How does enrollment in a work-study program between 8th and 12th grade moderate the relationship between disability and employment?

ARDRAW Small Grant

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Abstract
Employment increases social connection, self-confidence, and independence for those with disabilities. However, individuals with disabilities are severely underrepresented in the work force. One potential intervention to support the employment of those with disabilities are work-study programs where youth can learn about how to work. This study uses the National Longitudinal Survey of Youth, 1997 to explore how work-study participation moderates the relationship between disability and employment. By using logistic and ordinal least squares regression I assess how the relationship between disability and employment activity (including the number of weeks worked since age 20, income in early adulthood, and the probability of employer provided benefits in adulthood) varies between those who have and have not participated in work-study programs during secondary school. Overall, disability is associated with lower income, less time spent working since age 20, and between a four and five percentage-point lower probability of having various benefits. Work study participation is associated with increased weeks worked since age 20, and increased probability of reporting various benefits (including medical, retirement, and dental). However, interactions between disability and work study employment were not significant for every outcome, suggesting that participation in work study in high school does not mediate the relationship between disability and employment related outcomes. Work study, like many programs that bring students out of classrooms during secondary school, comes with certain drawbacks such as lost instructional time. This study suggests that generalized work study programs show limited benefits for youth with disabilities and perhaps the risks are not worth the gains.

How does enrollment in a work-study program between 8th and 12th grade moderate the relationship between disability and employment?

The Americans with Disabilities Act (ADA) was passed in 1990 and prohibits discrimination against individuals with disabilities in public life, including employment. Employment has a variety of positive effects for those with disabilities. Employment helps build financial security and stability for those with disabilities (Warr, 1987). In addition to the clear financial benefits of employment, employment may also increase independence and have social and mental health benefits (Bal et al., 2017; Bevan et al., 2013). Employment reduces self-stigma for those with disabilities, which is associated with increased self-esteem and identity development. Additionally, the employment of those with disabilities increases visibility, helping to reduce stigma by the general population (Bevan et al., 2013). Overall, employment helps those with disabilities feel like and be perceived as contributing members of society (Saavedra, Lopez, Gonzáles, & Cubero, 2015). Despite these benefits, in 2016 only 17.9% of those with disabilities were employed (Statistics, 2017). In 2016 eight in ten individuals with disabilities were not participating in the labor force (compared to only three in ten among those without disabilities) (Statistics, 2017). There has been a steady decline in the employment rate of those with disabilities, while at the same there has a been a rise of disability insurance program receipt (Autor & Duggan, 2010; Mann & Stapleton, 2011).

The question of how to best prepare youth with disabilities for employment and independence has been pondered for decades. Research has found that rehabilitative vocational programs targeted at increasing employment capacity for those with disabilities are an effective intervention (Dutta, Gervey, Chan, Chou, & Ditchman, 2008). However, less research has looked more broadly at primary educational interventions in the k-12 education system targeted at a broader population. In 1966 Peck argued that work study programs in traditional schools may help span the gap between where a youth with disabilities is and where they need to be to maintain a long-term job. Looking specifically at youth with intellectual disabilities, he argued that the safe and structured environment of the special-education classroom may help students learn but that the "bridge to adulthood" is multi-dimensional and requires skills not learned in the special-education classroom (Peck, 1966). Since Peck stressed the necessity of work-study programs to help youth with intellectual disabilities prepare for the vocational activities, socio-civic environment, and a fully developed self-concept, a sizable group of research related to these themes was conducted in the end of the 20th century. Both the economy as well as the rigor of research design have developed considerably since the latter half of the 20th century. However, since then only a few studies have explored the effectiveness of such programs at reducing the negative associations between disability and employment.

One 2006 study examining issues related to work-study explored alternative education programs (Foley & Pang, 2006). Although these alternative education programs were designed for youth at risk of school failure, the authors found that a large proportion of those enrolled were actually students with disabilities (around 50%) (Foley & Pang, 2006). Additionally, around half of these alternative education programs had supplemented vocational education and yet overall there was limited access to educational supports (Foley & Pang, 2006). While this study did not seek to explore disability and work-study programs, they found informative patterns related to these topics. First, the over-representation of students with disabilities in these

alternative education programs suggests that a fair proportion of youth with disabilities may be enrolling in work-study programs. Second, the lack of educational supports found in these programs indicates that enrollment in alternative educational programs may come at a cost. Students are only able to participate in so many programs and their time during the day is limited, often work study program participation comes at the cost of lost time in other realms (such as in classrooms) or lost opportunities for other programs (such as college preparatory courses or tutoring time).

