outcome and predictor variables. We used SAS SURVEYLOGISTIC and the MI ANALYZE procedure for all analyses (SAS, 2019).

Results

Factors Associated With Early Work Experiences

Approximately 24.4% of youth with ASD reported having been involved in a paid work experience during high school at some point within the past year. This is a weighted percentage reflecting the population of all youth with ASD. The regression results are presented below and in Table 2.

Youth-related variables. There was no significant association between four youth-related variables (sex, race/ethnicity, level of functioning, or autonomy) and paid work experience. However, age ($B = 0.26$, $p < .01$) and social engagement (i.e., whether youth gets together with friends outside of school) ($B = 0.77$, $p = .002$) were significant

predictors. For every increase of 1 year of age (ranging from 14 to 21 years), there was about a 29% increase in the odds of getting a paid job while in middle and high school. Youth who reported seeing friends after school for the past week were 1.98 times more likely to have a paid job than those who never saw friends.

Family-related variables. Of family-related variables, youth from families with a household income of US$120,000 or more were almost 3 times more likely to have early paid work experience than youth from families with household incomes less than US$40,000. However, no significant difference in paid work experience was found among families whose household income was US$0 to US$40,000; US$40,000 to US$80,000; US$80,000 to US$120,000; and US$120,000 or more. Parent expectation was another significant predictor of paid work experience while in high school. Youth whose parents expected them to *both* live independently and be financially independent by the age of 30 years were 1.75 times more likely to have early work experience in high school than youth whose parents did not expect *either* of these outcomes ($B = 0.63$, $p = .03$). Yet, there was no significant difference between youth whose parents expected only one of these outcomes (either to live independently or to be financially independent) and those whose parents did not expect either of the outcomes.

School-related variables. We did not find any significant relationships among parent education, parent employment status, and paid work experience during high school. None of the school-related variables were predictive of the outcome variable.

Discussion

This study used NLTS 2012 to examine the early paid work experiences of middle and high school youth (age 14–21 years) with ASD. The findings from this secondary analysis provided useful insight into the factors that influence early work experiences.

RQ1: Paid Work Experience in High School

We found that a relatively low proportion of youth with ASD held a paid job during high school (24%). This percentage is higher than the previous NLTS2 study conducted by Carter et al. (2011) in which only 5.9% of students with ASD participated in paid work experiences while in school. A report on youth aged 15 to 18 years from the NLTS 2012 compared with the NLTS2 also found an increase in participation in paid work experience during high school for students with ASD between 2003 and 2012, in particular for school-sponsored work activities (21% in 2012 vs. 11% in 2003; Liu et al., 2018). This increase was not observed for youth with other disabilities. This is an encouraging finding for young people with ASD, suggesting that perhaps, for this group of students specifically, recommendations to increase access to early paid work experiences were put into practice by transition professionals between the 2000–2001 NLTS2 and 2012–2013 NLTS 2012 data collection points.

RQ2: Correlates of Early Work Experiences

Youth-related variables. We found that the rate of work experience during high school no longer differed based on the functional ability index (e.g., the ability to carry a conversation) when other variables were considered. This finding is inconsistent with previous studies, suggesting youth with greater support needs in communication or independent living (e.g., dressing oneself) were much less likely to have a paid job during high school (Carter et al., 2011) or after leaving high school (Carter et al., 2012). This finding supports the notion that a student's employment experience is a function of interactions between individual factors and the support available in their environment (e.g., home, school, and community) (Thompson et al., 2009). One limitation of this measure is that it is based on parent-reported responses, and we must acknowledge that parents and youth may have different perspectives. However, the use of parent-reported data is common in the NLTS studies, and while obtaining responses from the students themselves would be optimal, Levine and Edgar (1994) found that there is generally acceptable agreement between parent- and youth-reported data in studies on transition-age youth with disabilities. However, an observational or self-reported measure could rate functional abilities differently, resulting in different findings for the present analysis.

Consistent with the study by Carter et al. (2012), we found age was significantly related to such experiences. Youth with ASD were more likely to have a paid job during their later school years. This is logical and may align with expectations that youth with disabilities, particularly those in younger grades, should be involved in academic courses to a greater extent. However, as youth with ASD increase in age, particularly those who will complete high school at the age of 18 years, it is imperative that transition planning includes conversations about when and where paid work experience will occur. This finding, however, should not preclude earlier opportunities to involve these youth in work experience opportunities.

One example is the recently concluded Promoting Readiness of Minors in Supplemental Security Income (PROMISE) model demonstration program that was specifically focused on creating employment opportunities for 14- to 16-year-old recipients of Supplemental Security Income (SSI) benefits. Six projects were funded across 11 states and administered through the U.S. Department of

Education's Office of Special Education Programs. Each state project was required to provide at least one paid work experience in an integrated setting for youth participating in the project before leaving high school. Educators, community-based service providers, and parents can learn from the findings of these demonstration projects in providing early work experiences to youth with disabilities. Information on the PROMISE program can be found at http://www.promisetacenter.org/transition-resources.

