Journal of Education and Work

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cjew20

Can adolescent work experience protect vulnerable youth? A population wide longitudinal study of young adults not in education, employment or training (NEET)

Jannike Gottschalk Ballo, Mari Amdahl Heglum, Wendy Nilsen & Vilde Hoff Bernstrøm

To cite this article: Jannike Gottschalk Ballo, Mari Amdahl Heglum, Wendy Nilsen & Vilde Hoff Bernstrøm (2022) Can adolescent work experience protect vulnerable youth? A population wide longitudinal study of young adults not in education, employment or training (NEET), Journal of Education and Work, 35:5, 502-520, DOI: 10.1080/13639080.2022.2099534

To link to this article: https://doi.org/10.1080/13639080.2022.2099534

Published online: 13 Jul 2022.

JOURNAL OF EDUCATION AND WORK
2022, VOL. 35, NO. 5, 502–520
https://doi.org/10.1080/13639080.2022.2099534

Routledge
Taylor & Francis Group

RESEARCH ARTICLE

Can adolescent work experience protect vulnerable youth? A population wide longitudinal study of young adults not in education, employment or training (NEET)

Jannike Gottschalk Ballo, Mari Amdahl Heglum, Wendy Nilsen and Vilde Hoff Bernstrøm

Work Research Institute, Oslo Metropolitan University, Oslo, Norway

ABSTRACT

Early work experience is found to be an influential factor in young people's transitions from school to work. Still, we know little about whether early work experience can protect vulnerable young people from subsequent exclusion from labour and education in early adulthood. Our objective is therefore to examine how early work experience in adolescence influences the risk of being NEET (Not in Education, Employment or Training), and whether this relationship is stronger for early school leavers and young disabled people. We utilise Norwegian register data covering the entire 1985-birth cohort, followed from age 16 to 29 (n ~ 50 000). Linear probability models are used to estimate the NEET risk at age 25 and age 29. The findings reveal that early work experience is related to a lower NEET risk for everyone, but more strongly for the young people with disabilities or early school leaving. The findings support early work experience as a potentially important protective factor against subsequent NEET status, particularly among vulnerable young people.

ARTICLE HISTORY
Received 9 June 2021
Accepted 5 July 2022

KEYWORDS
Adolescent work experience; vulnerable youth; social exclusion; young people; marginalisation; population data

Introduction

On average, 14% of young people aged 18–24 across OECD countries are neither in employment, education, nor training (NEET) (OECD 2020). In addition to the large societal economic costs, NEET status is considered a risk factor for adverse life outcomes, such as more permanent social exclusion, criminality, and poor physical and mental health (Bäckman and Nilsson 2016; Feng et al. 2017; Goldman-Mellor et al. 2016; Nilsen and Reiso 2011; Ralston et al. 2016). The current COVID-19 pandemic and its inevitable consequences on labour markets will likely increase the levels of social and economic exclusion among young people in the coming years, especially in groups that already are vulnerable to exclusion (Wall 2021; Caroleo et al. 2020). According to recent estimations by Tamesberger and Bacher (2020, 232), 'the number of young people not in education, employment, and training (NEET) will increase from 4.7 to 6.7 million' as a result of the pandemic. Finding protective factors, with the potential to reduce NEET risk and prevent increased youth marginalisation is more urgent than ever.

Previous studies suggest that early work experience can ease subsequent labour market establishment for young adults in general (Mortimer and Staff 2004; Baum and Ruhm 2016; Howieson, McKechnie, and Semple 2012; Simpson, McKechnie, and Hobbs 2018). Despite the potential importance of early work experience as a promotive factor for labour market entry, there is a lack of studies on the relationship between early work experience and NEET. The first aim of the current study is,

CONTACT Jannike Gottschalk Ballo jannba@oslomet.no Work Research Institute, Oslo Metropolitan University, Postboks 4, St. Olavs plass, Oslo 0130, Norway

therefore, to contribute to the existing literature by investigating whether early work experience in adolescence (ages 16–18) can decrease the risk of NEET status in early adulthood (age 25 and 29) using full-population longitudinal data of Norwegian young people.

Studies have also highlighted the importance of early work experience for young people with higher vulnerability for exclusion, such as disabled, poor, early school leavers or otherwise vulnerable young people (Cimera, Burgess, and Wiley 2013; Frøyland 2016, 2019; Joshi, Bouck, and Maeda 2012; Lindstrom, Doren, and Miesch 2011; Entwisle, Alexander, and Olson 2000). However, no previous studies test whether early work experience is of greater importance to vulnerable young people compared to young people without such risk factors. Therefore, the second aim of the current study is to investigate whether the relationship between early work experience in adolescence and subsequent NEET status in early adulthood is stronger for young people with early school leaving and disability. An important contribution of this study is the use of large longitudinal population data, which facilitates the study of small groups otherwise hard to reach with sampled survey data.

Both early school leaving (Bynner and Parsons 2002; Barth et al. 2021) and disability (Rasalingam et al. 2021; Rodwell et al. 2018) are two important risk factors for subsequent NEET status in young adulthood. Findings indicate that early school leavers or those with no educational qualifications are much more likely to experience NEET, and NEET for longer durations, than their higher qualified counterparts (Bynner and Parsons 2002; Barth et al. 2021). Similarly, findings identify both physical disability and mental disorders as predictors for NEET (Rodwell et al. 2018; Rasalingam et al. 2021), as well as adverse educational and work outcome in general (Ballo 2019b; Cimera, Burgess, and Wiley 2013).

NEET operationalisation

The NEET abbreviation (Not in Education, Employment or Training) denotes young people with lacking attachment to both the labour and educational system. While the NEET measure has been criticised for its heterogeneity (Furlong 2006; Yates and Payne 2006), the indicator has since the beginning of the 1990s increasingly been used as a proxy for measuring young adults at risk of more permanent social exclusion (Bäckman et al. 2011; Lorentzen et al. 2019; Blair 1999). The NEET indicator is considered to be a more precise measure of a status which hinders accumulation of human capital, than traditional unemployment measures such as short-term job-seeking (Eurofound 2016; Bäckman and Nilsson 2016).

The impact of early work experience: theory and previous findings

Early work experience has been hypothesised to have both positive and negative influence on young adults educational and labour market outcomes in general. On the one hand, the *developmental perspective* postulates that early work puts adolescents at risk of reduced human capital accumulation and mental health problems because early work increases stress and reduces time spent on productive activities such as education (Greenberger and Steinberg 1986; Marsh and Kleitman 2005; Mortimer, Staff, and Oesterle 2003). Early work could thus displace more productive activities in a zero-sum game and increase the risk of unfavourable longer term-outcomes when compared to investing more time in education.

On the other hand, a contrasting hypothesis is that adolescent work experience can produce favourable long-term outcomes through several mechanisms. Firstly, the hypothesised increases in work-related stress postulated from the developmental perspective might also enhance coping resources and adaptive capacities in the longer run. This in turn can enhance self-efficiency, strengthen motivation, and increase ability of coping with subsequent adulthood work stress (Mortimer and Staff 2004). Some studies suggest that such positive outcomes are dependent on qualified follow-up and a good match between job-tasks and young peoples' interests and abilities (Frøyland 2019, 2020). Secondly, early employment can provide young people with important skills,

experiences and knowledge about the labour market (Baum and Ruhm 2016; Howieson, McKechnie, and Semple 2012), and improve basic interpersonal skills which can increase their future employability (Howieson, McKechnie, and Semple 2012; Simpson, McKechnie, and Hobbs 2018). Early work experience can also have positive signalling effects towards future employers (Spence 1973). Lastly, positive labour experiences during adolescence can increase self-esteem and sense of mastery (Frøyland 2016; Herrygers, Stacey, and Wieland 2017), Taken together, these mechanisms can be expected to promote subsequent entry and establishment in the adult labour market.

Studies investigating early work experience and related outcomes such as *educational performance and attainment* show somewhat mixed results. Some findings indicate that work during high school has an overall negative influence on educational achievement, aspirations, and higher education participation (Marsh and Kleitman 2005; McCoy and Smyth 2007; Tyler 2003). Other studies provide evidence that combining part-time work and school can promote academic performance (DeSimone 2006), and especially so for young people who struggle in school or have low educational promise (Staff and Mortimer 2007). Other studies again demonstrate no significant protective effects (Buscha et al. 2012; Lee and Orazem 2010; Sabia 2009). Ambiguity in previous findings can be due to selection problems in many existing studies (Staff and Mortimer 2007).

