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Indicators of teenage career readiness: An analysis of longitudinal data from eight countries

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This working paper has been authorised by Andreas Schleicher, Director of the Directorate for Education and Skills, OECD.

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NEW SKILLS AT WORK

J.P.Morgan

Abstract

The aim of the OECD Career Readiness project is to identify patterns of teenage attitudes and activities that are associated with better transitions into employment by analysing multiple national longitudinal datasets. This paper looks for further evidence of the link between teenage activities, experiences and career-related thinking and adult career outcomes by analysing 10 new datasets from eight countries. Overall, the results of this paper find further evidence that secondary school students who explore, experience and think about their futures in work frequently encounter lower levels of unemployment, receive higher wages and are happier in their careers as adults. The findings of this paper are analysed together with the evidence from the two previous working papers of the Career Readiness project, concluding that there is international evidence to support 11 out of the 14 potential indicators that were explored as indicators of career readiness.

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1 Introduction

Economic crises are commonly characterised by sharply rising youth unemployment (OECD, 2020[1]). Even under normal economic circumstances, young people face difficulties in their transitions into the world of work, often struggling to compete for available employment. These difficulties have increased during the COVID-19 emergency, with young people finding themselves more affected than other workers by uncertainty, lay-offs and recruitment freezes. And as is commonly the case in periods of economic turbulence, as business activity resumes they are finding themselves particularly vulnerable in the search for work (Mann, Denis and Percy, 2020[2]).

However, it is possible for schools to help young people become better prepared for the difficult labour markets that they will face. Through career education and guidance, young people are helped to explore and confirm their career ambitions, to develop the skills required to begin managing their career journeys and to gain first-hand experience of the world of work. Unfortunately, evidence on the long-term impact of such careers support activities has historically been weak, undermining the capacity of education systems to provide guidelines to schools on effective policies and practices.

This working paper was developed within the OECD Career Readiness project, which aims to improve global practice in enhancing the career readiness of young people by systematically bringing relevant evidence of 'what works' to the attention of practitioners and policy makers during a period of global economic turbulence. It does so by undertaking an unprecedented study of national longitudinal studies. Such studies represent a particularly valuable and rare source of evidence for researchers as they gather plentiful information from large cohorts of young people as they go through education and training systems and enter the labour market. Consequently, it substantially increases understanding of 'what works' in career education and guidance.

The project has three elements: introducing new indicators of career readiness into the public domain, making it easy for practitioners and policy makers to access new evidence, and providing data-driven guidance and tools for policy and practice.

This paper is the third of three working papers that review existing evidence and introduce new evidence into the public domain and work towards identifying cross-national teenage indicators of positive employment outcomes. It builds on and further develops the analysis presented in the first working paper "Career Ready? How schools can better prepare young people for working life in the era of COVID-19" (hereon, "Career Ready?") (Mann, Denis and Percy, 2020[2]). That paper focused on how secondary schools can optimise young people's preparation for adult employment at a time of labour-market turbulence. For this, it conducted an extensive review of existing academic analyses of national longitudinal surveys primarily from Australia, the United Kingdom and the United States. "Career Ready?" identified nine teenage career-related attitudes or experiences which are frequently linked in longitudinal studies with three adult employment outcomes in adulthood (related to earnings, likelihood of being in education, employment or training and satisfaction with career progression) that are better than would be anticipated of individuals with comparable academic qualifications, personal characteristics and socio-economic backgrounds. Initial indicators were grouped in the paper into three areas: i) how teenagers think about their futures in work; ii) the extent to which teenagers actively explore potential futures through their school; and iii) whether teenagers gain workplace experience while still in school.

Building on the literature review and data evidence collected in "Career Ready?", the second working paper, "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice" (hereon, "Thinking about the future") (Covacevich et al., 2021[3]) further explored the relationship between the indicators

related with thinking about potential futures and evidence of adult-life labour outcomes. This was done by including a wider set of national longitudinal datasets from Australia, Denmark and Switzerland; and by exploring two new indicators: *instrumental motivation* (young people's perception that schooling is relevant to their future plans) and *career originality* (referred to as career concentration in "'Thinking about the future") (young people expecting to work in jobs that are not the most popular choices of their peers). Reviewing the results of the new analyses alongside studies from the existing research literature, clear patterns emerge. Long-term employment benefits for young people are identified in:

- 12 out of 14 studies from all five countries, from career certainty
- 13 out of 14 studies from four countries, from career ambition
- 5 out of 6 studies, from three countries, from career alignment
- 7 of 8 studies, from three countries, from instrumental motivation towards school
- 2 out of 3 studies, from two countries, from career originality

Such indicators are based upon the limited insights into the lives of young people that are available from national longitudinal surveys which ask a broad range of questions of teenage students (Covacevich et al., 2021[3]).

A crucial concept underlying the theory of change put forward in "Career Ready?" and developed in this working paper is that of individual agency. Collectively, the indicators identified in "Career Ready?" reveal student capacity to develop greater agency in approaching school-to-work transitions (Mann, Denis and Percy, 2020[2]). Students for example with clear, high and more original occupational ambitions, which align and are seen as relevant to their educational plans can be seen to be developing the agency needed to drive successful transition into good employment. Where indicators are not met, potential disadvantages can be identified and flags of concern should be raised (Covacevich et al., 2021[3]). In line with the OECD Future of Education and Skills 2030 project, which highlights the significance of learners' attitudes to their wider success in education and life, agency means young people developing the ability and determination to influence their lives through their own development. Agency is not something an individual can develop on their own, but is achieved in co-operation with teachers, families and wider communities (OECD, 2019[4]). Concepts such as self-efficacy and growth mind-set, that underline the concept of student agency, have become highly influential within educational debates. When young people believe in their ability to succeed educationally or that intelligence is something that can be trained and developed rather than being fixed, positive consequences can be expected (OECD, 2019[5]). In a similar way, young people who think about, explore and experience the world of work are seen as being better placed to exert a greater sense of control over their transitions into it.

This study recognises, of course, that agency is constrained by social and economic background. Earlier studies by the OECD and other researchers have shown that young people's career aspirations are deeply affected by gender, ethnicity/migrant background and socio-economic status. Young people's ambitions moreover are not consistently linked to their academic abilities. The Programme for International Student Assessment (PISA) 2018 data show for example that among students who performed most strongly on the academic assessment across the OECD, socially advantaged students were twice as likely as disadvantaged students to plan on attending tertiary education (OECD, 2019[6]; Mann et al., 2020[7]; Musset and Kureková Mýtna, 2018[8]). The concept of the "capacity to aspire" helps make sense of such evidence. Developed by the Indian sociologist Arjun Appadurai (Appadurai, 2004[9]), the concept explores the relationship between the occupational aspirations of young people and adult outcomes, and identifies unnecessarily low or confused aspirations as a symptom, more than a cause, of inequality. Young people routinely do not lack ambition, but they often lack the capacity to make a reality of their ambitions. Young people have very different access to the information, support and resources that will allow them to visualise and plan their career aspirations (Archer, 2013[10]). Education and training systems increasingly expect students to demonstrate agency as they progress their schooling, but very often, young people lack the resources they need to make decisions that will work well for them as they approach ultimate entry to the labour market.

2 Methodology

Research aim and questions

The OECD working paper "Career Ready?" reviewed existing analyses of national longitudinal surveys to show that better than anticipated adult employment outcomes are frequently associated with teenage indicators of career readiness.

The working paper "Thinking about the future" focused on providing further evidence that teenage indicators related to thinking about the future are associated with better labour-market outcomes. It also included two new indicators: instrumental motivation or as hereon "instrumental motivation towards school" (young people's perception that schooling is relevant to their future plans) and career concentration or as hereon "career originality" (whether the career goals of students are very similar to or more original than those of their peers).

This working paper seeks further evidence that these indicators can be considered universally applicable, by extending the analyses to ten new datasets from eight countries.

This paper draws on data from longitudinal surveys undertaken in eight countries: Australia, Canada, People's Republic of China (hereafter "China"), Germany, Korea, the United Kingdom (two surveys), Uruguay, and the United States (two surveys). The datasets represent all those identified globally as being accessible to researchers and allowing them to reasonably test long-term associations between teenage and adult lives.

The research question that guide this paper is: What further evidence does new analysis of ten national longitudinal datasets provide of the relationship between, on one side, thinking about the future, exploring the future and experiencing the future in work as teenagers, and, on the other side, adult employment-related outcomes? The following section describes the indicators and outcome variables.

The overarching aim of the OECD Career Readiness project is to uncover patterns of attitudes and activities that are associated with better transitions into employment from a unique analysis of multiple national longitudinal datasets. In this paper, data are considered from a wide range of countries and longitudinal surveys, further providing an international overview of the link between teenage career-related thinking and activities and adult career outcomes. This paper focuses only on employment benefits. Non-labour related outcomes, such as academic achievement and social outcomes, are not included in the analyses. These are areas however which have been reviewed in literature reviews – see for example (Hughes, 2016[11]).

Five of the ten surveys analysed in this paper cover the period of significant economic turbulence and rising youth unemployment that followed the Great Financial Crisis of 2007 and 2008 (OECD, 2021[12]) providing helpful insight for the turbulence of the COVID-19 labour market.

The datasets

This working paper analyses data from ten national longitudinal datasets from eight different countries: Australia, Canada, China, Germany, Korea, the United Kingdom (two datasets), the United States (two datasets) and Uruguay. These are cohort surveys that follow large numbers of people as they move from childhood and their teenage years

into adulthood. By following such samples of young people into their twenties, it becomes possible to identify evidence of the impact of teenage career-related activities and experiences in the labour market.

The analyses of each dataset were conducted by external consultants with expert knowledge of the relevant database and who also had good local knowledge that helped contextualise and interpret the results. For more details on the experts who conducted the analyses, see Table A A.1 in the Annex A. While based on the inputs provided by the external experts[1], this paper was drafted by the OECD, and consequently the findings presented in this document represent the interpretation of the OECD authors following extensive discussion with consultants.

The following table presents an overview of each database, describing the name of the survey, the year of the baseline data collection and last follow-up, the age of the sample at each data collection point, and the size of the baseline sample and of the sample at the last follow-up.

Table 2.1. Description of the datasets used in this paper

	Data source (surveys)	Baseline data collection	Follow-up data collection	Age of students at baseline data collection	Baseline sample size	Age of students at last follow-up	Sample size at last follow-up
Australia	Longitudinal Surveys of Australian Youth (LSAY)	PISA 2009[1]	LSAY - yearly between 2010 and 2019	15-16	14 251	25-26	2 933
Canada	Youth in Transition Survey-Reading Cohort, Cycle 6 (YITS) & The T1 Family File (T1FF)	YITS & PISA 2000	YITS - biyearly between 2002 and 2010 (T1FF 2009 & 2014)	15	29 687	25, 29-30	10 927
China	China (People's Republic of) Family Panel Studies (CFPS)	CFPS 2010 (for variables related with thinking about the future); CFPS 2014 (for variables related with experiencing the future)	CFPS - biyearly between 2012 and 2018	10 to 15 (thinking about the future); 14 to 18 (experiencing the future)	3 303 (thinking about the future); 1 669 (experiencing the future)	18-23 (thinking about the future); 18-22 (experiencing the future)	2078 (thinking about the future); 1210 (experiencing the future)
Germany	The National Educational Panel Study (NEPS)	NEPS Starting Cohort 4 2010-2011	NEPS Starting cohort 4, wave 1 (ninth graders in 2010) to wave 11 (2018)	14 to 16	5 589	23-25	5 589
Korea	Korean Education Longitudinal Study 2005 (KELS2005)	KELS 2006	KELS - yearly 2006-2018	14/15	6 908	25/26	3 720
United Kingdom	British Cohort Study (BCS70)	BCS70 - 1986	BCS70 - 1996, 2004	16	6417	26 and 34	4 547 for Age 26 or 4 635 for Age 34, or 5 511 across both

[1] When permissions to use or publish a dataset were required, each expert obtained permission to use and access the dataset, and the OECD obtained permission to publish the results.

	Longitudinal Study of Young People in England (LSYPE1 Next Steps[2])	LSYPE 2004 (February)	LSYPE 2005, 2006, 2007, 2015-16	14	~ 15 770	25-26	7 707
United States	National Longitudinal Survey of Youth 1997 (NLSY97)	NLSY79 - 1997	NLSY79 - yearly from 1997 to 2011 and every other year between 2013 and 2018 - Data collected from Round 1 (1997-98) and Round 14 (2010-11)	12 to 16	8 984	25-29	5 466
	Educational Longitudinal Study (ELS)	ELS - 2002	ELS - 2004, 2006, 2012	15	16 197	25	13 250
Uruguay	Uruguayan Longitudinal Study (PIS03-UYLS)	PISA 2003	PIS03-UYLS - 2007, 2012	15-16	5 835	24-25	2 451

Note 1. The Longitudinal Surveys of Australian Youth 2009 commenced in 2009 when 14 251 participants of the Australian Programme for International Student Assessment (PISA) became an LSAY cohort. LSAY surveyed these Australian 2009 PISA participants for 11 years.

As is shown in the table, some of the datasets used PISA as the baseline survey, and followed-up with a national survey, while others used different waves of a national survey for both the initial and subsequent data collections. In general the datasets first collected information on students when they were around 15 years old (though the China Family Panel Studies first collected data when students were as young as 10 for some of the variables), and the last follow-up was conducted around 10 years later, when young adults were in their mid-twenties, though some datasets also have data for older respondents. Most of the first data collections happened in the 2000s with the exception of the British Cohort Study (BCS70) that first collected data of relevance to this study in 1986. The sample sizes are quite different, with the smallest sample at the last follow-up being 1 210 individuals for the "Experiencing" variables in CFPS and the largest being 13 250 individuals for the Educational Longitudinal Study (ELS) in the United States.

Analytical techniques and reporting of results

The external experts used a range of statistical analysis methods to establish associations between the selected indicators and the outcomes. The main analyses consisted in Ordinary Least Squares (OLS) and logistic regressions, preceded by bivariate cross-tabulations with appropriate tests such as Pearson's r, Chi-square and t-tests. Experts adapted their use of statistical models according to the particularities of their national datasets. For example, the analyses from the Canadian dataset applied an OLS regression model to a dichotomous outcome – whether respondents were Not in education, employment or training (NEET) or not – while all other datasets used logistic regressions for the same outcome variable.

For the purposes of this paper, associations between indicators and outcomes were reported as they were qualified in the different regression models (OLS and logistic). These regression models allowed for multivariate analysis and the inclusion of selected controls (gender, socio-economic status, level of educational qualification, among others). See Table A A.2 in the Annex A. for a complete list of controls included.

[2] Hereafter referred to as LSYPE

This paper reports results with p-values below 0.1. The significance level for individual estimates (and linked interpretations) is signalled in the tables with a different numbers of asterisks (*** = $P < .01$. ** = $P < .05$; * = $P < .1$). To showcase the full breadth of results produced by the national experts, Table A A.3, Table A A.4 and Table A A.5 in Annex A contains all the associations reported between indicators and outcomes across datasets. For each association, the relevant regression coefficient (regression type, either OLS or logistic, is detailed in the notes) is indicated, accompanied by the standard error, or in isolated cases, the confidence interval.

Extensive and rich information was available in the analyses of each dataset and it is beyond the aims of this paper to report all the results that were found. This paper focuses on reporting the results of associations between variables (indicators and outcomes) that were most aligned with the conceptual definitions being used, and that were most comparable across datasets. Hence, in most cases, for each indicator, only the variable most aligned with the conceptual definition and most comparable with the variables available in the other datasets was chosen to be reported and compared. This means that for some models and variables there were significant associations found in some datasets that were not included in the reporting of this paper (or are reported as complementary information, but are not included in the comparison with other datasets). However, in the section about exploring the future, more than one variable was included when they referred to different activities within the indicator being reported. In some exceptional cases, associations between variables that were only available in one dataset are reported, this is discussed in a box, separately from the main text. Qualitative aspects of the indicators (such as frequency or perceived usefulness of an activity) which provide especially useful insights for practice, were reported for the indicators related with experiencing the future. These are reported even if they were only included in two datasets. While analyses of subgroups were conducted for most datasets and variables, this paper focuses on reporting results for the overall samples. It only reports results for subgroups for the indicators related with thinking about the future and only when an association was not found for the overall sample.

Box 2.1. Strengths and weaknesses of using longitudinal datasets

The datasets used in this paper are built on data collected from the same individuals over a period of time. This kind of data allows for the identification of changes and trends that short-time studies cannot, to establish causality more easily, and to identify long-term effects (Cohen, Manion and Morrison, 2007[13]).

This type of dataset also has limitations, among them that analyses are constrained by the questions designed many years ago, that the data may be contextually outdated so it is not clear to what extent the findings apply to today's world, and that cohort studied often encounter attrition issues, meaning that respondents drop out of the study over time (Covacevich et al., 2021[3]; OECD, 2018[14]).

Attrition can be problematic for two main reasons. First, attrition reduces the size of the sample, and if the sample becomes too small, this can jeopardise statistical power. Second, if attrition is not random, meaning certain subgroups within the initial sample are more likely to drop out or not respond to a follow-up survey, it can introduce non-response bias into the sample. If this is the case, it can mean that the sample no longer remains representative of the original population being studied, and so can affect the validity of statistical findings.

Two approaches are typically adopted to deal with attrition[3]: weighting survey responses to re-balance the data (performing calculations to compensate the differences between the sample that responded the follow-up surveys and the population that the sample should represent) or imputing values for the missing information (OECD, 2018[14]).

Each survey dealt with attrition and missing data differently. Many of the surveys use weights or imputed data, but others do not. In several of the surveys, the results cannot be generalised to the whole population, but reflect the

[3] Assuming all the predictors of drop-out are accounted for in the weighting model or in the imputation model

findings for the participants alone. For more information on how this was approached in each dataset, see Table A A.6 in the Annex A.

Variables used in the analyses

Teenage career-related indicators

The analyses in this paper focus on 14 potential indicators related to the thematic areas of how young people think about, explore and experience their possible futures in work, that have been initially identified in multiple studies using longitudinal datasets from Australia, Denmark, Switzerland, the United Kingdom and the United States. This paper builds on such research literature and further explores how these indicators work in datasets from different countries. This paper does not focus on describing the indicators, as it has already been done in the two previous working papers. However a brief definition of each indicator, which is based on the literature review conducted for the two previous working papers, is provided before describing the results. The indicators related with exploring the future have been somewhat modified in response to the new available data that allows for finer-grained distinctions.

The potential teenage indicators of employment outcomes included in this paper are:

Exploring the future

- School-based career reflection activities: participating in activities that promote reflection, such as participating in career classes or answering career questionnaires
- Career conversations: speaking to someone individually about a career of interest
- Engaging with people in work through career talks or job fairs: attending career talks given by people in the world of work or attending job fairs
- Workplace visits or job shadowing: participation in workplace visits or job shadowing
- Application and interview skills development activities: participation in school-based activities that teach skills for applying to jobs (such as writing cover letters) and being interviewed for jobs
- Occupationally-focused short programmes: participation in short occupationally-specific courses within general programmes of education

Experiencing the future

- Part-time work: participation in part-time or holiday work
- Work placements[4]: participation in short school-mediated work placements
- Volunteering: participation in community-based volunteering

Thinking about the future

- Career certainty: ability to name a job expected at age 30
- Career ambition: expecting to have professional/managerial employment at age 30
- Career alignment: matching of occupational and educational expectations
- Instrumental motivation towards school; perceiving the usefulness of schooling for their future plans
- Career originality: having more original career plans than peers

By no means did all longitudinal datasets include questions related to such indicators. Questionnaires vary extensively and frustratingly in the extent to which they explore aspects of teenage career readiness. However, all enable some analysis to be undertaken of relationships between work-related attitudes and experiences and later employment outcomes.

[4] Work placements are sometimes described as internships. The label "work placements" is used in this paper to reflect terminology used in English-language educational institutions.

An objective for this paper was to assess whether the typology described in "Career Ready?" and "Thinking about the future" required adaptation in light of the new analyses undertaken. The indicators related with experiencing the future and thinking about the future did not suffer any changes (additions had already been made to the latter in "Thinking about the future") other than changing the name "career concentration" to "career originality". Changes were made in the typology of the indicators related with exploring the future. Due to the availability of considerable new data related to exploring the future, the typology of indicators was fully revised.

A definition of each indicator, as well as a description of how it was measured in this paper, is provided in Annex A.

Career-related outcomes

The analyses focus on three important career-related outcomes:

Not in education, employment or training (NEET) status

NEET, an acronym for "Not in Employment, nor in Education or Training", is defined as a person who is unemployed and not in education nor receiving vocational training. Young people who are NEET are at risk of incurring long-term "scarring" due to their status, with studies showing that early experiences of youth unemployment are linked with lower than anticipated employment outcomes and psychological well-being through adult life (OECD, 2016[15]; Bell and Blanchflower, 2011[16]; Andrews et al., 2020[17]).

Information on NEET status was available in nine out of the ten datasets, with Australia[5] not having such data available. There are variations in how NEET status was measured within the surveys. In some cases it was measured directly through a question in the questionnaire, and in others a composite variable was constructed by combining respondents' answers to different questions. In most cases, this outcome is based on whether respondents were NEET or not at the time they responded the questionnaire. However, in Germany they were asked about episodes of NEET at ages 23-25. The BCS70 dataset (United Kingdom) also asked about past experiences, and collected information on respondents' longest period of unemployment only, not on whether they were in education or receiving vocational training.

This variable was treated as dichotomous variable for the analyses.

A detailed description of how NEET was measured by each survey is available in Table A A.7 in Annex A.

Earnings if in full-time employment

Information on reported earnings if in full-time employment was available in eight out of the 10 datasets, with Germany and United States (NLSY) not having appropriate data available.

This outcome was also measured somewhat differently in each survey. In most cases, it was considered that respondents had a full-time job if they worked 35 hours or more a week. However, in Korea and the United Kingdom (BCS70) information was available only for those working 30 hours or more a week. Some datasets asked for total earnings, and others only for earnings from the main full-time job. In most cases, the data on salary was based on information self-reported by the respondents, but in Canada (YITS) the data was obtained from tax declarations. The period considered for the reporting of earnings varied between databases (hourly-daily-weekly-yearly).

For each dataset, the information on salaries was collected in the local currency. To enable comparisons between the results, this paper reports percentage differences in salaries. A detailed description of how earnings were measured by each survey is available in the Table A A.7 in Annex A

[5] From here onwards, datasets are referred to by the name of the country they collected data on and not by the name of the survey. When there is more than one dataset per country, the name of the dataset is specified.

Career satisfaction

This outcome focuses on satisfaction with career progression in early adulthood, understood as the extent to which respondents perceive their current job to be helping them to achieve their longer term career plans. This outcome was included in reflection of growing concerns over the psychological well-being of young adults. Questions that allow measurement of this outcome are not as commonly included in large-scale surveys as is information on NEET status and salary. Consequently, out of the 10 datasets, career satisfaction was only available for the United States (ELS).

However, other datasets had variables related to this outcome. Australia (LSAY) had a composite variable about job satisfaction that included items related with career satisfaction; Canada (YITS), China (CFPS) and Korea (KELS) had information related with respondents' satisfaction with their job/work at the time of the survey; Germany collected data on satisfaction with their jobs at ages 23-25; and the United Kingdom (LYSPE) collected information on life satisfaction. Information from these six datasets was included in the analyses. No information was available for United Kingdom (BCS), United States (NLSY97) or Uruguay.

While this outcome was measured as a scale variable in all datasets, it was treated as dichotomous variable for the analyses of the Canadian dataset (YITS).

A detailed description of how career satisfaction was measured for each survey is available in Table A A.7 in Annex A.

Background variables

A range of background characteristics such as gender, socio-economic status, academic achievement, immigrant status, and study programme (vocational education and training – VET – programme or not) that can be expected to influence school-to-work transitions, were used as control variables. They varied in number and in type depending on the dataset.

Due to variation in the information gathered by the different surveys and based on the council of national analysts, there is some diversity on how many control variables were used for the analysis of each dataset and within the analysis of each dataset, the different control variables that were used for some analyses. Even when the same control was used, diversity is encountered in how it was measured, as is the case for example with socio-economic status where most surveys used a composite measure that considered information relevant in that national context, and of academic performance where the data available could be PISA scores, grades obtained in school, or other measures. Most of the background characteristics were collected at the time of the baseline survey, but others were collected later, such as highest level of education obtained.

However, analyses of all datasets make use of a core set of control variables: gender, socio-economic status, and academic performance. Most analyses also used migrant status and/or ethnicity, information on location of the school, and information on education (such as highest level of education obtained, study programme, or educational status at the time of the baseline survey) as control variables. Other relevant country-specific variables were also included.

Some of these background characteristics were also used to compare the outcomes between different subgroups, treating them as binary variables and using regression models similar to those used to analyse possible associations between full-sample indicators and outcomes. Most subgroup reported results are based on gender, socio-economic status, and study programme. For the purposes of reporting results in this paper, all subgroups were treated as binary variables.

A list of the main background characteristics used as controls and/or for the comparison of subgroups as well as a brief explanation of how each was measured in each dataset is available in Table A A.2 in Annex A.

3 Exploring the future

Student career exploration can increase the chances of success in the adult labour market. There is evidence that teenagers who engage in conversations about their working futures or who take part in programmes of career exploration or career guidance are more commonly found to enjoy employment boosts as young adults. OECD PISA 2018 data shows however that many 15-year-olds, particularly from more disadvantaged backgrounds, do not have opportunity to engage in such career exploration (Mann, Denis and Percy, 2020[2]).

School-based career reflection activities

School-based career reflection activities and their relationship with adult employment outcomes

In this paper, school-based career reflection activities refer to activities designed by, and delivered with, schools to help young people in secondary education visualise and plan their futures, focusing on career questionnaires and career classes. These activities typically take place within school and do not require workplace volunteers. In "Career Ready?" it is noted that the existing research literature on the long-term impact of many career guidance activities is thin and this is especially the case with regard to in-school activities designed to encourage and enable career reflection. Existing literature tends to provide indirect evidence of the value of such provision. Galliot (2015[18]) for example finds, that teenage career uncertainty in Australia is lower if students have participated in career education classes or met with a career counsellor (see also (Mann, Denis and Percy, 2020[2])).

PISA 2018 data shows that young people attending schools which do not provide access to career guidance are more likely to be uncertain about their career aspirations. In the case of low performers, on average across participating OECD countries 33% of teenagers without access to guidance through their schools are uncertain compared to 28% where career guidance is available (on a compulsory or voluntary basis). Levels of misalignment are also slightly higher in schools lacking a career guidance resource. Furthermore, teenagers in such institutions are less likely than peers to take into account school grades and the availability of financial support, training pathways and employment opportunities when deciding on their career ambitions. However, PISA data provides no insight into the intensity of participation in career development activities (on how many occasions students take part in different interventions), the duration of participation (time spent in an intervention and at what age interventions began) or whether participation was on a voluntary or compulsory basis (Mann, Denis and Percy, 2020[2]).

A number of the national longitudinal studies under consideration include questions about such activities, allowing an assessment, if limited, of the associations with long-term employment outcomes.

How school-based career reflection activities are measured in this paper

In this paper, career guidance activities have been divided into two categories: i) Career questionnaires and ii) Career classes.

Career questionnaires are commonly used within schools to help students reflect on their career interests often in light of personal dispositions and preferences (Covacevich et al., 2021[3]). Information on career questionnaires was available in the analyses of three datasets: Canada, Germany, and Uruguay. Using different wording, in all three cases the students were asked if they had completed a test or questionnaire to find out about their interest and abilities

and/or which professions they were more suitable for. Thirty-eight percent of the students in Canada, 61% of the students in Germany, and 28% of the students in Uruguay said they had completed such tests or questionnaires.

Information on career classes was available in the analyses of six of the datasets. This was approached a bit differently in each case. In some datasets, the question referred to timetabled career classes, while in others it referred to provision of information within school or which was described as career-orientated provision. The proportion of students who reported having received this type of class varied between 14% in Uruguay and 81% in Australia.

When information on an indicator is not available, the corresponding cell is greyed-out in the tables that report results.

For more information on how the questions were asked in each questionnaire, see Table A A.8 in Annex A. Information on the distribution of responses for each dataset is available in Table A A.10 in Annex A.