Another youth-related variable, seeing friends at least weekly, also had a significant positive association with having a paid job during high school. Although causality cannot be confirmed through logistic regression analysis, it is possible the greater number of and access to social connections held by the youth who see friends regularly could facilitate finding paid jobs. Youth with these friendship networks could be leveraging their social capital to access better transition experiences than those without such networks (see Trainor, 2008 for a discussion of cultural and social capital during transition for students with disabilities in general). Previous studies have also found that significant associations between work experience and seeing friends at least weekly after high school for students with disabilities (e.g., Papay & Bambara, 2011 for students with ID), indicating that there is an interaction between social and employment experiences, whether in school or after. This relationship warrants more in-depth investigation going forward. Unlike the study by Carter et al. (2012), this study did not find any significant relationships between race/ethnicity or level of functioning and the outcome variable.

Family-related variables. We found parent expectations had an association with paid work experiences during high school. The connection between parent expectations and youth post-school employment outcomes has been documented in previous studies (Carter et al., 2011, 2012). This study adds to this growing body of evidence documenting the strong, positive relationship between the expectations of parents and the outcomes achieved by their children. Research suggests that the expectations held by parents can be changed (e.g., Bozick et al., 2010; Mistry et al., 2009). To ensure that youth with ASD have greater access to early paid work experiences, it is essential for secondary educators and transition professionals to convey to parents the possibility of future employment for all youth with ASD and the different manners through which this can be achieved (e.g., supported or customized employment). Doren et al. (2012) suggested that, to change the expectations of parents regarding the future for their children with disabilities, educators could (a) help parents disentangle their own educational experiences and outcomes from those of their children, (b) provide information on resources available to their children to build parents' confidence, and (c) involve families in activities that will build their children's autonomy. For students with low parent expectations, Doren et al. (2012) suggested introducing adult role models and mentors to foster a positive and supporting environment.

This study had an additional finding: parent expectations for *either* financial independence or independent living alone did not predict having a paid job. Rather, there was a significant association between expectations and a paid job during high school only for those whose parents expected that they would achieve *both* financial and residential independence. The cumulative impact of expecting both of these outcomes on early work experience has not been examined in previous analyses of the NLTS2 and remains to be explored further using the NLTS 2012.

One additional family-related variable, household income, had a significant association with work experience during high school, but only for youth from families with the highest level of income (US$120,000 or more) compared with youth from families with the lowest level of income (less than US$40,000). Household income has been found to have a significant association with post-school employment outcomes for youth with disabilities in many studies (Papay & Bambara, 2011; Wagner et al., 2014), although no significant predictive relationship between household income and work experience was found by Carter et al. (2012). The present finding is not surprising given that youth whose families have greater access to resources are more likely to be able to access opportunities for their children, including paid work opportunities. Surprisingly, unlike Carter et al. (2012), neither parent education level nor employment status were significantly associated with paid employment in high school.

School-related variables. Contrary to our hypothesis, none of the school-related variables (having been suspended from school, participating in a vocational or career club in the past year, and repeating a grade) were significantly associated with paid work during high school. We speculate that limiting the sample to ASD decreases the power needed to detect a meaningful difference. It is also likely that school-related variables included in this study, such as school engagement, may be related to post-school paid employment, but not paid work during high school. Additional studies are needed to further elucidate these relationships and identify malleable factors at the school level associated with paid work experiences.

Limitations

This study is not without some limitations. First, the findings are based on secondary data analyses and no original data were collected or analyzed. We were constrained by the variables available in the NLTS 2012 data set, most measures were based on parent report (e.g., functional index), and further limited by the amount of missing data. Had this study

been designed to include original data collection, the survey questions could have been written to map directly on to the variables that were examined in previous research studies and the findings may have differed. Second, we included youth in this sample whose primary disability, as reported by the school district, was ASD. Not considering co-occurring disability categories (e.g., youth with a primary disability of ID and secondary disability of ASD) may have generated a heterogeneous sample. A future study that accounts for co-occurring disabilities or that selects a sample that is similar in other characteristics, rather than only disability, would allow for greater generalizability to a more specific subgroup of youth with ASD. Third, the autonomy measure survey questions were asked only of youth who were able to respond. Therefore, it is likely that youth with more significant support needs were excluded from the sample for this variable. Fourth, this study conducted logistic regression analysis and, therefore, no causal relationships can be determined. A future study could use a technique such as a propensity score modeling/matching to increase the level of evidence found in this study (Rojewski et al., 2015). Finally, we tested the relation between school engagement and paid work experience during high school. The set of variables included may not represent the construct of engagement well (Appleton et al., 2008).