While the work-study programs examined in this study are not specifically designed for those with disabilities and tailored to their needs, they still provide training and information about *how* to work which I hypothesize may benefit those with disabilities as well as the general population. Programs specifically targeted to improve employment outcomes for those with disabilities have been effective in many cases (Cook & Rozzano, 2000; Dutta et al., 2008; Straaton, Maisiak, Wrigley, & Fine, 1995), lending support for the argument that learning about work can help improve outcomes for those with disabilities. In regard to the characteristics of employment, I hypothesize that work-study will moderate many of the relationships. Insufficient research has examined the characteristics of employment for those with disabilities, but existing evidence suggests varying patterns of employment such as increased odds of part-time employment (Hotchkiss, 2004). Additionally, it is possible that participation in work-study reduces the increase in the probability of receiving "other" government assistance (mostly SSI) associated with having a disability. By reducing the decrease in employment and desirable employment associated with having a disability, those with disabilities may lean less heavily on government assistance.

This study provides a clear, efficient, and cost-effective way of testing if work-study programs hold promise as a primary intervention to help those with disabilities be independent and employed. More robust tests, such as a randomized control trial, have considerable time and financial costs. Additionally, as a primary intervention, work-study programs have the potential to reduce costs associated with the SSI program which often comes in as a secondary or tertiary intervention. If work-study is able to alleviate the barriers to desirable employment associated with having a disability, work-study could reduce reliance on the SSA's disability benefits program. This study, using publicly available existing data, is an effective first step in evaluating the potential effectiveness of work-study in reducing the disability penalty associated with employment and can provide a test of the theory that work-study program participation for those with disabilities may decrease reliance on SSI benefits. Additionally, generalized work study programs are available at many of the public high schools in the United States. If this study finds that generalized work study program participation could benefit those with disabilities youth could enroll in those programs at little or no cost to the Social Security Administration.

This study evaluates employment on two dimensions—employment over time (such as the number of jobs since age 20) and the character of employment in early adulthood (such as access to benefits or sick time). Access to medical benefits, for example, may be particularly important for those with disabilities who tend to have high medical costs. The "opt-out" theory argues that those with disabilities may opt out of the labor force if they can receive income and health insurance through government programs, especially if they are working for low pay or without health insurance. The availability of health insurance and other benefits to reduce the

burden on those with disabilities may help support employment, so examining how work-study moderates the relationship between having a disability and access to benefits is pivotal in understanding the full effect of work-study.

Additionally, this study examines if the relationship between disability and receiving other government assistance, a proxy for SSI disability benefit receipt, varies by work-study program enrollment. This is of particular interest in light of the raising rates of program participation for those with disabilities and the immense costs associated with the program. If an early investment in developing or supporting work-study programs in high schools could defray substantial costs later in life the Social Security Administration should consider further examining this possibility.

Research has yet to show if enrollment in work-study programs may alleviate the decrease in employment and increase in less-desirable employment conditions (such as limited access to benefits) associated with having a disability. This begs the question, are work-study programs associated with decreased penalties for individuals with disabilities in the work force? Additionally, are the benefits of work-study worth the risks? The answers to these questions have important implications for work-study program interventions and the practitioners and teachers who work in them. This study will answer part of this question, considering how work study program participation in high school moderates the relationship between disability and employment in adulthood.

Research Objectives

- How does participation in a work-study program moderate the relationship between disability and employment history since age 20 (such as the weeks worked in an employee-type job between 20 and early adulthood)?
- How does participation in a work-study program moderate the relationship between disability and employment benefits during early adulthood (such as access dental benefits)?
- How does participation in a work-study program moderate the relationship between disability and "other" government assistance receipt, including SSI, in early adulthood?