What the new data adds to the knowledge on school-based career reflection activities

Table 3.1. School-based career reflection activities and adult employment outcomes

Indicator	Country and dataset		School-based career reflection activities		
			NEET (not being in education, employment and training)	Earnings (full-time)[2]	Career satisfaction[3]
Career questionnaires	Australia	LSAY			
	Canada	YITS	Overall, students who had completed a skills and interests questionnaire by age 15 were 4 percentage points less likely to be NEET at 25 relative to their comparable peers who had not***	No significant associations found	No significant associations found
	China	CFPS			
	Germany	NEPS	No significant associations found		No significant associations found
	Korea	KELS2005			
	United Kingdom	BCS70			
		LSYPE			
	United States	NLSY97			
		ELS			
	Uruguay	PIS03-UYLS	No significant associations found	Overall, students who had completed a vocational test by the age of 15 earned 10% less per month at 25 relative to comparable peers who had not*	
Career Classes	Australia	LSAY		No significant associations found	No significant associations found
	Canada	YITS	Overall, students who were taught how to find information on jobs for their future by age 15 were 3 percentage points less likely to be NEET at 25 relative to their comparable peers who had not**	Overall, students who were taught how to find information on jobs for their future by age 15 earned 4% more per annum at age 30 than their peer counterparts who had not *	
	China	CFPS			
	Germany	NEPS	No significant associations found		No significant associations found
	Korea	KELS2005	No significant associations found	No significant associations found	No significant associations found

	United Kingdom	BCS70[1]	No significant associations found	Overall, students who had participated in any career classes aged 14-16 earned 2% less per week less in a week at age 26 relative to comparable peers who had not*	No significant associations found
		LSYPE			
	United States	NLSY97			
		ELS			
	Uruguay	PIS03-UYLS	No significant associations found	Overall, students who had participated in teacher orientation activities by the age of 15 earned 9% more per month at 25 relative to comparable peers who had not*	

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01
Key for symbols:

No significant association found
Statistically significant association found in the overall sample
Statistically significant association found in the opposite direction to what was expected

Sources: **LSAY:** (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];
KELS2005: (Korea Development Institute, 2019[22]), "연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
LSYPE: (Unversity College London, UCL Institute of Education, Centre for Longitudinal Studies, 2021[24]), Next Steps: Sweeps 1-8, 2004-2016. [data collection]. 16th Edition. UK Data Service. SN: 5545, http://doi.org/10.5255/UKDA-SN-5545-8;
PIS03-UYLS: (Fernandez et al., 2021[25]), PISA 2003 Uruguay Career Readiness Dataset. PISA 2003 Uruguay Longitudinal Study, Department of Sociology, School of Social Sciences, Universidad de la República. 2021.

Career questionnaires and adult employment outcomes

Having responded to career questionnaires is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada. Individuals who had responded a career questionnaire by the age of 15 were 4 percentage points less likely to be NEET at 25 compared to those who had not.

However, having responded to career questionnaires is significantly associated with lower earnings if in full-time work in the overall sample in Uruguay. Individuals who completed a vocational test by the age of 15 earned 10% less at 25 compared to those who had not completed one. As indicated in the table by the magnifying glass, this association is in the opposite direction to that expected.

No significant associations were found between responding career questionnaires and career satisfaction in the overall samples in the datasets that had available data.

Career classes and adult employment outcomes

Having career classes is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada. Individuals who were taught how to find information on jobs for their future by age 15 were 3% less likely to be NEET at age 25 than those who were not taught this.

Having career classes as teenagers is significantly associated with higher earnings if in full-time work in the overall sample in Canada and Uruguay. In Canada, individuals who by age 15 were taught how to find information on jobs for their future earned 4% more per annum at age 30 than those who were not taught. And in Uruguay, individuals who had a teacher orientation activity by the age of 15 earned 9% more per month at age 25 than those who did not have this activity.

However, having career classes as teenagers is significantly associated with lower earnings in the overall sample in United Kingdom (BCS70). Individuals who had participated in any career classes between the ages of 14 and 16 earned 2% less at age 26 compared to those who had not.

No significant associations were found between having career classes as teenagers and career satisfaction in the overall samples in the datasets that had available data.

Career conversations

Career conversations and their relationship with adult employment outcomes

Career conversations refer to when students talk with someone about their future career plans. Such conversations can be seen as evidence of young people actively exploring potential futures in work. Teenagers overwhelmingly turn to their parents to discuss their career plans (Baxter, 2017[26]; Gemici, 2014[27]; Homel, 2014[28]; Oymak, 2018[29]), who can be extremely helpful by providing information, helping to access other sources of information and by arranging opportunities for active learning about jobs, access to training contracts or employment (Roth, 2018[30]). However, the help they can provide is constrained by the limits of parents' experiences and networks (Blenkinsop, 2006[31]; Irwin, 2013[32]; Norris and Francis, 2014[33]; Mann, Denis and Percy, 2020[2]). In addition, many young people do not discuss their career aspirations with their parents or with anyone else for that matter (Hart, 2016[34]; Baxter, 2017[26]; Mann, Denis and Percy, 2020[2]; Rennison et al., 2005[35]).

Thus, career conversations that happen through schools are fundamental in enabling young people to deepen and develop relationships to complement those emerging from the family (Fisher, 2018[36]). The research literature highlights the role of teachers as an important resource for all young people in exploring their career ambitions through daily interactions (Blenkinsop, 2006[31]; Craig, 2019[37]). This is particularly relevant for disadvantaged students, whose parents may have less access to resources to help their children (Archer, 2013[10]). Career conversations at school can happen with trained counsellors or with subject teachers.

Analysis of PISA 2018 shows a statistically significant relationship between 15-year-olds having talked to someone about a future job of interest and lower levels of career uncertainty and misalignment, as well as higher levels of instrumental motivation and greater career ambition, even after controlling for background variables (Mann, Denis and Percy, 2020[2]).

However, PISA data does not ask who it was students have spoken to about their future plans. "Career Ready?" identifies four existing longitudinal studies from the United Kingdom and the United States that looked for evidence of relationships between career conversations with teachers and adult employment outcomes. Three of the studies found a relationship in a significant part of the population, even after accounting for controls (sometimes this relationship was only found in certain subgroups) (Mann, Denis and Percy, 2020[2]). More details on these studies can be found in Table A A.11 in Annex A.

The available research on the long-term impact of career guidance counsellors on young people's adult outcomes is thin. Existing studies are surprisingly rare, but there is some evidence that it can be associated with positive labour outcomes, at least for some groups (Mann, Denis and Percy, 2020[2]). There is even less research on the long-term impact of conversations with family and peers.

How career conversations are measured in this paper

Information on career conversations was available in four of the ten new datasets analysed. The available information permits career conversations to be broken down into three categories: conversations with: i) teachers, ii) career guidance counsellors, and with iii) family and peers.

Information on career conversations with teachers was available in three of the datasets, Australia, Canada and United Kingdom (BCS70). In Australia, students were asked if they had talked to a teacher about their career plans (59% said yes); in Canada, if they had talked to a teacher to get information about work they may be interested in when they finish schooling (36% said yes); and in United Kingdom (BCS) if they had had an individual conversation regarding their future with a teacher between (64% said yes).

Information on career conversations with career guidance counsellors was available in four of the datasets: Australia, Canada, Germany, and United Kingdom (BCS70). While the phrasing of the questions was slightly different in each case, all the surveys asked whether students had spoken with a career advisor about their career plans. In some cases it was specified that this has happened at school or been arranged by the school, in others it was not. The proportion of students who said they had had a career conversation with a counsellor varied between 30% of the students in Canada and 83% of the students in United Kingdom (BCS70).

Information on career conversations with family and peers was available for Australia, Canada, and United States (ELS). Australia and Canada had two different questions, one that referred to conversations with family members and another to conversations with the student's peers. Both questions were included in the reporting of this indicator. Korea and United States (ELS) had one question that focused on speaking with relatives. In Australia and Canada, the students were asked if they had had at least one conversation, in the case of the United States (ELS) the analyses distinguished between those students who had conversations with their mother, father and another adult relatives, and those who did not. The question in Korea focused on advice on the career path for high school, in the other datasets the question focused on what students would do after high school.

The distribution varied between 55% of the students in Canada declaring to have had a career conversation with friends, and 96% of them declaring to have had a career conversation with their family in Australia.

For more information on how the questions were asked in each questionnaire, see Table A A.8 in Annex A. Information on the distribution of responses for each dataset is available in Table A A.12 in Annex A.

What the new data adds to the knowledge on career conversations

Table 3.2. Career conversations and adult employment outcomes

Indicator	Country and Dataset		Career conversations		
			NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Career conversations with teachers	Australia	LSAY		No significant association found	Overall, students who had conversations with teachers at 15/16 had a 0.39 point increase in the career satisfaction 0 to 10 point scale at age 25/26 relative to comparable peers who did not have career conversations with teachers***
	Canada	YITS	Overall, students who had career conversations with a teacher by age 15 were 3 percentage points less likely to be NEET at 25 relative to comparable peers who did not**	Overall, students who had career conversations with a teachers at 15 earned 3% more annually at age 30 relative to comparable peers who did not**	No significant association found
	China	CFPS			
	Germany	NEPS			
	Korea	KELS2005			
	United Kingdom	BCS70[1]	No significant associations found	No significant associations found	Overall, students who had a career conversation with a teacher aged 14-16, had a 0.11 point increase in the life satisfaction 0-10 scale aged 26*
		LSYPE			
	United States	NLSY97			
		ELS			
	Uruguay	PIS03-UYLS			
Career conversations with career guidance counsellors	Australia	LSAY		No significant association found	No significant association found
	Canada	YITS	Overall, students who had career conversations with a school counsellor by age 15 were 3 percentage points less likely to be NEET at 25 relative to comparable peers who did not**	Overall, students who had career conversations with a school counsellor at 15 earned 3% more annually at age 30 compared relative to comparable peers who did not**	No significant association found
	China	CFPS			
	Germany	NEPS	No significant association found		No significant association found
	Korea	KELS2005			
	United Kingdom	BCS70[1]	No significant association found	No significant association found	No significant association found
		LSYPE			
	United States	NLSY97			
		ELS			
	Uruguay	PIS03-UYLS			
Career conversations with family members and	Australia	LSAY		No significant association found	Overall, students who had conversations with members of their family at 15/16 had a 0.62 point increase in the career satisfaction 0 to 10 point scale at age 25/26 relative to comparable peers

					who did not have career conversations with family members*
				No significant association found	Overall, students who had conversations with a friend at 15/16 had a 0.46 point increase in the career satisfaction 0 to 10 point scale at age 25/26 relative to comparable peers who did not have career conversations with friends*
	Canada	YITS	No significant association found	Overall, students who had career conversations with a parent/guardian at 15 earned 8% more annually at age 30 relative to their comparable peers who did not***	No significant association found
			Overall, students who had career conversations with a friend by age 15 were 2 percentage points less likely to be NEET at 25 relative to comparable peers who did not*	Overall, students who had career conversations with a friend by age15 earned 3% more at age 30 annually relative to comparable peers who did not**	No significant association found
	China	CFPS			
	Germany	NEPS			
	Korea	KELS2005		No significant association found	
	United Kingdom	BCS70[1]			
		LSYPE			
	United States	NLSY97			
		ELS	Overall, students who had conversations with their mother, father and adult close relative, about their future after leaving compulsory school, by the age of 15, were 1.48 times less likely to be NEET at 25 relative to their comparable peers who did not have conversations with all 3 adults***	No significant association found	No significant association found
	Uruguay	PIS03-UYLS			

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found
Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];

NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];
KELS2005: (Korea Development Institute, 2019[22]), Korea Educational Development Institute. 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk ;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002 Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch.

Career conversations with teachers and adult employment outcomes

Having career conversations with a teacher is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada. Individuals who had career conversations with a teacher by age 15 were 3 percentage points less likely to be NEET at age 25 compared with those who did not.

In addition, having career conversations with a teacher is significantly associated with higher earnings if in full-time work in the overall sample in Canada. Overall, individuals who had career conversations with a teacher at 15 earned 3% more at age 30 compared to those who did not.

Having career conversations with a teacher is significantly associated with higher career satisfaction in the overall sample in Australia and United Kingdom (BCS7070). In Australia, individuals who had conversations with teachers at age 15/16 had a 0.39 point increase in the career satisfaction 0 to 10 point scale at age 25/26 compared to those who did not. And in the United Kingdom (BCS7070), individuals who had a career conversation with a teacher at age 14-16 had a 0.11 point increase in the life satisfaction 0-10 scale aged 26 compared to those who did not.

Career conversations with guidance counsellors and adult employment outcomes

Having career conversations with a guidance counsellor is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada. Individuals who had career conversations with a school counsellor by age 15 were 3 percentage points less likely to be NEET at age 25 than those who did not.

In addition, having career conversations with a guidance counsellor is significantly associated with higher earnings if in full-time work in the overall sample in Canada. Overall, individuals who had career conversations with a school counsellor at 15 earned 3% more at age 30 compared to those who did not.

No significant association were found between having career conversations with a trained career guidance expert and career satisfaction in the overall samples in any of the datasets that had available data.

Career conversations with family and peers and adult employment outcomes

Having career conversations with family and peers is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada and United States (ELS). In Canada, individuals who had career conversations with a friend by age 15 were 2 percentage points less likely to be NEET at age 25 compared to those who did not. And in the United States (ELS), individuals who had conversations about their future after leaving compulsory education by the age of 15 with their mother, father and adult close relative, were 1.48 times less likely to be NEET at age 25 than those who did not have conversations with these three adults.

Having career conversations with family members and peers is significantly associated with higher earnings if in full-time work in the overall sample in Canada. Individuals who had career conversations with a parent/guardian at age 15

earned 8% more at age 30 compared to those who did not. In addition, individuals who had career conversations with a friend by age 15 earned 3% more at age 30 compared with those who did not.

Having career conversations with a family member is significantly associated with higher career satisfaction in the overall sample in Australia. Overall, individuals who had conversations with members of their family at age 15/16 had a 0.62 point increase in the career satisfaction 0 to 10 point scale at age 25/26 compared to those who did not. In addition, individuals who had such conversations with a friend at age 15/16 had a 0.46 point increase in the career satisfaction 0 to 10 point scale at age 25/26 compared to those who did not.

Engaging with people in work through career talks or job fairs

Engaging with people in work through career talks or job fairs and their relationship with adult employment outcomes

A wide research literature now focuses on guidance activities that engage employers or people in work. Through such interactions, studies propose that young people are presented with the opportunity to gain valuable information and experiences that are not easily replicated in schools without such engagement (Mann, Denis and Percy, 2020[2]; Mann, Stanley and Archer, 2014[39]; Mann, Huddleston and Kashefpakdel, 2019[40]; CEDEFOP, European Commission, European Training Foundation, ILO, OECD, UNESCO, 2021[41]). However, PISA 2018 data shows that in many countries, only a minority of students engage in the most commonplace activities (workplace visits, job shadowing, job fairs) (Mann, Denis and Percy, 2020[2]).

Guidance activities that require employer engagement are varied in nature and distinguishing between them enables a better exploration of the relationships with adult employment outcomes. In this paper, the analyses of new datasets that was available distinguishes between engaging with people in work through career talks or job fairs, on one hand, and workplace visits or job shadowing, on the other. This section refers to engaging with people in work through career talks or job fairs, common activities designed to help students explore potential career options.

A number of studies from the United Kingdom have explored the relationship between teenage participation in guidance activities that engage employers and adult employment outcomes. Kashefpakdel and Percy (2016[42]) make use of the British Cohort Study to highlight earnings premiums at age 26 linked to teenage involvement in school-managed career talks at ages 14 to 16. Studies by (Mann and Percy, 2013[43]; Percy and Mann, 2014[44]; Mann et al., 2017[45]) use data from surveys of adults aged 19-24 and find significant relationships between adult employment outcomes and the volume of (recalled) teenage engagement with employers through guidance activities.

A recent review of the existing international literature on employer engagement in guidance activities suggests that students can expect outcomes to be enhanced in relation to the diversity, intensity, and their satisfaction with activities (Mann, Rehill and Kashefpakdel, 2018[46]):

- Diversity: where students undertake a range of different activities, the reasoning being that different activities provide different potential benefits to students
- Intensity: where students repeat activities (with different content), notably career talks, they will be more likely to gain access to new and useful information
- Satisfaction: where students (as teenagers) feel guidance activities were useful to them, it is more likely that they consciously gained something of new value to them.

How engaging with people in work through career talks or job fairs is measured in this paper

Information on engaging with people in work through career talks or job fairs was available in the analyses of six of the datasets: Australia, Canada, Germany, Korea, United Kingdom (BCS70) and Uruguay. This section focuses simply on whether students participated in these activities or not. No information is provided on how these activities were delivered.

Some surveys asked about attending a job fair, while others about attending a career talk by someone in work. This was treated as a dichotomous variable, differentiating between those students who had ever participated in these activities on at least one occasion, and those who had not. The proportion of students who said they had attended such events at least once varied between 18% in Canada and 84% in the United Kingdom (BCS70). It should be noted that this approach does not capture from the United Kingdom (BCS70) as described in the research literature by Kashefpakdel and Percy (2016[42]) on long-term associations between participation in *multiple* (more than four a year) career talks and higher earnings, whereas in this paper, to allow better comparisons between countries, analysis focused on participation in one or more talks.

For more information on how the questions were asked in each questionnaire, see Table A A.8 in the Annex A. Information on the distribution of responses for each dataset is available in Table A A.13 in Annex A.

What the new data adds to the knowledge on engaging with people in work through career talks or job fairs

Table 3.3. Engaging with people in work through career talks or job fairs and adult employment outcomes

Country and Dataset		Engaging with people in work through career talks or job fairs		
		NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Australia	LSAY		No significant association found	Overall, students who had attended a careers expo or fair at 15/16 had a 0.26 point increase in the 0-10 point career satisfaction scale at age 25/26 relative to their comparable peers who had not*
Canada	YITS	Overall, students who had attended a career talk by age 15 were 3 percentage points less likely to be NEET at 25 relative to comparable peers who had not**	No significant association found	No significant association found
China	CFPS			
Germany	NEPS	No significant association found		No significant association found
Korea	KELS2005	No significant association found	No significant association found	No significant association found
United Kingdom	BCS70[1]	No significant association found	No significant association found	No significant association found
	LSYPE			
United States	NLSY97			
	ELS			
Uruguay	PISO3-UYLS	Overall, students who had attended a career talk by age 15 were 3 percentage points less likely to be NEET at 25 relative of their comparable peers who had not**	No significant association found	

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found
Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;

YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed 20 July 2021];
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
PIS03-UYLS: (Fernandez et al., 2021[25]), PISA 2003 Uruguay Career Readiness Dataset. PISA 2003 Uruguay Longitudinal Study. Department of Sociology, School of Social Sciences, Universidad de la República. 2021.

Engaging with people in work through career talks or job fairs and NEET (not being in education, employment or training)

Having engaged with people in work through career talks or job fairs is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada and Uruguay. In both Canada and Uruguay, individuals who had attended a career talk by age 15 were 3 percentage points less likely to be NEET at age 25 compared to those who had not.

Engaging with people in work through career talks or job fairs and adult earnings

There were no significant associations found between having engaged with people in work through career talks or job fairs and earnings in the new analyses of the available datasets.

Engaging with people in work through career talks or job fairs and job satisfaction

Having engaged with people in work through career talks or job fairs is significantly associated with higher career satisfaction in the overall sample in Australia. Individuals who had attended a careers expo or fair at age 15/16 reported 0.26 higher points in the 0 to 10 point career satisfaction scale at age 25/26 than those who had not.

Workplace visits or job shadowing

Workplace visits or job shadowing and their relationship with adult employment outcomes

As noted earlier, a wide research literature suggests that young people gain particularly from guidance activities enriched by employer engagement (Mann, Denis and Percy, 2020[2]). In this paper, analyses of available new datasets distinguishes between engaging with people in work through career talks or job fairs, on one hand, and workplace visits or job shadowing, on the other. This section refers to workplace visits or job shadowing.

How workplace visits or job shadowing are measured in this paper

Information on workplace visits or job shadowing was available in the analyses of six of the datasets: Australia, Canada, Germany, Korea, United Kingdom (BCS70) and United States (ELS).

This was treated as a dichotomous variable, differentiating between those students who had ever participated in these activities on at least one occasion, and those who had not. The proportion of students in each country who had participated in these visits varied between 11% in United States (ELS) to 43% in Germany.

For more information on how the questions were asked in each questionnaire, see Table A A.8 in Annex A. Information on the distribution of responses for each dataset is available in Table A A.14 in Annex A.

What the new data adds to the knowledge on workplace visits or job shadowing

Table 3.4. Workplace visits or job shadowing and adult employment outcomes

Country and Dataset		Workplace visits or job shadowing		
		NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Australia	LSAY		Overall, students who had a school organised workplace visit by 15/16 earned 9% more hourly at 25 than students who had not visited a school organised workplace*	Overall, students who had a school organised workplace visit by 15/16 had a 0.41 point increase in the 0-10 point career satisfaction scale at age 25/26 relative to comparable peers who did not***
Canada	YITS	Overall, students who had attended an organised visit to a workplace by age 15 were 4 percentage points less likely to be NEET at 25 relative to comparable peers who had not**	No significant association found	No significant association found
China	CFPS			
Germany	NEPS	No significant association found		No significant association found
Korea	KELS2005	Overall, students who had visited a job site or factory at 15 were 1.23 times less likely to be NEET at 25 relative to their comparable peers who had not**	No significant association found	Overall, students who had visited a job site or factory at 15 scored 0.12 points on a 1-5 job satisfaction scale at 25 relative to their comparable peers who had not**
United Kingdom	BCS70[1]	No significant association found	No significant association found	No significant association found
	LSYPE			
United States	NLSY97			
	ELS	No significant association found	Overall, students who had participated in job-shadowing or work-site visits at13/14 earned 9.7% more at 23/24 relative to average earnings*	No significant association found
Uruguay	PIS03-UYLS			

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01
Key for symbols:

No significant association found
Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), 2017, "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do.[accessed on 20 July 2021];

BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002. Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch.

Workplace visits or job shadowing and NEET (not being in education, employment or training)

Participating in workplace visits or job shadowing as a teenage student is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada and Korea. In Canada, individuals who had attended an organised visit to a workplace by the age of 15 were 4 percentage points less likely to be NEET at 25 compared to those who had not. In Korea, individuals who had visited a job site or factory at 15 were 1.23 times less likely to be NEET at 25 relative to those who had not.

Workplace visits or job shadowing and adult earnings

Participating in workplace visits or job shadowing is significantly associated with higher earnings if in full-time work in the overall sample in Australia and United States (ELS). In Australia, individuals who had participated in a school organised workplace visit by 15/16 earned 9% more at age 25 than students who had not. In the United States (ELS) individuals who participated in job-shadowing or work-site visits at age 13/14 earned 10% more at 23/24 compared to average earnings.

Workplace visits or job shadowing and job satisfaction

Participating in workplace visits or job shadowing is significantly associated with higher career satisfaction in the overall sample in Australia and Korea. In Australia, students who participated in a school organised workplace visit by 15/16 had a 0.41 point increase in the 0-10 point career satisfaction scale at age 25/26 compared to comparable peers who did not. While in Korea, students who had visited a job site or factory at age 15 scored 0.12 points on a 1-5 job satisfaction scale at 25 compared to those who had not.

Application and interview skills development activities

Application and interview skills development activities and their relationship with adult employment outcomes

In this paper, application and interview skills development activities refer to activities designed to help young people in secondary education to develop career management skills related to recruitment: learning how to apply to jobs and how to approach an interview. These activities typically take place within school and do not require workplace volunteers, but can be expected to be more effective if they do so (Rehill, Kashefpakdel and Mann, 2017[47]). It is not known if the activities explored in the longitudinal studies under consideration engaged employers. This is not an indicator explored by itself in "Career Ready?" as no research literature using longitudinal data is known to have tested for associations between such activities and adult employment outcomes. In the current analysis however, sufficient new data was available from countries to allow a review of recruitment-focused skill development.

How application and interview skills development activities are measured in this paper

Information on application skills was available in four of the datasets: Australia, Canada, Germany, United Kingdom (BCS70). The questions used in each survey varied modestly, with some asking students if their school had prepared them to apply for a job in general, and others asking about specific skills such as writing CVs or application letters. In Germany, the question also included practicing job interviews. In the United Kingdom (BCS70) two variables

were included, one that referred to completing application forms and another to cover letters. The proportion of students who said they had received this training/had working knowledge varied between 21% in Australia and 91% in the United Kingdom (BCS70).

Information on interview skills was available in two of the datasets: Canada and United Kingdom (BCS70)[6]. The questions used in both surveys asked students if they had received training on interviewing skills, without empathising if they received this training at school or not. The proportion of students who said they had received this training was 31% in Australia and 86% in the United Kingdom (BCS70).

For more information on how the questions were asked in each questionnaire, see Table A A.8 in the Annex A. Information on the distribution of responses for each dataset is available in Table A A.9 in Annex A.

[6] There was a question Germany that included interviewing skills, but as it was asked together with application skills, it is reported in this paper within application skills.

What the new data adds to the knowledge on application and interview skills development activities

Table 3.5. Application and interview skills development activities and adult employment outcomes

Indicator	Country and Dataset		Application and interview skills development activities		
			NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Applying to jobs	Australia	LSAY[2]		No significant associations found	Overall, students who learnt how to apply for jobs at school aged 15/16 had a 0.28 point increase in the 0-10 point career satisfaction scale at age 25/26 compared to stundets who had not**
	Canada	YITS	No significant associations found	Overall, students who had been taught how to write a CV by age 15 earned 4% more annually at age 30 relative to comparable peers who had not***	No significant associations found
	China	CFPS			
	Germany	NEPS	No significant associations found		No significant associations found
	Korea	KELS2005			
	United Kingdom	BCS70	Overall, students who felt they had working knowledge of job application forms by age 16 had been unemployed for 1.5 months less by the age of 26 relative to comparable peers who did not***	No significant associations found	Overall, students who who felt they had working knowledge of job application forms by age 16 had a 0.2 point higher life satisfaction, in a 0-10 point scale, relative to comparable peers who did not**
			Overall, students who felt they had working knowledge of cover letters by age 16 had been unemployed for 1.7 months less by the age of 26 relative to comparable peers who had not who had not***	No significant associations found	Overall, students who who felt they had working knowledge of cover letters by age 16 scored 0.4 points more in a 0-10 life satisfaction scale, relative to comparable peers who did not***
		LSYPE			
	United States	NLSY97			
		ELS			
	Uruguay	PIS03-UYLS			
Interviewing for jobs	Australia	LSAY			
	Canada	YITS	No significant associations found	Overall, students who had been taught how to prepare for an interview by age 15 earned 5% more annually at age 30 relative to comparable peers who had not***	No significant associations found
	China	CFPS			
	Germany	NEPS			
	Korea	KELS2005			
	United Kingdom	BCS70[1]	Overall, students who were not trained in interview skills by age 16 had been unemployed for 0.8 months longer by the age of 26 relative to comparable peers who were**	No significant associations found	Overall, students who were trained in interview skills by age 16 had a 0.3 point higher life satisfaction, in a 0-10 point scale, at the age of 26 relative to comparable peers who were not***
		LSYPE			
	United States	NLSY97			
		ELS			
	Uruguay	PIS03-UYLS			

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01
Key for symbols:

No significant association found
Statistically significant association found in the overall sample

Sources:

LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683. University of London. UCL Social Research Institute. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk.

Applying for jobs skills development activities and adult employment outcomes

Receiving training for developing skills related with applying to jobs is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in United Kingdom (BCS70). Individuals who felt they had working knowledge of completing job application forms by age 16 experienced an average of 1.5 months less unemployment by the age of 26 compared with those who did not have this knowledge. In addition, individuals who had working knowledge of cover letters by age 16 experienced an average of 1.7 months less unemployment by the age of 26 compared to those not did not have this knowledge.

Receiving training for developing skills related with applying to jobs is significantly associated with higher earnings if in full-time work in the overall sample in Canada. Individuals who had been taught how to write a CV by age 15 earned 4% more at age 30 compared to those who had not.

Receiving training for developing skills related with applying for jobs is significantly associated with higher career satisfaction in the overall samples in Australia and United Kingdom (BCS70). In Australia, individuals who learnt how to apply for jobs at school at ages 15/16 had a 0.28 point increase in the 0-10 point career satisfaction scale at age 25/26 compared to those who had not. In the United Kingdom (BCS70), individuals who had working knowledge of application forms by age 16 had 0.2 points higher life satisfaction, in a 0-10 point scale, compared with those who did not. In addition, individuals who had working knowledge of cover letters by age 16 scored 0.4 points more in a 0-10 life satisfaction scale, compared with those who did not.

Interviewing for jobs skills development activities and adult employment outcomes

Not receiving training for developing skills related to interviewing for jobs is significantly associated with an increased likelihood of being NEET in young adulthood in the overall sample in United Kingdom (BCS70). Individuals who had not received training in interview skills by age 16 had been unemployed for 0.8 months longer by the age of 26 compared to those who did.

Receiving training for developing skills related to interviewing for jobs is significantly associated with higher earnings if in full-time work in the overall sample in Canada. Individuals who had been taught how to prepare for an interview by age 15 earned 5% more at age 30 relative to comparable peers who had not.