Previous research focusing on the relationship between early work and *future employment opportunities and wages* mostly find positive influences of adolescent work experiences (Alon, Donahoe, and Tienda 2001; Baum and Ruhm 2016; Cimera, Burgess, and Wiley 2013; Entwisle, Alexander, and Olson 2000; Mortimer and Staff 2004). However, there is a lack of studies on the relationship between early work experience in adolescence and later NEET outcome. Our first hypothesis (as illustrated in Figure 1) is:

Early work experience is negatively related to later NEET risk

There also exists some support that early work experience is of importance to vulnerable groups. For disabled young people, previous research consistently identifies early work experience as an essential factor promoting labour market inclusion and adaption to adult life (Joshi, Bouck, and Maeda 2012; Lindstrom, Benz, and Doren 2004). For example, several quantitative studies have shown that early experience from paid work affects the opportunities to later find a job and is a central factor in the transition between school and work (Connors et al. 2014; Carter, Austin, and Trainor 2012; Mamun et al. 2018; Gold, Fabian, and Luecking 2013; Test et al. 2009; McDonnall et al. 2017; Siperstein, Heyman, and Stokes 2014; Wehman et al. 2015). Mamun et al. (2018) found that early

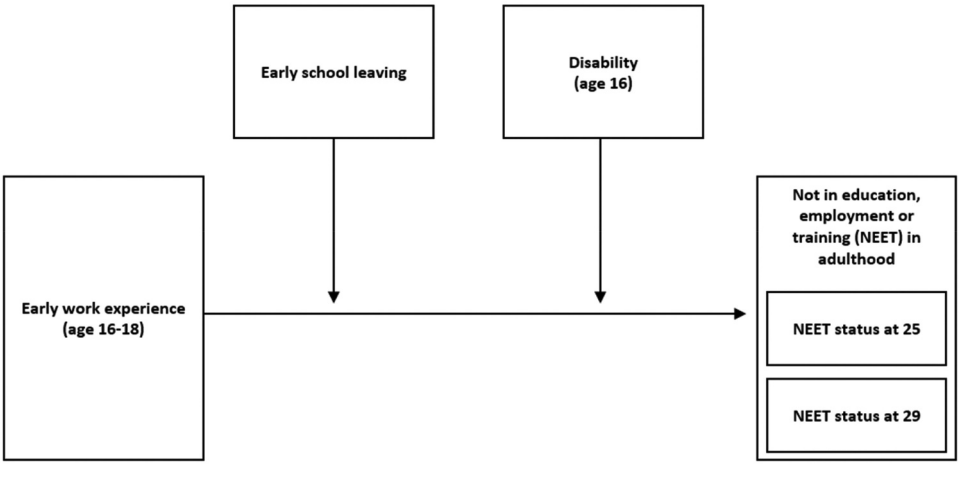

Figure 1. Conceptual framework – the relationship between early work experience and NEET, dependent on early school leaving and youth disability.

work experience increased the probability of being employed two years later by 17% among young disabled people aged 18–20. Connors et al. (2014) apply longitudinal survey data from special education schools to explore how among other factors, paid work at an early age influences chances of employment or enrolment in post-high school education. However, they do not compare outcome between disabled and non-disabled young people. In fact, no study to our knowledge examines the interaction between early work experience and youth disability.

For early school leavers, there is a lack of studies on the protective influence of early work experience. One exception is Entwisle, Alexander, and Olson (2000) who, using survey data, found that lower socio-economic background and poor school performance predicted higher chances of gaining work experience at an early age. They also found that early work experience improved chances of holding a semi-skilled job (vs unskilled job). However, they do not test the interaction effect between early work experience and poor school performance on future employment. The authors argue that students with poor school records look elsewhere for personal fulfilment. Furthermore, this early choice increases their likelihood of getting a better job, at least up to age 17.

Theoretically, we can expect that several of the same mechanisms that might link early work experience to lower NEET risk will be of greater importance to vulnerable young people who might be in greater need of them. For example, gaining a sense of mastery through work experience (Frøyland 2016; Herrygers, Stacey, and Wieland 2017) may be of greater importance to young people struggling at school and potentially suffering from lower sense of mastery due to early school leaving. Using work experience as an arena for acquiring essential skills, experience and confidence will likely be more critical when young people to a lesser degree acquire such experiences in school. Similarly, early school leavers and young disabled might be in greater need of early work experience as a positive signalling effect towards future employers (Spence 1973) to reduce some of the stigmas of belonging to a more vulnerable group. Our second hypothesis (as illustrated in Figure 1) is:

The relationship between early work experience and risk of NEET status is stronger for early school leavers and young disabled compared to young people without these risk factors

The Norwegian context

Norway has relatively generous welfare benefits and social services (Esping-Andersen 1990), and active labour market policies aimed at full employment (Dahl and Lorentzen 2017). The labour market is characterised by low unemployment rates and a small proportion of young people not in employment, education or training, as compared to the OECD average. However, the employment system is considered difficult to enter for young people who lack education or other coping resources (Mills and Blossfeld 2005), and there is considerable political concern related to secondary school dropout (Ellingsæter et al. 2020; Stjernø 2020). Some Norwegian labour market policies have therefore been specifically targeted at young people, with introduction of the first Youth Guarantee in 1979,[1] and inter-sectorial local follow-up services established in 1994 (Assmann et al. 2021). Many municipalities also offer individualised follow up for young people at risk of school drop-out, to foster attendance, self-confidence, and well-being. Young people below age 30 is a prioritised group within the Norwegian Labour and Welfare Administration, which provide individualised follow up, guidance and work assistance to job seekers. However, the policies and measures directed at vulnerable young people are often provided within the educational system, focusing on training and school attainment, and few have focused on short- term job placement (Dingeldey and Steinberg 2017).

Methods

Data and population

We used data from full-population administrative registries covering the period 2001–2014 for the 1985 Norwegian birth cohort, followed from age 16 to 29. Individuals included in the dataset were registered residents in Norway for the entire 13-year period of analysis, giving an N of approximately 50 000. The dataset was extracted from microdata.no, a browser-based research infrastructure providing researchers with a large databank of merged official registers and integrated Stata-like software for statistical analysis. The service has built-in data protection to avoid compromising the anonymity of individuals (Ballo 2019a; NSD, and SSB 2018). Our syntax used for data extraction and analyses in this article is available in appendix A.

Variables

The operationalisations of all variables are presented in Table 1. NEET status is measured by two binary dependent variables: 1) NEET status at age 25, and 2) NEET status at age 29, using the calendar year of individuals' 25th and 29th birthdays. NEET status was defined for individuals not registered in education or vocational training at any point during the relevant year and with an annual labour market income of less than 0.5 Price Base Amounts (PBA).[2] The cut-off at 0.5 PBA corresponded to an annual amount of 45000 Norwegian kroner (NOK) in 2015 and is considered the

Table 1. Descriptive statistics and NEET rates at age 25 and 29.

	Total %	NEET rate at age 25 Excl. IB25	NEET rate at age 29 Excl. IB29
Total N 50506			
DEPENDENT VARIABLE			
Total NEET at 25/29		8%	9%
NEET at 25		100%	50%
INDEPENDENT VARIABLES			
Early work experience (age 16–18)	49%	5%	6%
No early work experience (age 16–18)	51%	11%	11%
Early school leavers	23%	24%	21%
School completers	77%	3%	5%
Disabled	3%	18%	16%
Nondisabled	97%	8%	9%
CONTROL VARIABLES			
Women	48%	7%	8%
Men	52%	8%	9%
Nonwestern background	5%	14%	16%
Western background	95%	8%	8%
Children at 25	25%	10%	
No children 25	75%	7%	
Children at 29	36%		8%
No children 29	64%		9%
Married at 25	8%	8%	
Not married 25	92%	8%	
Married at 29	20%		6%
Not married 29	80%		9%
Disabled at 25	2%	20%	
Nondisabled 25	98%	8%	
Disabled at 29	2%		14%
Nondisabled 29	98%		9%
Social background at 16			
Long higher education	10%	4%	6%
Short higher education	28%	6%	7%
Upper sec education	49%	8%	9%
Secondary education or less	13%	15%	15%

Individuals registered with incapacity benefits at the age of 25 are not included in the NEET 25 statistics, and individuals registered with incapacity benefits at the age of 29 are not included in the NEET 29 statistics.

limit for economic marginalisation in several existing studies (Bäckman and Nilsson 2016; Vogt, Lorentzen, and Hansen 2020; Widding-Havneråas 2016). The amount corresponds to an average monthly income of less than 4 222 NOK (410 EURO/500 USD) in 2020, a marginal income not enough for self-maintenance in Norway.

Early work experience is measured as one binary dependent variable denoting an annual income of more than 0.5 PBA at 16, 17 or 18 years old. Early school leavers are operationalised as young people who did not finish upper secondary school within the year they turned 25 years old. Disabled young people are operationalised as recipients of basic or attendance benefits at the age of 16. Basic benefits are entitlements meant to cover necessary additional expenses incurred due to permanent injuries, illness, disabilities or congenital malformations. Attendance benefits are entitlements for people requiring long-term private care and supervision due to illness, injury, or congenital disability. Previous research has used basic and attendance benefits as a proxy for disability (Ballo 2019b). Additionally, we include gender (women, 1; men, 0), parenthood (one or more children, 1; no children, 0), marital status (married or registered partner, 1; otherwise, 0), and non-western background (individuals themselves or both of their parents born outside of EU/EEA, USA, Canada, Australia and New Zealand, 1; otherwise, 0) as control variables.