Study Design

To pursue these questions, I used the National Longitudinal Survey of Youth, 1997 (NLSY 97) which follows around nine thousand youth (n=8,984) across 17 waves. The NLSY 97 is a longitudinal data set which relies on probability sampling and was collected by the U.S. Bureau of Labor Statistics beginning in 1997. Participants in the study were born between 1980 and 1984 are were most recently interviewed between 2015 and 2016 at age 30 to 36. The response rate was nearly 80% between Wave 1 and Wave 17. The sample is around half male (51%), half non-Black Non-Hispanic (51.9%), a quarter Black non-Hispanic (26%), and around twenty percent Hispanic or Latino (21.2%). More information about the sample and recruitment can be found at the National Longitudinal Surveys webpage (https://www.nlsinfo.org/content/cohorts/nlsy97).

Focal Variables

This study explores how disability shapes employment activity differentially for those who have and have not participated in work-study programs between 8th and 12th grade. The independent variables in this study are disability and participation in a work-study program. Respondents were asked about school programs that help students learn about the work world. Respondents who reported during Wave I that they participated in a career major program (sequence of courses based on an occupation goal), a cooperative education program (alternate or parallel academic and vocational studies with a job in a related field), or a tech-prep program (planned program of study with defined career focus) between 8 and 12th grade were considered to have participated in a work-study program. Just over 12% of the sample had participated in a work-study program at Wave I as seen in Table 1. Participants were also asked questions about their health. For the purposes of this study an individual was considered to have a disability if they reported a physical, emotional, or mental issue that limited their ability to work, a learning or emotional issue that limited their ability to work, performance at work, or amount of time spent at work, a sensory impairment, or a deformed or missing body part. Just over a quarter of the sample reported having a disability (27%).

The outcome variables for this study reflect the employment activity of participants. I examine outcomes related to the characteristics of participant's employment in adulthood, their employment over time, and receipt of "other" government benefits (including SSI). First, I examine how participation in work-study programming affects the association between disability and the benefits available, if paid sick leave is available, and total income from wages varies. Then, I examine how work-study program participation affects the association between disability and the total number of weeks worked in an employee-type job since age 20 and the total number of jobs had since age 20. The variables related to the characteristics of employment in adulthood were collected in Wave 17 and Wave 15 when participants were in their late 20s to early 30s. The variables related to employment over time were collected across the waves and collapsed into a created variable available through the NLSY Investigator. The last outcome, other government assistance including SSI, is based on a series of questions about government assistance. The NLSY 97 asks about government assistance program participation for Temporary Assistance for Needy Families, food stamps, unemployment compensation, Women, Infants, and Children benefits, worker's compensation, or other welfare programs (including Cuban/Haitian or Indian assistance, emergency assistance, general assistance, and Supplemental Security Income). I consider participants to have received other government assistance if they reported one or more months of assistance in 2009.

In addition to these focal variables I include control variables for gender (male, female), race (White, Black, Hispanic, or mixed-race), U.S. citizenship status, urban status, mother's age at the participant's birth, region of the U.S., father's and mother's highest level of education (less than high school degree, high school degree or equivalent, and more than high school degree), participant's highest level of education (less than high school degree, GED, high school degree, associate's degree, or college degree or more), and family income during Wave 1. I used chained multiple imputation to address missingness in control variables.

Analysis Strategy

I use logistic regression and linear probability models, in addition to least squares regression models, to examine how the association between disability and employment varies between those who completed and do not complete work-study programs between eighth and twelfth grade. For each outcome variable I ran a model which includes an interaction effect to examine how participation in a work-study program moderates the relationship between disability and the outcome. This allows me to explore if the association between disability and the outcome varies by work study. For example, I will examine how the decrease in the probability of having access to benefits through employment associated with having a disability varies between those who have and have not participated in a work study program. For ease of interpretation, I will present the linear probability model outcomes instead of logistic regression models for binary outcomes. The pattern of the results was similar between the logistic and linear probability regressions, and comparisons across models are more digestible when comparing probabilities.

Table 1. Summary table of demographics, controls, dependent, and independent variables.