Receiving training for developing skills related with applying to jobs is significantly associated with higher career satisfaction in the overall samples in United Kingdom (BCS70). Individuals who had received training in interview skills by age 16 had a 0.3 point higher life satisfaction in a 0-10 point scale by the age of 26, compared to those who did not.

Occupationally-focused short programmes

Occupationally-focused short programmes and their relationship with adult employment outcomes

Occupationally-focused short programmes refer to short-duration programmes of study that take place within general programmes of education and are designed to provide students with insight into specific occupations or economic areas. This definition distinguishes such courses from school-based vocational education and training (Mann, Denis and Percy, 2020[2]; Hughes, 2016[11]).

These kinds of programmes are common in Australia, Canada, and the United States. In Australia, a majority of schools offer young people between the ages of 16 and 18 the opportunity to study such provision (Education Council, 2014[48]). In the United States, such programmes expanded particularly during the 1990s, and by 2002, 60% of young people undertook at least one career exploratory course of study within their High School curricula (Visher, 2004[49]).

Based on "Career Ready?" 17 longitudinal studies from Australia and the United States that looked for evidence of relationships between occupationally-focused short programmes and adult employment outcomes are identified. Fourteen of them found a relationship in a significant part of the population, even after accounting for controls (sometimes this relationship was only found in certain subgroups) (Mann, Denis and Percy, 2020[2]). More details on these studies can be found in Table A A.15 in the Annex A.

How occupationally-focused short programmes are measured in this paper

Information on occupationally-focused short programmes was available in two of the datasets: Canada and United States (ELS). In each case the question referred to the specific name these courses have in each context. The distribution varied between the two datasets, with 10% of the Canadian students and 11% of the students in United States (ELS) saying they had participated in such courses.

For more information on how the questions were asked in each questionnaire, see Table A A.8 in the Annex A. Information on the distribution of responses for each dataset is available in Table A A.16 in the Annex A.

What the new data adds to the knowledge on occupationally-focused short programmes

Table 3.6. Occupationally-focused short programmes and adult employment outcomes

Country and Dataset		Occupationally focused short programmes		
		NEET (not being in education, employment or training)	Earnings (full-time)[1]	Career satisfaction[2]
Australia	LSAY			
Canada	YITS	Overall, students who had taken a school course with employer engagement by age 15 were 6 percentage points less likely to be NEET at 25 relative to comparable peers who had not***	Overall, students who had taken a school course with employer engagement by age 15 earned 3% more annually at age 30 relative to comparable peers who had not*	No significant association found
China	CFPS			
Germany	NEPS			
Korea	KELS2005			
United Kingdom	BCS70			
	LSYPE			
United States	NLSY97			
	ELS	No significant association found	No significant association found	Overall, students who were in 'Cooperative Education' at age 15 were more likely to be job satisfied at 25 than those who were not in 'Cooperative Education'
Uruguay	PIS03-UYLS			

1. Some datasets asked about total earnings, others about earnings of the full-time job

2. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 measured life satisfaction rather than career satisfaction.
Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01
Key for symbols:
🔇 No significant association found
👥 Statistically significant association found in the overall sample

Sources:
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002. Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021from http://nces.ed.gov/pubsearch

Occupationally-focused short programmes and NEET (not being in education, employment or training)

Having participated in occupationally-focused short programmes is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Canada. Individuals who had taken these courses by age 15 were 6% less likely to be NEET at 25 than those who did not.

Occupationally-focused short programmes and adult earnings

In addition, having participated in occupationally-focused short programmes is significantly associated with higher earnings if in full-time work in the overall sample in Canada. Individuals who had taken these courses by age 15 earned 3% more at age 30 than those who did not.

Occupationally-focused short programmes and career satisfaction

Having participated in occupationally-focused short programmes is significantly associated with higher career satisfaction in the overall sample in United States (ELS). Individuals who participated in occupationally-focused short programmes at age 15 were more likely to be job satisfied at 25 compared to those who did not[7].

[7] The association between instrumental motivation and "job satisfaction" for the ELS dataset is reported only qualitatively as the Wald test used to predict significance of input variables cannot be converted into an effect size.

4 Experiencing the future

First-hand experiences of the workplace such as part-time work, work placements and volunteering can help young people imagine their possible futures in work, confirm or contest their plans and provide them with an opportunity to develop their capacity to aspire. These experiences also allow them to develop the technical and social skills that employers seek (Mann, Denis and Percy, 2020[2]), to develop their own social capital (developing networks among people beyond teachers and family members who can ultimately prove helpful to students through their transitions), including contacts who can provide advice and guidance as well as practical help by providing recommendations, references or even employment itself (Hensvik, 2013[50]).

Significant relationships have been found in PISA 2018 data between young people's experience of workplaces and their confidence in adapting to unfamiliar situations as well as with belief in a growth mind-set (Mann, Denis and Percy, 2020[2]) – the view that someone's ability or intelligence can develop over time (OECD, 2019[5]).

Hence, it is not surprising that having these workplace experiences has been associated with better employment and earnings outcomes, as is described in the following sections. However, there are important gaps in the existing data regarding the duration and intensity of workplace engagement and student perceptions of the utility of their experience (Mann, Denis and Percy, 2020[2]).

Analysis of PISA 2018 highlights considerable variation between countries regarding the extent to which young people participate in different forms of workplace activities. Together with the economic community, effective schools and education systems can encourage, enable and/or require young people to secure direct experience of workplaces (Mann, Denis and Percy, 2020[2]).

Part-time work

Part-time work and its relationship with adult employment outcomes

PISA 2018 data show that there is considerable variation between countries in the extent to which teenagers combine full-time secondary education with part-time work. The likelihood of teenagers in full-time secondary education working part-time is strongly linked to the country in which they live. Participation in the most formal type of part-time work is strongly associated with delivery of in-school career guidance (Mann, Denis and Percy, 2020[2]).

Teenage part-time workers tend to be more likely to be boys, lower performers (on the PISA assessments) and from rural schools. In general, in OECD countries there is a relationship between social disadvantage and teenage part-time work (Bachman, 2013[51]; Conlon, Patrignani and Mantovani, 2015[52]; Greene, 2012[53]; Morisi, 2010[54]), but this is not always the case.

Associations have been found in the research literature between part-time working and greater reflection and increased thoughtfulness in career planning and exploration (Creed, 2003[55]; Smith and Green, 2005[56]); growth in personal confidence (McKechnie, 2010[57]; Simpson, 2018[58]); and greater confidence among students that their employment experiences were preparing them well for adult life (Hobbs, 2007[59]).

Building on the OECD working paper "Career Ready?", 20 existing studies based on longitudinal surveys in Australia, the United Kingdom and the United States that explored relationships between teenage part-time paid work and later adult outcomes related to employment are identified. Seventeen of the studies find clear evidence of young

people achieving better than anticipated economic outcomes in early adulthood linked to school-age exposure to the labour market[8] (Mann, Denis and Percy, 2020[2]). More details on these studies and their results can be found in Table A A.17 in Annex A.

A number of studies suggest that excessive working hours risk damaging academic prospects, identifying more than 5-15 working hours a week as a potential concern (Payne, 2003[60]; Stern, 2001[61]; Robinson, 1999[62]).

Studies from the United States and United Kingdom show that teenage part-time work alongside full-time secondary education has declined substantially over the last generation (Bauer, 2019[63]; Conlon, Patrignani and Mantovani, 2015[52]). Where part-time working has reduced substantially, arguably there is a greater need for schools to enable students to secure the benefits of workplace exposure through school-mediated interventions (Mann, Denis and Percy, 2020[2]).

How part-time work is measured in this paper

Information on part-time work was available in the analyses of seven of the ten datasets, with China, United Kingdom (LSYPE) and Uruguay not having any data available.

Part-time working was measured slightly differently by each survey and in some cases there was more than one question that referred to the concept. In most cases, the data used for the analyses were collected though a closed-ended question that asked if students currently had a job, or if they had had one that year or in the previous year. In the case of United States (ELS), students were asked if they had ever had a part-time job and in the case of the United States (NLSY97) information was gathered on their employment status after their fourteenth birthday. In two cases (Australia and Canada) summer work was explicitly excluded. In some cases, it was explicitly stated that the question referred only to paid work, in others it was not specified. For more information on how this indicator was measured in each dataset, see Table A A.18 in Annex A.

This variable was treated as a dichotomous variable for the analyses.

The distribution of part-time work shows important differences between countries, with 13% of the students declaring to work in Korea to 63% in the United Kingdom (BCS70). Information on the distribution of responses for each dataset is available in Table A A.19 in Annex A.

[8] However, this relationship is not found with summer jobs in the United States. This can be due to more complex samples that typically look at the experiences of participants aged 14-25 or due to their duration: longitudinal analyses of the long-term impacts of part-time employment tend to highlight greater financial returns in relation to steady working over a longer duration (Anlezark and Lim, 2011[100]; Light, 1999[115]; Staff, 2008[148])

What the new data adds to the knowledge on part-time work

Table 4.1. Part-time work and adult employment outcomes

Country and database		Part-time work		
		NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Australia	LSAY		No significant association found	No significant association found
Canada	YITS	Overall, teenagers who worked at age 15 were 4 percentage points less likely to be NEET at 25 than comparable peers who did not work part-time at age 15***	Overall, teenagers who worked part-time age 15 earned 5% more in annual earnings at age 30 compared to those who did not work part-time age 15***	No significant association found
China	CFPS			
Germany	NEPS	No significant association found	No significant association found	Overall, teenagers who worked part-time during school at age 14-16 reported 0.18 less points on a 0-10 work satisfaction scale at age 23-25 than comparable peers not having worked part-time age 14-16*
Korea	KELS2005	No significant association found	No significant association found	No significant association found
United Kingdom	BCS70[1]	Overall, teenagers who had experience of paid work by age 16, experienced 0.9 fewer months of longest unemployment duration by age 26 relative to comparable peers who reported not having experience of paid work by age 16***	Overall, teenagers who had experience of paid work by age 16 earned 6% more in weekly wages at age 26 relative to comparable peers who did not by age 16***	No significant association found
	LSYPE			
United States	NLSY97	Overall, teenagers who did not work part-time at ages 14-16 were 1.28 times more likely to be NEET ages 27-28 than comparable peers who did work part-time ages 14-16*	Overall, teenagers who worked part-time at ages 14-16 earned 6% more annually at ages 27-28 than comparable peers who did not work part-time ages 14-16*	No significant association found
	ELS	No significant associations found	No significant associations found	No significant associations found
Uruguay	PIS03-UYLS			

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found
Statistically significant association found in the overall sample
Statistically significant association found in the opposite direction to what was expected

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];

KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원, available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683. University of London, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
NLSY97: (Bureau of Labor Statistics, US Department of Labor, 2019[64]), National Longitudinal Survey of Youth 1979 cohort, 1979-2016 (rounds 1-27). Produced and distributed by the Center for Human Resource Research (CHRR), The Ohio State University. Columbus, OH: 2019;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002. Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch

Association between part-time work and NEET (not being in education, employment or training)

Part-time work was significantly associated with a reduced likelihood of being NEET later on in the overall sample in Canada, in the United Kingdom (BCS70) and in the United States (NLSY97). In Canada, individuals who worked part-time at age 15 were 4 percentage points less likely to be NEET at age 25 than those who did not work part-time. In the United Kingdom (BCS70), individuals who had experience of paid work by age 16, experienced 0.9 fewer months of longest unemployment duration by age 26 compared with those who did not. And in the United States (NLSY97), individuals who did not work part-time at ages 14-16 were 1.28 times more likely to be NEET ages 27-28 than those who did work part-time.

Association between part-time work and adult earnings

Part-time work was significantly associated with increased earnings in the overall sample in Canada, in the United Kingdom (BCS70) and in the United States (NLSY97). In Canada, teenagers who worked part-time age 15 earned 5% more at age 30 than those who did not work part-time. In the United Kingdom (BCS70), teenagers who had experience of paid work by age 16 earned 6% more at age 26 than those who had no experience of paid work. And in the United States (NLSY97), teenagers who worked part-time at ages 14-15 earned 6% more at ages 27-28 than those who did not work part-time.

Association between part-time work and career satisfaction

Part-time work was significantly associated with lower career satisfaction in Germany. In the overall sample, individuals who worked part-time during school at age 14-16 reported 0.18 fewer points on a 0-10 work satisfaction scale at age 23-25 than those who did not work. As indicated in the table by the magnifying glass, this association is in the opposite direction to that which was expected.

Work placements

Work placements and their relationship with adult employment outcomes

This section refers to short work placements[9] typically arranged by a school within wider programmes of general or vocational education.

Within programmes of general education, work placements typically last one or two weeks and have the objective of exploring the suitability of a potential career and/or gaining exposure to the workplace. These are common in many countries including Australia, Canada, France and the United Kingdom. Placements within programmes of

[9] Work placements are sometimes described as internships. The label "work placements" is used in this paper to reflect terminology used in English-language educational institutions.

Vocational Education and Training (VET) are commonly of longer duration, and more typically designed to provide a direct experience of the type of work the student is preparing for within their programme of study (Musset, 2019[65]).

PISA refers to such work placements as internships. PISA 2018 data shows that participation levels in internships vary considerably across countries, with participation noticeably high in countries with strong systems of VET. Fifteen-year-olds undertaking internships/work placements are in general more likely to be enrolled on programmes of VET than general secondary education (Musset and Kureková Mýtna, 2018[8]). Across participating OECD countries in PISA 2018, internships are more common among boys and lower performers (coherent with the profile of typical VET learners). Young people enrolled in secondary schools that do not provide career guidance are less likely to take part in internships (Mann, Denis and Percy, 2020[2]).

A review of international evidence in relationship to work placements undertaken within both vocational and general education programmes, finds consistent evidence that placements are associated with better employment outcomes in the early labour market (Musset and Kureková Mýtna, 2018[8]). However, there are very few studies of the relationship between participation in work experience placements using national longitudinal databases (Buzzeo, 2017[66]; Mann and Percy, 2013[43]). Of 14 publications in the 2018 literature review undertaken by (Mann, Rehill and Kashefpakdel, 2018[46]) which assess economic and educational impact of provision which include work placements, only one provides a longitudinal assessment that isolates the exclusive impact of short-duration internships: (Mann et al., 2017[45]) who finds that British students who undertook placements were less likely to be NEET as adults. More details on this study can be found in Table A A.20 in the Annex A. Other assessments tend to combine work placements with other activities such as mentoring or occupationally-focused short programmes.

There is thus a need for studies which isolate the specific intervention of the work placement on long-term outcomes.

"Career Ready?" adds to the research literature by analysing the long-term impacts of short work experience placements in the United Kingdom, making use of the British Cohort Study. Analysis focused on teenage participation in school-managed work experience placements that were described as "useful" by teenage participants. In general, such placements were not associated with improved economic outcomes at age 26, but were linked with higher life satisfaction. However, for key subsamples (notably for women from more disadvantaged socio-economic backgrounds and without experience of part-time work) there were positive significant relationships in terms of higher later earnings. The findings suggest that teenage participation in work-related activities can serve to have a compensatory effect and that school-mediated work placements can be seen as providing additional value for young people without experience of paid part-time work (Mann, Denis and Percy, 2020[2]).

From another perspective, (Galliot, 2015[18]) finds a significant relationship between greater career certainty and participation in voluntary work experience placements.

How work placements are measured in this paper

Information on work placements was available in the analyses of four of the ten datasets: Australia, Germany, United Kingdom (BCS70) and United States (ELS).

The data from Australia, United Kingdom (BCS70) and United States (ELS) that was used for the analyses was collected though a closed-ended question that asked if students had had a work placement co-ordinated by their school, or as part of their schooling. The timeframe varied between during the year that the questionnaire was completed (Australia and United Kingdom BCS70) and during high school up to that point (United States ELS). In Germany, the question asked if students had undertaken an internship of several days in a company between the ages of 15 and 18 and did not state if it had been co-ordinated by their school. For more information on how this indicator was measured in each dataset, see Table A A.18 in Annex A.

This variable was treated as a dichotomous variable for the analyses.

The distribution of work placements shows important differences between countries, with 77% of the students having participated in them in Australia, 82% in Germany, 33% in the United Kingdom (BCS70) and 5%[10] in the United States (ELS). Information on the distribution of responses for each dataset is available in Table A A.19 in Annex A.

What the new data adds to the knowledge on work placements

Table 4.2. Work placements and adult employment outcomes

Country and database		Work placements		
		NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Australia	LSAY		No significant association found	No significant association found
Canada	YITS			
China	CFPS			
Germany	NEPS	Overall, teenagers having done an internship of several days in a company by age 18 are 0.24 times less likely to be NEET at age 23-25 than comparable peers not having done an internship by age 18*	No significant association found	No significant association found
Korea	KELS2005			
United Kingdom	BCS70[1]	No significant association found	No significant association found	No significant association found
	LSYPE			
United States	NLSY97			
	ELS	No significant association found	No significant association found	No significant association found
Uruguay	PIS03-UYLS			

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:
No significant association found
Statistically significant association found in the overall sample
Statistically significant association found in the opposite direction to what was expected

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];

[10] Due to the large sample size, 5% of the sample corresponds to over 600 respondents.

KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do.[accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683. University of London, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002 Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch

Association between work placements and NEET (not being in education, employment or training)

Work placements were significantly associated with a decreased likelihood of being NEET later on in Germany. In Germany, in the overall sample, individuals who had undertaken an internship of several days in a company by age 18 are 0.24 times less likely to be NEET at age 23-25 than those who did not do this internship.

Association between work placements and adult earnings

No significant associations were found between work placements and earnings in the overall samples of any of the datasets with available data.

However, in Germany, taking an additional voluntary internship at age 15 (13% of all students) is associated with 10% additional earnings at age 23-25 (p-value <0.5; SE 2.49).

Association between work placements and career satisfaction

No significant associations were found between work and career satisfaction in Germany. However, in Germany, taking an additional voluntary internship at age 15 (13% of all students) is associated with a 0.16 point increase on the 0 to 10 job satisfaction scale at age 23-25 (p-value <0.5; SE 2.35).

Volunteering

Volunteering and its relationship with adult employment outcomes

A popular motivation for young volunteers is to develop skills of use to later employment and many participate as volunteers in activities which people are paid to undertake as adults (Simonson, 2017[67]; TNS, 2018[68]; Volunteer Development Scotland, 2010[69]; Walsh, 2015[70]).

PISA 2018 data shows that across participating OECD countries, an average of 48% of students had undertaken some volunteering. The extent of volunteering varied considerably between countries. Volunteers were significantly more likely to be from higher socio-economic status (SES) groups, lower performers on the PISA tests and inhabitants of rural communities. As is the case with internships/work placements, young people are less likely to volunteer if they attend a school that offers no career guidance (Mann, Denis and Percy, 2020[2]).

Until recently, few longitudinal studies had explored the experiences of young people who volunteer while still in full-time secondary education. A series of new reviews, which control for the impact of personal characteristics, social circumstances and educational attainment on outcomes has found significant evidence of impacts on the well-being of young adults in their twenties.

"Career Ready?" identified four existing studies based on longitudinal surveys in Australia and the United States that explored relationships between teenage volunteering and later adult outcomes related to employment. All of them find evidence of young people achieving better outcomes linked to volunteering (Mann, Denis and Percy, 2020[2]). More details on these studies and their results can be found in Table A A.21 in Annex A.

There is also evidence that young people who volunteer believe that the experience helped to develop skills which would be of ultimate value in employment and often mention improvements in self-confidence, self-esteem, self-organisation, communication and effectiveness in working with others in unfamiliar situations (National Youth Agency, 2008[71]; Ockenden, 2014[72]; Walsh, 2015[70]; Sikora and Green, 2020[73]). However, not all volunteering opportunities provide the same opportunities to develop these work-relevant skills (Sikora and Green, 2020[73]). It is also noteworthy that PISA 2018 data show statistically significant relationships between participation in volunteering and lower than expected levels of career uncertainty (Mann, Denis and Percy, 2020[2]).

How volunteering is measured in this paper

Information on volunteering was available in the analyses of five of the ten datasets: Australia, Canada, Germany, United Kingdom (BCS70) and United States (ELS).

In Australia, Canada, United Kingdom (BCS70) and United States (ELS) the data on volunteering was collected though questions that referred to participation in volunteer activities or volunteer work; in Germany, it also included (in the same question) participation in clubs or groups. Some of the questions in these surveys focused on current volunteering, others on having ever volunteered. For more information on how this indicator was measured in each dataset, see Table A A.18 in Annex A.

This variable was treated as a dichotomous variable for the analyses. In Canada, the categories reported in this paper are those who volunteered 4-10 times in a year compared to those who never volunteered. In all the other datasets, the categories were having volunteered and not having volunteered.

The distribution of volunteering varied between countries, with 14% of the students declaring to have volunteered 4-10 times in the year in Canada to 52% declaring to have ever volunteered in the United Kingdom (BCS70). These differences may be partly due to the different timeframes. In Germany, 87% of the students declared to be participating in a club our group. Information on the distribution of responses for each dataset is available in Table A A.19 in Annex A.

What the new data adds to the knowledge on volunteering

Table 4.3. Volunteering and adult employment outcomes

Country and database		Volunteering		
		NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Australia	LSAY		Overall, teenagers who volunteered at age 15 earned 8% more hourly at age 26 than comparable peers who did not volunteer at age 15**	Overall, teenagers who volunteered at age 15 reported 0.22 points higher on a 0-10 work satisfaction scale at 26 relative to comparable peers who did not volunteer at age 15**
Canada	YITS	No significant association found	Overall, teenagers who volunteered 4-10 times in the year at age 15, earned 4% more in annual earnings at age 30 relative to comparable peers who never volunteered at age 15**	No significant association found
China	CFPS			
Germany	NEPS[4]	Overall, teenagers who were part of a group or club outside of school age 14-16 are 0.41 times less likely to be NEET at age 23-25 than comparable peers who were not part of a group or club outside of school age 14-16***	No significant association found	No significant association found
Korea	KELS2005			
United Kingdom	BCS70[1]	Overall, teenagers who volunteered by age 16, experienced 0.6 fewer months of longest unemployment duration by age 26 than comparable peers who reported not having experience of volunteering by age 16***	No significant association found	Overall, teenagers who volunteered by age 16 reported 0.1 higher points on a 0-10 life satisfaction scale at 26 relative to comparable peers who did not volunteer by age 16**
	LSYPE			
United States	NLSY97			
	ELS	No significant association found	No significant association found	No significant association found
Uruguay	PIS03-UYLS			

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.
4 In Germany, the variable groups together forms of volunteering and other extra-curriculars such as fan and theatre clubs.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01
Key for symbols:
No significant association found
Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;

ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002 Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch

Association between volunteering and NEET (not being in education, employment or training)

Volunteering was significantly associated with a reduced likelihood of being NEET later on in the overall sample in Germany and the United Kingdom (BCS70). In Germany, individuals who at age 14-16 were part of a group or club outside of school (including, typical volunteering activities but not exclusively so) were approximately 0.41 times less likely to be NEET at age 23-25 than those who were not. And in the United Kingdom (BCS70) teenagers who by age 16 had volunteered, experienced 0.6 fewer months of longest unemployment duration by age 26 than those who had not volunteered.

Association between volunteering and adult earnings

Volunteering was significantly associated with increased earnings in Australia and Canada in the overall sample. In Australia, teenagers who volunteered at age 15 earned 8% more at age 26 than those who did not volunteer. And in Canada, teenagers who volunteered 4 to 10 times in the year at age 15, earned 4% more at age 30 than those who did not volunteer.

Association between volunteering and career satisfaction

Volunteering was significantly associated with a higher career satisfaction in the overall sample in Australia and United Kingdom (BCS70). In Australia, individuals who volunteered at age 15 scored 0.22 points higher on a 0 to 10 work satisfaction scale at 26 compared with those who did not volunteer. And the United Kingdom (BCS70), individuals who had volunteered by age 16 reported 0.1 higher points on a 0-10 life satisfaction scale at age 26, compared with those who had not volunteered.

Qualifying the indicators related with experiencing the future

As mentioned earlier, while there are many studies that look for –and find- evidence of teenage workplace experiences being associated with better employment and earnings outcomes later on, there are important gaps in the existing data regarding the duration and intensity of workplace engagement as well as of student perceptions of the utility of their experience (Mann, Denis and Percy, 2020[2]). Some of the datasets analysed in this paper include information that allow researchers to explore this relationship. This section presents some indicators that allow an investigation of the association between perceived usefulness of the workplace experience, frequency of the work experience, and reasons for engaging with the work experience (if instrumental motivation was a reason) with work-related outcomes in adulthood.

Perceived usefulness of experience of work

Information on the perceived usefulness of part-time work was available in two of the datasets: Germany and United Kingdom (BCS70). In Germany, the data are based on a question that asked if they had gained experience in their part-time job that they may need later in employment after completing education, and 24% of the students answered “it does rather apply" or "does completely apply". In United Kingdom (BCS70), the question asked whether students found the opportunity of working part time useful in their career planning, and 77% of the students agreed with this statement. These variables were treated as dichotomous variables. For more information on how this indicator was measured in each dataset, see Table A A.22 in Annex A.

Table 4.4. Perceived usefulness of working and adult labour outcomes

Country and database		Perceived usefulness of experience of work		
		NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
United Kingdom	BCS70[1]	🔇 No significant association found	🔇 No significant association found	🔇 No significant association found
Germany	NEPS	👥 Overall, teenagers that report at age 14-16 having gained experience during their part-time job(s) which they declare useful for their future career were 0.4 times less likely to be NEET at age 23-25 than comparable peers who did not report having gained such experience during their part-time job(s) at age 14-16*	🔇 No significant association found	🔇 No significant association found

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:
🔇 No significant association found
👥 Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
CFPS: (Institute of Social Science Survey, Peking University, 2015[74]), China Family Panel Studies (CFPS), https://doi.org/10.18170/DVN/45LCSO, Peking University Open Research Data Platform, V39;
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002 Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch;
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];

In Germany, perceiving part-time work was useful was significantly associated with a reduced likelihood of being NEET later on the overall sample, with individuals who reported as teenagers to have gained experience in their part-time jobs that they may need later on being 0.4 times less likely to be NEET at age 23-25 than teenagers who did not report this.

No associations were found in the available data between perceiving part-time work was useful and earning or career satisfaction in the overall samples. The analyses for United Kingdom (BCS70) focus on youth at age 25. However, in United Kingdom (BCS70), describing work experience placements undertaken by age 16 as useful is associated with 12% higher wages at age 34 (p-value <0,1; SE 0.06).

Frequency of working or volunteering

Information on the frequency of working or volunteering was available in four of the datasets: Germany, United Kingdom (BCS70), United States (NLSY97) and United States (ELS). The latter had two available variables. The questions for collecting data on this indicator and the analyses conducted were approached differently in each dataset. In Germany, the information available relates to whether the part-time job was on a regular basis (19% of all students answered yes) or not. In the United Kingdom (BCS70), an index was created that measured the frequency of volunteering in a 0 to 8 scale (the average of the whole sample was 0.8). In the United States (NLSY97), the available data identifies how many hours were usually worked, distinguishing between those who worked more than 51 hours over the four year period between the ages of 14 to 19 (55% of all students) and those who worked fewer than 51 hours over the same period. In the United States (ELS), one question focused on hours normally worked a week, distinguishing between those who more than 10 hours a week (56% of the students who worked) and those who worked less. The ELS survey also asked students how often they volunteered, with four possible responses. This paper compares the categories "rarely or never" (68% of all students) and "once or twice a week" (10% of all students). Information about the distribution of responses is available in Table A A.22 in Annex A.

Table 4.5. Frequency of working or volunteering and adult employment outcomes

Country and database		Frequency of working or volunteering		
		NEET (not being in education, employment or training)	Earnings (full-time)[1]	Career satisfaction[2]
Germany	NEPS	Overall, teenagers who had a part-time job on a regular basis ages 14-16 were 1.47 times more likely to be NEET at age 23-25 than comparable peers who did not report having a part-time job on a regular basis ages 14-16**	No significant association found	No significant association found
United Kingdom	BCS70[3]	Overall, a one point increase in a 0-8 index capturing teenager's reported volunteering frequency up to age 16 was associated with 0.2 fewer months of longest unemployment duration by age 26, relative to comparable peers*.	No significant association found	Overall, a one point increase in a 0-8 index capturing teenager's reported volunteering frequency up to age 16 was associated with a 0.1 higher average life satisfaction at age 26 on a 0-10 scale, relative to comparable peers**
United States	NLSY97	Overall, teenagers who worked less than 51 weeks ages 14-19 were 1.36 times more likely to be NEET ages 27-28 than comparable peers who worked more than 51 weeks ages 14-19*	No significant association found	Overall, teenagers who worked more than 51 weeks ages 14-19 reported 0.08 points higher on a 0-5 job satisfaction scale at ages 27-28 relative to comparable peers who worked less than 51 weeks ages 14-19*
United States	ELS[4]	No significant association found	No significant association found	No significant association found
		No significant association found	No significant association found	No significant association found

1. Some datasets asked about total earnings, others about earnings of the full-time job
2. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.
3. Data only reported on employment and not NEET
4. For ELS, two variables related to the frequency of working or volunteering were analysed: "How many hours do you usually work in a week" and "How often do you volunteer or perform community service".