Model

We estimated two sets of three linear probability models. The first set (a) utilised NEET at age 25 as the outcome variable and the second set (b) utilised NEET at age 29 as the outcome variable. Model 1 included explanatory and control variables without interaction terms. Model 2 included the interaction between early school leaving and early work experience, and Model 3 included the interaction between youth disability and early work experience. Recipients of incapacity benefits[3] at the age of 25 were excluded from the models using NEET at age 25 as the outcome, and recipients of incapacity benefits at the age of 29 were excluded from the corresponding analyses. Since we are interested in the protective effect of early work experience for future NEET status, we exclude individuals we assume to be permanently excluded from work and education.

Coefficients in linear probability models are equivalent to average marginal effects (AME), which can be obtained using logistic regression. Using LPM has the advantage of making coefficients comparable across models and groups, and interaction coefficients can be interpreted in absolute terms as changes in percentage points (Mood 2010).

Results

Descriptive statistics

Demographic characteristics of the study population are displayed in Table 1. The NEET rates at ages 25 and 29 were eight and nine percent, respectively. Fifty percent of those with a NEET status at age 25 were also in the NEET category at age 29. About a quarter of the population were early school leavers with high NEET rates at 24 and 21 percent. Three percent of the 1985-cohort were registered with disability the year they turned 16. Among these, the NEET rates were about twice the average at 18 and 19 percent. Approximately half of the 1985-cohort has had early work experience. The NEET rates among those with early work experience were below average at five and six percent.

To describe common types of early work experience in our study population, we present descriptive employment statistics in Table 2, encompassing those individuals in the 1985-cohort who were working the year they turned 18. Among all working young people the year they turned 18, 67 percent worked less than 20 hours a week, while 28 percent worked 30 hours a week or more. Working longer hours was more common among young people with disabilities (30%) and early school leavers (34%). Average yearly wages also varied between the groups, from approximately 60 000 NOK among all, 62 000 NOK among young disabled, to 73 000 NOK among early school

Table 2. Characteristics of jobs held by our study population the year they turned 18.

Weekly working hours	All(%)	Disabled(%)	Early school leavers (%)
0–19,9 hours	67	64	58
20–29,9 hours	5	*4*	8
30 hours or more	28	30	34
Sum	100	98	100
N	24 277	421	4 087
Wage			
Average wage (NOK)	59 823	62 020	72 794
Standard deviation	28 541	31 869	43 708
25 percentile	39 126	39 276	41 332
50 percentile	51 988	52 374	58 573
75 percentile	71 598	72 979	89 869
Organizational forms with more than 1% representation			
Limited company	72	70	74
Sole proprietorship	9	7	9
Company with limited liability	7	7	6
Organizational section	5	7	0
Municipality	2	4	2
Public limited company	1	3	1
General Partnership	1	2	1
Sum	97	98	93
N	22 082	384	3 510
Industries with more than 1% representation			
Retail	22		18
Hotels, motels, restaurants and cafés	10		2
Gas stations	5		5
Construction of buildings	4		4
Electrical installation work	3		
Services related to pets	3		3
Nursing homes	2		2
Maintenance/repair of motor vehicles	2		1
Hairdressing and other beauty care	2		2
Operation of fast-food restaurants and salad bars	1		
Production of bread and fresh confectionery	1		1
Postal services	1		1
Public administration and financial management	1		
Call centre business	1		2
Heating, ventilation and sanitation work	1		1
Demolition of buildings and relocation of mass			1
Other specialised construction work			1
Freight transport by road			1
Cleaning			2
Kindergartens			1
Other professions	42		51
Sum	100		100
N	22 131		3 709

leavers. The vast majority of early work experience across groups is accumulated in the private sector. The most common early work experiences overall were in retail (22%), hotels, restaurant or cafés (10%), gas stations (5%), and construction (4%). For early school leavers, it was a lot less common than average to work in hotels, restaurant and cafés (2%), and a bit more common than average to work in call centres, cleaning, freight transport and kindergartens.

Table 3. Linear probability models predicting NEET at age 25 and 29. Includes dummy variables for municipality of residence at age 16, coefficients not reported. Persons registered with incapacity benefits are excluded from the analyses.

	Neet at age 25						Neet at age 29					
	Model 1a		Model 2a		Model 3a		Model 1b		Model 2b		Model 3b	
	b	SE	*B*	SE	*B*	*SE*	*b*	SE	*b*	SE	*b*	*SE*
Independent variables												
Early work experience	−0.047**	0.002	−0.018**	0.003	−0.044**	0,002	−0,036**	0,003	−0,020**	0,003	−0,035**	0,003
Early school leaving	0.185**	0.003	0.244**	0.004	0.184**	0,003	0,144**	0,003	0,178**	0,004	0,144**	0,003
Disability 16	0.065**	0.007	0.061**	0.007	0.107**	0,009	0,049**	0,008	0,048**	0,008	0,071**	0,011
Early sch. leaving x early work exp.			−0.130**	0.006					−0,072**	0,006		
Disabled 16 x early work exp.					−0.110**	0,015					−0,052*	0,017
Control variables												
Female	0.003	0.002	0.003	0.002	0.003	0,002	0,007*	0,003	0,006*	0,003	0,007*	0,003
Non-western	0.017*	0.006	0.015*	0.006	0.017*	0,006	0,043**	0,006	0,042**	0,006	0,043**	0,006
Children	0.012**	0.003	0.012**	0.003	0.012**	0,003	−0,014**	0,003	−0,014**	0,003	−0,014**	0,003
Married	−0.005	0.004	−0.004	0.004	−0.005	0,004	−0,017**	0,003	−0,017**	0,003	−0,017**	0,003
Parents' educ (ref. long higher education)												
Short high. Edu.	0.008	0.004	0.005	0.004	0.007	0,004	−0,001	0,005	−0,002	0,005	−0,001*	0,005
Upper sec. school	0.017**	0.004	0.013**	0.004	0.017*	0,004	0,008	0,004	0,006	0,004	0,008*	0,004
Up to sec. school	0.046**	0.005	0.042**	0.005	0.046**	0,005	0,036**	0,006	0,033**	0,006	0,036**	0,006
Municip. 16, dummies	X		X		X		X		X		X	
Intercept	0.032*	0.016	0.020	0.016	0.03	0,016	0,055*	0,017	0,049*	0,017	0,055*	0,017
N	49 528		49 528		49 528		48,943		48,943		48,943	
Adjusted R^2	0.109		0.119		0.110		0,063		0,066		0,063	

* $p < 0.05$, ** $p < 0.001$

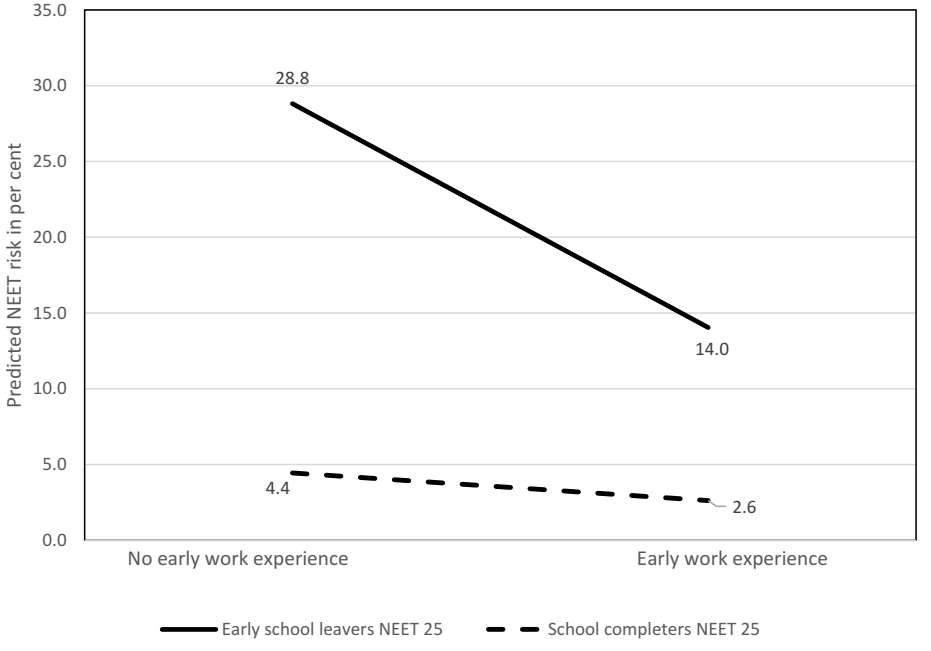

Figure 2. The interaction between early work experience and early school leaving displayed as predicted probabilities of subsequent NEET status. Predictions are calculated by adding the descriptive NEET prevalence for school completers with no early work experience to coefficients of the interaction from Model 2.