Implications for Practice and Research

Implications for practice. This study demonstrates that despite three decades of research documenting the importance of early paid work experiences, these experiences are available to only a quarter of all youth with ASD while in school. This means that there is considerable work to be done to increase access to early paid work experiences for youth with ASD. Cease-Cook et al. (2015) encourage teachers to support access to paid work experiences for students with disabilities by providing instruction in job application and interview skills, empowering and supporting students to apply for jobs related to their career interests, monitoring student access to and success in part- and full-time jobs through reflective course assignments, and ensuring communication with students and families about paid work experience outside of school.

It is also important that we find ways to expand opportunities for partnerships between the school and business sector, for example, by reaching out to chambers of commerce and other local organizations and identifying specific activities within the scope of work of these organizations that can help to support employment opportunities for students with disabilities, including ASD (Carter et al., 2009). Furthermore, we must use effective strategies to engage employers, such as matching youth skills and interests to job tasks or providing support and monitoring at the worksite (Luecking, 2009).

We encourage educators to consider promoting paid work experiences earlier on, perhaps before the age of 16 years when transition planning is to begin under the requirements of IDEA. For youth with ASD who will graduate from high school at the age of 18 years, and even for those who plan on going to college, there needs to be a clear plan in each student's Individualized Education Plan (IEP) for providing paid work experience before they complete their education. For students with high-functioning ASD, Lee and Carter (2012) suggest, "Career interest assessments, vocational evaluations, and person-centered future planning efforts can all be employed to help youth and their transition planning teams identify promising work experiences aligned with students' individualized needs" (p. 992). For students who are aged 18 to 21 years and continuing to receive special education services, the focus of the educational program in their final years of high school should be increasingly community-based with an almost exclusive focus on employment and independent living skills and experiences (Wehmeyer et al., 2006). Similarly, Choiseul-Praslin and McConnell (2019) described a model for providing community-based employment training for students with significant disabilities that includes focusing on interagency collaboration, staff training, scheduling, skill acquisition, data tracking, and student involvement.

In terms of social engagement, it is possible that seeing friends more often could lead to greater access to paid work opportunities, both due to having a greater social network that can be used to seek and obtain employment and due to greater opportunities to develop the social skills needed in the workplace. Transition planning should include the development of social skills as well as planning for socialization opportunities with same-age peers. For example, educators can use direct instruction to teach social skills such as conversation, negotiation, and conflict resolution; provide opportunities to practice social skills to develop authentic friendships; and integrate social skill instruction across the curriculum (Rowe et al., 2015). The use of these strategies would ensure that youth with ASD can take advantage of opportunities that could increase their access to paid work experiences.

Implications for research. Findings from this study raise many opportunities for further research. First, future studies need to examine factors related to parent expectations, especially low-income families. Results from these studies may inform the field which factors distinguish families with high and low expectations while controlling for socioeconomic status. Second, there is a need for the field to have a common measure of employment outcomes that researchers can use. It is difficult to synthesize findings when different measures are used across studies. Recent efforts to develop common measures among workforce preparation programs have been initiated as part of the 2014 WIOA (Desjardins et al., 2019),

providing a model that could be extended to other areas of employment outcome data collection. Finally, there is a lack of research on effective interventions to support students in paid work experiences. These efficacy trials would provide a greater body of evidence that can be used to select practices to support students with ASD in paid work experiences, in particular, those whose transition services emphasize pre-employment and employment skills rather than college preparation. Measuring long-term outcomes also needs to be a focus of these studies. Currently, evidence of effective practices for achieving successful postsecondary education, employment, and independent living outcomes is mainly based on correlational studies (Test et al., 2016). Greater causal evidence is needed to document the impact of in-school practices beyond immediate, in-school outcomes by determining with confidence the impact on post-school outcomes achieved by youth with ASD.

Conclusion

Early work experiences that youth with ASD have while in school, especially paid work experiences, are a bridge to later employment that pays a competitive wage (Carter et al., 2012; Mamun et al., 2017). Furthermore, for youth with ASD who hope to get a job instead of going to college, early work experiences during high school are essential. Previous studies have consistently demonstrated the importance of early paid work experience for students with disabilities. Yet, very few studies have examined which factors distinguish students who had paid work experiences in school from those who did not. The findings of this study add empirical support to the role of two alterable factors (parent expectations and social engagement) in early paid work experiences among youth with ASD. The findings also indicate that nonalterable factors (e.g., functional ability, family income, and age) play a role in access to early paid work experiences, highlighting the importance of ensuring early paid work experiences are matched to students personal circumstances, abilities, and needs. The implications for practice provided by this study can guide educators toward practices that ensure all youth with ASD have access to early paid work experiences, leading to the attainment of important postsecondary employment goals.

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