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found
Statistically significant association found in the overall sample
Statistically significant association found in the opposite direction to what was expected

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
CFPS: (Institute of Social Science Survey, Peking University, 2015[74]), "China Family Panel Studies (CFPS)", https://doi.org/10.18170/DVN/45LCSO, Peking University Open Research Data Platform, V39;
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002 Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch;
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];

An increased frequency of working or volunteering was significantly associated in the overall sample with a reduced likelihood of being NEET later on in the United Kingdom (BCS70) and United States (NLSY97), and with an increased likelihood of being NEET in in Germany. In the United Kingdom (BCS70), a one point increase in a 0 to 8 index capturing teenagers' reported volunteering frequency up to age 16 was associated with 0.2 fewer months of longest unemployment duration by age 26. In the United States (NLSY97), individuals who worked fewer than 51 weeks as teenagers were 1.36 times more likely to be NEET at ages 27-28 than comparable peers who worked more than 51 weeks. While in Germany, overall, teenagers who had a part-time job on a regular basis at ages 14 to 16 were 1.47 times more likely to be NEET at age 23 to 25 than those who did not have a regular job.

No significant associations were found between the frequency of working or volunteering and earnings (if in full-time employment).

An increased frequency of working or volunteering was significantly associated with higher career satisfaction in the overall sample of United Kingdom (BCS70) and the United States (NLSY97). In the United Kingdom (BCS70), a one point increase in a 0-8 index capturing teenager's reported volunteering frequency up to age 16 was associated with a 0.1 higher average life satisfaction at age 26 on a 0-10 scale. In the United States (NLSY97), teenagers who worked more than 51 weeks at age 14-19 reported 0.08 points higher on a 0- 5 job satisfaction scale at age 27-28, than those who worked less than 51 weeks at ages 14-19.

Instrumental motivation as a reason for working or volunteering

The analyses of two of the datasets – Australia and Canada – provided information about whether instrumental motivation (thinking the activity would be beneficial for their future) was among the reasons students had for engaging in working or volunteering. While the indicator perceived usefulness of working focuses on whether the actual experience they had with working/volunteering was perceived as useful or not, this indictor focuses on whether thinking the activity would be beneficial for their future work was a reason for choosing to do the activity in the first place. This provides some evidence that students were seeing a link between gathering work/volunteering experience as a teenager and future job-related outcomes, thus it may reflect a more advanced career thinking and planning. The

two indicators may interact, as it is possible that previous or current experiences of work or volunteering have enabled them to see this link.

In Australia, the question used to collect the data asked to what extent (on a Likert scale) did students agree that a reason for choosing to work was because it was the kind of work they expected to do as a career. The degree to which they agreed was treated as a 4 point ordinal with "strongly disagree" coded as 0, "disagree" coded as 0.33, "agree" coded as 0.66 and "strongly agree" coded as 1. This paper reports the comparison between "Strongly disagree" coded as 0 (41% of the students), and "Strongly agree" coded as 1 (4% of the students). In the Canadian dataset, one question identified if wanting to improve their job opportunities was among the main reasons for starting volunteering (22% of the students who volunteered chose this option among the main reasons) and another question asked if wanting to get work experience was among the main reasons for starting to work (55% of the students who worked said this had been a reason). These were treated as dichotomous variables.

Table 4.6. Instrumental motivation as a reason for working or volunteering and adult employment outcomes

Country and database		Instrumental motivation as a reason for working or volunteering		
		NEET (not being in education, employment or training)	Earnings (full-time)[1]	Career satisfaction[2]
Australia	LSAY		Overall, teenagers who strongly agreed that a reason for working was that it was the kind of work they wanted to do as a career at age 15, earned 12% more in annual earnings at age 26 than comparable peers who strongly disagreed that a reason for working was that it was the kind of work they wanted to do as a career**	No significant association found
Canada	YITS	Overall, teenagers who reported wanting to improve their job opportunities as a main reason for their volunteering at age 15 were 4 percentage points less likely to be NEET at age 25 than comparable peers who had not selected it as one of the main reasons for volunteering as teenagers***	Overall, teenagers who reported wanting to improve their job opportunities as a main reason for volunteering at age 15 earned 6% more in annual earnings at age 30 relative to comparable peers who had not selected it as one of the main reasons for volunteering as teenagers at age 15***	No significant association found
		Overall, teenagers who reported wanting work experience as a main reason for working part-time at age 15 were 3 percentage points less likely to become NEET age 25 than comparable peers who did not reported it as one of the main reasons for working part-time at age 15**	Overall, teenagers who reported wanting work experience as a main reason for working part-time at age 15 earned 3% more in annual earnings at age 30 relative to comparable peers who did not reported it as one of the main reasons for working part-time at age 15**	No significant association found

1. Some datasets asked about total earnings, others about earnings of the full-time job
2. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found
Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
CFPS: (Institute of Social Science Survey, Peking University, 2015[74]), "China Family Panel Studies (CFPS)", https://doi.org/10.18170/DVN/45LCSO, Peking University Open Research Data Platform, V39;
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do.[accessed on 20 July 2021];

BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002 Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch;
NEPS (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];

Indicating instrumental motivation as a reason for working or volunteering was significantly associated with a reduced likelihood of being NEET later on in the overall sample in Canada. Teenagers who at age 15 reported wanting to improve their job opportunities as one of the main reasons for their volunteering were 4 percentage points less likely to be NEET at age 25 than comparable peers who had not selected it as one of the main reasons for volunteering. Similarly, in Canada teenagers who at age 15 reported wanting to have work experience as one of the main reasons for working part-time were 3 percentage points less likely to become NEET age 25 than those teenagers who did not.

Both in Australia and in Canada highlighting instrumental motivation as a reason for working or volunteering was significantly associated with increased earnings later on in the overall sample. In Australia, teenagers who strongly agreed that a reason for working was that it was the kind of work they wanted to do as a career at age 15, earned 12% more at age 26 than comparable peers who strongly disagreed that a reason for working was that it was the kind of work they wanted to do as a career. In Canada, teenagers who at age 15 reported wanting to improve their job opportunities as one of the main reasons for volunteering earned 6% more at age 30 compared with their peers who had not selected this it as one of the main reasons.

Similarly, in Canada teenagers at age 15 reported wanting work experience as a main reason for working part-time earned 3% more at age 30 relative to comparable peers who did not report this as one of the main reasons.

There were no significant associations found between mentioning instrumental motivation as a reason to work and career satisfaction.

5 Thinking about the future

National longitudinal studies show that what students think about themselves and their potential futures in work matters. Teenagers who are uncertain, confused, less ambitious, and who do not see the value of school to their future can be expected to do worse as young adults in the labour market than comparable peers (Mann, Denis and Percy, 2020[2]; Covacevich et al., 2021[3]). Teenagers' plans many times do not reflect labour-market demand (Mann et al., 2020[7]). In addition, their aspirations can be narrowed and influenced by social background and it is students from the lowest socio-economic backgrounds and achievement levels who exhibit thinking that generates greatest concern (Mann, Denis and Percy, 2020[2]).

Career certainty

Career certainty and its relationship with adult employment outcomes

Career certainty refers to articulation, as a teenager, of an occupational ambition or career expectation for adult life. It does not require occupational expectations to be fixed, but for a student to have a view on the type of job they envision in adulthood (Mann, Denis and Percy, 2020[2]).

Teenage career uncertainty – the inability as a teenager to name an expected adult occupation – has been associated with adult economic penalties (Mann, Denis and Percy, 2020[2]). Building on the work of "Career Ready?", "Thinking about the future" lists 14 studies based on cohort longitudinal surveys in Australia, Denmark, the United Kingdom, the United States and Switzerland that looked for evidence of relationships between teenage career uncertainty and adult employment outcomes. Twelve out of the 14 found a relationship in a significant part of the population (sometimes this relationship was only found in certain subgroups), after accounting for statistical controls (Mann, Denis and Percy, 2020[2]; Covacevich et al., 2021[3]). More details on these studies can be found in Table A A.23 in Annex A.

Whether certainty (and ambition) work as indicators of adult labour outcomes may be linked to the age of the students or to the rigidity of education systems. For example, Dicks, Levels, and van der Velden (Dicks, Levels and van der Velden, 2020[75]) did not find a relationship between being uncertain or misaligned and being NEET later on in the Netherlands. They used data from students in their first year of secondary school (age 11-12), younger than other studies that typically look at the attitudes of students aged 15 to 16. Indeed, in Schoon's study of a British dataset that focuses on 13-14-year-olds share the same risk of becoming NEET at ages 16/17 as their more certain peers. The authors of the Dutch study argue that in the Netherlands, with its strong system of vocational education and training, uncertainty may not be so relevant to have clear post-secondary education and/or career plans because most students will stream through their assigned trajectory. This hypothesis receives some support from OECD analysis. Datasets in Denmark and Switzerland reviewed in "Thinking about the future" find that it was only among academically higher performing youth that the negative relationship with uncertainty was statistically significant.

In PISA 2018, the most recent PISA cycle, on average 25% of students across OECD countries were uncertain. PISA data shows that uncertainty is not evenly distributed among students, with disadvantaged and low-performing youth the most likely to be uncertain (Mann, Denis and Percy, 2020[2]; OECD, 2019[6]).

How career certainty is measured in this paper

Information on career certainty was available in the analyses of six of the 10 datasets, with Germany, United States (NLSY97), United Kingdom (LSYPE) and Uruguay not having any data available.

Career certainty was measured slightly differently by each survey. In most cases it was based on an open-ended question where students were asked to name the job, work or occupation they expected to have when they were 30 or about 30 years old (Australia, Canada and United States ELS), when they grew up (China), or after finishing full-time education (United Kingdom LSYPE and BCS70). The responses were considered to indicate career certainty when the student could name a job. In some cases it was required that the job was described in enough detail for it to be classified using a directory of occupations. In Korea, the same question was asked, but it was a closed-ended question and referred to when they were in "their early thirties". In this case, the responses were considered to indicate career certainty when the student selected a job or job category. For more information on how this indicator was measured in each dataset, see Table A A.25 in the Annex A.

This variable was treated as a dichotomous variable for the analyses.

The majority of the students were career certain, ranging from approximately 54% in United States (ELS) to approximately 94% in Canada. Information on the distribution of responses for each dataset is available in Table A A.26 in Annex A.

What the new data adds to the knowledge on career certainty

Table 5.1. Career certainty and adult employment outcomes

Country and database		Career Certainty		
		NEET (not being in education, employment or training)	Earnings (full-time)[3]	Career satisfaction[4]
Australia	LSAY		No significant association found	No significant association found
Canada	YITS	Overall, students who were career certain at 15 were 6 percentage points less likely to be NEET at 25 than those who were not career certain*	Overall, students who were career certain at 15 earned 6% more per annum when they were 30 compared to those who were career uncertain**	No significant association found
China	CFPS	No significant association found	No significant association found	No significant association found
Germany	NEPS			
Korea	KELS2005[1]	No significant association found	Overall, students who were career certain at 15/16 earned 4% less monthly at 25/26 compared to average earnings**	No significant association found
United Kingdom	BCS70[2]	No significant association found	No significant association found	Overall, students who were career certain at 16 had an increase of 0.12 points in the 0-10 life satisfaction scale at 26 relative to comparable peers who were uncertain*
	LSYPE			
United States	NLSY97			
	ELS	No significant association found	Overall, students who were career certain at 15 earned 11% more per annum at the age of 25 compared to average earnings**	No significant association found
Uruguay	PIS03-UYLS			

1. Career certainty was derived from a closed question in the KELS2005 dataset where respondents were asked to select an option from a range of options provided
2. Data only reported on employment and not NEET
3. Some datasets asked about total earnings, others about earnings of the full-time job
4. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables

* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found
Statistically significant association found in the overall sample
Statistically significant association found in the opposite direction to what was expected

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
CFPS: (Institute of Social Science Survey, Peking University, 2015[74]), "China Family Panel Studies (CFPS)", https://doi.org/10.18170/DVN/45LCSO, Peking University Open Research Data Platform, V39;
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원., available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002. Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch;

Association between career certainty and NEET (not being in education, employment or training)

Teenage career certainty is significantly associated with a reduced likelihood of being NEET later on in Canada's overall sample, with youth who were certain as teenagers being 6 percentage points less likely to be NEET at age 25 than youth who were uncertain as teenagers.

Association between career certainty and adult earnings

Teenage career certainty is significantly associated with higher earnings in the overall sample in Canada and the United States (ELS). In Canada, individuals who were career certain as teenagers earned 6% more at age 30 than those who were not career certain as teenagers. And in the United States (ELS), individuals who were certain as teenagers earned 11% more than the average earnings at age 25.

On the other hand, teenage career certainty is significantly associated with lower earnings in the overall sample in Korea: young workers who were certain as teenagers earned 4% less at age 25 than the average earnings for the whole cohort at age 25. As indicated in the table by the magnifying glass, this association is in the opposite direction to that expected, as it was expected that being career certain as a teenager would be associated with having better labour outcomes – as is the case in Canada and the United States (ELS) in this analysis of new datasets.

Association between career certainty and career satisfaction

Teenage career certainty is significantly associated with higher life satisfaction in the overall sample in the United Kingdom (BCS70). Overall, individuals who were career certain as teenagers scored 0.12 points more in the 0- 10 life satisfaction scale at age 26, than those who were uncertain as teenagers.

Career ambition

Career ambition and its relationship with adult employment outcomes

Career ambition, defined as the expectation of working in a job classified as managerial or professional, has been associated with positive adult employment outcomes such as higher earnings, reduced unemployment, and greater career satisfaction, even after controlling for background variables (Green et al., 2017[76]; Schoon and Polek, 2011[77]). Building on the work of "Career Ready?", "Thinking about the future" identified 14 studies based on longitudinal cohort studies in Australia, Denmark, Switzerland, the United Kingdom and the United States that looked for evidence of relationships between teenage career ambition and adult employment outcomes. Thirteen out of the 14 found a positive relationship (sometimes this relationship was only found in certain subgroups), even after accounting for controls that included academic achievement (Mann, Denis and Percy, 2020[2]; Covacevich et al., 2021[3]). More details on these studies can be found in Table A A.28

Table A A.28 in Annex A.

PISA 2018 shows that large majorities of young people of all backgrounds anticipate working in managerial or professional occupations by the age of 30, a trend which has risen since 2000 (Mann, Denis and Percy, 2020[2]).The strong influence of socio-economic background and parental expectations on young people's occupational plans has been extensively detailed in analysis of PISA 2015 data as well as in studies of national longitudinal datasets (Ashby and Schoon, 2010[78]; Croll, 2008[79]; Gemici, 2014[27]; Gore, 2015[80]; Marjoribanks, 2003[81]; Schoon and Polek, 2011[77]; Pasquier-Doumer, 2015[82]; Sheng, 2014[83]; Musset and Kureková Mýtna, 2018[8]). For example, data from longitudinal surveys[11] shows while half of the children whose parents are in the managerial class become managers themselves, less than a quarter of children of manual workers are likely to become managers (OECD, 2018[84]); and PISA 2018 shows that 18% of high-performing girls do not expect to work in managerial or professional roles, compared to 29% of comparable boys (Mann, Denis and Percy, 2020[2]).

How career ambition is measured in this paper

Information on career ambition was available in the analyses of five of the new datasets. These datasets all had a question on future expected occupation. In most cases it was an open-ended question where students were asked to name the job, work or occupation they expected to have when they were 30 or about 30 years old (Australia, Canada and United States ELS), "when they grew up" (China), or "later" (Germany). In Korea, the same question was asked but it was approached as a closed-ended question and it referred to the occupation they expected to have in their early thirties.

The datasets that used open-ended questions classified the responses using the International Standard Classification of Occupations ISCO[12] or other classification systems. In Australia and Germany, responses corresponding to occupations that are professional or managerial (ISCO categories 1 and 2) were identified as ambitious. For the analyses of the Chinese dataset, ambition was defined as responses corresponding to the categories 1 Leading cadres and 2 Professionals in the Chinese Standard Classification of Occupations (CSCO); in addition, students also had to aspire to tertiary education to be classified as ambitious. For the Korean dataset, that used a closed-ended question with 30 possible responses, the expert who analysed the dataset identified the responses corresponding to professional or managerial occupations. The United States (ELS) dataset included a classification of the open-ended responses

[11] OECD calculations based on the ESS all seven waves for European countries (2002-14), the PSID for the United States (1999-2013), CNEF for Australia and Korea (2000-14) and the GSS cycle 15 for Canada.
[12] For more information about the International Standard Classification of Occupations, visit https://www.ilo.org/public/english/bureau/stat/isco/intro.htm

into 17 categories, out of which the expert who analysed the dataset identified those corresponding to professional or managerial occupations. For more information on how this indicator was measured in each dataset, see Table A A.25 in Annex A.

Students who were career ambitious varied between approximately 42% in China to approximately 67% in Australia. Information on the distribution of responses for each dataset is available in Table A A.26 in Annex A.

What the new data adds to the knowledge on career ambition

Table 5.2. Career ambition and adult employment outcomes

Country and database		Career Ambition		
		NEET (not being in education, employment or training)	Earnings (full-time)[1]	Career satisfaction[2]
Australia	LSAY		No significant association found	No significant association found
Canada	YITS			
China	CFPS	No significant association found	Overall, students who were career ambitious at 10-15 earned 34% more per annum when they were 24-30 compared to their peer counterparts who were not ambitous[3]**	No significant association found
Germany	NEPS	No significant association found		No significant association found
Korea	KELS2005	Overall, students who were career ambitious at 14/15 were 1.17 times less likely to be NEET at 25/26 than their peer counterparts*	Overall, students who were career ambitious at 14/15 earned 5% more monthly at 25/26 than their peer counterparts***	No significant association found
United Kingdom	BCS70			
	LSYPE			
United States	NLSY97			
	ELS	No significant association found	No significant association found	No significant association found
Uruguay	PIS03-UYLS			

1. Some datasets asked about total earnings, others about earnings of the full-time job
2. Career satisfaction was measured with deferring levels of specificity to aspects of the current career in different datasets.
3. Data reported for education and career ambition in conjunction

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found
Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
CFPS: (Institute of Social Science Survey, Peking University, 2015[74]), "China Family Panel Studies (CFPS)", https://doi.org/10.18170/DVN/45LCSO, Peking University Open Research Data Platform, V39;

NEPS: (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원, available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002. Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch.

Association between ambition and NEET (not being in education, employment or training)

Teenage career ambition is significantly associated with a reduced likelihood of being NEET later on in the overall sample in Korea, with 25/26-year-olds who were ambitious as teenagers being 1.17 times less likely to be NEET than those who were not ambitious as teenagers.

Association between ambition and adult earnings

Teenage career ambition is significantly associated with higher earnings if in full-time work in the overall sample in China and Korea. The difference in earnings between young workers who were ambitious as teenagers and those who were not, was of 34% at age 24-30 in China, and 5% at age 25/26 in Korea.

Association between ambition and career satisfaction

No significant associations were found between teenage career ambition and career satisfaction in the five datasets where this information was available.

Box 5.1. Educational ambition and adult employment outcomes in Uruguay

The dataset from Uruguay did not have data on teenage career ambition. However, it did provide data on teenage educational ambition, defined as whether students expected to complete higher education or not. Approximately 57% of the Uruguayan students could be classified as educationally ambitious. More information on the distribution of responses is available in Table A A.26 in Annex A.

Table 5.3. Educational ambition and adult employment outcomes in Uruguay

		Educational Ambition		
		NEET (not being in education, employment or training)	Earnings (full-time)[1]	Career satisfaction[2]
Uruguay	PIS03-UYLS	Female sudents who at 15 expected to not complete higher education were 4.4 percentage points more likely to be NEET at 25 compared to females who expected to complete Higher Education*	Overall, students who at 15 expected to not complete higher education earned 13% less per month at 25 than average monthly earnings***	

1. Some datasets asked about total earnings, others about earnings of the full-time job
2. Career satisfaction was measured with deferring levels of specificity to aspects of the current career in different datasets.
Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

Statistically significant association found in the overall sample
Statistically significant association found for one or more subgroup(s) within the sample

Source: **PIS03-UYLS**: (Fernandez et al., 2021[25]), PISA 2003 Uruguay Career Readiness Dataset. PISA 2003 Uruguay Longitudinal Study. Department of Sociology, School of Social Sciences, Universidad de la República. 2021.

Low teenage educational ambition is significantly associated with an increased likelihood of being NEET at 25 in several subgroups in Uruguay. For example, 25-year-old females who as teenagers did not expect to complete higher education were 4% percentage points more likely to be NEET than those who had expected to complete higher education.

Low teenage educational ambition is also significantly associated with lower earnings if in full-time employment in the overall sample. Twenty-five year-olds who as teenagers did not expect to complete higher education earn 13% less per month than the average monthly earnings.

Career alignment

Career alignment and its relationship with adult employment outcomes

Career alignment refers to young people having educational plans that are aligned with their occupational ambitions (Mann, Denis and Percy, 2020[2]), while career misalignment refers to teenagers whose educational plans are not aligned with their occupational ambitions. Misalignment can be conceived as confusion about the labour market and specifically the levels of education and qualifications that are typically required to access desired employment (Covacevich et al., 2021[3]).

The literature on misalignment tends to focus on teenagers who underestimate the level of education required to secure their career expectation. Misaligned young people can expect to do worse in the adult labour market than their comparable peers (Mann, Denis and Percy, 2020[2]). Building on the work of "Career Ready?", "Thinking about the future" identifies six studies based on longitudinal surveys in Australia, the United Kingdom, and the United States that looked for evidence of relationships between teenage career alignment and adult employment outcomes. Details on these studies can be found in Table A A.29 in Annex A. Five out of the six found a significant relationship in the population reviewed (sometimes this relationship was only found in certain subgroups). All the results presented in the two working papers are after accounting for controls. These studies show that misaligned teenage secondary school students are likely to experience more time out of education, employment or training (NEET) between the ages of 16 and 18, to be less likely to go into higher-status jobs and to earn less in their thirties than peers with aligned plans (Mann, Denis and Percy, 2020[2]; Covacevich et al., 2021[3]). The two studies from the United States (Kim, Klager and Schneider, 2019[85]; Schmitt-Wilson and Faas, 2016[86]), show positive outcomes for students who overestimated the level of education required for their career plans. However, there is also some evidence that overestimating the educational level required for the expected job can have negative effects on outcomes such as educational attainment, having a job, and wages. This varies among subgroups, particularly according to gender and level of career ambition (Sabates, Harris and Staff, 2010[87]).

PISA 2018 data show that across the OECD, on average one young person in five is misaligned due to underestimation and that boys, students with lower socio-economic status, in rural schools, foreign-born students, and most notably, students with low academic performance, are more likely to underestimate the education required to achieve their career goals. Misalignment is also more common in students who lack access to career guidance through their school (OECD, 2019[6]).

How career alignment is measured in this paper

Information on career alignment was available in the analyses of five of the datasets. For the analyses of the data from Australia, Canada, Germany and Korea, alignment was understood as expecting to attend higher education and to become a professional or a manager and students expecting to have non-professional jobs were excluded from the analyses of this indicator. In the analysis of the data from China, alignment is understood as expecting to attend higher education and to become a professional or a manager, as well as not expecting to attend higher education and not expecting to become a professional or a manager.

For the analyses of data from Australia, Canada and Germany, misalignment was understood as effectively under-estimating the education required for their career plans, as these students expected to have a job that typically requires higher education but were not planning on attending higher education. For the analyses of the data from Korea, misalignment was understood as overestimating the education required for their career plans as these students planned to have a job that does not require higher education but were planning on attending higher education. The data on China identifies as misaligned both those students who underestimated and those who overestimated the education required for their career plans. For more information on how this indicator was measured in each dataset, see Table A A.25 in Annex A.

In Australia, Canada, and Germany the majority of students were aligned, ranging between approximately 59% in China to approximately 93% in Germany. In Korea, only around 43% of them were aligned. Information on the distribution of responses for each dataset is available in Table A A.26

Table A A.26in Annex A.

What the new data adds to the knowledge on career alignment

Table 5.4. Career alignment and adult employment outcomes

Country and database		Career Alignment		
		NEET (not being in education, employment or training)	Earnings (full-time)[1]	Career satisfaction[2]
Australia	LSAY		Overall, students who were career aligned at 15/16 earned 8% more hourly at 25/26 compared to average earnings***	No significant association found
Canada	YITS	No significant association found	Overall, students who were career aligned at 15 earned 10% more per annum at 30 compared to those who were misaligned (and planned for an educational level lower than the one required for their planned job)***	No significant association found
China	CFPS	No significant association found	Overall, students who were career aligned at 10-15 earned 34% more per annum at 24-30 compared to average earnings**	No significant association found
Germany	NEPS	No significant association found		No significant association found
Korea	KELS2005	Overall, students who were career aligned at 14/15 were 1.27 times less likely to be NEET at 25/26 than those who were misaligned (and planned for an educational level higher than the one required for their planned job)**	Overall, students who were career aligned at 14/15 earned 4% more monthly at 25/26 compared to average earnings***	Overall, students who were career aligned at 14/15 were 0.07 points higher at 25/26 in the job satisfaction 1 to 5 point scale than those who were misaligned (and planned for an educational level higher than the one required for their planned job) **
United Kingdom	BCS70			
	LSYPE			
United States	NLSY97			
	ELS			
Uruguay	PIS03-UYLS			

1. Some datasets asked about total earnings, others about earnings of the full-time job
2. Career satisfaction was measured with deferring levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01
Key for symbols:

No significant association found
Statistically significant association found in the overall sample

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
CFPS: (Institute of Social Science Survey, Peking University, 2015[74]), "China Family Panel Studies (CFPS)", https://doi.org/10.18170/DVN/45LCSO, Peking University Open Research Data Platform, V39;
NEPS: (Blossfeld, Hans-Peter; Rossbach, Hans-Günther; von Maurice, J. (Eds.), 2011[21]) data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Blossfeld, H.-P., Rossbach, H.-G, and von Maurice, J. (Eds.) (2011). Education as a Lifelong Process -- The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift fuer Erziehungswissenschaft: 14. Available at https://www.neps-data.de/Data-Center/Data-Access [accessed on 20 July 2021];
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원, available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021]

Association between career alignment and NEET (not being in education, employment or training)

Teenage career alignment is significantly associated with a reduced likelihood of being NEET in young adulthood in the overall sample in Korea, with 25/26-year-olds who were aligned as teenagers being 1.27 times less likely to be NEET than those who were misaligned as teenagers (those who are planning on obtaining an educational level higher than the education required for their career plans).

Association between career alignment and adult earnings

Teenage career alignment is significantly associated with higher earnings if in full-time work in the four datasets that had available information. The difference in earnings between young workers who were aligned as teenagers and the average earnings, was 8% at age 25/26 in Australia; 34% at age 24-30 in China; and 4% at age 25/26 in Korea. The difference in earnings between young workers who were aligned as teenagers and those who were not (and planned for an educational level lower than the one required for their planned job) was 10% at age 30 in Canada.

Association between career alignment and career satisfaction

Teenage career alignment is significantly associated with higher career satisfaction in the overall sample in Korea, with 25-year-olds who were aligned as teenagers (those expecting to attend higher education and to become a professional or a manager) being 0.07 points higher in the job satisfaction 1 to 5 point scale than those who were misaligned as teenagers (those who overestimated the level of education required for the job they expected to have).

Instrumental motivation towards school

Instrumental motivation towards school and its relationship with adult employment outcomes

Students' motivations are important precursors of, and predictors for, successful labour-market outcomes (OECD, 2019[88]). Student motivation can be divided into internal motivation, that comes from rewards inherent to the experience of schooling (OECD, 2013[89]) and is based on interest and enjoyment (OECD, 2003[90]; OECD, 2017[91]); and external or instrumental motivation, which refers to student motivation to learn being influenced by expected external rewards for good performance, such as future employment prospects (OECD, 2003[90]; Cresswell and Underwood, 2004[92]). Instrumental motivation has been identified as an important predictor of course selection, career choice and academic performance (OECD, 2003[90]; OECD, 2017[91]). Instrumental motivation is also associated with positive career outcomes such as better career prospects (Thomson and Hillman, 2010, p. 8[93]), less likelihood of being NEET (Duckworth and Schoon, 2012, p. R46[94]; Mann, Kashefpakdel and Rehill, 2017[95]), and earning higher salaries as adults (Mann, Kashefpakdel and Rehill, 2017, p. 14[95]). In literature reviews and new analysis reported in "Career Ready?" and "Thinking about the future", longitudinal surveys that looked for evidence of instrumental motivation and adult employment outcomes were identified in Australia, Denmark, Switzerland and the United Kingdom. In all, of eight surveys which were reviewed, seven found a positive relationship (sometimes this relationship was only found in certain subgroups), even after accounting for controls (Mann, Denis and Percy, 2020[2]; Covacevich et al., 2021[3]). More details on these studies can be found in Table A A.30 in Annex A.