Regression models

Results from linear probability models on the NEET risk at age 25 and 29 are displayed in Table 3. Models 1a and 1b without interaction terms show that both leaving school early and disability the year they turn 16 were significantly associated with an increased risk of subsequent NEET status. In contrast, early work experience was associated with a reduced risk of subsequent NEET status at age 25 and 29. Leaving school early was associated with a higher initial NEET risk (19 and 14 percentage points at age 25 and 29), than being disabled at a young age (7 and 5 percentage points at ages 25 and 29). The decrease in risk observed from having early work experience was approximately 5 and 4 percentage points. All three predictive variables had a stronger relationship to NEET at 25 than NEET at 29.

Models 2 and 3 show a significant interaction between early work experience and belonging to a vulnerable group.

The negative relationship between early work experience and NEET risk was approximately 13 and 7 percentage points stronger for young people with early school leaving compared to young people with school completion. The relationship between early work experience and NEET status at 25 is displayed in Figure 2, for young people with and without early school leaving. For early school leavers, the estimated probability of being NEET at age 25 drops from approximately 29 percent without early work experience to 14 percent for those that gain early work experience. For school completers gaining early work experience is associated with a drop in NEET probability from 4 to 3 percent. Similarly, the estimated probability of becoming NEET at age 29 drops from 22 percent for early school leavers without early work experience to 13 percent with early work experience. For school completers, the estimated NEET risk at age 29 is 4 percent without early work experience and 2 percent with early work experience.

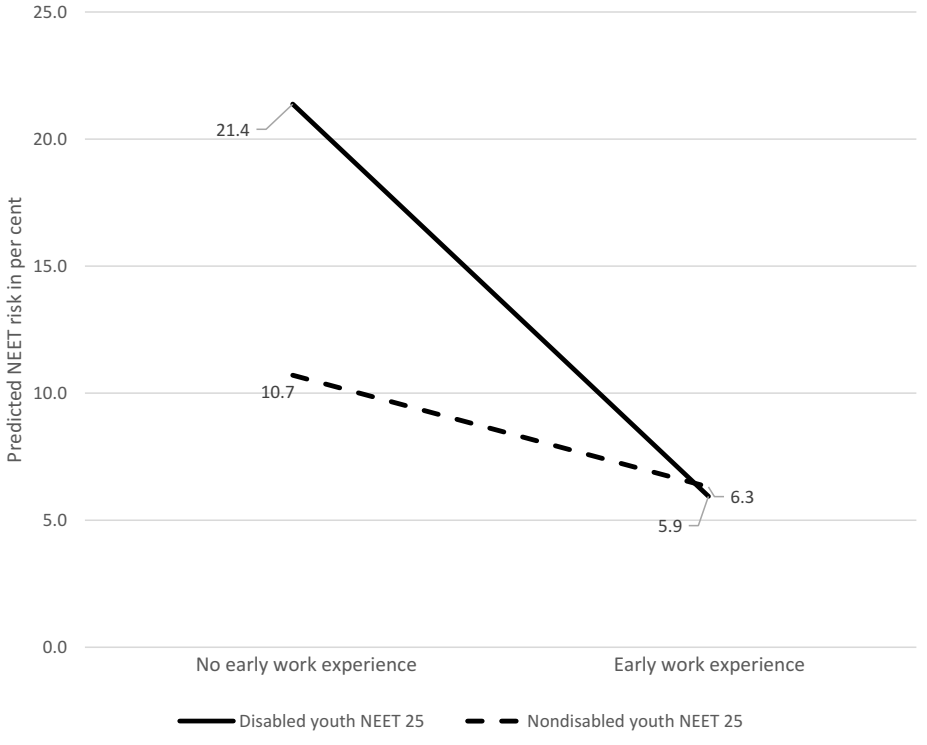

Figure 3. The interaction between early work experience and youth disability displayed as predicted probabilities of subsequent NEET status. Predictions are calculated by adding the descriptive NEET prevalence for non-disabled young people without early work experience to coefficients of the interaction from Model 3.

Similarly to early school leaving, the relationship between early work experience and NEET risk was 11 and 5 percentage points stronger for young disabled people compared to young non-disabled people. The relationship between early work experience and NEET status at 25 is displayed in Figure 3, for young people with and without disability. The graph illustrates that young disabled people with early work experience had a predicted NEET probability at age 25, which roughly equalled that of non-disabled young people with early work experience, at around 6 percent. A separate significance test shows no significant difference between disabled and non-disabled young people with early work experience, neither in NEET risk at age 25 nor NEET risk at age 29.

Discussion

The main aim of the current study was to investigate if early work experience in adolescence (ages 16–18) can protect against NEET status in early adulthood, using a nation-wide register dataset of an entire cohort. Our secondary aim was to examine whether the relationship between early work experience and subsequent NEET status is stronger for young people with early school leaving and disability.

In line with our first hypothesis, early work experience is related to a lower risk of NEET at age 25 and 29. Our results thus support earlier research that finds adolescent work experience to have a positive influence on future employment and earnings (Alon, Donahoe, and Tienda 2001; Baum and Ruhm 2016; Cimera, Burgess, and Wiley 2013; Entwisle, Alexander, and Olson 2000; Mortimer and Staff 2004). We thus contribute to this literature by demonstrating NEET as a critical outcome

variable. Our results are in line with the theoretical expectation that early work experience may provide young people with an arena for learning essential skills and achieving belief in own abilities and improved confidence (Mortimer and Staff 2004; Baum and Ruhm 2016; Howieson, McKechnie, and Semple 2012; Simpson, McKechnie, and Hobbs 2018).

Our results also show that both disability and early school leaving were related to increased risk of being NEET at 25 and 29. This corresponds to prior studies by Barth et al. (2021) and Bynner and Parsons (2002) who find that poor educational achievements is a predictor for future NEET, and by Rasalingam et al. (2021) who find that young adults with long-term health challenges have a higher risk of NEET status.

In line with our second hypothesis, the results also show that early work experience decreases the risk of subsequent NEET status for young people who are otherwise at a greater risk, such as young disabled people and early school leavers. These findings support existing studies identifying early work experience as an essential factor promoting labour market inclusion and adaption to adult life among vulnerable groups (Connors et al. 2014; Joshi, Bouck, and Maeda 2012; Lindstrom, Benz, and Doren 2004; Mamun et al. 2018; McDonnall et al. 2017; Siperstein, Heyman, and Stokes 2014; Wehman et al. 2015). However, the current results contribute by testing the interaction, demonstrating that earlier work experience has a stronger relationship to inclusion for vulnerable groups than young people without these risk factors (Spence 1973; Entwisle, Alexander, and Olson 2000). The practical implication of these results is that the signalling effect of early work experiences to future employers are likely of greater importance for young people who might otherwise be perceived as a greater risk. Similarly, employment at an early age that provides young people with an alternative arena for achieving a sense of mastery is likely also of greater importance when this is not achieved in school.

Early work experience protected all young people from subsequent NEET-status, and were particularly protective for the two examined vulnerable subgroups, early school leavers and young disabled people. Many former studies focus on individual skills or specific impairments leaving the responsibility for increased NEET risk with the individual, the current study underscore how an increased NEET risk may be prevented at the societal level. Moreover, several of the known risk factors for NEET are challenging to change or prevent. Early work experience can be an essential tool practitioners and policy makers can use in aiding young people with NEET risk factors to gain skills and mastery necessary for avoiding future exclusion.

It is, however, fruitful to also consider the developmental perspective, which posits that early work experience reduces time spent on education (Greenberger and Steinberg 1986; Marsh and Kleitman 2005; Mortimer, Staff, and Oesterle 2003; Frøyland 2020). While our results support that early work experience is positive for reducing NEET risk in early school leavers, we have not examined to which extent early work experience may be associated with a reduction in school completion. Previous research has shown a positive influence of early work experience on future employment opportunities and wages in general (Baum and Ruhm 2016; Entwisle, Alexander, and Olson 2000; Mortimer and Staff 2004), and Alon, Donahoe, and Tienda (2001) provide evidence that each additional month of work experience during high school positively influence women's probability of membership in a stable labour force attachment trajectory between ages 25–28.

However, this does not exclude that early work experience may have a negative impact for some groups of young people. Using the perspectives of the developmental perspective we argue that early work experience may have the greatest potential for eliciting negative consequences in young people who are swaying between school dropout and completion, for whom early work experience may negatively influence the capacity to complete school. If young people struggling to complete school focus on paid work instead of school completion, early work experience may invoke a trajectory of precarious and poorly paid work in the longer run.

