

**Predictors of Inclusive Course Enrollments in Higher Education by Students With
Intellectual and Developmental Disabilities**

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Abstract

Higher education programs for students with intellectual and developmental disabilities (IDD) offer opportunities to engage in college experiences including access to typical college courses. The purpose of the present study was to examine data from federally funded programs in order to describe and identify predictors of inclusive course enrollments. Data on 672 first-year students with IDD who enrolled in 3,233 inclusive college courses were analyzed. Significant predictors were the age of the student, whether the student attended a program that offered access to regular student advising or provided an official transcript, whether the student took any specialized courses, and whether the student had a paid job or participated in particular career development experiences. Implications for higher education programs are discussed.

Key Words: *Intellectual and developmental disabilities; higher education; college; inclusion*

The Individuals with Disabilities Education Act (2004) mandates that students with disabilities be educated in the least restrictive environment (LRE) and have access to the general education curriculum. The position of the American Association for Intellectual and Developmental Disabilities (AAIDD, 2018) is that all children with intellectual and developmental disabilities (IDD) have access to the general education curriculum in age-appropriate inclusive settings. In the 2016-2017 academic year, of the more than 400,000 students with intellectual disability (ID) ages 6 to 21 served under the Individuals with Disabilities Education Act (IDEA), 70,000 (17%) were educated inside the regular education

classroom for more than 80% of their school day (U.S. Department of Education, 2018). The movement towards inclusion, in terms of the physical setting of the instruction as well as the curriculum in which students participate, has developed over the last 40 years. Academic and social benefits of inclusion for students with IDD have been identified (Morningstar et al., 2016; Ryndak, Jackson, & White, 2013) and research has demonstrated that students with extensive support needs, including those with IDD, can learn skills and develop knowledge when instructed in the general education classroom with supports (Ryndak et al., 2013). Inclusion in the general education curriculum during high school has also been determined to be an evidence-based predictor of education and employment outcomes for students with disabilities (Mazzotti et al., 2016).

When leaving a secondary education setting, students with IDD are increasingly looking for opportunities to continue their education in inclusive settings. Going to college represents the natural progression for students who have had access to inclusive education throughout elementary and secondary school (Hart, Grigal, & Weir, 2010). In addition to the academic benefits college affords, postsecondary education can also provide a pathway to employment for people with IDD. Emerging research suggests that individuals with IDD who receive some postsecondary education have substantially higher employment rates than individuals with IDD in the general population (Papay, Trivedi, Smith, & Grigal, 2017). According to the most recent estimates from Think College, a national organization dedicated to expanding access to inclusive higher education for students with ID, there are now more than 260 programs serving students with ID at colleges and universities in the U.S., a more than 10-fold increase since 2004 (Think College, 2018).

Much of the increase in availability of inclusive higher education programs can be attributed to the Higher Education Opportunity Act (HEOA) of 2008. This law, a reauthorization of the Higher Education Act of 1965, included for the first time, a federal definition of a student with ID, thus recognizing and validating individuals with ID as part of the college going population. The HEOA included two important provisions for students with ID. First, it created access to federal financial aid for students with ID through the Comprehensive Transition and Postsecondary (CTP) programs. Previously, many students with ID were unable to access federal financial aid due to a lack of a high school diploma, and the required pursuit of a degree. With the creation of CTP designation, a financially eligible student with ID can access grant and work study funds to support enrollment. Courses in approved programs can be taken for credit or audit. The CTP programs are required to provide a certain level of access to inclusive courses, and lead to a culminating credential, but not typically a degree. Second, the HEOA established a model demonstration program, the Transition and Postsecondary Programs for Students with Intellectual Disabilities (TPSID). The purpose of the TPSID program was to promote successful transition of students with ID into higher education by supporting institutions of higher education (IHEs) to create or expand model programs (Grigal, Hart, & Weir, 2013). The HEOA also created a National Coordinating Center for the TPSIDs and awarded this grant to Think College at the Institute for Community Inclusion, University of Massachusetts Boston, in 2010, and again in 2015.

TPSID grants were initially awarded in 2010 to 27 grantees and implemented between 2010 and 2015 at 57 IHEs in 23 states. The grants were awarded again in 2015 to 25 grantees and are currently being implemented between 2015 and 2020 at more than 40 IHEs in 19 states. Reports from the TPSID National Coordinating Center at Think College have provided data on

the structure and operation of TPSID programs and the activities of students enrolled in TPSID programs, including initial descriptive data on the coursework taken by students attending TPSID programs. In the first five years of the TPSID grant, students were enrolled in more than 10,000 inclusive college courses (Grigal, Hart, Smith, Domin, & Weir, 2016).