PISA has traditionally included questions related with students' instrumental motivation. In PISA 2018, on average in OECD countries, 86% of students agreed with the statement "Trying hard at school will help me get a good job". The distribution varied modestly according to student's background characteristics (Mann, Denis and Percy, 2020[2]).

How instrumental motivation is measured in this paper

Data for instrumental motivation was available for seven of the new datasets. This indicator was approached in different ways.

For the datasets from Australia and Uruguay, a composite variable that included statements relevant to instrumental motivation was used. In the case of Australia, two values from a continuous variable (from the zero point considered neutral) were used in the regression analysis that is reported: value -2 was selected to represent negative attitude to school (not having instrumental motivation), and +2 was selected to represent positive attitudes to school (having instrumental motivation). In Uruguay the composite for instrumental motivation was treated as a continuous variable.

The datasets from Canada, Korea, United Kingdom (BCS70 and LSYPE) and United States (ELS) had individual statements related to instrumental motivation. In Canada and the United Kingdom (LSYPE) the statements related to school being a waste of time were chosen to be reported on in this paper over items related to the usefulness of school. The statements reported on are:

- "School is often a waste of time", Canada
- "I am studying to get a good job", Korea
- "I feel school is largely a waste of time" United Kingdom (BCS70)
- "School is a waste of time for me" United Kingdom (LSYPE)
- "I study to ensure that my future will be financially secure" United States (ELS)

The items had 3 to 5 response options that represent different levels of agreement with the statement. For Canada, the analyses presented in this paper only focus on comparing two categories, "agree" and "strongly disagree". To predict the effects of one position, in this case "agreeing that school was a waste of time", the "strongly disagree position" was used as reference in a linear regression model estimation. For Korea, the five response options were converted into three categories and all three are compared. For United Kingdom (BCS70), all three categories ("very true", "partly true" and "not true at all") were compared. For the United Kingdom (LSYPE) two responses out of four possible ones ("strongly agree" and "strongly disagree") were used to report results[13]. For United States (ELS), two out of the four response categories are reported on: strongly agree and strongly disagree.

For more information on how this indicator was measured in each dataset, see Table A A.25 in Annex A.

Overall, the tendency was for students to agree with the instrumental value of school. Information on the distribution of responses for each dataset is available in Table A A.27 in Annex A.

[13] For these three datasets, the analyses of predicted effects of one of the positions relative to having "instrumental motivation" ("agree" with "school is a waste of time" for Canada, as an example) was performed using linear regression estimation models, by holding one of the positions ("strongly disagreeing" in the case of Canada, for instance) as reference.

What the new data adds to the knowledge on instrumental motivation

Table 5.5. Instrumental motivation and adult employment outcomes

Country and Dataset		Instrumental motivation		
		NEET (not being in education, employment or training)	Earnings (full-time)[2]	Career satisfaction[3]
Australia	LSAY		Overall, students who had positive attitudes towards school (instrumental motivation) at 15/16 earned 20% more per hour at 25/26 compared to having negative attitudes towards school (no instrumental motivation)**	Overall, students who had a positive attitude towards school (instrumental motivation) at 15/16 had a 1.12 point increase in the career satisfaction 0-10 point scale at age 25/26 compared to those with negative attitudes towards school (no instrumental motivation)***
Canada	YITS	Male students who agreed that school was a waste of time at 15 were 7 percentage points more likely to be NEET at 25 compared to those who strongly disagreed with the statement***	Overal, students who agreed that school was a waste of time at 15 earned 5% less per annum at age 30 compared to those who strongly disagreed with the statement***	No significant association found
China	CFPS			
Germany	NEPS			
Korea	KELS2005	Overall, a point increase in a 1-3 scale variable that measures agreement with "I am studying to get a good job" at 15 translated into a 1.23 times lower likelihood of being NEET by at the age of 25		
United Kingdom	BCS70[1]	Overall, students who strongly agreed with the statement 'school is a waste of time' at 16 had a 2.4 extra months of longest unemployment duration by the age 26 on average, compared to those who said the statement was "not true at all"***[1]	Overall, students who agreed with the statement 'school is a waste of time' at 16 had their weekly earnings decreased by 3% at the age of 26 compared to average earnings**	Overall, students who strongly agreed with the statement "school is a waste of time" at 16 had circa 0.5 less points in the 0-10 life satisfaction scale at 26, compared to those who said the statement was not true at all***
	LSYPE	Overall, students who strongly agreed that school was a waste of time at age 14 were 9 percentage points more likely to be NEET aged 25/26, than those who strongly disagreed with school being a waste of time***	Overall, students who strongly disagreed that school was a waste of time at the age of 14 increased weekly earnings by 6% at age 25/26 compared to those who were neutral*	Overall, students who had strongly disagreed with school being a waste of time at the age 14, had a 0.32 point increase in the 1-5 life satisfaction scale at 25/26, compared to students who strongly agreed**
United States	NLSY97			
	ELS		Overall, students who strongly agree with the statement that "I study to ensure that my future will be financially secure" at 15 earned 19% more in annual earnings compared to those who strongly disagreed with the same statement***	No significant association found
Uruguay	PIS03-UYLS	Overall, for each extra unit increase students had in the *PISA attitudes to school* Index (-2.4 to 2.5) at age 15/16, the likelihood of being NEET at 25 increased by 1.3 percentage points	No significant association found	

1. Data only reported on employment and not NEET
2. Some datasets asked about total earnings, others about earnings of the full-time job
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.
Grey shading: Data analysis not performed for these variables
* p-value < .1, ** p-value <.05, ***p-value <.01
Key for symbols:

No significant association found
Statistically significant association found in the overall sample
Statistically significant association found for one or more subgroup(s) within the sample
Statistically significant association found in the opposite direction to what was expected

Sources:
LSAY: (Australian Government Department of Education, Skills and Employment, 2017[19]), "Longitudinal Surveys of Australian Youth, 2009 cohort (Version 9.0)", https://doi.org/10.4225/87/6bw27v, ADA Dataverse, V7;
YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021];
KELS2005: (Korea Development Institute, 2019[22]), 연구조사자료 목록 - 한국교육개발원, available at www.kedi.re.kr/, www.kedi.re.kr/khome/main/research/listSurveyDBFormNew.do [accessed on 20 July 2021];

BCS70: (University of London. UCL Social Research Institute, 2007[23]), Centre for Longitudinal Studies, Millennium Cohort Study: First Survey, 2001-2003 [computer file]. 6th Edition. Colchester, Essex: UK Data Archive [distributor], March 2007. SN: 4683, Project ID number 189239. Retrieved on 13 September 2021 from https://cls.ucl.ac.uk/;
LSYPE: (Unversity College London, UCL Institute of Education, Centre for Longitudinal Studies, 2021[24])**,** Next Steps: Sweeps 1-8, 2004-2016. [data collection]. 16th Edition. UK Data Service. SN: 5545, http://doi.org/10.5255/UKDA-SN-5545-8;
ELS: (Ingels et al., 2014[38]), Education Longitudinal Study of 2002 Third Follow-up Data File Documentation (NCES 2014-364). National Center for Education Statistics, Institute of Education Sciences, US Department of Education. Washington, DC. Retrieved on 24 February 2021 from http://nces.ed.gov/pubsearch;
PIS03-UYLS: (Fernandez et al., 2021[25]), PISA 2003 Uruguay Career Readiness Dataset. PISA 2003 Uruguay Longitudinal Study. Department of Sociology, School of Social Sciences, University of Uruguay. 2021.

Association between instrumental motivation and NEET (not being in education, employment or training)

Lack of instrumental motivation is significantly associated with an increased likelihood of being unemployed in the overall sample in the United Kingdom (BCS70) and with an increased likelihood of being NEET later on in the overall sample in the United Kingdom (LSYPE). Similarly, in Korea, having instrumental motivation is associated with an increased likelihood of being employed later on in the overall sample.

In the United Kingdom (BCS70), strongly agreeing that school is a waste of time as teenagers increased the longest unemployment duration by the age of 26 by 2.4 months compared to those who said the statement was not true at all; in the United Kingdom (LSYPE) individuals who strongly agreed that school was a waste of time at age 14 were 9 percentage points more likely to be NEET at age 25/26, than those who strongly disagreed with school being a waste of time. In Korea, a one point increase in a 1 to 3 scale that measures agreement at age 15 with the statement "I am studying to get a good job" translated into a 1.23 times lower likelihood of being NEET by at the age of 25.

In Canada, while there was no significant association found for the overall sample, there was for some subgroups: 25-year-old men who agreed as teenagers that school was a waste of time were 7 percentage points more likely to be NEET at age 25 than those who strongly disagreed with the statement.

In contrast, in Uruguay it is having instrumental motivation that is significantly associated with an increased likelihood of being NEET later on. For each extra unit increase students had in the PISA attitudes to school Index (-2.4 to 2.5) at age 15/16, the likelihood of being NEET at 25 increased by 1.3 percentage points. As indicated in the table by the magnifying glass, this association is in the opposite direction to that anticipated.

Association between instrumental motivation and adult earnings

Having instrumental motivation is significantly associated with higher earnings when in full-time work in the overall sample in Australia, Canada, the United Kingdom (BCS70 and LSYPE), and the United States (ELS). In Australia, individuals who had a positive attitude towards school (instrumental motivation) at age 15/16 earn 20% more at age 25/26 than those who had a negative attitude; in Canada, 30-year-olds who agreed as teenagers that school is a waste of time earn 5% less compared with those who strongly disagreed; in the United Kingdom (BCS70), 26-year-olds who agreed that school was a waste of time as teenagers earn 3% less than the average earnings; in the United Kingdom (LSYPE) strongly disagreeing that school was a waste of time at the age of 14 increased earnings by 6% at age 25 compared to those who were neutral; and in the United States (ELS) 25-year-olds who strongly agreed with the statement that "I study to ensure that my future will be financially secure" as teenagers earned 19% more as adults than those who strongly disagreed with the same statement.

Association between instrumental motivation and career satisfaction

Demonstrating instrumental motivation towards school as a teenager is significantly associated with higher career satisfaction in the overall sample in Australia and the United Kingdom (BCS70 and LSYPE). In Australia, students who had a positive attitude towards school at age 15/16 had a 1.12 point increase in the career satisfaction 0- 10 point scale at age 25/26 compared to those who had negative attitudes towards school; in the United Kingdom (BCS70),

26-year-olds who strongly agreed school is waste of time had approximately 0.5 lower life satisfaction in a 1- 5 point scale than those who said the statement was not true at all; and in the United Kingdom (LSYPE) students who had strongly disagreed with school being a waste of time at the age 14, had a 0.32 point increase in the 1-5 life satisfaction scale at 25/26 compared to students who strongly agreed.

In the United States (ELS), while no significant associations were found between agreement with the statement "I study to ensure that my future will be financially secure" and career satisfaction, students who at the age of 15 strongly agreed that learning skills at school was needed for a job later were more likely to be job satisfied at 25 than those who strongly disagreed[14] (p-value <.01, SE 0.12).

Career originality

Career originality and its relationship with adult employment outcomes

Career originality is a new indicator that was first explored in "Thinking about the future"[15] (Covacevich et al., 2021[3]). It refers to whether the career expectations of students can be considered more or less original, compared with those of their peers.

To illustrate, PISA questionnaires ask 15-year-old students: what kind of job do you expect to have when you are about 30 years old? Coding these questions (PISA uses ISCO, the International Standard Classification of Occupations) permits identification of the most commonly anticipated jobs. In PISA 2018, across the OECD, 53% of girls and 47% of boys who indicated an occupational expectation named a job from one of the ten most frequently chosen jobs in their country (career concentration). Career originality therefore is used to identify the students who named one of typically hundreds of other different occupations (non-popular occupations) versus those who reflect career concentration, by planning on working in these ten jobs (popular occupations).

It can be theorised that while in some specific cases expecting to have one the most popular occupations may reflect the demands of the market and/or considered and informed career reflection, it is likely that young people with more original career aspirations may have directed greater thought to their plans for the future. So career originality may be a sign of greater ultimate critical reflection, career maturity, and of agency being applied within decision-making (Covacevich et al., 2021[3]).

Data from PISA 2018 show that career concentration is highest among girls, foreign-born students, urban residents, students from higher socio-economic backgrounds and higher achievers. Between countries and economies, levels of career concentration are much higher among certain non-OECD countries. The highest proportions of concentration (and lowest proportions of career originality), over 60% for boys and 70% for girls, are found in Baku (Azerbaijan), Brunei Darussalam, Indonesia, Jordan, Kosovo, Lebanon, Morocco, Philippines, Qatar, Turkey, Saudi Arabia and the United Arab Emirates. The highest proportions of career originality (typically around 60%) are found in central European countries such as France, Germany, the Netherlands and Switzerland, which are characterised by high levels of teenage participation in programmes of Vocational Education and Training, which may help explain greater variety of career interests. Teenagers anticipating joining such programmes designed to enable entrance to specific occupations can be expected to have received support from their schools in exploring the labour market prior to key decision-making (Musset and Kureková Mýtna, 2018[8]; Mann, Denis and Percy, 2020[2]). In support of this idea, PISA 2018 highlights that students attending schools which offer no access to career guidance, have some of the highest average levels of career concentration across the OECD (Mann, Denis and Percy, 2020[2]).

The review of the research literature conducted in "Thinking about the future" failed to reveal any previous longitudinal studies that draw a direct connection between highly concentrated teenage career aspirations and labour

[14] The association between instrumental motivation and "job satisfaction" for the ELS dataset is reported only qualitatively as the Wald test used to predict significance of input variables cannot be converted into an effect size.

[15] In "Thinking about the future" it was called career concentration, but in this paper the indicator was re-named career originality

market outcomes (Covacevich et al., 2021[3]). However, "Thinking about the future" conducted analyses of three longitudinal datasets in Australia, Denmark, and Switzerland that looked for evidence of relationships between teenage career concentration (renamed "career originality" in this paper) and adult employment outcomes. Two out of the three found a relationship in a significant part of the population (sometimes this relationship was only found in certain subgroups) (Mann, Denis and Percy, 2020[2]; Covacevich et al., 2021[3]). More details on these studies can be found in Table A A.31 in Annex A. Since this review, the project team has become aware of forthcoming analysis by Ingrid Schoon and Chris Percy of the British Longitudinal Study of Young People in England that finds significant negative employment outcomes for girls related to highly concentrated career ambitions.

How career originality is measured in this paper

As career originality was identified as a potential indicator midway through the new analyses undertaken by country specialists and set out in this paper, a systematic review of this indicator was not undertaken. Analyses of career originality were only undertaken of the Canadian database. Students were asked what job they expected to have at age 30 and these responses were coded using the Standard Occupational Classification SOC of 1991. Career originality is defined as students who chose a job that was not amongst the top 10 most chosen by his/her cohort. For more information on how this indicator was measured, see Table A A.25 in the Annex A.

What the new data adds to the knowledge on career originality

Around 72% of the Canadian students showed career originality (chose a job that was not among the ten most popular). Information on the distribution of responses is available in Table A A.26 in Annex A.

Table 5.6. Career originality and adult employment outcomes

Country and database		Career Originality		
		NEET (not being in education, employment or training)	Earnings (full-time)[1]	Career satisfaction
Canada	YITS	No significant association found	Overall, students who were career original at age 15 (who selected a job that was not among the 10 most frequently chosen careers) earned 4% less annually at 30 than those who chose one of the 10 most popular jobs***	Men who were career original at age 15 (who selected a job that was not among the 10 most frequently chosen careers) were 4 percentage points less likely to be career satisfied at age 30 than those who chose one of the 10 most popular jobs*

1. Some datasets asked about total earnings, others about earnings of the full-time job

Notes:

Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables used for each dataset is available in Table A A.2 in Annex A.

* p-value < .1, ** p-value <.05, ***p-value <.01

Key for symbols:

No significant association found

Statistically significant association found in the overall sample

Statistically significant association found for one or more subgroup(s) within the sample

Statistically significant association found in the opposite direction to what was expected

Source:

YITS: (Statistics Canada, 2011[20]), Youth in Transition Survey 2008-2009 (Cycle 6), available at https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4435 [accessed on 6 August 2021]

No significant association was observed in Canada between career originality as a teenager and NEET status at age 30.

A significant association was observed between career originality (choosing one of less popular careers) and lower earnings if in full-time employment. Overall in Canada, 30-year-olds who expected to have an original career (not

one of the ten most popular jobs) when they were teenagers earned 4% less than those who expected to have one of the most 10 popular jobs. As indicated in the table by the magnifying glass, this association is in the opposite direction to that expected.

While no association was observed between career concentration and career satisfaction in the overall sample, this association is significant when focusing only on men. Thirty year-old men who expected to have one of the less most popular jobs when they were teenagers were 4 percentage points less likely to be satisfied with their jobs at age 30 than those that expected to have a job among the ten most popular. This association is also in the opposite direction to that expected.

6 Discussion

What the paper set out to do

This paper is the third of three working papers that are focused on identifying generic teenage career-related indicators of positive adult employment outcomes. The OECD Career Readiness project draws on the best available international evidence to understand how schools can reduce student risk of unemployment and poor school-to-work transitions, bringing relevant evidence of 'what works' to the attention of practitioners and policy makers during a period of global economic turbulence.

The paper builds on and further develops the analysis presented in two previous working papers: "Career Ready? How schools can better prepare young people for working life in the era of COVID-19" (Mann, Denis and Percy, 2020[2]) and "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice" (Covacevich et al., 2021[3]).

These two working papers reviewed evidence respectively from national longitudinal datasets from the existing academic literature and conducted new analyses using data from three countries. The papers concluded that better adult employment outcomes can often be associated with teenage indicators of career readiness. "Career Ready?" identified nine teenage career-related attitudes, activities or experiences which are frequently linked in previously published analyses of longitudinal studies with three adult positive employment outcomes in adulthood (earnings, likelihood of being in education, employment or training and satisfaction with career progression). Nine initial indicators were grouped in that paper into three areas: i) the extent to which teenagers actively explore potential futures through their school; ii) whether teenagers gain workplace experience while still in school and iii) how teenagers think about their futures in work. "Thinking about the future" reviewed datasets in Australia, Denmark and Switzerland and focused specifically on the last of the three thematic areas, identifying two further potential new indicators.

The current working paper looks for further evidence that these indicators can be considered applicable across a wide range of countries, by extending the analysis to ten new datasets from longitudinal surveys from eight countries: Australia, Canada, China, Germany, Korea, the United Kingdom (two surveys), the United States (two surveys) and Uruguay. The paper extends the 11 potential indicators identified earlier, by adding three more. In order to confirm indicators of cross-national relevance, this paper looks for longitudinal evidence that indicators can be associated with positive employment outcomes in at least three countries.

What the paper found

In all, also taking into consideration the evidence collected in the two previous working papers, this paper found evidence of beneficial outcomes in three or more countries linked to 11 of the 14 potential indicators assessed. The new analysis presented in this paper aligns with the clustering of indicators across three thematic areas: how students explore, experience and think about their potential futures in work.

Exploring the future

The exploring the future category relates to activities that teenagers engage in to investigate potential futures in work. This category includes many activities that are often provided by secondary schools. Six indicators were considered part of exploring the future.

School-based career reflection activities

School-based career reflection activities were divided into career questionnaires and career classes. Three datasets had available data on career questionnaires that are associated with positive outcomes in Canada, and with negative ones in Uruguay. Six datasets had available data on career classes that are associated with positive outcomes in Canada and Uruguay but with negative ones in United Kingdom (BCS70).

Hence, these results, together with the lack of conclusive evidence from the previous studies identified in the two previous working papers do not allow to identify school-based career reflection activities as a confirmed indicator of career readiness.

However, this should not be interpreted as proof that these activities are not effective. The analysed data has some limitations that must be taken into account. Information on career questionnaires was only available in the analyses of three datasets. And while information on career classes was available in the analyses of six datasets, in one study the question referred to timetabled career classes, while in the others it referred to school provision of information or career-orientated classes; hence the content and approach of these career classes varied between (and possibly within) countries. In addition, the assignment of career questionnaires and career classes to students may not have been random, but based on student characteristics such as educational disengagement. Furthermore, the way in which these indicators were measured only allowed to identification if students had had these activities or not, without taking into account their frequency. Further research would be needed to be able to confirm or refute school-based career reflection activities as a confirmed indicator of career readiness.

Career conversations

Information on career conversations was available in six of the ten new datasets analysed. This indicator was broken down into three categories: conversations with: i) teachers, ii) career guidance counsellors, and iii) family and peers. While Australia and Canada had information on career conversations with all three categories of people, United Kingdom (BCS70) had information for two categories and Germany, Korea, and the United States (ELS) only had information for one category.

Career conversations with teachers are associated with positive adult employment outcomes in the three datasets with available data: Australia, Canada and United Kingdom (BCS70). Career conversations with career guidance counsellors are associated with positive adult employment outcomes in one of the three datasets with available data: Canada. Career conversations with family and peers are associated with positive adult employment outcomes in three of the four datasets with available data: Australia, Canada, and United States (ELS). In relative terms, the Canadian dataset presented the highest incidence of positive associations between all career conversation types and adult employment outcomes. Aggregated measures of having conversations with different types of people can be expected to have even more of an impact than having conversations only with certain categories of people. Finding associations between having conversations with specific categories of people and adult employment outcomes highlights the impact that these conversations can have. How schools can optimise the benefits of career conversations is the subject of a forthcoming policy brief from the Career Readiness project.

These results further confirm the evidence collected by in a small number of previous studies described in “Career Ready?” that identify career conversations as an indicator of career readiness.

Engaging with people in work through career talks or job fairs

Engaging with people in work through career talks or job fairs is associated with positive adult employment outcomes in three out of the six datasets with available data: Australia, Canada, and Uruguay. While there is limited evidence from longitudinal data outside of the analyses conducted for this paper, these new results, together with the available research, confirm that engaging with people in work through career talks or job fairs as an indicator of career readiness.

Workplace visits or job shadowing

Workplace visits or job shadowing is associated with positive adult employment outcomes in four of the six datasets with available data: Australia, Canada, Korea and the United States (ELS).

The data from Canada and Australia focus only on workplace visits and the data from Korea and the United States (ELS) analysed workplace visits and job shadowing under the same variable.

These results confirm that there is evidence from more than three counties to be able to consider workplace visits or job shadowing as an indicator of career readiness.

Application and interview skills development activities

This study represents the first occasion on which longitudinal data has been examined for evidence of long-term beneficial impacts linked to the teenage development of skills needed for recruitment. The reporting of this indicator was subdivided into activities related to 'applying for jobs' and those related to 'interviewing for a job'. Activities that develop skills related with applying for jobs are associated with positive adult employment outcomes in three of the four datasets with available data: Australia, Canada and United Kingdom (BCS70). Activities that develop skills related to interviewing for jobs are associated with positive adult employment outcomes in the two datasets with available data: Canada and United Kingdom (BCS70).

These results confirm that there is evidence from three countries that support application and interview skills development activities as an indicator of career readiness.

Occupationally-focused short programmes

Occupationally-focused short programmes are associated with positive adult employment outcomes in the two datasets with available data: Canada and the United States (ELS). A limitation of the analyses presented here is that there is only evidence available from two datasets. This is probably due to these programmes being more common in specific countries, such as Australia, Canada, and the United States. However, taking into account the evidence collected by previous studies (notably in Australia), these new results further confirm occupationally-focused short programmes as an indicator of career readiness.

Experiencing the future

The experiencing the future category relates with first-hand experience of the world of work during teenage years that can be associated with positive employment outcomes in adulthood. Three indicators were considered part of experiencing the future.

Part-time work

Part-time work is associated with positive adult employment outcomes in three out of the seven datasets with available data: Canada, United Kingdom (BCS70) and United States (NLSY97). However, part-time work is associated with negative adult employment outcomes in the case of Germany, specifically with lower work satisfaction. Overall, these results further confirm the evidence collected by previous studies that identify part-time work as an indicator

of career readiness. However, it should be noted that the distribution of part-time employment shows important differences between countries.

Work placements

Work placements are associated with positive adult employment outcomes in one of the four datasets with available data: Germany. As well as only having data for four datasets, the available information may have limitations as work placements can mean different things in different settings. In most countries considered, work placements are likely to be undertaken within general education, rather than dedicated programmes of vocational study where earlier OECD analysis has highlighted the strong value of work-based learning (Musset, 2019[65]). There are very few previous longitudinal assessments (based on the British data) that look at the effect on adult employment outcomes of work placements. Further research would be needed to be able to confirm work placements as an indicator of career readiness, exploring in greater depth impacts experienced by students who may not have been randomly allocated to the provision.

Volunteering

Volunteering is associated with positive adult employment outcomes in two of the three datasets with available data: Germany and United Kingdom (BCS70). As with part-time work, there is a lot of variation in the distribution of volunteering between countries and the forms that it takes in different countries also varies. Despite these limitations, when this data is considered together with previous studies of longitudinal data (from Australia and the United States), it confirms volunteering as an indicator of career readiness.

While part-time work, work placements and volunteering provide evidence of varying strength as indicators of career readiness, these activities are quite context specific and more than individual indicators in themselves they can perhaps be better considered examples of how teenage experience of the world of work while still in secondary education can be seen to provide long-term benefits.

Intensity and student perceptions of workplace engagement

The above indicators focus only on whether students had participated in those activities or not. But elements such as frequency and perception of the experience can make a difference on adult employment outcomes (Mann, Kashefpakdel and Percy, 2018[96]). To better understand the experiences that students had with part-time work, work placements and volunteering, this paper analysed the relationship between work-related outcomes and perceived usefulness of the experience of work, frequency of the work or volunteering experience, and whether instrumental motivation was a reason for engaging with the work or volunteering experience.

Higher perceived usefulness of the experience of work is associated with positive adult employment outcomes in one of the two datasets with available data: Germany. Greater frequency of working or volunteering is associated with positive adult employment outcomes in two of the four datasets with available data (United Kingdom BCS70 and United States NLSY97) and with negative adult employment outcomes in Germany, specifically with an increased likelihood of being NEET. Instrumental motivation as a reason for working or volunteering is associated with positive adult employment outcomes in the two datasets with available data: Australia and Germany.

While the available data was limited, these results seem to confirm that characteristics of the work experience as well as how it is perceived by the students matter.

Thinking about the future

Perhaps the most powerful finding from this study is the strong association across multiple countries between teenage thoughts and attitudes about their imagined futures in work and positive employment outcomes in adulthood. Five indicators were considered as part of thinking about the future.

Career certainty

Career certainty ambition is associated with positive adult employment outcomes in three out of the six datasets with available data: Canada, United Kingdom (BCS70) and United States (ELS). However, in one of the datasets – Korea – career certainty is associated with a negative outcome (lower salary). A possible explanation for this is the late entry of males into the labour market due to military service.

Overall, these new analyses can be considered to further confirm the evidence from previous studies (in Australia, the United Kingdom and the United States) that identify career certainty as an indicator of teenage career readiness.

Career ambition

Career ambition is associated with positive adult employment outcomes in two out of the five datasets with available data: Korea and China. These new analyses further confirm career ambition as an indicator of career readiness in other countries beyond the evidence already collected in previous studies from Australia, the United Kingdom, the United States, and Switzerland.

Career alignment

Career alignment is associated with positive adult employment outcomes in four out of the five datasets with available data: Australia, Canada, China and Korea. The results build on evidence of beneficial outcomes identified in previous research literature related to Australia, the United Kingdom and the United States). These new analyses further confirm career alignment as an indicator of career readiness, and in three of the cases, this is in countries for which there was no previous data.

Instrumental motivation towards school

Different studies and datasets use different names to refer to what is here called 'instrumental motivation towards school'. It is a variable that presents challenges in comparing between datasets, as the questions used to collect the information focus on different elements of instrumental motivation towards school, some questions are phrased positively (school will help me get a good job) while others are phrased negatively (school is a waste of time), and some analyses used composite variables while others used answers to individual items. Despite these difficulties, instrumental motivation towards school is associated with positive adult employment outcomes in six out of the seven datasets with available data (Australia, Canada, Denmark, the United Kingdom and the United States). Only in Uruguay it was associated with negative outcomes, specifically with an increased likelihood of being NEET. Together with the previous available analyses (from the United Kingdom and the United States), these new analyses further confirm instrumental motivation towards school as an indicator of career readiness.

Career originality

Career originality was an indicator explored for the first time in "Thinking about the future" (where it was referred to as "career concentration") as there were no previous analyses of national datasets found about this potential indicator. In "Thinking about the future", career originality was associated with positive adult employment outcomes in two of the three datasets (Australia and Denmark). In the new datasets analysed in this paper, analyses on career originality were only available for Canada, and the results show negative associations with adult employment outcomes. Thus, further research would be needed to be able to confirm career originality as an indicator of career readiness. Forthcoming longitudinal research from the United Kingdom is expected soon add to this collective knowledge. Once published, this new research may allow the confirmation of career originality as an indicator of career readiness.