Our findings indicate that leaving school early with or without early work experience is associated with a higher NEET risk than completing school. The practical implication is that facilitation of early work for young people should only occur to the extent that it does not interfere with the pupils' capacity to complete school. Other studies have highlighted that the intensity of work is important when considering how early work experience influences educational attainment (Bachman et al. 2011). DeSimone (2006) has suggested that combining part-time work and school can promote academic performance if work is not too time consuming. Essential questions for further interventions are thus related to differences between subgroups of young people (e.g. differences in early school achievements and likeliness of school completion) and differences in type of work experience (e.g. magnitude of work). How many hours a week should a work experience be to achieve the desired reduction in NEET risk, and how many hours a week could a work experience be not to hinder school participation?

Strengths and limitations

The main strength of this study is the use of large longitudinal population data facilitating the study of small hard-to-reach-groups. Consequently, our analysis contributes to the existing literature by supporting previous findings with population data rather than the usual smaller sample data. In addition to individual-level data, our analyses apply municipality dummy variables to control for local variations between municipalities of residence. Thus, our results are not confounded by variations in local labour market opportunities or other local factors that can impact education and work outcomes.

Our study supports that early work experience is related to reduced risk of NEET. This result may also be influenced by who has early work experience (i.e. a selection effect). For early school leavers our results could be influenced by differences between young people who have left school due to paid employment and young people who have left school without alternative activities. For disability, there may be systematic differences in work capacity between the young disabled who have early work experience, and those that do not. Future studies should also aim to control for severity of disability and potential causes of early school leaving. Nevertheless, a previous study by Mamun et al. (2018) did find a significant positive effect of early work experience on future employment for young people with disabilities, even after adjusting for selection bias.

An important strength of the current study is the ability to investigate the relationship between early work experience and NEET status across two different vulnerable groups, reducing the risk of bias specifically related to each subgroup. Despite differing mechanisms of early work experience for early school leavers and young disabled people, respectively, we have shown that early work experience moderates the NEET risk for both groups. This may point towards a general positive impact of early work experience for vulnerable groups.

In addition to disability and early school leaving, our results show that another two vulnerable subgroups – being non-western and having children early is associated to an increased risk of being NEET. We have not yet investigated the importance of early school leaving for these two subgroups, but our current results may point towards a general tendency in regards to the impact of early work experience for vulnerable groups – including young people with non-western background and very young parents – independent of the mechanisms at work for each individual group. Future research should investigate whether early work experience actually has the same moderating influence for young parents and immigrants, to contribute to further evaluation of whether early work experience is specifically favourable for vulnerable young adults in general.

One of the limitations of register data is lacking data on in-depth interpersonal (e.g., social competencies), cognitive (e.g., self-efficacy and motivation) and other resourceful factors that could have been examined as potential mechanisms of which early work experience protects against increased NEET risk for young people in general, early school leavers and young disabled people. We encourage future studies to examine such mechanisms to tailor preventive

efforts more precisely to reduce NEET risk. This will be more important in the years to come, as many countries are now expected to have an increase in youth unemployment (Caroleo et al. 2020; Tamesberger and Bacher 2020).

Conclusion

Our study shows that early work experience reduces the risk of NEET status. Moreover, it was shown to have a stronger positive impact on reducing NEET risk, among the two vulnerable groups who formed part of the analyses, namely early school leavers and young people with disabilities. The mechanisms that explain higher returns from early work experience to groups vulnerable to exclusion are likely to be the strengthening of their coping resources, adaptive skills, motivation and self-efficacy that a work-place provides an arena for, as well as the signalling effect to future employers of the employability of a person. The current study contributes to the literature as the first to test the relationship between early work experience and NEET risk, and how the importance of early work experience depends on young people's risk factors. By studying the impact of early work experience, we contribute to knowledge about how an increased NEET risk can be prevented.

Notes

1. The first Youth Guarantee ensured an offer of labour market measures to young people aged 16–19, if it was not possible to find appropriate work or school placement. Between 1995 and 1998 the guarantee was expanded to also include young people aged 20–24 who had been registered as unemployed for at least six months.
2. The Price Base Amount (PBA) is a fixed annual amount used to calculate applicability and level of welfare benefits, pensions and student allowances in Norway. The amount is adjusted annually to reflect expected wage growth and adjusted for discrepancies between expected and actual growth during the last year.
3. Incapacity benefits are social welfare benefits for persons who due to illness or injury have at least a 50 percent permanent reduction in earning capacity.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the The Research Council of Norway [280298].

Notes on contributors

Jannike Gottschalk Ballo is a researcher at the Work Research Institute at OsloMet – Oslo Metropolitan University, Norway. Her main research interests are related to social inequality within education and work, including disability, gender and intersectionality. See: https://www.oslomet.no/about/employee/jannba/

Mari Amdahl Heglum is a political scientist and PhD fellow in social policy at the Work Research Institute at OsloMet – Oslo Metropolitan University, Norway. Her research interests include social inequalities in young adulthood, social exclusion and life course studies. See: https://www.oslomet.no/om/ansatt/marih/

Wendy Nilsen is a research professor in Occupational Health Psychology at the Work Research Institute at OsloMet – Oslo Metropolitan University, Norway. Her research is focused on the intersection between work, family and health. She is the principal investigator of three research projects funded by the Research Council of Norway: 1) NEET: Preventing sick leave and marginalization in young adults; 2) Crossbow: Crossing and managing boundaries between work and non-work; and 3) Flex-IT – A mixed-method study of cross-domain information technology use in everyday life. See: https://www.oslomet.no/about/employee/niwe/

Vilde Hoff Bernstrøm is a research professor in Organizational Psychology at the Work Research Institute at OsloMet – Oslo Metropolitan University, Norway. Her research is focused on work and the work environment, occupational health, work hours, and the work-life interface. See: https://www.oslomet.no/om/ansatt/vilde/

ORCID

Jannike Gottschalk Ballo http://orcid.org/0000-0001-5258-1052

References

Alon, Sigal, Debra Donahoe, and Marta Tienda. 2001. "The Effects of Early Work Experience on Young Women's Labor Force Attachment." *Social Forces* 79 (3): 1005–1034. doi:10.1353/sof.2001.0002.

Assmann, M.-L., I. Tolgensbakk, J. S. Vedeler, and K. K. Bøhler. 2021. "Public Employment Services: Building Social Resilience in Youth?" *Social Policy & Administration* 55 (4): 659–673. doi:10.1111/spol.12649.

Bachman, J. G., J. Staff, P. M. O'Malley, J. E. Schulenberg, and P. Freedman-Doan. 2011. "Twelfth-grade Student Work Intensity Linked to Later Educational Attainment and Substance Use: New Longitudinal Evidence." *Developmental Psychology* 47 (2): 344–363. doi:10.1037/a0021027.

Bäckman, Olof, Vibeke Jakobsen, Thomas Lorentzen, Eva Österbacka, and Espen Dahl. 2011. "Dropping Out in Scandinavia Social Exclusion and Labour Market Attachment among Upper Secondary School Dropouts in Denmark, Finland, Norway and Sweden." 2011:8. *Arbetsrapport*. Arbetsrapport. Institute for Futures Studies. https://ideas.repec.org/p/hhs/ifswps/2011_008.html.

Bäckman, Olof, and Anders Nilsson. 2016. "Long-Term Consequences of Being Not in Employment, Education or Training as a Young Adult. Stability and Change in Three Swedish Birth Cohorts." *European Societies* 18 (2): 136–157. doi:10.1080/14616696.2016.1153699.

Ballo, Jannike Gottschalk. 2019a. "Microdata.no: Ny Teknologi Gir Forskere Umiddelbar Tilgang Til Norske Registerdata. [Microdata.no: New Technology Provides Researchers with Instant Access to Norwegian Registry Data]." *Tidsskrift for samfunnsforskning* 60 (4): 398–408. doi:10.18261/.1504-291X-2019-04-04.

Ballo, Jannike Gottschalk. September 2019b. "Labour Market Participation for Young People with Disabilities: The Impact of Gender and Higher Education:." *Work, Employment and Society* doi:10.1177/0950017019868139.

Barth, Erling, Anna Lena Keute, Pål Schøne, Simson von Kristine, and Kjartan Steffensen. 2021. "NEET Status and Early versus Later Skills among Young Adults: Evidence from Linked Register-PIAAC Data." *Scandinavian Journal of Educational Research* 65 (1): 140–152. doi:10.1080/00313831.2019.1659403.

Baum, Charles L., and Christopher J. Ruhm. 2016. "The Changing Benefits of Early Work Experience." *Southern Economic Journal* 83 (2): 343–63. doi:10.1002/soej.12157.

Blair, Tony. 1999. "Bridging the Gap: New Opportunities for 16-18 Year Olds Not in Education, Employment or Training, Presented to Parliament by the Prime Minister." The Stationery Office. http://dera.ioe.ac.uk/15119/2/bridging-the-gap.pdf.