Higher education programs serving students with IDD offer a wide range of access to inclusive college coursework. Inclusive courses are typical courses offered by the IHE that are listed in the IHE course catalog and available for any college students to enroll in. Students with IDD may take these courses for credit or may choose to enroll in the course via an audit option which allows for greater flexibility in the supports that can be provided. Many higher education programs also offer specialized courses in which students with IDD are provided instruction in life skills, social skills, or career preparation skills in group settings separate from their college peers without disabilities. The definitions of inclusive and specialized courses that are used by the TPSID National Coordinating Center (NCC) to distinguish between inclusive and specialized courses are shared in Table 1. In the most recent TPSID data report (2016-2017), 45% of all course enrollments by students attending TPSIDs were in academically inclusive courses whereas 55% of course enrollments were in specialized courses (Grigal, Hart, Smith, & Papay, 2018). The examples of inclusive course titles given in TPSID NCC annual reports suggest that students are accessing a wide range of courses across many academic domains (Grigal et al., 2016).

INSERT TABLE 1 HERE

Emerging research has suggested that there is a relationship between the courses that students take and employment outcomes. Qian, Johnson, Smith, and Papay (2018) analyzed data on students who attended TPSID programs located at two community colleges and found that

students who took *only* inclusive classes were almost five times more likely to earn minimum wage or above in their jobs, compared to students who took some specialized courses. Grigal, Papay, Smith, Hart, and Verbeck (2019) analyzed data on students who attended TPSID programs between 2010 and 2015 and found that students who enrolled in higher numbers of specialized courses were significantly less likely to obtain paid employment while in the program. These studies suggest that inclusive college coursework may have both direct and indirect impacts on employment outcomes for college students with IDD.

Given this connection, further exploration is needed to understand the factors that predict the degree of inclusive course enrollment for students with IDD. These factors can relate to the program, the student, and the experiences of the student. Program factors describe the type of program attended by the program, for example the type of institution (2- or 4-year), whether or not the program is approved as a CTP, how long the program has been in operation, and whether the program provides access to regular advising and transcripts. Student factors describe the demographics of the student, for example race, disability, and age. Student experiential factors describe the experiences that students have in the program, for example if they are dually enrolled in college and high school (i.e., enrolled in higher education during the final years of high school while continuing to receive special education services), have a paid job, participate in various unpaid career development experiences, receive support from the disability support office (DSO), live in campus housing, and take any specialized courses.

Through exploration of the relationship between these factors and inclusive course enrollments, we can begin to identify malleable variables that can be altered or improved to ensure greater access to inclusive college coursework. The purpose of the present study was to conduct a deeper examination of inclusive course enrollments of students attending TPSIDs. To

reflect the most up-to-date practices, we selected our sample from TPSID programs funded in 2015. Data were available for two academic years: 2015-2016 and 2016-2017. To ensure a consistent but sufficiently sized sample, we examined data on course enrollments for students in their first year of the program to answer the following research questions:

1. To what degree are students in their first year of a TPSID program enrolled in inclusive courses and how do these differ in terms of type of enrollment, pre-requisites, grades, and reasons for enrollment?
2. Do program, student, and experiential factors predict the number of inclusive courses that students enroll in during their first year at TPSID programs?

Method

Data Source

Data for this study were collected by the TPSID NCC in the first two years of the 2015-2020 TPSID grant from all sites that received TPSID funding. The Think College Data Network was implemented to gather data on the activities of the TPSID grantees and their students on several aspects aligned with the Think College Standards for Inclusive Higher Education (Grigal, Hart, & Weir, 2012a). This tool was initially developed for use with the 2010-2015 TPSID grantees and was revised and updated in 2015 (Grigal et al., 2018). The changes made in 2015 ensured greater accuracy in reporting of course enrollment data. Therefore, data collected in 2015-2016 and 2016-2017 were selected for analysis in this study.

Sample

We selected students whose first year in the TPSID program was either 2015-2016 or 2016-2017. Higher education programs for students with ID, including TPSIDs, range from 1 year to 4 years in length and many vary based on the needs of the individual student (Think

College, 2018). Therefore, there is not a consistent length of time across programs for which students attend. Given that program requirements, such as inclusive courses, can differ based on the student's year in the program, we selected data only on students' first year experiences in order to ensure consistency in the sample. A single year of data was examined for each student. From the full sample ($N = 968$), 720 students enrolled for their first year in either 2015-2016 ($n = 362$) or 2016-2017 ($n = 358$). We removed students who had incomplete data from our sample; thus, the sample size for this study was $n = 672$.