Limitations of this analysis and areas of future research

The analyses presented in this paper present several limitations. In most cases, only some of the available longitudinal datasets included questions related to the indicators being analysed, as questionnaires vary extensively in the extent to which they explore aspects of teenage career readiness. At the same time, the data available in some datasets was incredibly rich, and it was only possible to focus on some elements. As the objective was to compare datasets, inevitably choices needed to be made concerning which variables to include from each dataset. Many times, there were more than one variable that related to the indicator, but only one was selected for reporting, the criteria being that it was the one closest to the definition of the indicator being used as well as most similar to what was asked in other datasets and being closest to the age group this paper focused on (15-year-olds). Thus, some associations that were significant have not been included in the reporting.

Another limitation is that while most of the analyses compared groups of individuals for whom the indicator was relevant as teenagers with those individuals who did not, in some cases the comparison was with the average of the population. In these cases, the effect size of the indicator may be under-reported.

The analyses conducted in the paper "Thinking about the future" and in this paper (with regard to teenage career thinking) confirm that the relationship between each indicator and labour-market outcomes is affected by students' background variables, mostly gender, academic achievement, socio-economic status and general or vocational school track. So for example, "Thinking about the future" shows that teenage career uncertainty is associated with lower earnings in high-performing youth in Denmark and in Switzerland, but this association does not exist for low-performing youth. These analyses show that while in some cases there is not an overall effect on the whole population, significant associations can be found for specific subgroups, such as men. This is the case with teenage career uncertainty in Canada where being uncertain is associated with a higher likelihood of being NEET in males, but not within the overall sample. This highlights how a one-size-fits-all does not necessarily work when it comes to teenage indicators of career readiness, and that certain groups can be expected to benefit more than others from specific indicators. Current limitations of data however make overall patterns difficult to establish. This paper did not perform subgroup analyses for the indicators related with exploring and experiencing. However, based on the analyses of the indicators related to thinking about the future, it is likely that for indicators where no association was found in the overall population, there may be an effect in subgroups according to gender, academic achievement, socio-economic status and school tack, among others. Further research on this is needed to better understand how certain students benefit more from specific career-related activities that school can offer than others.

For some indicators, such as career conversations, in most cases the available analyses did not aggregate the data to form one integrated indicator of career conversation, but analysed each type of career conversation separately according with whom the conversation was held. While this allowed the identification of the effect of conversations with different people, it may be underrepresenting the overall effect of career conversations. Multiple career conversations with adults occupying a range of different roles, enabling access to sources of new and useful information, initially framed by American sociologist Mark Granovetter (1973[97]) as a form of social capital (the "strength of weak ties"), may well be associated with greater improved outcomes for young people.

Care was taken to account for background or control variables. Despite this, there may be powerful non-identified selection bias in the indicators related with activities that may affect the association between the indicators and the outcomes. For example, in certain school systems students may not be equally likely to receive training on interview skills. Thus, what the association may be partly reflecting is the effect of a certain type of school, or a specific study programme, or the resources available at the school. These factors may be only partly controlled for. Needless to say, a primary challenge of using longitudinal data is to fully understand provision experienced by students many years ago. It is also possible that some indicators are proxies for something else. For example, visits to a work-site may be part of a larger school programme.

All the limitations mentioned so far imply the risk that the findings presented in this paper may not have been able to identify some associations, thus under-estimating the effect of the indicators on adult labour outcomes. In a way, the findings presented can be considered the tip of an iceberg.

In addition, there are also other types of methodological limitations. Some indicators are more straightforward in the sense that the aspects of student lives being investigated were very similar, even in different settings. This is the case in the example of career conversations. Having had a career conversation about their future with someone or not is quite comparable through the different datasets. However, other indicators, such as work placements, are more difficult. These may vary between and within educational systems, in terms of length, goals, levels of school preparation support and activities with which the student is involved.

Furthermore, as described in the methodology, various types of analyses were used for the different datasets. So for example, while the analyses of all datasets accounted for background variables as much as possible, this could not be conducted in a standardised way. As such, the results reported here should be considered as separate pieces of analyses and not as one integrated and standardised analysis of all 10 datasets.

A relevant question is when is it reasonable to expect to see effects of a teenage career-related indicator on an adult life? Can we expect impacts to be greatest at the very start of working life or when young people have established a foothold in the labour market? Does an initial more favourable transition sustain a more favourable advantage over time or can positive benefits be expected to diminish with age? Does the effect of time vary according to the outcome? The studies in this paper focus strongly on age 25 for assessment of outcomes in employment. Understanding of earlier and later impacts is limited and further studies are warranted in exploring the process through which these aspects of teenage lives serve to enhance transitions through education and training systems into and through the early labour market.

A further priority for further research will be to explore the relationship between better employment outcomes for young people and their productivity in work. Does better career guidance lead to a better matching of individuals and occupations underpinning greater stability and more productive working which is reflected in better outcomes for youth, notably higher wages? In this way, can effective school provision be seen to benefit employers and society more widely as well as young people themselves?

Finally, further studies will be welcomed that investigate how schools can optimise beneficial findings for all students. Well-designed randomised control trials and action research projects will allow researchers to identify differential outcomes linked to student characteristics and the quality of provision. Such studies would further fill in the gaps in understanding how teenager's lived experiences go on to shape their adult lives.

How the findings link with previous evidence

The new data analysed in this paper provides substantial new evidence of teenage career-related indicators being associated with better employment outcomes across a range of countries. Results however, vary across the potential indicators considered. There is evidence of a significant association between most of the indicators and positive adult employment outcomes in at least one of the datasets examined. For many of the indicators there is evidence in several countries of an association with positive labour outcomes. On other occasions, beneficial significant associations are found only in one or two countries and on a few occasions there is evidence of negative outcomes.

The table below summarised the accumulated evidence on these 14 indicators. When the literature review and the analyses conducted in the previous working paper are taken into account, clearer patterns arise. Using as a criteria that there must be evidence of an overall association with positive labour outcomes in at least three countries, based on the accumulated evidence of all three working papers, 11 of the 14 indicators (marked with an asterisk in the table) can be considered as confirmed indicators of career readiness:

Exploring the future

- Career conversations
- Engaging with people in work through career talks or job fairs
- Workplace visits or job shadowing
- Application and interview skills development activities

- Occupationally-focused short programmes

Experiencing the future

- Part-time work
- Volunteering

Thinking about the future

- Career certainty
- Career ambition
- Career alignment
- Instrumental motivation towards school

For school-based career reflection activities (exploring), work placements (experiencing) and career originality (thinking), there is still currently insufficient evidence. However, forthcoming research may well provide a third country where benefits linked to career originality can be identified. Given the potential impact of national or local circumstances, it will be for leaders of education and career guidance specialists to come to their own view about the likely benefits of these potential indicators. Further studies in these areas particularly are warranted and encouraged as in each case the number of current analyses is small and, given other findings, it would be reasonable to expect positive impacts.

Table 6.1 below lists all the longitudinal assessments considered within the Career Readiness project and its three working papers.

Table 6.1. Summary of analyses that look for evidence of associations between teenage indicators related with thinking about the future and adult employment outcomes

			Exploring						Experiencing			Thinking				
Country	Study	Periods of data collection	School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
Australia	(Robinson, 1999[62]), LSAY	1992-1994							↑							
	(Vickers, Lamb and Hinkley, 2003[98]), LSAY	1995-1998							↑							
	(Sikora and Saha, 2011[99]) LSAY	1998-2008										↑	↑	↑		
	(Anlezark and Lim, 2011[100]), LSAY	2003-2007							↑							
	(Covacevich et al., 2021[3]) PISA-LSAY	2003-2013										-	↑	-	↑	↑
	(Marks, 2006[101]) LSAY	1995-2002							↑							
	(Thomson and Hillman, 2010[93]) LSAY	2003-2007										↑			↑	
	(Sikora, 2018[102]) LSAY	2006-2016										↑				
	(Sikora and Green, 2020[73]), LSAY	2006-2016									↑					

			Exploring						Experiencing			Thinking				
Country	Study	Periods of data collection	School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
	(Misko, Chew and Korbel, 2020[103]), LSAY	2009-2016						↑								
	(Covacevich et al., 2021[104]) PISA-LSAY	2009-2019	▬	↑	↑	↑	↑		▬	▬	↑	▬	▬	↑	↑	
Canada	(Covacevich et al., 2021[104]), PISA-YITS-T1FF	2000-2014	↑	↑	↑	↑	↑	↑	↑		↑	↑		↑	↑	↓
China	(Covacevich et al., 2021[104]) CFPS	2010-2018										▬	↑	↑		
Denmark	(Covacevich et al., 2021[3]) PISA-PIAAC	2000-2012										↑	▬		↑	↑
Germany	(Covacevich et al., 2021[104]) NEPS	2010-2018	▬	▬	▬	▬	▬		↓	↑	↑		▬	▬		
Korea	(Covacevich et al., 2021[104]) KELS2005	2005-2018	▬	▬	▬	↑			▬			↓	↑	↑	↑	
Switzerland	(Covacevich et al., 2021[3]) PISA-TREE1	2000-2010										↑	↑		▬	▬
United Kingdom	(Brown, Ortiz-Nuñez and Taylor, 2011[105]), NCDS	1974 – 1983		↑												

			Exploring						Experiencing			Thinking				
Country	**Study**	**Periods of data collection**	**School-based career reflection activities**	*** Career conversations**	*** Engaging with people in work through career talks or job fairs:**	*** Workplace visits or job shadowing:**	*** Application and interview skills development activities**	***Occupationally -focused short programmes**	*** Part-time work**	**Work placements**	*** Volunteering**	*** Certainty**	*** Ambition**	*** Alignment**	*** Instrumental motivation towards school**	**Career originality (previously career concentration)**
	(Duckworth and Schoon, 2012[94]), BCS70	1986-1988													↑	
	(Covacevich et al., 2021[104]), BCS70	1986-2004	↓	↑	-	-	↑		↑	-	↑	↑			↑	
	(Schoon and Parsons, 2002[106]), NCDS	1974-1991											↑			
	(Schoon and Polek, 2011[77]), NCDS*	1974-1991											↑			
	(Ashby and Schoon, 2010[78]), BCS	1986											↑			
	(Sabates, Gutman and Schoon, 2017[107]), BCS70	1986										↑				
	(Yates et al., 2010[108]), BCS	1986-1988										↑		↑		
	(Gutman, Sabates and Schoon, 2014[109]), BCS	1986-1988										↑				
	(Mann, Denis and Percy, 2020[2]), BCS	1986-1996							↑	↑						

			Exploring						Experiencing			Thinking				
Country	Study	Periods of data collection	School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
	(Mann, Kashefpakdel and Rehill, 2017[95]), BCS	1986-1996													↑	
	(Schoon and Parsons, 2002[106]), BCS	1986-1996											↑			
	(Sabates, Harris and Staff, 2010[87]), BCS70	1986-2004										↑		↑		
	(Schoon and Polek, 2011[77]), BCS	1986-2004											↑			
	(Green et al., 2017[76]), BCS	1986-2012											↑			
	(Duckworth and Schoon, 2012[94]), BCS70	1986-1988							↑							
	(Kashefpakdel and Percy, 2016[42]), BCS	1986-1996			↑											
	(Crawford et al., 2010[110]), BHPS	1991-2008							↑							
	(Crawford et al., 2010[110]), LFS	1993-2008							↑							
	(Croll, 2008[79]) BHPS	1994-2004											↑			
	(Gutman, Sabates and	2004-2008										▬				

			Exploring							Experiencing			Thinking				
Country	Study	Periods of data collection	School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
	Schoon, 2014[109]), LSYPE															
	(Mann, Kashefpakdel and Rehill, 2017[95]) LSYPE	2004-2009		↑											↑	
	(Gutman and Schoon, 2018[111]) LSYPE	2004-2010										↑	↑			
	(Holford, 2020[112]), LSYPE	2004-2015							-							
	(Covacevich et al., 2021[104]) LSYPE 2004	2004-2015/16													↑	
	(Percy and Kashefpakdel, 2018[113]) BCS	1986-1996	-	-												
	(Duckworth and Schoon, 2012[94]) LSYPE	2005/6-2007/8													↑	
	(Crawford et al., 2010[110]), LSYPE	2007-2009							↑							
United States	(Leventhal, Graber and Brooks-Gunn, 2001[114])	1966-1994							-							

			Exploring						Experiencing			Thinking				
Country	Study	Periods of data collection	School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
	(Kim, Klager and Schneider, 2019[85]) NLSY79	1979-2012												↑		
	(Light, 1999[115]), NLSY79	1979-1991							↑							
	(Hotz et al., 1999[116]), NLSY79	1979-1991							▪							
	(Ruhm, 1995[117]), NLSY79	1979-1991							↑							
	(Light, 2001[118]), NLSY79	1979-1994							↑							
	(Dalton et al., 2013[119]) HSB	1980-1984						↑								
	(Chan, Ou and Reynolds, 2014[120]), CLS	1986-1996									↑					
	(Mortimer, 2005[121]), YDS	1987-1992							↑							
	(University of Minnesota: Center for Urban and Regional Affairs; Mortimer, Jeylan T.; Rolando, Dominique J.;	1988-2000		↑												

			Exploring							Experiencing			Thinking				
Country	**Study**	**Periods of data collection**	**School-based career reflection activities**	*** Career conversations**	*** Engaging with people in work through career talks or job fairs:**	*** Workplace visits or job shadowing:**	*** Application and interview skills development activities**	***Occupationally -focused short programmes**	*** Part-time work**	**Work placements**	*** Volunteering**	*** Certainty**	*** Ambition**	*** Alignment**	*** Instrumental motivation towards school**	**Career originality (previously career concentration)**
	Zierman, Carol, 2017[122]), YDS																
	(Mortimer et al., 2008[123]), YDS	1988-2003							↑								
	(Vuolo, Mortimer and Staff, 2013[124]), YDS	1988-2005							↑								
	(Mello, 2008[125]) NELS	1988-2000											↑				
	(University of Minnesota: Center for Urban and Regional Affairs; Mortimer, Jeylan T.; Rolando, Dominique J.; Zierman, Carol, 2017[122])YDS	1988-2000										↑	↑				
	(Bishop and Mane, 2003[126]), NELS:88	1988-2000						↑									
	(Dalton et al., 2013[119])NELS:88	1988-1994						↑									
	(Schmitt-Wilson and Faas, 2016[86]), NELS:88	1988-2000												↑			

			Exploring						Experiencing			Thinking				
Country	Study	Periods of data collection	School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
	(Staff et al., 2010[127]), NELS	1990-2000										↑				
	(Kemple, 2001[128]), CAE	1993-2003						▪								
	(Kemple, 2008[129]), CAE	1993-2003						↑								
	(Page, 2012[130]), CAE	1993-2003						↑								
	(Kim and Morgül, 2017[131]), NLSAAH	1994-2008									↑					
	(Ballard, Hoyt and Pachucki, 2019[132]), NLSAAH	1994-2013									↑					
	(Enayati and Karpur, 2018[133]), NLSAAH	1997-2008						↑								
	(Neumark, 2004[134]), NLSY	1997-2000						↑								
	(Neumark and Rothstein, 2005[135]), NLSY	1997-2000						↑								

			Exploring						Experiencing			Thinking				
Country	Study	Periods of data collection	School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
	(Shandra and Hogan, 2008[136]), NLSY	1997-2004						↑								
	(Fletcher . and Zirkle, 2009[137]), NLSY	1997-2006						↑								
	(Covacevich et al., 2021[104]) NLSY97	1997-2011							↑							
	(Bragg et al., 2002[138]), LSTP	1998-2002						-								
	(Carter, Austin and Trainor, 2011[139]), NLTS	2000-2010							↑							
	(Connors et al., 2014[140]), NLTS	2000-2010							↑							
	(Dalton et al., 2013[119]) ELS	2002-2006						↑								
	(Nicholas et al., 2015[141]), ELS	2002-2011						-								
	(Covacevich et al., 2021[104]), ELS	2002-2012		↑		↑		↑	-	-	-	↑	-		↑	
Uruguay	(Covacevich et al., 2021[104]), PISA–UYLS	2003-2012	↑		↑										↓	

Country	Study	Periods of data collection	Exploring						Experiencing			Thinking				
			School-based career reflection activities	* Career conversations	* Engaging with people in work through career talks or job fairs:	* Workplace visits or job shadowing:	* Application and interview skills development activities	*Occupationally -focused short programmes	* Part-time work	Work placements	* Volunteering	* Certainty	* Ambition	* Alignment	* Instrumental motivation towards school	Career originality (previously career concentration)
Total number of studies that look for a significant relationship between the indicator and adult employment outcomes			7	10	7	6	4	17	27	5	9	20	19	11	15	4
Number of studies that find a significant and positive relationship between the indicator and adult employment outcomes			2 out of 7	7 out of 10	4 out of 7	4 out of 6	3 out of 4	14 out of 17	20 out of 27	2 out of 5	8 out of 9	15 out of 20	15 out of 19	9 out of 11	13 out of 15	2 out of 4

Notes:

* Indicators marked with an asterisk can be considered indicators of career readiness based on accumulated evidence from "'Career Ready?", "Thinking about the Future", and the new analyses in this paper.

↑: Evidence of a significant association was found between the indicator and better adult employment outcomes for at least a significant minority of respondents.

↓: Evidence of a significant association was found between the indicator and worse adult employment outcomes for at least a significant minority of respondents.

– The analyses looked for evidence of a relationship between the indicator and adult employment outcomes and found no significant association.

Blanks: No analysis was undertaken of the indicator in question.

Source: Adapted from (Covacevich et al., 2021[3])

The evidence presented in this paper (and its two predecessors) varies considerably in terms of how much can be learnt about provision in specific countries. At times, when analyses find no significant associations with employment outcomes, more often the questionnaires completed by teenagers failed to ask students about these aspects of their lives. However, results allow some basis for a cautious comparison of countries. In Canada for example, analysis of the YITS longitudinal study shows that beneficial associations with adult employment outcomes are found in 11 of the 14 potential indicators. And in Australia, analysis of LSAY shows beneficial association in seven of the 12 indicators with available evidence. These insights into the likely efficacy of guidance provision warrant further investigation. In forthcoming publications, data from PISA 2018 will be drawn on to illustrate how countries compare across many areas in the extent to which 15-year-olds are meeting the indicators. Further publications will also describe tools for education systems and schools to help them assess whether their students are becoming more career ready.

Associations between career exploring/experiencing activities and career thinking

Analysis of data from PISA 2018 provides insight into the relationship between the indicators considered in this paper. The PISA questionnaires ask 15-year-olds in many countries about their experience of activities closely connected to the career readiness indicators identified in national longitudinal studies. Using a set of statistical controls (gender, socio-economic status and performance in reading) to ensure a reasonable comparison of students, the analysis finds plentiful significant beneficial relationships between participation in school-managed career development activities and workplace experiences and the sort of teenage attitudes that are linked with better employment outcomes. Impacts are most consistent in relation to career certainty and career ambition where large number of studies of longitudinal data now show benefits to students as they enter the adult workplace.

Table 6.2. Relationship between student participation in career exploration and experiences and career thinking

Activity	Career certainty (more certain than uncertain in occupational expectations)	Career ambition (more ambitious for a ISCO 1 or 2 job)	Alignment (more likely to be alignment in ISCO 1 and 2 plans and expecting to do tertiary education)	Instrumental alignment (more likely to believe that school is useful for employment)	Career originality (lower levels of career concentration – expectation of working in one of 10 most popular jobs for their gender in that country)
I spoke with a Career Advisor (at all)	+***	+**		+**	
I talked to someone about the job I would like to do when they finish their education	+***	+***	+***	+***	
I completed a questionnaire to find out about my interests and abilities	+***	+***	+**	+**	
I researched the internet for information about careers	+***	+***	+***	+**	

I visited a job fair	+***				
I attended a job shadowing or work-site visit	+***		+*		+**
I did an internship	+***	-*			
I earn money from working outside school hours (e.g. a holiday job, part time work)	+***				+**
I undertook voluntary work	+***	+**	+*		

Notes:
+* / + / +***** = statistically significant positive relationship at 10%, 5% or 1%
- * / - / -***** = statistically significant negative relationship at 10%, 5% or 1%
NA = no significant association
Source: (OECD, 2019[142]), *PISA 2018 Database*, https://www.oecd.org/pisa/data/2018database/ (accessed on 24 September 2021).

These results align with findings from a 2016 study by Jones, Mann and Morris (Jones, Mann and Morris, 2015[143]). Reviewing written statements from 390 young adults (aged 19-24) who agreed that they had found something of value in school-mediated episodes of employer engagement related to career guidance, the authors ask whether benefits can best be ascribed to growth in human capital (such as "employability" or technical skills), social capital (helpful networks) or cultural capital (defined in terms of enhancing personal confidence, elimination of options and visualisation of potential new pathways and as academic motivation). The study concluded that:

> *Cultural capital is the clearest benefit associated with engagement as young people from all backgrounds grow in personal confidence and begin to develop insights that prove valuable when navigating the job market. This links to social capital, the second most common type, which often involves establishing a range of "weak ties" providing resources of differing types rather than a single connection that leads to permanent employment. Human capital in the traditional sense of skills development was found to be relatively low frequency, thereby challenging the assumption that teenage exposure to working professionals necessarily generates "employability skills". Young people more commonly use employer engagement to aid self-realisation than to develop workplace skills directly. In other words, they become better equipped to make connections between their academic input and their future roles in the workplace (Jones, Mann and Morris, 2015, pp. 850-851[143]).*

Both analyses support the conclusion that the primary purpose of career guidance should be to help students to visualise and plan their futures through education and into work within a cyclical process. Exploring and experiencing activities can be expected to enhance career thinking which will in turn will shape the ways in which they will seek out and engage in future career-related activities. Effective career guidance takes the shape of a virtuous circle.

Youth employment and career guidance

Around the world, young people collectively have never stayed longer in education, entered the labour market more qualified or been more ambitious at 15[16] (ILO, 2020[144]; Henseke, 2018[145]). However, collectively too they face continuing challenges in accessing work. Across the OECD countries, young people are typically two and a half times more likely to be unemployed that people over the age of 24. At times of economic disturbance moreover, unemployment rates among young people can be expected to rise sharply. In some countries such as Germany and Switzerland, strong vocational pathways serve to protect many young people from the risk of unemployment. Well-designed vocational programmes hold out a firm promise of access to skilled employment following programmes of training. And this may help explain some of the results presented above. In both Switzerland and Germany, impacts may be constrained by the presence of well-worn and effective vocational pathways into work. In such countries, workplace signalling to young people about ultimate job opportunities and the pathways needed to secure them is clear through the active engagement of employers in apprenticeship programmes.

In other countries, such as Australia, Canada, Korea, the United Kingdom and the United States (and indeed for many non-VET students in Germany and Switzerland), students tend to stay in general education, confronting multiple choices about the subjects they choose to study, where they will study them and how hard they will apply themselves. For example, what grade in Mathematics is really needed to achieve to secure a dream job? In these circumstances, students are effectively asked to plan their own navigation through education and training provision. The evidence from this collection of research papers shows that students who are not given the resources they need to manage their transitions can expect to be at a consistent disadvantage in comparison to peers who have access to the tools to complete the task.

Earlier papers have drawn on the conceptualisation of Indian sociologist Arjun Appadurai that young people vary less in the character of their aspirations than in their "capacity to aspire". Students have access to very different resources and tools to help them develop the sense of agency that enables a confident and informed navigation through the complexities of education and training systems. The indicators identified with regard to how young people explore and experience potential futures in work highlight such tools and resources. As theorised by Stanley and Mann (2014[39]), young people engage in career guidance provision with levels of human, social and cultural capital that vary between peers and influence both engagement with, and the outcomes that can be expected from, different activities. Consequently, guidance activities have the capacity to either reduce or to widen inequalities.

Implications for policy and practice

This study provides a number of insights of value of policy makers and practitioners. It provides much greater confidence about the core characteristics of more effective career guidance – and so presents a challenge to education systems. As set out in "Career Ready?" in many countries, relatively few young people engage in career-related activities and experiences or demonstrate the career thinking that is conducive to better employment outcomes. By age 15, on average across OECD countries for which data exists, only 18% of students have undertaken three core activities: speaking with a career advisor as well as attending a job fair and visiting a workplace/job shadowing. The focus in this paper on the importance of career thinking underpins the significance of career guidance beginning well before the age of 15. Effective guidance is as much, perhaps more, about personal and informed reflection as it is about simple access to information, and because ultimate job opportunities are influenced by study choices, attitudes towards learning and educational experiences from the beginning of schooling, career-related learning and guidance should also begin young. The earlier that students are taught to engage in self-reflection and become aware of their developing attributes and the world of work, the more time they have to make the most out of their time in education. Broadening horizons in the context of a rapidly changing world of work, including technological advancements and

[16] PISA 2000 data shows that on average for the OECD, 53% of the students expected to be professionals or managers. This 62% in PISA 2018. By PISA 2018, this figure rose to 62%.

a greener, more sustainable economy, gives fresh impetus to career education and career guidance activities. Students need time and encouragement to explore, experience and think about their possible futures in work and how they relate to their educational choices. From primary school, children should be helped to understand the value of learning in different fields of study, the links between education and employment and to be challenged in stereotypical career thinking through direct encounters with people working in traditional and non-traditional roles.

For schools, rich programmes of career guidance should continue through lower secondary provision, enabling students to explore their occupational interests through counselling, career-interest exercises and career dialogues including with subject teachers. Guidance activities that involve employers are particularly important in broadening and informing student attitudes. As a result of the pandemic and national economy recovery plans, there is a growing need to ensure young people can engage in a meaningful way with people in a variety of job roles and sectors that may be experiencing turbulence. Career talks (notably the carousel format) (Rehill, Kashefpakdel and Mann, 2017[146]), workplace visits, job shadowing and exercises focused on developing the skills needed in recruitment have been shown to be especially effective. Such activities should be regular, contextualised, authentic, and initially mandatory to optimise the chance of students encountering new and useful information (OECD, 2021[147]). As students get older, more personalised activities and first-hand encounters with workplaces will help confirm career thinking and enable progression.

Two common responses to the findings reported in this study have been that 15 is too young an age for someone to settle on a career to pursue in adulthood ("career certainty") and that with the labour market in such apparent flux, it would even be foolhardy for a young person to commit to a particular ambition at such a young age. This study does not propose that ambitions should remain fixed. Rather, career certainty is better taken as a likely sign of critical engagement in thinking about the future in work. A skilled guidance counsellor will be well-placed to assess the solidity of the basis on which such occupational ambitions are founded and to make sure alternative options have been ruled out. As Table 6.2 illustrates however, the absence of any career aspiration may well link to a lack of participation in career exploration activities and first-hand encounters with the labour market. The 'thinking' indicators presented in this study provide some degree of confidence that a young person is in the process of visualising and planning their future. Effective guidance will help a student understand what they really need to achieve to secure their ambitions, reinforcing or challenging career aspirations, helping them to make decisions that are right for them. Turning to the second objection, it remains the case that while digitalisation is radically changing many jobs, much continuity remains. Through their choices in school, students can actively enable or significantly restrict their chances of moving into particular types of employment whether immediately after leaving school or following a period of further education or training. In a dynamic labour market, it becomes especially important that students have the opportunity to explore for themselves, through first-hand encounters how desirable jobs and careers are changing, and can be expected to further change in the years ahead.

7 Conclusions

The aim of the OECD Career Readiness project is to identify patterns of attitudes and activities that are associated with better transitions into employment by analysing multiple national longitudinal datasets. In this unprecedented study, data are considered from a wide range of countries and longitudinal surveys, further providing an international overview of the link between teenage career-related thinking, activities and experiences and adult career outcomes. Overall, the results of this paper present further evidence that secondary school students who explore, experience and think about their futures in work frequently experience lower levels of unemployment, receive higher wages and are happier in their careers as adults. It should be noted moreover that review of the studies against the history of rising and falling youth unemployment over the last half century shows that indicators apply in periods of both plenty and famine in employers' demand for the labour of young people (Covacevich et al., 2021[3]).

When evidence from this paper is considered together with the evidence presented in the two previous working papers, 11 of 14 the indicators considered can be seen to apply in a minimum of three countries:

Exploring the future

- Career conversations
- Engaging with people in work through career talks or job fairs
- Workplace visits or job shadowing
- Application and interview skills development activities
- Occupationally-focused short programmes

Experiencing the future

- Part-time work
- Volunteering

Thinking about the future

- Career certainty
- Career ambition
- Career alignment
- Instrumental motivation towards school

Collectively, the eleven confirmed indicators evidenced in this paper provide a new resource to education systems and schools seeking to ensure that students are being equipped with the tools they need to manage their journeys through education and training and into work. In forthcoming publications from the Career Readiness team, resources will be presented for use by schools and education systems in assessing the effectiveness of provision.