Variables	Means/Proportion	SD
Disability	0.27	
Work Study Participation	0.12	
Male	0.52	
Age at Baseline	14.24	1.48
Race		
NH White	0.52	
NH Black	0.26	
Hispanic	0.21	
NH Other	0.09	
Urban Status at Baseline	0.7	
U.S. Citizenship at Baseline	0.91	
Mother's Age at R's Birth	25.92	5.37
Region at Baseline		
Northeast	0.18	
North Central	0.23	
South	0.37	
West	0.22	
Father's Years of Education	13.01	3.12
Mother's Years of Education	13.06	2.93
Net Family Income at Baseline	53,025.64	42,099.48
Highest Degree		
Less than HS	0.11	
GED	0.13	
HS Diploma	0.42	
Associates Degree	0.08	
College+	0.26	
Benefits		
Medical	0.62	
Retirement	0.53	
Maternity	0.48	
Dental	0.57	
Tuition	0.28	
Income at Adulthood		
Less then $10K	0.09	
Less than $25k	0.28	
Less than $50k	0.66	
Employment History		
# of Jobs	6.31	3.78
# of Hours Worked	22176.6	10,838.76
# of Weeks Worked	538.14	232.14

Notes. N=7,776.

Findings

Disability is significantly associated with various indicators of employment. Having a disability is significantly associated with reporting more jobs on average net of controls (b=0.426, p<0.000), a higher probability of reporting less than $10,000 in earnings (b=0.024, p=0.013), and a higher probability of reporting government assistance (b=0.030, p=0.001). There is not a significant association between disability and weeks reported working. Work study program participation has more mixed results, having no association with the number of jobs reported, the probability of reporting less than $10,000 in income, and reporting government assistance. However, work study participation is associated with 22 more weeks reported working since age 20 (p=0.019). Overall, when examining the interaction between disability and work study program participation there is no significant association with employment outcomes (earnings, weeks works, number of jobs, or returning government assistance).

Table 2. Association between disability and employment and between work study program participation and employment as well as the interaction between disability and work study program participation.

	Number of Jobs		Weeks Worked		Less than $10k		Other Government Assistance	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Disability	0.386***	0.426***	-5.414	-4.125	0.029**	0.024*	0.028**	0.030**
	(0.098)	(0.104)	(5.526)	(5.879)	(0.009)	(0.010)	(0.009)	(0.009)
Work Study	0.005	0.096	18.600*	21.551*	0.003	-0.009	0.002	0.007
	(0.140)	(0.162)	(7.909)	(9157)	(0.013)	(0.015)	(0.013)	(0.015)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Disability # Work Study	No	-0.320	No	-10.779	No	0.042+	No	-0.016
		(0.291)		(16.780)		(0.027)		(0.026)
N	7,776		7,350		5,051		7,770	

Notes. Control variables are male, race, urban, citizenship, mom's age at respondent's birth, region, father's years of education, mother's years of education, household income at baseline, respondents highest degree, and age. Sample varies due to missing data in outcomes.

Table 3. Association between disability and benefits and between work study program participation and benefits, as well as the interaction between disability and work study program participation.

	Medical Benefits		Retirement Benefits		Parental Leave Benefits		Dental Benefits		Tuition Benefits	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Disability	-0.054***	-0.052***	-0.043**	-0.043**	-0.048***	-0.054***	-0.047**	-0.044**	-0.039**	-0.044***
	(0.014)	(0.014)	(0.013)	(0.014)	(0.013)	(0.014)	(0.014)	(0.015)	(0.012)	(0.012)
Work Study	0.052**	0.056*	0.039*	0.038+	0.013	-0.001	0.063**	0.070**	0.032+	0.020
	(0.020)	(0.023)	(0.019)	(0.023)	(0.019)	(0.022)	(0.020)	(0.023)	(0.017)	(0.020)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Disability # Work Study	No	-0.015 (0.041)	No	0.003 (0.040)	No	0.047 (0.040)	No	-0.024 (0.041)	No	0.042 (0.035)

Notes. Sample *N=6,260.* Control variables are male, race, urban, citizenship, mom's age at respondent's birth, region, father's years of education, mother's years of education, household income at baseline, respondent's highest degree, and age.

Having a disability is significantly associated with a smaller probability of reporting benefit access. Disability is associated with a five percentage-point lower probability of reporting medical benefits ($p<0.000$), a four percentage-point lower probability of reporting retirement benefits ($p=0.003$), a five percentage-point lower probability of reporting parental leave ($p<0.000$), a four percentage-point lower probability of reporting dental benefits ($p=0.002$), and a four percentage-point lower probability of reporting tuition benefits ($p<0.000$). Work study program participation is associated with a six percentage-point higher probability of reporting medical benefits ($p=0.014$), and a seven percentage-point higher probability of reporting dental benefits ($p=0.002$). Work study program participation is moderately associated with the probability of reporting retirement benefits ($b=0.038$, $p=0.090$), and not significantly associated with parental leave or tuition benefits. Again, I find that the interaction between having a disability and work-study program participation is not significant for any outcome.