Variables

Research question 1. The Think College Data Network includes data on all courses in which students enrolled each year. To answer research question one, we selected relevant variables to describe the course enrollments in inclusive courses in the students' first year ($N = 3,233$ inclusive course enrollments). See Table 2 for a list of variables.

INSERT TABLE 2 HERE

Research question 2. The Think College Data Network also includes annual data on the programs that students attended ($N = 46$) as well as data on the core demographics of students and their experiences each year. Three groups of independent variables were selected for research question two. Student factors were demographic variables of the students (race, disability, and age). Program factors were variables that characterized the programs that students attended (2-year or 4-year IHE, approved as a CTP, offered access to regular advising, in operation before receiving TPSID funds, and provided students with an official transcript from the IHE). Student experiential factors were variables that described the experiences students had in the program during their first year (dually enrolled in high school, had a paid job, participated in various unpaid career development experiences [service learning, volunteering and/or

community service, unpaid individual work training, or unpaid internship], received support from the DSO, lived in campus housing, and took at least one specialized course).

Dependent variable. We constructed the dependent variable from the course enrollment records. First, we created a dichotomous variable based on the type of courses (inclusive or specialized) indicating if the course enrollment was in an inclusive course (i.e. a course that met the definition shown in Table 1). Next, we aggregated the enrollment records to the student level to obtain the total number of inclusive course enrollments for each student in their first year.

Analysis

All analyses were conducted using the quantitative data analysis software Stata, version 15. For research question one, we conducted basic descriptive statistics. For research question two, we conceptualized the combined dataset to be hierarchically structured; that is, comprised of individuals (at level 1) nested within programs (at level 2). Given the dependent variable is continuous, a multilevel linear regression (2-level model) was employed to examine the effect of the explanatory variables on the total number of inclusive courses taken. This analysis was run in four steps: In Model 1 (empty model), no explanatory variable was included. This model represented the total variance in the specified outcome (total number of inclusive courses taken) between programs. In Model 2, only student and student experiential factors (level 1) were included to test the extent to which program-level differences were explained by individual characteristics. In Model 3, only program factors (level 2) were included to examine the effects of program level factors on the specified outcomes. Finally, in Model 4 (full model, shown in Table 3) both student-level (student factors and student experiential factors) and program-level factors were included. The results for Model 4 of fixed effects (measures of association) are

reported as coefficients with standard errors and p -values to indicate any statistical significance ($p < .05$).

INSERT TABLE 3 HERE

Results

Sample Description

Of the 672 students, 61.2% were White, 26.3% Black, 6.0% Asian, 1.2% Native American, 0.9% Native Hawaiian/Pacific Islander, and 4.5% other race. In terms of ethnicity, 13.1% were Hispanic or Latino. For gender, 61.3% were male and 38.7% were female. Almost all students (94%) had either ID, autism, or both: 64.1% ID only, 7.4% autism only, 22.8% both, and 5.7% neither.

Research Question One

The results of the descriptive analysis of course enrollments are shown in Table 2. For the 672 first-year students, 3,233 inclusive course enrollments were reported. Few courses in which students enrolled ($n = 291$ enrollments, 9.0%) had pre-requisites. The most frequent type of course enrollment was as a non-credit or auditing student ($n = 1,329$, 41.1%). In 38.4% of course enrollments ($n = 1,242$) students received a grade. In terms of the reasons for enrolling in a course, the most frequently cited reason was that the course related to the student's personal interest ($n = 2,304$, 71.3%).

Research Question Two

The mean number of inclusive courses taken for each student in their first year was 3.43 ($SD = 2.46$; median = 3, mode = 2, and range = 0-17). Table 3 displays the full model coefficients, standard errors, and p -values for the results of the multilevel modeling used to assess the effect of student-level (student and student experiential factors) and program-level variables on the total number of inclusive

courses taken. We calculated the estimates of the variance components. The estimate of the level-2 variance component is given as $\text{var}(\text{Constant})$ and is 2.28, with a 95% confidence interval from 1.77 to 2.94. The estimate of the level-1 variance component is given as $\text{var}(\text{Residual})$ and is 1.31, with a 95% confidence interval from 1.24 to 1.39. The likelihood (LR) ratio test statistic suggested that the variance components were statistically significant: the LR test statistic is 413.96 with a p value of 0.000.

To obtain a better sense of the variance that is explained by the student-level and program-level measures, we calculated the R^2 of the full model ($R^2 = 1 - (V_{\text{full}} / V_{\text{null}})$). Thus, R^2 of the full model = $1 - (3.59/5.55) = .35$. This means that the addition of student-level (student and student experiential factors) and program-level factors accounted for around 35% of the variation in the intercepts.