Buscha, Franz, Arnaud Maurel, Lionel Page, and Stefan Speckesser. 2012. "The Effect of Employment while in High School on Educational Attainment: A Conditional Difference-in-Differences Approach*." *Oxford Bulletin of Economics and Statistics* 74 (3): 380–396. doi:10.1111/j.1468-0084.2011.00650.x.

Bynner, John, and Samantha Parsons. 2002. "Social Exclusion and the Transition from School to Work: The Case of Young People Not in Education, Employment, or Training (NEET)." *Journal of Vocational Behavior* 60 (2): 289–309. doi:10.1006/jvbe.2001.1868.

Caroleo, Floro Ernesto, Antonella Rocca, Paolo Mazzocchi, and Claudio Quintano. 2020. "Being NEET in Europe before and after the Economic Crisis: An Analysis of the Micro and Macro Determinants." *Social Indicators Research* 149 (3): 991–1024. doi:10.1007/s11205-020-02270-6.

Carter, Erik W., Diane Austin, and Audrey A. Trainor. 2012. "Predictors of Postschool Employment Outcomes for Young Adults with Severe Disabilities." *Journal of Disability Policy Studies* 23 (1): 50–63. doi:10.1177/1044207311414680.

Cimera, Robert Evert, Sloane Burgess, and Andrew Wiley. 2013. "Does Providing Transition Services Early Enable Students with ASD to Achieve Better Vocational Outcomes as Adults?" *Research and Practice for Persons with Severe Disabilities* 38 (2): 88–93. doi:10.2511/027494813807714474.

Connors, Elyse, Amy Curtis, Robert Wall Emerson, and Benedict Dormitorio. 2014. "Longitudinal Analysis of Factors Associated with Successful Outcomes for Transition-Age Youths with Visual Impairments." *Journal of Visual Impairment & Blindness* 108 (2): 95–106. doi:10.1177/0145482X1410800202.

Dahl, E., and T. Lorentzen. 2017. "Employment Policy and Social Investment in Norway." In *Social Investment and Social Welfare*, edited by J. Midgley, E. Dahl, and A. C. Wright, 87–104, Cheltenham: Edward Elgar Publishing.

DeSimone, Jeff. 2006. "Academic Performance and Part-Time Employment among High School Seniors." *Topics in Economic Analysis & Policy* 6 (1). doi:10.2202/1538-0653.1466.

Dingeldey, I. A., and L Steinberg. (2017). "Strategies to Improve Labor Uropa Integration of Young People: Comparing Policy Coordination in Nine European Countries." Retrieved from https://uni.oslomet.no/negotiate/wp-content/uploads/sites/746/2015/04/NEGOTIATE_WP_8.2-_Strategies-to-improve-labour-market-integration-of-young-people.pdf

Ellingsæter, A. L., A. Hatland, P. Haave, and S. Stjernø. 2020. "Lange linjer i velferdsstatens utvikling." In *Den nye velferdsstatens historie. Ekspansjon og omdanning etter 1966*, edited by A. L. Ellingsæter, A. Htland, P. Haave, and S. Stjernø, 27–54. Oslo: Gyldendal Akademisk.

Entwisle, Doris R., Karl L. Alexander, and Linda Steffel Olson. 2000. "Early Work Histories of Urban Youth." *American Sociological Review* 65 (2): 279–297. doi:10.2307/2657441.

Esping-Andersen, G. 1990. *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.

Eurofound. 2016. "Exploring the Diversity of NEETs." Eurofound. https://www.eurofound.europa.eu/de/publications/report/2016/labour-market-social-policies/exploring-the-diversity-of-neets.

Feng, Zhiqiang, Kevin Ralston, Dawn Everington, and Chris Dibben. 2017. "Long Term Health Effects of NEET Experiences: Evidence from a Longitudinal Analysis of Young People in Scotland: IJPDS (2017) Issue 1, Vol 1:306 Proceedings of the IPDLN Conference (August 2016)." *International Journal of Population Data Science* 1 (1). doi:10.23889/ijpds.v1i1.327.

Frøyland, Kjetil. January 2016. "Applicability of IPS Principles to Job Inclusion of Vulnerable Youth." *Journal of Vocational Rehabilitation* 45 (3): 249–265. doi:10.3233/JVR-160827.

Frøyland, Kjetil. 2019. "Vital Tasks and Roles of Frontline Workers Facilitating Job Inclusion of Vulnerable Youth." *European Journal of Social Work* 22 (4): 563–574. doi:10.1080/13691457.2018.1423547.

Frøyland, Kjetil. 2020. "Arbeidsinkludering Av Utsett Ungdom. [Work Inclusion of Vulnerable Youth]." *Tidsskrift for velferdsforskning* 23 (3): 187–200. doi:10.18261/.0809-2052-2020-03-03.

Furlong, Andy. 2006. "Not a Very NEET Solution: Representing Problematic Labour Market Transitions among Early School-Leavers." *Work, Employment and Society* 20 (3): 553–569. doi:10.1177/0950017006067001.

Gold, Paul B., Ellen S. Fabian, and Richard G. Luecking. 2013. "Job Acquisition by Urban Youth with Disabilities Transitioning from School to Work." *Rehabilitation Counseling Bulletin* 57 (1): 31–45. doi:10.1177/0034355213481248.

Goldman-Mellor, Sidra, Avshalom Caspi, Louise Arseneault, Nifemi Ajala, Antony Ambler, Andrea Danese, Helen Fisher, et al. 2016. "Committed to Work but Vulnerable: Self-Perceptions and Mental Health in NEET 18-Year Olds from a Contemporary British Cohort." *Journal of Child Psychology and Psychiatry, and Allied Disciplines* 57 (2): 196–203. doi:10.1111/jcpp.12459.

Greenberger, Ellen, and Laurence Steinberg. 1986. *When Teenagers Work: The Psychological and Social Costs of Adolescent Employment*. New York, NY, US: Basic Books.

Herrygers, Katelyn Sandor, M. B. Stacey, and Wieland. 2017. "Work Socialization through Part-Time Work: Cultivating Self-Efficacy and Engagement through Care." *Journal of Applied Communication Research* 45 (5): 557–575. doi:10.1080/00909882.2017.1382712.

Howieson, C., J. McKechnie, and S. Semple. 2012. "Working Pupils: Challenges and Potential." *Journal of Education and Work* 25 (4): 423–442. doi:10.1080/13639080.2012.708723.

Joshi, Gauri S., Emily C. Bouck, and Yukiko Maeda. 2012. "Exploring Employment Preparation and Postschool Outcomes for Students with Mild Intellectual Disability." *Career Development and Transition for Exceptional Individuals* 35 (2): 97–107. doi:10.1177/0885728811433822.

Lee, Chanyoung, and Peter F. Orazem. 2010. "High School Employment, School Performance, and College Entry." *Economics of Education Review* 29 (1): 29–39. doi:10.1016/j.econedurev.2009.03.004.

Lindstrom, Lauren E., Michael R. Benz, and Bonnie Doren. 2004. "Expanding Career Options for Young Women with Learning Disabilities." *Career Development for Exceptional Individuals* 27 (1): 43–63. doi:10.1177/088572880402700104.

Lindstrom, Lauren, Bonnie Doren, and Jennifer Miesch. 2011. "Waging a Living: Career Development and Long-Term Employment Outcomes for Young Adults with Disabilities." *Exceptional Children* 77 (4): 423–434. doi:10.1177/001440291107700403.

Lorentzen, Thomas, Olof Bäckman, Ilari Ilmakunnas, and Timo Kauppinen. 2019. "Pathways to Adulthood: Sequences in the School-to-Work Transition in Finland, Norway and Sweden." *Social Indicators Research: An International and Interdisciplinary Journal for Quality-of-Life Measurement* 141 (3): 1285–1305. doi:10.1007/s11205-018-1877-4.

Mamun, Arif A., Erik W. Carter, Thomas M. Fraker, and Lori L. Timmins. 2018. "Impact of Early Work Experiences on Subsequent Paid Employment for Young Adults with Disabilities." *Career Development and Transition for Exceptional Individuals* 41 (4): 212–222. doi:10.1177/2165143417726302.

Marsh, Herbert W., and Sabina Kleitman. 2005. "Consequences of Employment during High School: Character Building, Subversion of Academic Goals, or a Threshold?" *American Educational Research Journal* 42 (2): 331–369. doi:10.3102/00028312042002331.

McCoy, Selina, and Emer Smyth. 2007. "So Much to Do, so Little Time: Part-Time Employment among Secondary Students in Ireland." *Work, Employment and Society* 21 (2): 227–246. doi:10.1177/0950017007076630.

McDonnall, Michele C., B. J. Adele Crudden, LeJeune, and Anne Carter Steverson. 2017. "Availability of Mental Health Services for Individuals Who are Deaf or Deaf-Blind." *Journal of Social Work in Disability & Rehabilitation* 16 (1): 1–13. doi:10.1080/1536710X.2017.1260515.