Three further potential indicators provided some evidence in some countries of beneficial impacts, but elsewhere results in the opposite direction were also found. Further studies are required to better understand the impact of the following aspects of teenage lives:

Exploring the future

- school-based career reflection activities

Experiencing the future

- work placements

Thinking about the future

- career originality

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Annex A.

Table A A.1. Experts who conducted the analyses of each dataset

Dataset country	Dataset	Expert	E-mail address	Team members/research assistants
Australia	Longitudinal Surveys of Australian Youth, 2009 Cohort (LSAY Version 9.0)	Joanna Sikora	joanna.sikora@anu.edu.au	-
China	China Family Panel Studies (CFPS)	*Wangyang Li (Beijing Normal University)	wangyangli@bnu.edu.cn	Wei Zhao (Beijing Normal University) Yichun Yang Jing Ning (Beijing Normal University)
Canada	Youth In Transition Survey (YITS)	Marie Connolly	connolly.marie@uqam.ca	-
Canada	Youth In Transition Survey (YITS)	Catherine Haeck	haeck.catherine@uqam.ca	-
Canada	Youth In Transition Survey (YITS)	Pierre Lefebvre	lefebvre.pierre@uqam.ca	-
Germany	German National Educational Panel Study (NEPS)	Francesco Pastore	Francesco.PASTORE@unicampania.it	Marie Lena Muschik
Korea	Korean Educational Longitudinal Study 2005 (KELS2005)	Ryu Hangu	ryuhangu@krivet.re.kr	-
United Kingdom	British Cohort Study 1970	Chris Percy	chris@cspres.co.uk	-
United Kingdom	Longitudinal Study of Young People in England (LSYPE)	*Jill Hanson (University of Derby)	j.hanson@derby.ac.uk	-
		*Chris Percy (University of Derby)	chris@cspres.co.uk	-
United States	Educational Longitudinal Study	Matthew Diemer	diemerm@umich.edu	-
United States	National Longitudinal Survey of Youth 1997 (NLSY97)	Blake A. Allan	ballan@Central.UH.EDU	-
United States	National Longitudinal Survey of Youth 1997 (NLSY97)	*Ryan Duffy (University of Florida)	rduf@ufl.edu	-
Uruguay	PISA 2003 Uruguay Longitudinal Study	* Tabaré Fernandez (Sociology Department of Universidad de la	tabare.fernandez@cienciassociales.edu.uy	Angela Ríos (Sociology Department of Universidad de la República, contracted via Pro Fundación para las Ciencias Sociales)

		República, contracted via Pro Fundación para las Ciencias Sociales)		
		* Santiago Cardozo (Sociology Department of Universidad de la República, contracted via Pro Fundación para las Ciencias Sociales)	cardozo.santiago@gmail.com	Maximiliana Cedrés (Sociology Department of Universidad de la República, contracted via Pro Fundación para las Ciencias Sociales)

* The contract was with the institution, not with individual experts.

Table A A.2. Background variables

	Country	Dataset	Variables	Measured as	Associated question(s)	Used as	
						Control variable	For subgroup comparisons
Gender	Australia	LSAY	Gender	1. Female, 0. Male	Q4 in the PISA 2009 questionnaire Are you female or male? 1. Female 0. Male	Yes	Yes
	Canada	YITS	Gender	1= man, 0=woman	ST03Q01 (C1) [genderc1], GENDERD6 (C6) [genderc6]	Yes	Yes
	China	CFPS	Gender	1 = Male 5=Female	Interviewer's Note: What is the sex of the respondent?	Yes	Yes
	Germany	NEPS	Gender	Male, Female		Yes	Yes
	Korea	KELS2005	Gender	1 =Male, 0= Female		Yes	No
	United Kingdom	BCS	Gender	Male = 1; Female = 0		Yes	Yes
		LSYPE	Sex	males, females	INTERVIEWER: Respondent is...:	Yes	No
	United States	NLSY97	Sex	1 Male 2 Female	What is your sex?	Yes	Yes
		ELS	Biological sex	Male, Female		Yes	Yes
	Uruguay	PIS03-UYLS	Gender	Male, Female	PISA 2003 Student International Questionnaire, st03q01, coded as male (='0)' and female (=1).	Yes	Yes
Socio-economic status	Australia	LSAY	Economic and sociocultural status - ESCS - PISA index	Score variable	ESCS for PISA 2003 and 2006 was derived from three variables related to family background: highest parental education (in number of years of education according to International Standard Classification of Education (ISCED) classification, highest parental	Yes	Yes

					occupation (highest international social and economic index [HISEI] scores), and number of home possessions including books in the home		
	Canada	YITS	Social background	Quartile or terciles groups depending on sample size	From C1A: §parental total income, quartile (plus one category for missing information) [inc_par4] §parental education levels, maximum of both mother and father, 0='high' school or less, 1='college,' trade, vocational, university certificate, 2='bachelors,' professional, masters or Ph.D. (plus one category for missing information) [max_edu_parents_3cat] From PISA 2000: §parental education levels / highest international social and economic index (HISEI) of parental occupational status, quartile (plus one category for missing information) [hisei_par4]	Yes	No
	China	CFPS	Parents' education, Family income, Hukou	Highest v lowest quartile	Parents' education The highest level of education of "the lineal family member who does not live together" [List of levels of education] 1.Illiterate/Semi-literate 2. Primary school 3. Middle school 4. High school 5. 2- or 3-year college 6. 4-year college/Bachelor's degree 7. Master's degree 8. Doctoral degree What is the highest level of education you have obtained so far? 1. Illiterate/Semi-literate [Skip to D1] 2. Primary school 3. Middle school 4. High school 5. 2- or 3-year college 6. 4-year college/Bachelor's degree 7. Master's degree 8. Doctoral degree 9. No need to go to school[Masked]; Parent's education; Occupation of "the lineal family member who does not live together":_____; What is your occupation: _____; Family income - fincome2_per(net family income per capital): a composite variable is created and provided by CFPS project team; Hukou - your child's current household registration type is: 1. Agricultural 3. Non-Agricultural 5. Not registered [Skip to A6] 79. Not applicable	Yes	No

	Germany	NEPS	Parents' education attainment	Father and mother have HE or not	Answers for mothers are missing mostly.	Yes	No
	Korea	KELS2005	Social class	'High class', 'Middle class', and 'Low class'	the standardised SES is the sum of standardised parent occupations (.825), standardised parent education (.748), and standardised household income (.782).	Yes	Yes
	United Kingdom	BCS	Many variables	High paternal Socio-Economic Class (SEC), Low paternal SEC	Job Social Capital (Age 16)** (Y/N) (-), Reported Family Financial Hardship at 16 (Y/N), Family on Housing Benefits at 16 (Y/N), Family on Any State Benefits at 16 (Y/N), Maternal Socio-Economic Class**** (Class I (most privileged), Class II, Class III (non-manual trade), Class III (manual trade), Class IV, Class V (least privileged); Mother left education post-16; Mother left education post-20; Mother was a Teen Mother; Paternal Socio-Economic Class**** (Class I (most privileged), Class II, Class III (non-manual trade), Class III (manual trade), Class IV, Class V (least privileged)); Father left education post-16; Father left education post-20	Yes	Yes
		LSYPE	Parental level controls (w1)	1. Benefits1, 2. Benefits 2, 3. Benefits 3, 4. Qualf (Main parent holds degree), 5. Wrk9b (Main parent SES)	Parental benefits (low income Y/N, unemployment Y/N and sick/disability Y/N) • Main parent - Socio-Economic Class (1-8 from higher managerial & professional to unemployed) • Main parent holds university degree (Y/N)	Yes	No
	United States	NLSY97	Household income, household wealth, mother's highest educational attainment, father's highest educational attainment	Scale variables	• Highest grade parent completed What was the highest grade of schooling completed by your mother? 0 None 1 1st grade - 8th grade 2 9th grade - 11th grade 3 12th grade 4 Some college 5 College degree 6 Some grad school 7 Grad/prof degree What was the highest grade of schooling completed by your father?	Yes (all)	Yes (highest grade parents completed)

					0 None 1 1st grade - 8th grade 2 9th grade - 11th grade 3 12th grade 4 Some college 5 College degree 6 Some grad school 7 Grad/prof degree • Household income During 1996, how much income did you receive from wages, salary, commissions, or tips from all jobs, before deductions for taxes or anything else? This question is asked to both parents/guardians and summed. • Net worth of household What is the total dollar value [you/you or your spouse/partner] have in these assets? What is the total amount [you/you and your partner/you and your spouse] owe altogether on these debts? • Highest SAT math score CUMULATIVE VARIABLE: Highest SAT MATH score. This variable is created for all respondents regardless of interview status in the latest round the variable was created (round 11); CVC_SAT_MATH_RND_2007 provides the latest round from which the respondent's highest score is determined; that information was used to create this variable. 1 200 - 300		

					2 301 - 400 3 401 - 500 4 501 - 600 5 601 - 700 6 701 - 800 0 Have not yet received the scores		
		ELS	BYPARED: Highest level of parental education, BYINCOME: Total family income in 2001 (year prior to initial BY wave).	BYPARED: Did not finish high school, graduated from high school or General Educational Development (GED), attended 2-year school, no degree, graduated from 2-year school, attended college, no 4-year degree, graduated from college, completed Master's degree or equivalent, completed PhD, MD, other advanced degree; BYINCOME: USD 1 000 or less USD 1 001 – USD 5 000 USD 5 001 – USD 10 000 USD 10 001 – USD 15 000 USD 15 001 – USD 20 000 USD 20 001 – USD 25 000 USD 25 001 – USD 35 000 USD 35 001 – USD 50 000 USD 50 001 – USD 75 000 USD 75 001 – USD 100 000 USD 100 001 – USD 200 000 USD 200 001 or more	Parents' highest level of education	BYPARED: Yes, BYINCOME: Yes	BYPARED: Yes, BYINCOME: No
	Uruguay	PIS03-UYLS	Occupational Class Origin	four classes	Service Classes (sons/daughters of Proprietors, managers and professionals) and Working Classes (sons/daughters of the working class).	Yes	Yes
Academic performance	Australia	LSAY	PISA Science Score	Score value	PISA science plausible values - The science score was chosen for convenience as a proxy for student academic ability	Yes	No
	Canada	YITS	Academic achievement	0='no' high school, 1='high' school, 2='vocational' school, 3='college' or university certificate, 4='bachelor' degree,	Highest certificate, diploma or degree attained as of December 2009.	Yes	No

				5='professional' diploma, 6='masters' or Ph.D. [edu6_att_r]			
	China	CFPS	Achievement	Highest v lowest quartile	X2 Select one of the following lists and ask the respondent to read it out loud [Show card]. [Word Module] Interviewer Note: Ask the respondent to read out loud in Mandarin. Do not distinguish between tones/front nasal/back nasal/flat tongue/curved tongue. [CAPI] [Correct='1;' Incorrect='5](Alist' of 34 words) X4 Math: Please randomly select one of the four lists of questions. [Show card][Math Module] [CAPI] [Correct=1; Incorrect=5]	Yes	No
	Germany	NEPS	Final grade on leaving certificate of school (or next degree if missing)	Continuous variable	What was the approximate overall grade on your graduation certificate for this school-leaving qualification?; We have some questions about this school-leaving qualification. What was the overall grade earned on this qualification? The variable contains the final grade of the last school-leaving certificate an individual attained. For some observations, I used final grades from apprenticeships or studies if the school-leaving grade was not available. This applied to only a small case number of N = 195.	Yes	No
	Korea	KELS2005	Korean SAT score (kor, math, eng)©	Low Middle High	If SAT scores are used, the test takers are distinguished from those who do not take the test, which in turn results in an analysis of different groups. In Korea, the most of junior colleges do not require SAT scores in admission. For this reason, we present separate models using SAT scores and unused ones in regression analysis.	Yes	No
	United Kingdom	BCS	Maths Test Age 10, Number of national exam passes at age 16, Teacher View of Student Academic Ability at 16, Reading Age at 16, Highest level of qualification at 26	Maths Test Age 10 (High = better), Number of national exam passes at age 16 (continuous variable), Teacher View of Student Academic Ability at 16 (continuous variable), Reading Age at 16 (continuous variable), Highest level of qualification at 26: No Qualification, CSE 2-	Close-ended questions that ask for: Maths Test Age 10, Number of national exam passes at age 16, Teacher View of Student Academic Ability at 16, Reading Age at 16, Highest level of qualification at 26	Yes	No

				5/NVQ1, O Level/NVQ2, A Level/NVQ3, Higher Qual/NVQ4, Degree +/NVQ5 OR 6			
		LSYPE	NVQ level achieved by 2015 OR Education	NVQ level achieved by 2015: Level 1, Level 2, Level 3, Level 4, Level 5, Other academic qualifications, None of these qualifications & Whether achieved first degree: No degree, First or higher degree, Total, Not applicable	The interview asked the question below to derive the highest level of NVQ the respondent held by 2015 which we entered as individual dummy terms (0-5) Which, if any, vocational qualifications have you gained since {#DateQuestionTextInsert}? OR are studying for now? Please select all that apply. {VCQUHELP} UNIDEGQuestionTextInsert 1. From which university did you obtain your first degree? 2. At which university are you studying for your degree?* *This was used as a 1 = Russell Group university attended and 0 = did not attend a Russell group university	Yes	No
	United States	NLSY97	Highest SAT (Scholastic Assessment Test) math score, Highest SAT verbal score, Highest ACT (American College Testing) score	Highest Scholastic Assessment Test (SAT) math score: 1 200 - 300, 2 301 - 400, 3 401 - 500, 4 501 - 600, 5 601 - 700, 6 701 - 800, 0 Have not yet received the scores; Highest SAT verbal score: 1 200 - 300, 2 301 - 400, 3 401 - 500, 4 501 - 600, 5 601 - 700, 6 701 - 800, 0 Have not yet received the scores; Highest American College Test (ACT) score: 1 0 - 6, 2 7 - 12, 3 13 - 18, 4 19 - 24, 5 25 - 30, 6 31 - 36, 0 Have not yet received the scores	Highest SAT math score: CUMULATIVE VARIABLE: Highest SAT MATH score. This variable is created for all respondents regardless of interview status in the latest round the variable was created (round 11); CVC_SAT_MATH_RND_2007 provides the latest round from which the respondent's highest score is determined; that information was used to create this variable. Highest SAT verbal score: CUMULATIVE VARIABLE: Highest SAT VERBAL score. This variable is created for all respondents regardless of interview status in the latest round the variable was created (round 11); CVC_SAT_VERBAL_RND_2007 provides the latest round from which the respondent's highest score is determined that information was used to create this variable. Highest ACT score: CUMULATIVE VARIABLE: Highest ACT score. This variable is created for all respondents regardless of interview status in the latest round the variable was created (round 11);	Yes	No

					CVC_ACT_SCORE_2007 provides the latest round that information was used to create this variable.		
		ELS	Grade point average	1. Mostly below Ds 2. Mostly Ds 3. About half Cs and half Ds 4. Mostly Cs 5. About half Bs and half Cs 6. Mostly Bs 7. About half As and Bs 8. Mostly As 9. Other (SPECIFY) 10. As to Cs 11. Mixed 12. Ungraded	Overall, what grades did you receive in high school? UNIVERSE: R with history of formal schooling; attended 9th grade/higher; asked about grades in 9th grade/higher at Dual Language Immersion (DLI); DLI high school (HS) grades not "Don't Know" or "Refuse" (DK/RF); not asked about HS grades at DLI; not currently attending high school	Yes	No
			Composite score	Score variable	BYTXCSTD: Composite score, participant's math and reading achievement at BY (derived from item response theory by NCES.)	Yes	No
	Uruguay	PIS03-UYLS	Students' performance in PISA Mathematics Test	high achievers (PISA Maths Proficiency Levels 4, 5 and 6) and low achievers (PISA Maths Proficiency Levels 1 and bellow)	Proficiency levels were used like the three strata made for sampling purposes in the PISA 2003 UYLS. Young people in the highest levels of proficiency in Mathematics (4, 5, 6), considered an "academic elite", were grouped in a stratum that was censed (stratum 1), meanwhile, those in levels 2 and 3 were joined in sample strata (strata 2) and named "literate students", and finally, levels below 2 that reflect young people with worst mathematical proficiency were grouped in another sample stratum (stratum 3, named "illiterate students").	Yes	Yes
Level of education obtained, educational track, or educational status	Australia	LSAY	University graduate or student	University or not	This variable was constructed using a derived variable XBAC2018 See NCVER 2020, Longitudinal Surveys of Australian Youth (LSAY) 2009 cohort derived variables, NCVER, Adelaide. https://www.lsay.edu.au/publications/search-for-lsay-publications/2551	Yes	No
	Canada	YITS					
	China	CFPS					
	Germany	NEPS	Educational track	Vocational OR academic pathway	Vocational OR academic pathway	No	Yes

	Korea	KELS2005	High school track	'0' for general high schools and '1' for vocational high schools.		Yes	Yes
	United Kingdom	BCS	Education route post-16	Non-educational route post-16 Mixed educational route post-16 Academic route post-16 Vocational quals route post-16	• Whether achieved first degree (Y/N) – Wave 8 • Degree awarding institute (Russell group/Other) - Wave 8 • National Vocational Qualification (NVQ) level achieved by 2015 (Levels 1-5, other academic qualifications, no qualifications)	Yes	Yes
		LSYPE	Age left full-time education	Left education at 16 Left education post 16 Left education post 21	Age left full-time education	Yes	Yes
	United States	NLSY97	Education status	0 = not enrolled in any education and 1 = enrolled in education.	Enrolment status as of the survey date Note (1): This variable refers to the type of college the respondent attended, not the college degree that the respondent reported working towards or attained. Note (2): Respondents who are working towards a GED are coded as an "8" regardless of where that course of study took place.	Yes	No
		ELS					
	Uruguay	PIS03-UYLS	Educational trajectory	yes/no	Grade repetition in Primary or Lower Secondary Education. This variable was added as a control for the Educational trajectory;	Yes	No
School Location	Australia	LSAY	Location of the school	1. Metropolitan area school, 0. Not a metropolitan area school - comprises provincial and remote areas schools	A three-category variable, recorded in 2009 which denotes the location of the school. The three categories are: metropolitan, provincial and remote, based on the Australian statistical geography standard (ASGS) .The variable was converted to 2 categories:	Yes	No
	Canada	YITS	Urban/rural status	0='urban,' 1='rural,' 9=missing	ECR_D6 (Cycle 6) Economic Region (ER) of residence for the household at time of interview: was not used since not available in data files, PROVD6 Derived variable: Province of residence for the household as of date of interview (2006 Census geography) [provd6]	Yes	No
	China	CFPS	Geography	Name of province	Eastern region includes 11 provinces (municipalities): Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan. Central region includes 8 provinces: Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and	Yes	No

					Hunan. Western region includes 12 provinces (autonomous regions, municipalities): Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang		
	Germany	NEPS					
	Korea	KELS2005	At the age of 15, the area where middle schools are located	Divided into large cities, cities, and rural areas depending on the size of the city		Yes	Yes
	United Kingdom	BCS	Region features based on region lived in age 16	Economic Activity Rate in 1981 Unemployment Rate in 1981 Economic Activity Rate in 1991 Unemployment Rate in 1991	Economic Activity Rate in 1981, Unemployment Rate in 1981, Economic Activity Rate in 1991,Unemployment Rate in 1991	Yes	No
		LSYPE					
	United States	NLSY97					
		ELS	Geographic region of respondent's residence	Northeast, Midwest, South, West	Geographic region of respondent's residence at BY (Northeast; Midwest; South; West).	Yes	No
	Uruguay	PIS03-UYLS					
Migrant status/ethnicity	Australia	LSAY	1 = First-generation migrant, second-generation migrant, native Australians	First-generation migrants are coded 1, everyone else is coded as 0. Second-generation migrants are coded 1, everyone else is coded to 0	These variables as well as a variable identifying Australian-born students variables were created from the information about students and parents' country of birth. Native students are Australian-born students whose both parents were also born in Australia. First-generation migrants are students born in Australia with at least one parent born overseas. Second-generation migrants are students born overseas with both parents also born overseas. In the analysis Australian-born students are used as the reference category i.e. as a point of comparison with first and second-generation migrants.	Yes	No
	Canada	YITS	Ethnicity/migrant status	1='visible' minority, 0='not,' 1='Canadian' citizen at birth, 0=not	o visminp1 Visible Minority (1='visible' minority, 0='not)' [vis_minority_childa] o PD3P11:14 Citizenship Status (1='Canadian' citizen at birth, 0='not)' [citizen_birth] PD4P1, PD5P1 Immigrant Status: was not used since not enough respondents are immigrants	Yes	No
	China	CFPS	Ethnicity		Child's ethnicity is: _____. Your ethnicity is: _____.	Yes	No

			Migrant status	1. This village/residential community 2. Another village/residential community in this township 3. Another township in this county/city/district. 4. Another county/city/district in this province (please specify):_____ County. 5. Another province in Mainland China (People's Republic of) (please specify): ___ Province/ Municipality____ County. 6. Outside of Mainland China (People's Republic of) (including Hong Kong, Macau and Taiwan)	Your child's current place of household registration is?	Yes	No
	Germany	NEPS					
	Korea	KELS2005					
	United Kingdom	BCS	Ethnicity	Ethnicity (White = 1; Else = 0)	Ethnicity (White = 1; Else = 0)	Yes	No
		LSYPE	English Main Language and Ethnicity	English only/First or main/Second/Bilingual	Home 16 (English only/First or main/Second/Bilingual)	Yes	No
	United States	NLSY97	Ethnicity	Ethnicity - African America Ethnicity - Hispanic Multi-ethnic	Data on the respondent's race and ethnicity were collected in the Screener, Household Roster, and Non-resident Roster Questionnaire (round 1) and were based on the household informant's identification. Using the household roster variables, the survey program created KEY!RACE, which describes the respondent's race (https://www.nlsinfo.org/content/cohorts/nlsy97/topical-guide/household/race-ethnicity-citizenship). 1 Black 2 Hispanic 3 Mixed Race (Non-Hispanic) 4 Non-Black / Non-Hispanic {c_areyou/isname()} one of the following: Hispanic, Latino, or of Spanish origin? 1 Yes 0 No	Yes	Yes

					Which one of the following [(are you/is [NAME])()]? 1 White 2 Black or African American 3 American Indian, Eskimo, or Aleut 4 Asian or Pacific Islander 5 Something else? (SPECIFY)		
		ELS	Student's race/ethnicity-composite	Amer. Indian/Alaska Native, non-Hispanic Asian, Hawaii/Pac. Islander, non-Hispanic Black or African American, non-Hispanic Hispanic, no race specified Hispanic, race specified More than one race, non-Hispanic White, non-Hispanic	Student's race/ethnicity-composite	No	No
	Uruguay	PIS03-UYLS	Ethnical self-identification	Two categories, young people who identify themselves as an afro or black (even if self-identification includes another category as well) and who don't.	In the second follow-up of PISA 2003 UYLS, youngsters were asked about their self-identification in some of the majority ethnic groups in the country. This question applies the same structure that was selected in the 2011 national census, with multiple choice among five independent (and no excluding) categories. For analytical purposes, ethnical self-identification was recoded into two categories, young people who identify themselves as an afro or black (even if self-identification includes another category as well) and who don't	Yes	No
Age	Australia	LSAY	Date of birth collected in 2009	Measured in years	Age was created from the date of birth collected in 2009 when PISA was administered. The variable was created by the data owners. It is measured in years.	Yes	No
	Canada	YITS					
	China	CFPS	Date of birth collected in 2009	Measured in years	The child's date of birth _____year _____month _____day	Yes	No
	Germany	NEPS	Year of birth	1994 and older 1995, 1996, 1997 and younger	Year of birth (Reference: 1994 and older 1995, 1996, 1997 and younger)	Yes	No
	Korea	KELS2005					

	United Kingdom	BCS					
		LSYPE					
	United States	NLSY97					
		ELS					
	Uruguay	PIS03-UYLS					
Others	Australia	LSAY					
	Canada	YITS	[marital6] Marital status at Cycle 6, [child] • Presence of dependent children at Cycle 6, [famstruc] • Family structure at Cycle 1, [nnsib] • Number of siblings at Cycle 1, [status_job_dec2009] • Job status in December 2009	1='married' or common-law partner, 0='single,' 1='respondent' has child(ren), 0='not,' 1='single,' 2='nuclear,' 3='mixed,' 4='other,' 99='missing,' 1='full' time, 2= part time, 5= not applicable, 6='valid' skip		Yes	No
	China	CFPS	Whether a parent is a manager or not; school child is attending		F301 What school is the child attending? 1. Kindergarten/Pre-primary School [Skip to F804] 2. Primary school 3. Middle school 4. High school 5. College	Yes	No
	Germany	NEPS	• Combination of different career preparation activities; • By intensity/duration of experience, e.g. part-time working; • Perceptions of the quality/utility of provision/experiences.			Yes	No
	United Kingdom	BCS	Home environment; employment status at 26, life circumstances at 26, Highest level of qualification at 34 (voc or acad); Life circumstances at 34; employment status at 34, Region lived in aged 26, Region lived in aged 34	English Main Language at Home 16 (Y/N); Living with Natural Parents at 16 (Y/N); Weeknights Watching TV age 5; Days per Week Read To Age 5; Mother Interest in Education Age 10		Yes	No
			Networking	Network to get a job at age 16 No network to get a job	Networking	No	Yes

			School type, Academic/behaviour at school; age left full-time education, highest level of qualification at 26	Unknown (various other scale variables) Comprehensive Grammar Secondary Modern/Technical Independent Private LEA Special Independent Special Other Scottish LEA	Drawing Ability Test Age 5 (High = better score) Behaviour Age 5 (Grouped Rutter; High = worse behaviour) Behaviour Age 10 (Grouped Rutter; High = worse behaviour) How Much Reads Books Age 10 (1 = Hardly ever/Never; 2 =Sometimes; 3 = Often) Maths Test Age 10 (High = better) Number of national exam passes at age 16 Teacher View of Student Academic Ability at 16 Reading Age at 16 Had Been Suspended from School age 16 (y/n)	Yes	No
		LSYPE	Utility of conversations	Low utility of information from Connexions OR high utility of information from Connexions	1. Thinking about the information you have about future studies, how useful was the information you got... * From a Connexions Service Personal Advisor (PA) or someone else from Connexions?, 2. Thinking about the information you have about future studies, how useful was the information you got...* As part of a lesson?, 3. Thinking about the information you have about future studies, how useful was the information you got... * From teachers outside lessons?	No	Yes
			Breath of Career conversations	Low breadth of conversations wave 1-3 OR high breadth of conversations wave 1-3	Number of different people talked to from wave 1 to wave 3 about future study or apprenticeships (includes whether they talked with Connexions advisors, other Connexions personnel, advisors from the Careers Advisory Service, careers advisors/teachers, other teachers, teachers as part of lessons and teachers outside of lessons). In wave 1 and 2 the question asked about frequency of talks: 1. Not at all 2. Not very often 3. A little 4. Quite a lot 5. A lot Don't know	No	Yes
			Care	1. Yes - in this household 2. No	Some people your age may have to look after other people. This could be a brother or sister, a relative or	Yes	No

					someone else who is disabled or sick. Is there anyone like this who lives here with you that you have to look after on a regular basis?		
			Special Educational Needs (SEN)	1. Yes 2. No 3. Don't know	Has (text fill: name of sample member) ever been identified, either by his or her school or by someone else, as having special educational needs of any kind? INTERVIEWER: GIFTED YOUNG PEOPLE SHOULD NOT BE INCLUDED AS SPECIAL EDUCATION NEEDS	Yes	No
			Age of leaving full-time education	Left at 18 OR Did a degree	This was a two group split between those who attended university and those who left full-time education at 18. Those who attended university were identified from the wave 8 variable W8EVERUNI (ever been to university). Those who left full-time education were identified from wave 6 W6EducYP while removing those who spent most of their time working and were only attending a college course as part of their work (identified in W6PartimeYP).	No	Yes
			Ethnicity; SEN – • Young person ever identified as having special educational needs (Y/N), • Young person has caring responsibilities (Y/N); • Whether ever or is now married (Y/N) - Wave 8 • Region lived in Wave 8	White/Mixed/Indian/Pakistani/Bangladeshi/Black Caribbean/Black African/Other	Ethnicity (White/Mixed/Indian/Pakistani/Bangladeshi/Black Caribbean/Black African/Other)	Yes	No
	United States	NLSY97	Race, highest SAT math score, highest SAT verbal score, highest ACT score		Data on the respondent's race and ethnicity were collected in the Screener, Household Roster, and Non-resident Roster Questionnaire (round 1) and were based on the household informant's identification. Using the household roster variables, the survey program created KEY!RACE, which describes the respondent's race (https://www.nlsinfo.org/content/cohorts/nlsy97/topical-guide/household/race-ethnicity-citizenship).	Yes	Yes (race)

					1 Black 2 Hispanic 3 Mixed Race (Non-Hispanic) 4 Non-Black / Non-Hispanic {c_areyou/isname()} one of the following: Hispanic, Latino, or of Spanish origin? 1 Yes 0 No Which one of the following [(are you/is [NAME])()]? 1 White 2 Black or African American 3 American Indian, Eskimo, or Aleut 4 Asian or Pacific Islander 5 Something else? (SPECIFY), • Highest SAT math score CUMULATIVE VARIABLE: Highest SAT MATH score. This variable is created for all respondents regardless of interview status in the latest round the variable was created (round 11); CVC_SAT_MATH_RND_2007 provides the latest round from which the respondent's highest score is determined; that information was used to create this variable. 1 200 - 300 2 301 - 400 3 401 - 500 4 501 - 600 5 601 - 700 6 701 - 800 0 Have not yet received the scores • Highest SAT verbal score CUMULATIVE VARIABLE: Highest SAT VERBAL		

					score. This variable is created for all respondents regardless of interview status in the latest round the variable was created (round 11); CVC_SAT_VERBAL_RND_2007 provides the latest round from which the respondent's highest score is determined that information was used to create this variable. 1 200 - 300 2 301 - 400 3 401 - 500 4 501 - 600 5 601 - 700 6 701 - 800 0 Have not yet received the scores • Highest ACT score CUMULATIVE VARIABLE: Highest ACT score. This variable is created for all respondents regardless of interview status in the latest round the variable was created (round 11); CVC_ACT_SCORE_2007 provides the latest round that information was used to create this variable. 1 0 - 6 2 7 - 12 3 13 - 18 4 19 - 24 5 25 - 30 6 31 - 36 0 Have not yet received the scores		
		ELS	Number of academic risk factors	No risk factors One risk factor Two risk factors Three risk factors Four risk factors Five or six risk factors Outcome variables – linked to input variables	BYRISKFC: Number of academic risk factors, which include: (1) comes from a single-parent household; (2) has two parents without a high school diploma; (3) has a sibling who has dropped out of school; (4) has changed schools two or more times; (5) has repeated at least one grade; and (6) comes from a household with an income below the federal threshold for poverty.	No	Yes

	Uruguay	Household cultural capital; 2.5 Partners, parentship, and household composition at age 25		o Highest father/mother's educational level achievement by age 15. From PISA 2003 main study, international questionnaire: variable name "hisced". Categories are: a) ISCED Level 2; b) ISCED Level 3B o C; c) ISCED Level 3A; d) ISCED Level 4; e) ISCED Level 5B; f) ISCED Level 5A or 6. § The index on the highest educational level of parents (HISCED) corresponds to the higher ISCED level between either parent (OCDE, 2005). § This variable of PISA dataset is recoded for analysis into three categories of interest: (i) maximal education of parents is as far Lower Secondary; (ii) they acceded or completed Upper Secondary; and (iii) the acceded or completed Higher Education. o Home educational resources at age 15. From PISA 2003 main study international dataset. It is an index variable referred to as "hedress". o Cultural possessions at home at age 15. From PISA 2003 main study international dataset. It is an index referred to as "cultposs".	Yes	No

Notes:
Grey Shade: Data analyses not performed for these variables.
These are the main variables included in the regression analyses conducted for each dataset. Other background characteristics may have also been used.
The classification of the variables into the categories in column 1 were made to simplify the reading of this table.