Discussion

Disability is associated with more job turnovers, less income, more government assistance, and lower access to benefits. Work study program participation is associated with more weeks spent working, and increased access to medical benefits, dental benefits, and moderately associated with increased access to retirement benefits. Contrary to my hypothesis, work study program participation did not in fact moderate the relationship between disability and any employment outcome. I had expected to find that, at least in relation to some outcomes, work study participation in high school would reduce the workplace penalty that those with disabilities often face.

This study has three key contributions to the literature. First, it confirms the claims in the existing literature that disability is associated with worse labor market outcomes including characteristics of employment and trends of employment over time. Unfortunately, this includes lower access to benefits, including medical benefits. This is particularly important because those with disabilities have increased healthcare needs and access to care can stem health deteriorations and keep those with disabilities engage in the work force.

Second, the results of this study suggest that general work study program participation is associated with better labor market outcomes. While this study looks at general work study programs with little ability to differentiate program types or offerings, this does provide evidence of the long-held belief that students benefit from incorporating instruction directly related to employment during high school. For students who benefit in employment as a result of program participation, the costs associated with many work study programs, such as time spent outside of the classroom, must be considered in comparison to the benefits of the program such as higher likelihoods of benefit receipt and higher average number of weeks worked. While these results suggest that work study program participation is positive for employment, there is a question of selection. Future research interested in work study program participation for a broader population of youth should leverage more advanced designs to explore if these results are artifacts of selection or true effects.

Last, the findings of this study provide little evidence to support the belief that general work study program participation moderates the relationship between disability and employment. I expected to find that participation in a work study program in high school moderated the association between disability and employment. However, I find no evidence of this as every interaction between disability and work study program participation was insignificant. For those with disabilities, the difficulties of finding and maintaining gainful employment with adequate benefits are stark. In addition to having worse labor market experiences those with disabilities also have lower levels of academic attainment and achievement. Therefore, the reduced academic time associated with work study programs may not be worth the benefits of work study for those with disabilities.

While this study provided an initial test to see if participation in work-study programs between eighth and twelfth grade is associated with decreased employment penalties, which it found little support for, it is not able to provide a causal test or address issues of selection. It is possible that youth with less severe disabilities are better able to find and hold more-desirable employment and are more likely to enroll in work-study programs. Furthermore, the work study programs evaluated in this study were designed for general populations and not specifically for those with disabilities. It is possible that work study program designed with the needs of those with disabilities in mind would moderate the relationship between disability and employment and benefit access. Future research should evaluate disability-specific work study programs and use a more robust method to address selection (such as a randomized-control trial intervention or a matched comparison group).

There are several limitations that must be considered. First, the definition of key variables varies between the Social Security Administration and the NLSY 97. While I have chosen to use the variables for disability that emphasize the work or school limiting disabilities in an attempt to bring the definitions closer together, they are still not identical, and this limitation cannot be ignored. It is possible that this population difference might bias the results in some way. Second, SSI benefit receipt is in a collapsed category that also includes Cuban/Haitian and Indian assistance, emergency assistance, and general assistance. It is possible that an effect seen could be a result of another government benefit, however I could find no clear association between having a disability or participation in work-study and Cuban/Haitian and Indian assistance, emergency assistance, or general assistance in the existing literature indicating that any effect seen is likely driven primarily by the association between disability, work-study, and SSI benefit receipt. Disability was significantly associated with a higher probability of other government assistance, but work study program participation was not and the interaction between the two did not moderate this effect.

Conclusion

Employment offers positive benefits for those with disabilities, and primary interventions aimed at mitigating the negative effects on employment associated with having a disability may yield financial savings. However, the potential effect of work-study in moderating the negative relationship between having a disability and employment is poorly understood and unfortunately remains unclear. This study found no evidence that work-study participation moderates the relationship between disability and employment. Given that there may be costs associated with

work-study program participation, such as decreased educational attainment, this study provides no evidence that the risks are worth the costs. However, future research should evaluate disability-specific work study programs as they may be more effective at helping those with disabilities gain comprehensive employment.

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