One student factor was significant in the full model: Controlling for other variables, a one-year increase in age was associated with a .054 decrease in the number of inclusive courses taken in the student's first year ($p = .001$). Two program factors were significant: Being a student in a program that offered access to regular advising was associated with 1.06 more inclusive courses taken compared with otherwise similar students in a program that only had a separate advising system specifically for TPSID students ($p = .001$) and being a student in a program that provided an official transcript from the IHE was associated with 1.40 more inclusive courses taken compared with otherwise similar students who enrolled in a program that did not provide an official transcript ($p = .006$). Finally, four student experiential factors were significant: Students who took *any* specialized courses had 2.66 fewer inclusive course enrollments compared with otherwise similar students who did not take any specialized courses ($p < .001$). Students who had one or more paid jobs had 0.49 more inclusive course enrollments compared with otherwise similar students who did not have any paid job ($p < .001$). Students who had career development experience through volunteering or community service had 0.30 more

inclusive course enrollments compared with otherwise similar students who did not have volunteer experience ($p = .043$). Students who had career development experience in an unpaid individual work training site had 0.60 more inclusive course enrollments compared with otherwise similar students who did not have this experience ($p = .003$).

Discussion

The TPSID model demonstration program provides multistate data on higher education programs serving students with IDD. The present study examined course data from 672 students with IDD who enrolled in 3,233 inclusive courses during their first year of attendance at a TPSID program. Students took, on average, slightly more than 3 inclusive courses in their first year. In the 2016-2017 report of data from TPSID programs, Grigal et al. (2018) reported that students across years (not just in their first year) enrolled in an average of 3 inclusive courses per year, suggesting that the number of inclusive course enrollments of first year students in the present sample is similar to the overall average for students attending TPSID programs. The number of inclusive courses taken by students in the present study ranged from 0 to 17, indicating that there is a wide range in the degree to which students with IDD are enrolling in inclusive coursework in their first year.

The most frequent type of enrollment was audit (41.1% of all course enrollments) but a substantial percentage of courses were taken for credit (32.6%). The lower levels of students taking a class for credit may be due to the policies and practices of the program rather than the abilities of the student. For example, in a survey of higher education programs for students with ID, Grigal, Hart, and Weir (2012b) found that access to credit-bearing courses was offered by 51% of programs, meaning that in almost half of all programs the option of taking a course for credit was not even presented to students. Similarly, a study by Nunes (2017) of Inclusive

Concurrent Enrollment Programs for students with ID in Massachusetts reported that, of the 10 programs in the study, three program coordinators discussed credit-bearing options with the students whereas seven discussed primarily audit options. As Grigal et al. (2012b) stated, the “decision to support students with an ID to access existing college courses is often in the hands of the program developers, and likely reflects their level of expectation for the youth who will attend their program” (p. 231). The manner in which the student takes the course impacts the supports that they can receive (Grigal et al., 2013; Nunes, 2017) as well as the outcome. Courses taken for credit can be counted towards a typical certificate or degree offered by the IHE, whereas those courses taken for audit are likely only to be counted towards a TPSID-developed credential (Grigal et al., 2016). Further exploration is needed to understand how decisions about course access (i.e., whether to take a class for credit or audit) are made and the resulting impact these decisions have on student outcomes.

In 18.0% of course enrollments, students were unofficially attending or sitting in on the course. The finding that almost one-fifth of the courses students participated in used such an informal mechanism to access coursework brings forth a few areas of consideration. A survey conducted in 2008 by Papay and Bambara (2011) of transition-age students attending college through dual enrollment options reported that about a third of reported course enrollments were being taken unofficially. The present findings suggest that the prevalence of informal participation in college classes has perhaps decreased in the last decade, but that this form of access remains even in federally funded programs. Taking a course without any formal recognized process may present limitations for students and for the IHE. Students in such courses will not have the course appear on a transcript, and they cannot use that course to build toward a certificate or degree the future. Informal access also may perpetuate the idea that

students with IDD are not “real” college students. Instructors who teach courses in which students with IDD are attending, but not formally enrolled, may have less investment in providing those students with needed accommodations. Finally, creating a course access point that bypasses the official registration system, while perhaps offering a short-term work around, reflects that the host IHE is not creating institutional mechanisms that recognize and respond to the needs of students with IDD and may not see them as a legitimate member of the campus learning community.

Only 9.0% of courses had prerequisites, suggesting that the majority of courses taken are at an introductory level, which is not surprising given that the sample was comprised of first-year students. In 38.4% of courses, students received a grade. Almost all of these (96%) were courses taken for credit. Anecdotally, we found that in courses taken for credit, the median numerical grade was 3.5 and the median letter grade was B+, suggesting that students with IDD were successful in college courses taken for credit. Future research is needed to examine how students are graded in courses that are not taken for credit (i.e., courses that are audited or noncredit courses) and if there are differences in grades that are awarded by the instructor of the course and grades that are awarded by others (e.g. specialized course instructor, graduate students, TPSID program staff).