Mills, M., and H-P. Blossfeld. 2005. "Globalization, Uncertainty and the Early Life Course. A Theoretical Framework." In *Globalization, Uncertainty and Youth in Society*, edited by H-P. Blossfeld, E. Klijzing, M. Mills, and K. Kurz, 1–21, Abingdon: Routledge.

Mood, Carina. 2010. "Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do about It." *European Sociological Review* 26 (1): 67–82. doi:10.1093/esr/jcp006.

Mortimer, Jeylan T., Jeremy Staff, and Sabrina Oesterle. Handbooks of Sociology and Social Research 2003. "Adolescent Work and the Early Socioeconomic Career." In *Handbook of the Life Course*, edited by Jeylan T. Mortimer and Michael J. Shanahan, 437–459. Boston, MA: Springer US. doi:10.1007/978-0-306-48247-2_20.

Mortimer, Jeylan T., and Jeremy Staff. 2004. "Early Work as a Source of Developmental Discontinuity during the Transition to Adulthood." *Development and Psychopathology* 16 (4): 1047–1070. doi:10.1017/s0954579404040131.

Nilsen, Øivind, and Katrine Reiso. December 2011. "Scarring Effects of Unemployment." *SSRN Electronic Journal* doi:10.2139/ssrn.1972294.

NSD, and SSB. June 2018. "Brukermanual for Analysesystemet Microdata.No. [User Manual for Microdata.no]" https://microdata.no/brukermanual.pdf.

OECD. 2020. "Education at a Glance." https://www.oecd-ilibrary.org/education/education-at-a-glance_19991487.

Ralston, Kevin, Zhiqiang Feng, Dawn Everington, and Chris Dibben. 2016. "Do Young People Not in Education, Employment or Training Experience Long-Term Occupational Scarring? A Longitudinal Analysis over 20 Years of Follow-Up." *Contemporary Social Science* 11 (2–3): 203–221. doi:10.1080/21582041.2016.1194452.

Rasalingam, Anurajee, Idunn Brekke, Espen Dahl, and Sølvi Helseth. 2021. "Impact of Growing up with Somatic Long-Term Health Challenges on School Completion, NEET Status and Disability Pension: A Population-Based Longitudinal Study." *BMC Public Health* 21 (1): 514. doi:10.1186/s12889-021-10538-w.

Rodwell, Laura, Helena Romaniuk, John B. Wendy Nilsen, Katherine Lee Carlin, and George C. Patton. April 2018. "Adolescent Mental Health and Behavioural Predictors of Being NEET: A Prospective Study of Young Adults Not in Employment, Education, or Training." *Psychological Medicine* 48 (5): 861–871. doi:10.1017/S0033291717002434.

Sabia, Joseph J. 2009. "School-Year Employment and Academic Performance of Young Adolescents." *Economics of Education Review* 28 (2): 268–276. doi:10.1016/j.econedurev.2008.05.001.

Simpson, Amanda, Jim McKechnie, and Sandy Hobbs. 2018. "Learning in Work: Perceptions from Working Teenagers." *Journal of Education and Work* 31 (4): 433–446. doi:10.1080/13639080.2018.1479840.

Siperstein, Gary N., Miriam Heyman, and Jeffrey E. Stokes. 2014. "Pathways to Employment: A National Survey of Adults with Intellectual Disabilities." *Journal of Vocational Rehabilitation* 41 (3): 165–178. doi:10.3233/JVR-140711.

Spence, Michael. 1973. "Job Market Signaling." *The Quarterly Journal of Economics* 87 (3): 355–374. doi:10.2307/1882010.

Staff, Jeremy, and Jeylan T. Mortimer. 2007. "Educational and Work Strategies from Adolescence to Early Adulthood: Consequences for Educational Attainment." *Social Forces; a Scientific Medium of Social Study and Interpretation* 85 (3): 1169–1194. doi:10.1353/sof.2007.0057.

Stjernø, S. 2020. "«Flexibilitet» mot trygghet." In *Den nye velferdsstatens historie. Ekspansjon og omdanning etter 1966*, edited by A. L. Ellingsæter, A. Hatland, P. Haave, and S. Stjernø, 226–236. Oslo: Gyldendal Akademisk.

Tamesberger, Dennis, and Johann Bacher. 2020. "COVID-19 Crisis: How to Avoid a 'Lost Generation'." *Intereconomics* 55 (4): 232–238. doi:10.1007/s10272-020-0908-y.

Test, David W., Valerie L. Mazzotti, April L. Mustian, Catherine H. Fowler, Larry Kortering, and Paula Kohler. 2009. "Evidence-Based Secondary Transition Predictors for Improving Postschool Outcomes for Students with Disabilities." *Career Development for Exceptional Individuals* 32 (3): 160–181. doi:10.1177/0885728809346960.

Tyler, John H. 2003. "Using State Child Labor Laws to Identify the Effect of School-Year Work on High School Achievement." *Journal of Labor Economics* 21 (2): 381–408. doi:10.1086/345562.

Vogt, Kristoffer Chelsom, Thomas Lorentzen, and Hans-Tore Hansen. 2020. "Are Low-Skilled Young People Increasingly Useless, and are Men the Losers among Them?" *Journal of Education and Work* 1–18. doi:10.1080/13639080.2020.1820965.

Wall, Katherine. 2021. "Gendered Impacts of the COVID-19 Pandemic on the Proportion of Youth neither in Employment nor Education at the Start of the School Year," 17.

Wehman, Paul, Adam P. Sima, Michael D. Jessica Ketchum, Fong Chan West, and Richard Luecking. 2015. "Predictors of Successful Transition from School to Employment for Youth with Disabilities." *Journal of Occupational Rehabilitation* 25 (2): 323–334. doi:10.1007/s10926-014-9541-6.

Widding-Havnerås, Tarjei. 2016. "Unge Voksne Som Verken Er I Arbeid Eller Utdanning: En Registerbasert Studie, 1993–2009. [Young People Not in Work or Education: A Registry Data Investigation, 1993-2009]." *Søkelys på arbeidslivet* 33 (4): 360–378. doi:10.18261/.1504-7989-2016-04-05.

Yates, Scott, and Malcolm Payne. 2006. "Not so NEET? A Critique of the Use of 'NEET' in Setting Targets for Interventions with Young People." *Journal of Youth Studies* 9 (3): 329–344. doi:10.1080/13676260600805671.