Slightly less than half (45.7%) of courses were taken because they were related to a student’s career goal and almost two-thirds (71.3%) were taken for personal interest. A large majority of courses (80.7%) were taken for these two reasons combined, suggesting that career goals and personal interest are important motivating factors for inclusive course enrollments. About half of courses (51.6%) were taken because they were required either for a credential, either the TPSID credential or another certificate program at the IHE. The HEOA requires person-centered

planning be used by TPSID programs to develop each student's course of study. Therefore, many credentials offered by TPSIDs are designed to be flexible enough to be adapted to each student's goals (Shanley, Weir, & Grigal, 2014). This means that the credentials that TPSID programs offer tend to resemble an independent study curriculum with few required courses (Shanley et al., 2014). Future research could explore how inclusive vs. specialized course enrollments are impacted by students' options for programs of study as well as the kind of credentials they are seeking.

Predictors of Inclusive Course Enrollments

Student factors. Student factors such as age, gender, and race are unalterable factors that need to be taken into account when identifying predictors of inclusive course enrollments. Only one student factor, age, was significant in predicting the number of inclusive course enrollments in a student's first year. However, the .054 decrease in the number of inclusive course enrollments taken for each year of age is appears to be negligible. The distribution of the age of students in the sample may have impacted this finding: 94% of the sample was between the ages of 18 and 26 and only a handful of students were older. The students who were over age 26 took on average slightly fewer inclusive courses than their younger counterparts, thereby leading to the significant finding. Overall, the results suggest that the student factors that were included in the model are relatively unimportant in predicting inclusive course enrollments. It must be acknowledged, though, that there were no measures of student academic achievement/ability in the TPSID dataset, and that this student factor *may* impact inclusive course enrollment. This is a limitation that should be explored in future research.

Program factors. Program factors such as access to advising, acquisition of transcripts, and CTP status (ability to offer financial aid) reflect the level of integration of the TPSID into the

host IHE infrastructure, a critical factor for program development and sustainability (Grigal et al., 2016). Aligning TPSID services with the systems and practices used at the IHE ensures that students have access to everything that other students at the IHE receive, and also that the TPSID program is not duplicating or supplanting services and supports that already exist on campus. Alignment with the existing IHE infrastructure also lends itself to sustainability of the program as those structures will continue to be available after TPSID funding ends (Grigal et al., 2016). Descriptive data on program factors reflected that a large majority of first-year students (86%) were attending programs that were in operation prior to the TPSID funding and provided official transcripts from the host IHE. Fifty-percent of first-year students attended programs that offered access to a separate advising system only for TPSID students, whereas other students had access to either existing advising services only, or some combination of existing and specialized advising services.

Advising access and transcript provision were both identified as predictors of inclusive course enrollment. Students in programs that offered access to regular student advising (either alone or in conjunction with specialized advising) enrolled in 1.06 more inclusive courses than students in programs that offered only a separate advising system. Similarly, students in programs that provided official transcripts from the IHE enrolled in 1.40 more inclusive courses than students enrolled in programs that did not provide official transcripts. An additional variable, operating prior to TPSID funding, approached significance ($p = .089$) but was not deemed a predictor. But those students who enrolled in programs that were operating prior to TPSID funding took 1.35 more inclusive classes than students in programs that began when they received TPSID funding.

Access to courses for most college students begins with guidance from an academic advisor; and it seems reasonable that access to these same advising services would facilitate access to college courses for students attending the TPSID program. Academic advisors may have more knowledge about the courses in the course catalog, and may be better able to match students with courses that meet their interests or support their programs of study. Specialized advisors may be more likely to direct students to specialized courses. It is not clear from these findings the role of the staff person that provides specialized advising or if they are engaged in any formal or informal manner with typical advisors at the IHE.

Similarly, after enrollment in a course, typical college students receive transcripts that reflect the coursework attended, and their respective grade in that course. This same process is not present for students that are enrolled in specialized courses, as these courses often are not in the course catalog and the grades, if awarded, may not be recognized by the host IHE. It is, therefore, not surprising that students in TPSID programs that provide transcripts are likely supporting students to take courses that would appear on those transcripts.

Student experiential factors. Student experiential factors describe the activities that students engage in while attending the TPSID program. Some of the strongest predictors of inclusive course enrollments were in this block of variables: enrolling in any specialized courses, having a paid job, and participating in certain types of unpaid career development experience.

Specialized courses. Over 80% of students ($n = 672$) in the TPSID program took at least one specialized course that was attended only by students with IDD in their first year of college. Further, the findings revealed that students with IDD who took *any* specialized courses were enrolled in almost three fewer inclusive courses compared with otherwise similar students who did not take *any* specialized courses. There are a number of possible explanations for why

students with IDD who enroll in more specialized courses, enroll in fewer inclusive courses. One potential straightforward explanation is that when students spend their time participating in specialized courses only for students with IDD they obviously have less time available to take inclusive courses.

Another factor impacting whether students with IDD are enrolled in inclusive college courses are the expectations that program personnel have of students with IDD. These expectations impact how policies and practices for the program are structured and operationalized. Anecdotally, we are aware there are TPSIDs that require specialized courses as part of students' programs of study because they believe that students with IDD would either not be able to participate in or benefit from inclusive courses even with supports. We are also aware other TPSID programs have a limit on the number of inclusive courses from which students with IDD can choose to take and this results in a decrease in the number of inclusive courses in which students can enroll. Finally, TPSID personnel have communicated anecdotally that first-year students with IDD are "not ready" to take inclusive courses. Students in these programs are required to take specialized courses (e.g., Being a College Student, Study Skills for College Students, or Independent Living Skills) before they are allowed to enroll in inclusive courses.

Other secondary analyses of TPSID data have also identified negative impacts from specialized course enrollments (Qian et al., 2018; Grigal et al., 2019). Students with ID who participated in an inclusive programs of study at TPSIDs implemented at two community colleges were almost five times more likely to earn at or above minimum wage than those who took any specialized courses (Qian et al., 2018). Students with ID who participated in specialized courses only for students with ID at TPSID programs funded between 2010 and 2015 were

significantly less likely to achieve paid employment during their tenure in the TPSID program (Grigal et al., 2019).

These findings have several implications for research. It is possible that enrolling students in specialized courses in their first year of college in turn reduces students' access to subsequent inclusive courses. Further research needs to be conducted to confirm the findings of this study and to further explore potential other explanations of this relationship. Additionally, more rigorous research is needed to identify the differences between program structures and related policies and practices (e.g., those that require specialized courses and those that do not) and their respective impact on student outcomes.

Career development and employment. Career development experiences in the form of volunteering/community service or unpaid individual work training, as well as having had one or more paid jobs predicted increased enrollment in inclusive courses. Students with one or more jobs took .49 more inclusive courses than those who did not. Volunteer experience increased inclusive course enrollment by a smaller amount (.30) and unpaid individual work training sites increased inclusive course enrollment by a larger margin (.60). Other forms of career development experience such as participating in an unpaid internship and or participating in service learning experiences were not found to predict inclusive enrollment.

The connections between course access and employment can be influenced by a variety of factors including how closely a program aligns students' courses of study with students' career paths, how accessible career-related courses are in terms of pre-requisites, and if a program addresses employment preparation via engagement in internships or other course-related activities. Given that many typical college internships are tied directly to specific college courses (Callanan & Benzing, 2004), the finding that unpaid internships were not a predictor of

inclusive course enrollment was somewhat surprising. It is possible that the composition of internships in terms of how they are derived and implemented is different for students attending TPSID programs than they are for other college students. Why certain forms of career development experiences predicted inclusive course access requires further consideration. Do certain types of career development experience provide more flexibility or access to inclusive courses due to a student's schedule? Are the types of career development experiences offered dependent on assumptions made about the student's abilities or connected to their previous job exploration history? Future studies can and should explore the impetus and composition of career development experiences for students with IDD in the context of higher education and how they relate to student coursework. The connection between employment and inclusive course access also warrants further exploration. The current findings join a growing body of research that has documented a connection between the type of coursework taken and employment outcomes (e.g., Grigal et al., 2019; Qian et al., 2018). However, it is not clear from the current data the basis for this interaction. Are students who are taking typical college courses perceived as more capable of working, and thus offered greater opportunities for employment? Future research is needed to determine whether these opportunities are connected directly to students' skills or if, instead, they are predicated on a combination of staff expectations or program constraints related to inclusive learning and working experiences. The possibility of family factors cannot be dismissed either. It could be that the same family characteristics (e.g., strong advocacy skills and relatively more family resources) that might influence college enrollment in the first place could also influence employment outcomes.