Appendix

Script used for analysis in www.microdata.no

```
// Can adolescent work experience protect vulnerable youth?
// A population wide longitudinal study of young adults not in education, employment or training (NEET)

// Kobler til databank
require no.ssb.fdb:2 as ds

create-dataset NEET
import ds/BEFOLKNING_FOEDSELS_AAR_MND as alder15
replace alder15 = 2015 – (int(alder15/100))
keep if alder15 = = 30
import ds/BEFOLKNING_REGSTAT 2014–01-01 as status14
import ds/BEFOLKNING_REGSTAT 2013–01-01 as status13
import ds/BEFOLKNING_REGSTAT 2012–01-01 as status12
import ds/BEFOLKNING_REGSTAT 2011–01-01 as status11
import ds/BEFOLKNING_REGSTAT 2010–01-01 as status10
import ds/BEFOLKNING_REGSTAT 2009–01-01 as status09
import ds/BEFOLKNING_REGSTAT 2008–01-01 as status08
import ds/BEFOLKNING_REGSTAT 2007–01-01 as status07
import ds/BEFOLKNING_REGSTAT 2006–01-01 as status06
import ds/BEFOLKNING_REGSTAT 2005–01-01 as status05
import ds/BEFOLKNING_REGSTAT 2004–01-01 as status04
import ds/BEFOLKNING_REGSTAT 2003–01-01 as status03
import ds/BEFOLKNING_REGSTAT 2002–01-01 as status02
import ds/BEFOLKNING_REGSTAT 2001–01-01 as status01
keep if status14 = = '1'
keep if status13 = = '1'
keep if status12 = = '1'
keep if status11 = = '1'
keep if status10 = = '1'
keep if status09 = = '1'
keep if status08 = = '1'
keep if status07 = = '1'
keep if status06 = = '1'
keep if status05 = = '1'
keep if status04 = = '1'
keep if status03 = = '1'
keep if status02 = = '1'
keep if status01 = = '1'
drop status14 status13 status12 status11 status10 status09 status08 status07 status06 status05 status04 status03
status02 status01
import ds/INNTEKT_WLONN 2001–01-01 as lønn16
import ds/INNTEKT_WLONN 2002–01-01 as lønn17
import ds/INNTEKT_WLONN 2003–01-01 as lønn18
import ds/INNTEKT_WLONN 2010–01-01 as lønn25
import ds/INNTEKT_WLONN 2014–01-01 as lønn29

create-dataset utdanning
import-event ds/NUDB_KURS_NUS 2010–01-01 to 2010–12-31 as student25
create-dataset lenke_utd_person
import ds/NUDB_KURS_FNR as fnr
merge fnr into utdanning
use utdanning
destring student25
keep if student25 > 0
collapse (count) student25, by(fnr)
merge student25 into NEET
```

```
create-dataset utdanning29
import-event ds/NUDB_KURS_NUS 2014–01-01 to 2014–12-31 as student29
use lenke_utd_person
merge fnr into utdanning29
use utdanning29
destring student29
keep if student29 > 0
collapse (count) student29, by(fnr)
merge student29 into NEET

use NEET
recode lønn29 lønn25 (. = 0)
replace student25 = 1 if student25 > 0
replace student29 = 1 if student29 > 0
recode student25 student29 (. = 0)
generate neet25 = 1 if student25 = = 0 & lønn25 < 37,820.5
generate neet29 = 1 if student29 = = 0 & lønn29 < 44,185
recode neet25 neet29 (. = 0)

tabulate neet25, cellpct
tabulate neet29, cellpct

import ds/GRUNNSTFDT_MOTTAK 2001–11-01 as gs16
import ds/HJELPSTFDT_MOTTAK 2001–11-01 as hs16

import ds/BEFOLKNING_BARN_I_HUSH 2010–01-01 as barn25
import ds/BEFOLKNING_BARN_I_HUSH 2014–01-01 as barn29
import ds/SIVSTANDFDT_SIVSTAND 2010–11-01 as gift25
import ds/SIVSTANDFDT_SIVSTAND 2014–11-01 as gift29

destring gift25 gift29 barn25 barn29 gs25 hs16 gs16
generate uhelse16 = 1 if hs16 = = 1 | gs16 = = 1
recode uhelse16 (. = 0)
recode gift25 gift29 (0 = .) (1 = 0) (2 = 1) (3/5 = 0) (6 = 1) (7/9 = 0)
replace barn25 = 1 if barn25 > 0
replace barn29 = 1 if barn29 > 0
import ds/NUDB_SOSBAK as sosbakg
destring sosbakg
recode sosbakg (9 = .)
replace sosbakg = . if sosbakg = = 9
tabulate sosbakg

generate tidlarb = 0
replace tidlarb = 1 if lønn16 > 25,680
replace tidlarb = 1 if lønn17 > 27,085
replace tidlarb = 1 if lønn18 > 28,430.5
delete-dataset utdanning
delete-dataset utdanning29
recode lønn16 lønn17 lønn18 (. = 0)

delete-dataset lenke_utd_person
import ds/NUDB_BU 2010–11-01 as utd10
replace utd10 = substr(utd10,1,1)
destring utd10
generate dropout = 1 if utd10 < 4
recode dropout (. = 0)

import ds/BEFOLKNING_INVKAT as innvandrer
generate invbakgrunn = 1 if innvandrer = = 'B'
replace invbakgrunn = 1 if innvandrer = = 'C'
recode invbakgrunn (. = 0)
```

```
import ds/BEFOLKNING_LANDBAK3GEN as landbakgrunn
destring landbakgrunn
recode landbakgrunn (0 = 0) (101 = 1) (102 = 1) (103 = 1) (104 = 1) (105 = 1) (106 = 1) (111 = 2) (112 = 1) (113 = 1)
(114 = 1) (115 = 1) (117 = 1) (118 = 1) (119 = 1) (120 = 2) (121 = 1) (122 = 1) (123 = 1) (124 = 1) (126 = 1) (127 = 1)
(128 = 1) (129 = 1) (130 = 1) (131 = 1) (132 = 1) (133 = 1) (134 = 1) (136 = 1) (137 = 1) (138 = 2) (139 = 1) (140 = 2)
(141 = 1) (143 = 2) (144 = 1) (146 = 1) (148 = 2) (152 = 1) (153 = 1) (154 = 1) (155 = 2) (156 = 2) (157 = 1) (158 = 1)
(159 = 2) (160 = 2) (161 = 2) (162 = 1) (163 = 1) (164 = 1) (203 = 2) (204 = 2) (205 = 2) (209 = 2) (213 = 2) (216 = 2)
(220 = 2) (229 = 2) (235 = 2) (239 = 2) (241 = 2) (246 = 2) (249 = 2) (250 = 2) (254 = 2) (256 = 2) (260 = 2) (264 = 2)
(266 = 2) (270 = 2) (273 = 2) (276 = 2) (278 = 2) (279 = 2) (281 = 2) (283 = 2) (286 = 2) (289 = 2) (296 = 2) (299 = 2)
(303 = 2) (304 = 2) (306 = 2) (307 = 2) (308 = 2) (309 = 2) (313 = 2) (319 = 2) (322 = 2) (323 = 2) (326 = 2) (329 = 2)
(333 = 2) (336 = 2) (337 = 2) (338 = 2) (339 = 2) (346 = 2) (355 = 2) (356 = 2) (357 = 2) (359 = 2) (369 = 2) (373 = 2)
(376 = 2) (379 = 2) (386 = 2) (389 = 2) (393 = 2) (404 = 2) (406 = 2) (407 = 2) (409 = 2) (410 = 2) (412 = 2) (416 = 2)
(420 = 2) (424 = 2) (426 = 2) (428 = 2) (430 = 2) (432 = 2) (436 = 2) (444 = 2) (448 = 2) (452 = 2) (456 = 2) (460 = 2)
(464 = 2) (476 = 2) (478 = 2) (480 = 2) (484 = 2) (488 = 2) (492 = 2) (496 = 2) (500 = 1) (502 = 2) (504 = 2) (508 = 2)
(510 = 2) (512 = 2) (513 = 2) (516 = 2) (520 = 2) (524 = 2) (528 = 2) (534 = 2) (537 = 2) (540 = 2) (544 = 2) (548 = 2)
(550 = 2) (552 = 2) (554 = 2) (564 = 2) (568 = 2) (575 = 2) (578 = 2) (601 = 2) (602 = 2) (603 = 2) (604 = 2) (605 = 2)
(606 = 2) (608 = 2) (612 = 1) (613 = 2) (616 = 2) (620 = 2) (622 = 2) (624 = 2) (629 = 2) (631 = 2) (632 = 2) (636 = 2)
(644 = 2) (648 = 2) (650 = 2) (652 = 2) (654 = 2) (657 = 2) (658 = 2) (659 = 2) (660 = 2) (661 = 2) (664 = 2) (668 = 2)
(672 = 2) (676 = 2) (677 = 2) (678 = 2) (679 = 2) (680 = 2) (681 = 2) (684 = 1) (685 = 2) (686 = 2) (687 = 2) (705 = 2)
(710 = 2) (715 = 2) (720 = 2) (725 = 2) (730 = 2) (735 = 2) (740 = 2) (745 = 2) (755 = 2) (760 = 2) (765 = 2) (770 = 2)
(775 = 2) (802 = 2) (805 = 1) (806 = 2) (807 = 2) (808 = 2) (809 = 2) (811 = 2) (812 = 2) (813 = 2) (814 = 2) (815 = 2)
(816 = 2) (817 = 2) (818 = 2) (819 = 2) (820 = 1) (821 = 2) (822 = 2) (826 = 2) (827 = 2) (828 = 2) (829 = 2) (830 = 2)
(832 = 2) (833 = 2) (835 = 2) (839 = 2) (840 = 2) (980 = 2) (990 = 2)
generate ikkevest = 1 if invbakgrunn = = 1 & landbakgrunn = = 2
recode ikkevest (. = 0)
import ds/BEFOLKNING_KJOENN as kvinne
destring kvinne
recode kvinne (2 = 1) (1 = 0)

import ds/UFOERP2011FDT_GRAD 2014–07-01 as ufør29juli
import ds/UFOERP1992FDT_UFG 2010–07-01 as ufør25juli

use NEET
import ds/BOSATTEFDT_BOSTED 2001–01-01 as bosted16

// Modell 1 for 25 og 29
regress neet25 dropout tidlarb kvinne i.sosbakg ikkevest barn25 gift25 uhelse16 i.bosted16 if sysmiss(ufør25juli)
regress neet29 dropout tidlarb kvinne i.sosbakg ikkevest barn29 gift29 uhelse16 i.bosted16 if sysmiss(ufør29juli)
// Modell 2

regress neet25 dropout##tidlarb kvinne i.sosbakg ikkevest barn25 gift25 uhelse16 i.bosted16 if sysmiss(ufør25juli)
regress neet29 dropout##tidlarb kvinne i.sosbakg ikkevest barn29 gift29 uhelse16 i.bosted16 if sysmiss(ufør29juli)

// Modell 3 interaksjon med tidlarb og helse
regress neet25 dropout tidlarb##uhelse16 kvinne i.sosbakg ikkevest barn25 gift25 i.bosted16 if sysmiss(ufør25juli)
regress neet29 dropout tidlarb##uhelse16 kvinne i.sosbakg ikkevest barn29 gift29 i.bosted16 if sysmiss(ufør29juli)
```