Limitations

The findings of the present study must be considered in light of several limitations. Data for the study are derived from grant-funded model demonstration programs and therefore may not be representative of all higher education programs for students with IDD. Data were self-reported by program staff and thus may reflect bias or contain errors of omission. The dependent variable for this study was the count of inclusive course enrollments taken by each student, but we considered all courses to be equivalent units in this analysis rather than accounting for the differences in course lengths (e.g., 1-credit course vs. a 4-credit course). The present study examined only course enrollments for students in their first year and the findings may not reflect student enrollment in later years in the program. Finally, a total of 35% of variance in inclusive course enrollments was explained by the predictors in the model. Therefore, there are other factors not reflected in the model that contribute to the relationship. Future research should consider the myriad of factors that can impact the enrollment of students with IDD in inclusive courses. This could include additional student factors such as skill level, academic achievement, and self-determination; family factors such as family resources and advocacy strength; and additional program factors such the number of and type of inclusive courses available at the IHE, access to various enrollment types (credit/audit), as well as the expectations of program staff regarding the ability of IDD to be successful in inclusive courses.

Implications for Policy and Practice

Several implications for policy and practice emerged from this study. From the description of the types of inclusive course enrollments, it is clear that continued attention should be paid to ensure that student enrollment is officially recorded through the registrar when taking inclusive college courses. Further, increased efforts could focus on identifying and eliminating programmatic constraints that prevent students with IDD from enrolling in college courses for

credit (with appropriate supports). It is important for us to listen to the voices for students with IDD when making decisions around course enrollments, as illustrated by this quote from a student participant in the study by Nunes (2017):

I advocated that I wanted to take a class for credit, I knew I was up for the challenge. I don't need to rely on others; I know what I can do. I've made great progress in my time at the University. In my classes for audit, I was itching to take the test. I needed perseverance and commitment to take a class for credit (Patrick, p. 139).

When given the option of taking courses for credit it appears that many students with IDD are successful. But total success should not be expected; all college students struggle and in some cases fail in courses during their time at college. As current programs engage in reflective practices, we suggest they consider whether their use of the audit option has become a default, and if so, how they can expand students access to taking college courses for credit. Ideally these decisions should be made in conjunction with an academic advisor on a course-by-course basis and not deemed as a program-wide policy.

Our program factors findings indicate inclusive course enrollment can be predicted by the level of integration with certain existing college and university systems. Programs that create special policies and practices for students with IDD for typical college interactions such as advising, or eliminate access to typical records such as transcripts, may inadvertently reduce a student's chance to enroll in inclusive courses. This approach may also perpetuate a feeling of separateness for both the staff and the students involved in the TPSID. Use of existing college systems, including academic advising, registration, tutoring, and disabilities services, as well as offering access to typical courses, fosters ownership for student success among IHE staff and departments that are not directly involved in the TPSID program. Programs should carefully

consider the short- and long-term impact of creating separate or specialized structures and services prior to implementation of them on campus.

Finally, it is becoming clear that specialized course enrollments are an area that will require significant attention both in policy and practice. The etiology of specialized courses and when and why these courses are established is pertinent here, as is the expectations of those creating and implementing these courses. The frequency and level of academic inclusion in higher education for students with IDD may differ due to preconceptions about these students' capabilities, as well as what they are seeking from their higher education experience (Grigal et al., 2013). Our colleagues, Uditsky and Hughson (2012) observed:

The degree of inclusion embraced by any postsecondary initiative is often a function of the values and knowledge of the architects of these efforts. There is a risk in the fast-paced growth of new postsecondary education options for people with ID that implementers may repeat some of the errors evident in past efforts by creating less than fully inclusive practices that succeeding generations will then have to struggle to alter (p. 82).

We believe that our current findings serve as a reminder to those architects in colleges and universities creating or implementing programs for students with IDD to continuously reflect on any institutionally prescribed limitations in course access. Specialized course enrollments have been shown to be a negative predictor of enrolling in inclusive courses and on attaining paid employment (Grigal et al., 2019). Yet over 80% of students with IDD in the present study were enrolled in specialized courses. Whether this reflects a strategic error in program development, a lack of specificity in the statutory guidance, or a limitation contrived by low expectations and a desire to ensure “success” for students, the field of inclusive higher education

must consider both the short and long-term ramifications of perpetually offering separate or specialized instructional experiences for students with IDD.

Conclusion

The present study offers a close examination of inclusive course enrollments by students attending TPSIDs and provides some critical issues that current and future higher education programs enrolling students with IDD should consider. We suggest that programs start from a vantage point of using every available resource and course at their respective IHE before considering establishing specialized services, systems, or courses. If a program is using the typical advising process, students with IDD will have greater access to the typical registration system and also to typical college courses. If programs create access to inclusive courses, the students with IDD will have greater access to IHE faculty and staff, who, in turn, will better understand the program and the students in it. In recent years, higher education has become more responsive to an array of nontraditional learners. Colleges routinely include issues related to diversity (cultural, financial, academic) in their strategic planning and development efforts. The infusion of people with IDD into these learning environments has and will continue to help institutions of higher learning meet their vision of becoming responsive to diversity. We must continue to align our efforts toward inclusion of students with IDD with higher education's efforts toward diversity, as the overlap between these two missions has the potential to provide students with IDD with their greatest chance of deriving positive outcomes from higher learning.

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Table 1

Comparison of Inclusive and Specialized Courses

An inclusive course:	A specialized course:
<ul style="list-style-type: none"> • Is offered by the college/university 	<ul style="list-style-type: none"> • May or may not be offered by the college/university
<ul style="list-style-type: none"> • Is open for students to register through the typical course registration process 	<ul style="list-style-type: none"> • May or may not be open for students to register through the typical course registration process
<ul style="list-style-type: none"> • Can be found in the college/university course catalog 	<ul style="list-style-type: none"> • May or may not be in the college/university course catalog
<ul style="list-style-type: none"> • Enrolls students without disabilities (or other than intellectual disability) in the same role as students with intellectual disability (e.g., their role in the class is as a student following the same syllabus) 	<ul style="list-style-type: none"> • May have students without disabilities present during instruction, but with a different role from that of a student (e.g., as a peer mentor or instructor)
<ul style="list-style-type: none"> • Enrolls students without disabilities (or other than intellectual disability) in the same section (e.g., not a special section only for students with intellectual disability) without a disproportionate number of students with intellectual disability 	<ul style="list-style-type: none"> • Restricts enrollment to only students with intellectual disability or students in the TPSID program; or is primarily for students with intellectual disability but permits students without disability to enroll in the course (reverse inclusion)

Table 2

Description of Inclusive Course Enrollments

Variable	Frequency	Percentage
Course has pre-requisites	291	9.0%
Type of enrollment		
Non-credit student or auditing course	1329	41.1%
For standard IHE credit	1054	32.6%
Unofficially attending /sitting in on course	581	18.0%
Not for-credit or as a non-credit student	33	1.0%
For credit that can only be used towards the TPSID credential	0	0.0%
Student receives a grade	1242	38.4%
Reason for taking course		
Related to a student's personal interest	2304	71.3%
Required for the student's TPSID credential or degree/certificate	1668	51.6%
Related to a student's career goal	1477	45.7%

Note. ($N = 3,233$ enrollments for 672 students).

Table 3

Multilevel Linear Regression Model on Total Number of Inclusive Course Enrollments

Factor	Variable	<i>B</i>	<i>SE B</i>	<i>Z</i>	<i>P>z</i>	<i>95% CI</i>	
Student factors	Age	-0.054	0.016	-3.360	0.001*	-0.086	-0.023
	Male	-0.025	0.114	-0.220	0.827	-0.248	0.198
	Hispanic or Latino	0.042	0.182	0.230	0.816	-0.315	0.400
	White	0.189	0.125	1.510	0.131	-0.056	0.433
	Has autism	0.033	0.128	0.260	0.796	-0.219	0.285
	Has ID	0.162	0.211	0.770	0.444	-0.252	0.575
Program factors	Attending a 4-year IHE	0.701	0.918	0.760	0.445	-1.097	2.500
	Student in a program that was a CTP in student's first year	0.255	0.468	0.540	0.586	-0.662	1.171
	Student in a program that offers access to regular advising	1.065	0.321	3.320	0.001*	0.436	1.694
	Student in a program that was in operation before receiving TPSID funds	1.347	0.793	1.700	0.089	-0.207	2.901
	Student in a program that provides an official transcript from the IHE	1.406	0.509	2.760	0.006*	0.408	2.405
Student Experiential factors	Dually enrolled	-0.197	0.233	-0.840	0.400	-0.654	0.261
	Had a paid job in their first year	0.486	0.133	3.660	0.000*	0.226	0.746
	Participated in service learning	-0.408	0.211	-1.930	0.053	-0.822	0.006
	Participated in volunteering or community service	0.301	0.167	1.860	0.043*	0.016	0.617
	Participated in unpaid individual work training sites	0.602	0.200	3.010	0.003*	0.210	0.995
	Participated in unpaid internship	0.175	0.167	1.070	0.284	-0.145	0.496
	Received support from DSO	0.276	0.253	1.090	0.276	-0.220	0.771
	Lived in campus housing	-0.256	0.308	-0.830	0.406	-0.859	0.347
Student took at least one specialized course	-2.659	0.464	-5.730	0.000*	-3.569	-1.750	
Constant	2.289	1.298	1.760	0.007	0.256	4.833	

Note: LR test vs. linear model: $\chi^2(1) = 413.96$. Prob $\geq \chi^2 = 0.000$;

* $p < .05$