Table A A.3. Coefficients and standard errors for associations between indicators related with exploring the future and labour-market outcomes

Indicators	Country and dataset		NEET (not being in education, employment or training)		Earnings (full-time)[2]		Career satisfaction[3]	
			Coefficient[1]	Standard error	Coefficient	Standard error	Coefficient	Standard error
Career questionnaires	Australia	LSAY						
	Canada	YITS	-0.04***	0.01	0.02	0.01	-0.01	0.01
	China	CFPS						

	Germany	NEPS	0.03	0.57			0.00	0.09
	Korea	KELS2005						
	United Kingdom	BCS70						
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS	-0.41	0.33	-0.1*	0.05		
Career Classes	Australia	LSAY			-0.019	0.052	0.178	0.154
	Canada	YITS	-0.03**	0.02	0.04***	0.02	0.02	0.02
	China	CFPS						
	Germany	NEPS	-0.09	-1.34			-0.09	-1.50
	Korea	KELS2005	0.01	0.11	-0.02	0.02	-0.02	0.05
	United Kingdom	BCS70	-0.03	0.28	-0.02*	0.01	-0.06	0.07
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS	-0.21	0.38	0.09*	0.05		
Applying to jobs	Australia	LSAY[2]			0.05	0.07	0.28**	0.13
	Canada	YITS	0.00	0.02	0.04***	0.01	0.02	0.02
	China	CFPS						
	Germany	NEPS	0.00	0.08			0.07	1.51
	Korea	KELS2005						
	United Kingdom	BCS70	-1.55***	0.46	0.03	0.02	0.24**	0.11
			-1.66***	0.50	0.02	0.02	0.12***	0.06
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS						

Interviewing for jobs	Australia	LSAY						
	Canada	YITS	-0.01	0.01	0.05***	0.01	0.01	0.02
	China	CFPS						
	Germany	NEPS						
	Korea	KELS2005						
	United Kingdom	BCS70[1]	-0.79**	0.36	0.00	0.02	0.30***	0.09
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS						
Career conversations with teachers	Australia	LSAY			0.02	0.06	0.39***	0.13
	Canada	YITS	-0.03**	0.01	0.03**	0.01	-0.02	0.01
	China	CFPS						
	Germany	NEPS						
	Korea	KELS2005						
	United Kingdom	BCS70[1]	-0.41	0.26	0.00	0.01	0.11*	0.06
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS						
Career conversations with career guidance counsellors	Australia	LSAY			0.10	0.08	0.18	0.13
	Canada	YITS	-0.03**	0.01	0.03**	0.01	-0.01	0.02
	China	CFPS						
	Germany	NEPS	-0.02	-0.32			0.08	1.54
	Korea	KELS2005						
	United Kingdom	BCS70[1]	-0.57	0.37	0.00	0.02	0.11	0.06
		LSYPE						
	United States	NLSY97						
		ELS						

	Uruguay	PIS03-UYLS						
Career conversations with family members and peers	Australia	LSAY			0.00	0.08	0.62*	0.31
					-0.02	0.06	0.46*	0.26
	Canada	YITS	-0.02	0.02	0.08**	0.02	-0.01	0.02
			-0.02*	0.01	0.03**	0.01	0.01	0.01
	China	CFPS						
	Germany	NEPS						
	Korea	KELS2005			0.02	0.02		
	United Kingdom	BCS70[1]						
		LSYPE						
	United States	NLSY97						
		ELS	0.17***	1.87a	3462.87	772.74	0.09	0.04
	Uruguay	PIS03-UYLS						
Engaging with people in work through career talks or job fairs	Australia	LSAY			-0.09	0.06	0.26*	0.13
	Canada	YITS	-0.03**	0.02	0.02	0.02	0.03	0.02
	China	CFPS						
	Germany	NEPS	0.07	1.31			-0.05	-0.95
	Korea	KELS2005						
	United Kingdom	BCS70[1]	0.18	0.33	0.00	0.02	-0.06	0.08
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS	-0.53**	0.28	-0.02	0.04		
Workplace visits or job shadowing	Australia	LSAY			0.09*	0.05	0.41***	0.13
	Canada	YITS	-0.04**	0.01	0.01	0.02	0.00	0.02
	China	CFPS						
	Germany	NEPS	0.02	0.45			0.01	0.26
	Korea	KELS2005	0.21**	0.11			0.12**	0.05
	United Kingdom	BCS70[1]	-0.06	0.27	0.00	0.01	0.08	0.06
		LSYPE						
	United States	NLSY97						
		ELS	0.06	0.12	2088.50*	908.73	--	--

	Uruguay	PIS03-UYLS						
Occupationally-focused short programmes	Australia	LSAY						
	Canada	YITS	-0.06***	0.02	0.03*	0.02	-0.03	0.02
	China	CFPS						
	Germany	NEPS						
	Korea	KELS2005						
	United Kingdom	BCS70[1]						
		LSYPE						
	United States	NLSY97						
		ELS	--	--	-1063.91	714.79	0.12	0.04
	Uruguay	PIS03-UYLS						

1. The coefficient (B) for associations with NEET correspond to the log [exp(B)] for all datasets but for YITS, where the association is analysed by OLS regression
2. In ELS, confidence intervals are shared instead
3. In ELS, the coefficient for associations with earnings are unstandardised

Notes: Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables in each dataset available in Table A A.2 Annex A.

Grey shading: Data analysis not performed for these variables

-- : Not available

* p-value < .1, ** p-value <.05, ***p-value <.01

Table A A.4. Coefficients and standard errors for associations between indicators related with experiencing the future and labour-market outcomes

Indicators	Country and database		NEET (not being in education, employment or training)		Earnings (full-time)[2]		Career satisfaction	
			Coefficient[1]	Standard error	Coefficient	Standard error	Coefficient	Standard error
Part-time work	Australia	LSAY			0.04	0.04	0.00	0.12
	Canada	YITS	-0.04***	0.01	0.05***	0.01	0.01	0.01
	China	CFPS						
	Germany	NEPS	-0.04	-0.36	0.06	0.97	-0.18	-1.64
	Korea	KELS2005	-0.04	0.15	-0.02	0.03	0.05	0.07
	United Kingdom	BCS70	-0.91	0.26	0.06***	0.01	0.08	0.06
		LSYPE						
	United States	NLSY97	-0.24*	0.15	5.81***	1.41	0.00	0.04

		ELS	--	--	--	--	--	--
	Uruguay	PIS03-UYLS						
Work placement	Australia	LSAY			0.06	0.05	0.12	0.18
	Canada	YITS						
	China	CFPS						
	Germany	NEPS	-0.12*	-1.75	-0.03	-0.86	0.06	0.89
	Korea	KELS2005						
	United Kingdom	BCS70	-0.28	0.26	-0.00	0.01	0.09	0.06
		LSYPE						
	United States	NLSY97						
		ELS	--	--	-275.19	1902.3	0.06	0.09
	Uruguay	PIS03-UYLS						
Volunteering	Australia	LSAY			0.08**	0.04	0.22*	0.12
	Canada	YITS	-0.01	0.02	0.04**	0.02	-0.01	0.02
	China	CFPS						
	Germany	NEPS	-0.23**	-3.7	0.03	0.63	0.11	1.42
	Korea	KELS2005						
	United Kingdom	BCS70	-0.63**	0.23	0.01	0.01	0.12**	0.06
		LSYPE						
	United States	NLSY97						
		ELS	--	--	--	--	--	--
	Uruguay	PIS03-UYLS						
Perceived usefulness of experience of work	Australia	LSAY						
	Canada	YITS						
	China	CFPS						
	Germany	NEPS	-0.22**	-2.56	-0.04	-0.86	0.05	0.62
	Korea	KELS2005						
	United Kingdom	BCS70	-0.41	0.63	0.02	0.03	0.08	0.13
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS						

Frequency of working or volunteering	Australia	LSAY						
	Canada	YITS						
	China	CFPS						
	Germany	NEPS	0.17**	1.98	-0.02	-0.44	-0.08	-1.08
	Korea	KELS2005						
	United Kingdom	BCS70	-0.22*	0.12	-0.01	0.01	0.07**	0.03
		LSYPE						
	United States	NLSY97	-0.31*	0.16	-0.76	1.69	0.08*	0.04
		ELS[3]	--	--	1654.99	796.36	0.03	0.04
			--	--	--	--	--	--
	Uruguay	PIS03-UYLS						
Instrumental motivation as a reason for working or volunteering	Australia	LSAY			0.12**	0.06	0.46	0.32
	Canada	YITS[4]	-0.03**	0.01	0.03**	0.01	-0.01	0.01
			-0.04***	0.01	0.06***	0.01	-0.01	0.02
	China	CFPS						
	Germany	NEPS						
	Korea	KELS2005						
	United Kingdom	BCS70						
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS						

1. The coefficient (B) for associations with NEET correspond to the log [exp(B)] for all datasets but for YITS, where the association is analysed by OLS regression
2. In ELS, the coefficient for associations with earnings are unstandardised
3. In ELS, two variables related to the frequency of working or volunteering were analysed: "How many hours do you usually work a week" and "How often do you volunteer or perform community service"
4. In YITS, two variables related to the instrumental motivation as a reason for working or volunteering were analysed: "Volunteering to improve job opportunities", and "Working to get work experience"

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables in each dataset available in Annex A.A.2
Grey shading: Data analysis not performed for these variables
-- : Not available
* p-value < .1, ** p-value <.05, ***p-value <.01

Table A A.5. Coefficients and standard errors for associations between indicators related with thinking about the future and labour-market outcomes

Indicators	Country and database		NEET (not being in education, employment or training)		Earnings (full-time)[3]		Career satisfaction	
			Coefficient[1]	Standard error[2]	Coefficient	Standard error	Coefficient	Standard error
Career Certainty	Australia	LSAY			-0.01	0.05	0.14	0.13
	Canada	YITS	-0.06*	0.03	0.06**	0.03	0.04	0.04
	China	CFPS	-0.24	0.21	0.26	0.18	0.02	0.18
	Germany	NEPS						
	Korea	KELS2005	0.15	0.13	-0.04*	0.03	-0.07	0.06
	United Kingdom	BCS70	-0.22	0.26	0.01	0.01	0.12*	0.06
		LSYPE						
	United States	NLSY97						
		ELS	--	--	2913.68	906.77	0.08	0.05
	Uruguay	PIS03-UYLS						
Career Alignment	Australia	LSAY			-0.15***	0.09	-0.22	0.27
	Canada	YITS	-0.02	0.02	-0.10***	0.02	0.01	0.02
	China	CFPS	0.13	0.19	0.34**	0.15	-0.07	0.16
	Germany	NEPS	4.34	0.00			0.10	1.05
	Korea	KELS2005	0.24**	0.10	0.04***	0.02	0.07*	0.04
	United Kingdom	BCS70						
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS						
Career Ambition	Australia	LSAY			-0.02	0.05	0.12	0.14
	Canada	YITS						
	China	CFPS	-0.04	0.20	0.34**	0.16	-0.13	0.17
	Germany	NEPS	0.03	0.43			0.07	1.24
	Korea	KELS2005	0.16*	0.09	0.05***	0.02	0.04	0.04
	United Kingdom	BCS70						

		LSYPE						
	United States	NLSY97						
		ELS	--	--	1204.15	860.71	--	--
	Uruguay	PIS03-UYLS						
Instrumental motivation	Australia	LSAY			0.06**	0.03	0.28***	0.06
	Canada	YITS	0.07***	0.03	-0.05***	0.02	-0.03	0.02
	China	CFPS						
	Germany7	NEPS						
	Korea	KELS2005	0.16*	0.08				
	United Kingdom	BCS70	1.21***	0.29	-0.03**	0.01	0.19***	0.05
		LSYPE	-0.17***	0.11	0.03*	0.03	-0.08**	0.03
	United States	NLSY97						
		ELS			4844.23***	1359.07	0.02	0.00
	Uruguay	PIS03-UYLS	0.21*	0.11	0.00	0.02		
Educational ambition	Australia	LSAY						
	Canada	YITS						
	China	CFPS						
	Germany	NEPS						
	Korea	KELS2005						
	United Kingdom	BCS70						
		LSYPE						
	United States	NLSY97						
		ELS						
	Uruguay	PIS03-UYLS	-0.32*	0.30	0.13***	0.04		
Career originality	Australia	LSAY						
	Canada	YITS	0.01	0.01	0.04***	0.01	0.02*	0.01
	China	CFPS						
	Germany	NEPS						
	Korea	KELS2005						
	United Kingdom	BCS70						
		LSYPE						
	United States	NLSY97						
		ELS						

	Uruguay	PIS03-UYLS							

1. The coefficient (B) for associations with NEET correspond to the log [exp(B)] for all datasets but for YITS, where the association is analysed by OLS regression
2. In ELS, confidence intervals are shared instead
3. In ELS, the coefficient for associations with earnings are unstandardised

Notes:
Each dataset used a different group of control variables from a range unique to the context of each country. The full list of control variables in each dataset available in Annex A.A.2
Grey shading: Data analysis not performed for these variables
-- : Not available
* p-value < .1, ** p-value <.05, ***p-value <.01

Table A A.6. Strategies used to approach attrition in each dataset

	Data source (surveys)	Strategies to approach attrition
Australia	Longitudinal Surveys of Australian Youth (LSAY)	All estimates have been weighted using the WT2019 weight provided by the NCVER. The missing values within Wave 11 (in 2019 when individuals were 25) for the 2 933 respondents have been imputed using multiple chain imputations by the expert analyst to counter the impact of attrition bias due to missing data.
Canada	Youth in Transition Survey-Reading Cohort (YITS)& The T1 Family File (T1FF)	Weights were used in Cycle 6, when respondents were 25 bringing the population size and gender stratification to be comparable to those in Cycle 1. For Cycle 2 and beyond, additional non-response adjustments were made to represent non-respondents for each particular cycle. As such, all the analyses of the YITS dataset use the weights provided by Statistics Canada.
China	China (People's Republic of) Family Panel Studies (CFPS)	Missing values imputed using multiple imputation with chained equations and list wise deletion by the expert analyst
Germany	The National Educational Panel Study (NEPS)	No weights or imputation
Korea	Korean Education Longitudinal Study 2005 (KELS2005)	No weights or imputation
United Kingdom	The British Cohort Study (BCS70)	Missing values for control variables imputed using multiple imputation with chained equations (50 imputations used).
	Longitudinal Study of Young People in England (LSYPE)	LSYPE1 provides weights used by the expert analyst for attrition and other response issues across waves. Weighting in wave 8 (age 25) for missing data
Uruguay	Uruguayan Longitudinal Study (PIS03-UYLS)	The PIS03-UYLS study was designed to estimate educational and labour trajectories for the PISA 2003 cohort that represent the 78% of the Uruguayan youth. Attrition was approached by using adjusted weights based on post-stratification techniques, both for the first follow-up and for the second follow-up
United States	National Longitudinal Survey of Youth 1997 (NLSY97)	Weights and stratification provided by NLS
	The Educational Longitudinal Study (ELS)	Weights by ELS 2002 adjusted for unbalanced probabilities and attrition. ELS:2002 imputation used for nonresponse items substitution

Note: The information in this table was provided by the experts who analysed each dataset

Table A A.7. Description of how the outcomes were measured for each dataset

Outcome	Country	Dataset	Name of variables in each dataset	Age-range targeted by the question	Measured as	Associated question(s)
NEET	Australia	LSAY				
	Canada	YITS	NEET/non-NEET status - NEET is derived from a job status and an education status variable	25	NEET='1' if NEET status is observed for at least 3 (non-consecutive) months over that time period	Job variable: Derived variable: Working at job status - Flag for each month in 2008-2009 to indicate if respondent was employed and working at least one job. Education variable: Derived variable: Whether the respondent was in elementary, secondary or post-secondary full- time schooling for each month during 2008-2009.
	China	CFPS	1) Not employed or in education or training (more than 35 hours per week - Full time)[1]	Thinking - ages 18-23 (2018), Experiencing - ages 18-22 (2018)	1) Yes or No 2) Unemployed, Works Full-time, Works Part-time, Not in the labour market	Employment status is derived from two variables: employment status in 2018 (employed, unemployed, not in the labour market) and weekly working hours if having a primary job (qg6). Full-time workers are those have a primary job working more than 35 hours per week. Part-time workers are those have a primary job working less than 35 hours per week, or those who are employed but without a primary job.
	Germany	NEPS	At least one episode of NEET at age 23-25[1]	25	Yes or No	Monthly spell data episodes used, that ended after June 2018 and all those as NEET that do not indicate employment, parental leave, military service, or education were marked. If an individual is NEET for at least one episode, the generated dummy variable takes the value 1. I included the official unemployed as well as those who are inactive. NEPS categorizes these spells as so called gaps. They mainly translate to being on vacation, no specific activity, being ill, or housewife/househusband.
	Korea	KELS2005	Not employed or in education or training	25	0' for NEET and '1' for non-NEET.	NEET included all uneducated and unemployed people at the time of the 25 years old survey (2018, 11th wave).
	United Kingdom	BCS	Longest duration of unemployment by 26	by 26	Approx. months via answers in six bands	Total months "unemployed seeking work"
		LSYPE	NEET/non-NEET	25	NEET/non-NEET	Being NEET was derived from the person's activity at age 25, if selecting at least 1 of four options a. Full time (FT)/part time (PT) employment, b.

						FT/PT self-employment, c. FT/PT education, d. Government training scheme (responses were excluded from the analysis if they corresponded to one of the following selected options: Apprenticeship, temporary or long-term sick/disabled, In unpaid/voluntary work, Looking after home or family, 'Other')
	United States	NLSY97	NEET versus non-NEET	25 to 29	NEET/non-NEET	Educational enrolment (used in part to calculate NEET vs. Non-NEET) Enrolment status as of the survey date. Note (1): This variable refers to the type of college the R attended, not the college degree that R reported working towards or that R attained. Note(2): Rs who are working towards a GED are coded as an '8' regardless of where that course of study took place. 1 Not enrolled, no high school degree, no GED 2 Not enrolled, GED 3 Not enrolled, high school degree 4 Not enrolled, some college 5 Not enrolled, 2-year college graduate 6 Not enrolled, 4-year college graduate 7 Not enrolled, graduate degree 8 Enrolled in grades 1-12, not a high school graduate 9 Enrolled in a 2-year college 10 Enrolled in a 4-year college 11 Enrolled in a graduate program
		ELS	NEET vs non-NEET status[1]	24 to 26	NEET/non-NEET	F3A01 series of items: following syntax from Kevelson et al. Educational Testing Service (ETS) report, composite variable created.
	Uruguay	PIS03-UYLS	NEET status	25	1 for 25-year-olds who were Not Working nor Attending any kind of Formal Education by the time of PISA-L second Follow-up Survey, and 0 otherwise	The definition of NEET category combines information on educational and occupational history collected at the second wave of PISA 2003 UY longitudinal panel.
Earnings[1]	Australia	LSAY	Hourly earnings in AUD of full-time workers in 2019	25-26	Hourly Earnings: 1 = Respondents who were employed full-time (1 on XFTP2019) were selected for analysis of their average hourly earnings in 2019, 0 = all others	Constructed using two derived variables: average hourly pay at the time of interview in 2019 + Full-time or part-time employment status at the time of interview in 2019

	Canada	YITS	If in full-time employment at the age of 30	30	Annual Earnings: Total earned income in 2009 [lnT1_earnings], Total earned income in 2014 [lnT1_earnings_2014]	Earnings from the T1FF (tax files), T4 earnings (wages from employer), self-employment income, other employment income (t4e+sei+oei). In current year dollars.
	China	CFPS	Earnings if in full-time employment - We calculate full-time at more than 35 hours per week	Thinking - ages 18-23 (2018), Experiencing - ages 18-22 (2018)	Annual earnings	G6 How many hours per week on average did you work for this job in the past year? Working time does not include lunch break, but includes paid or unpaid extra working hours. ___Hours (0.1… 168.0) G12 QG12 "total income" Including salary, bonus, cash benefit, material benefit, and excluding tax, insurances, and public housing, how much in total did you make from this job for the last 12 months? G1203 In the past 12 months, including salary, bonus, cash benefit, material benefit, and excluding tax, insurances, and public housing, your totally aggregated income is ____yuan (0..10,000,000)
	Germany	NEPS				
	Korea	KELS2005	Monthly income of those for 30h or more per week	25	Monthly Earnings	Earnings are defined as the income of the first major job that works 30 or more hours per week. When there are multiple jobs, only the income of the first job is used as a variable.
	United Kingdom	BCS	Hourly pay at 26 - natural log, full-time workers. Hourly Pay at 34 - natural log, full-time workers. Full-time equivalent to working 30h or more per week	26 or 34	Hourly Earnings	Weekly Pay at 26 (natural log; full-time workers only); Hourly Pay at 34 (natural log; full-time workers only)
		LSYPE	Natural log transformed gross weekly income for FT employed	25	Weekly Earnings	W8GROW was used, this is a derived variable constructed for the dataset by the UCL team.
	United States	NLSY97	Income[2]	25 to 29	Weekly Earnings	During 2010, how much income did you receive from wages, salary, commissions, or tips from all jobs, before deductions for taxes or for anything else? (0, 1 TO 999, 1 000 TO 1 999, 2 000 TO 2 999, 3 000 TO 3 999, 4 000 TO 4 999, 5 000 TO 5 999, 6 000 TO 6 999, 7 000 TO 7 999, 8 000 TO 8 999, 9 000 TO 9 999, 10 000 TO 14 999, 15 000 TO 19 999, 20 000 TO 24 999, 25 000 TO 49 999, 50 000 TO 99 999 999: 50 000+)

		ELS	Earnings from one's primary occupation in the prior year, in USD	24 to 26	Weekly Earnings	F3ERN2011: Earnings from employment during the 2011 calendar year are drawn directly from F3 when available (F3D20), and are imputed when missing. (NCES-generated composite).
	Uruguay	PIS03-UYLS	(log) wage declared by 25-year-olds who were in a full-time job (35 hours a week or more)	25	Weekly Earnings	Monthly imputed and consistent wage perceived for all jobs by the surveyed
Career satisfaction[3]	Australia	LSAY	Work Satisfaction	25 to 26	Weekly Earnings	"I'd now like to ask how satisfied you are with different aspects of this job. On a scale from zero to ten where zero means very dissatisfied and ten means very satisfied, how satisfied are you with: The kind of work you do?, Opportunities to use skills and experience?, Opportunities for training?, The tasks you are assigned?, Your opportunities for promotion?
	Canada	YITS	Job satisfaction	25	A positive response (very satisfied and satisfied) and a negative response (fair, not satisfied, and not very satisfied)	Considering all aspects of your job, how satisfied were you with it? Would you say that you were ...? (1-4 scale), Available for each job
	China	CFPS	Job satisfaction	Thinking - ages 18-23 (2018), Experiencing - ages 18-22 (2018)	1. Very unsatisfied 2. Somewhat Unsatisfied 3. Fair 4. Somewhat satisfied 5. Very satisfied	G406 QG406 "work satisfaction" In general, how satisfied are you with this job? 1. Very unsatisfied 2. Somewhat Unsatisfied 3. Fair 4. Somewhat satisfied 5. Very satisfied
	Germany	NEPS	Satisfaction with work	23 to 25	0 to 10 Likert-type response scale	How satisfied are you with your work? This question was only asked to those who work in wave 11.
	Korea	KELS2005	Satisfaction with work	23 to 25	1 to 5 scale	Please respond to your satisfaction with your most recent job. 1) Salary 2) Employment stability 3) Welfare benefits 4) Business content 5) Working hours and workload 6) Working environment 7) Communication and human relationships 8) Personal development potential 9) Overall satisfaction
	United Kingdom	BCS	Life satisfaction	26	1 to 10 scale (10 = highest level of life satisfaction)	Life Satisfaction at 26 (high is more satisfied)
		LSYPE	Life satisfaction	25	Very satisfied (1), Satisfied (2), Neither satisfied nor dissatisfied (3), Dissatisfied (4), Very satisfied (5)	Overall how satisfied are you with your life, on 1-5 scale, 1 being most satisfied:

	United States	NLSY97	Satisfaction with work	25 to 29	1 Like it very much, 2 Like it fairly well, 3 Think it is OK, 4 Dislike it somewhat, 5 Dislike it very much	Which of the following best describes how you [feel/felt] about your job with [this employer]?
		ELS	Satisfaction with work	24 to 26	1='It' fulfils your long-term career goals; 2='It' is a step on the path to your long-term career goals; 3='It' is not related to your long-term career goals; 4='You' do not have long-term career goals. [Combine 1 & 2 'positive' vs 3 & 4 'negative'.]	F3B29: Which of the following best describes your job as a [job name]?
	Uruguay	PIS03-UYLS				

1. The questions about earnings referred to the local currency
2. In the NLSY97, earnings were defined as total earnings per annum without differentiating employment status, but the analysis was restricted to the sample of those in full-time employment.
3. Career satisfaction was measured with differing levels of specificity to aspects of the current career in different datasets. BCS70 and LSYPE measured life satisfaction rather than career satisfaction.
Note: Grey Shade: Data analyses not performed for these variables.

Table A A.8. Definition of the indicators related with exploring the future

Indicator	Sub-category	Country	Dataset	Name of variables in each dataset	Age range	Measured as	Associated question(s)
School-based career reflection activities	Career questionnaires	Australia	LSAY				
		Canada	YITS	Questionnaire	15	1= yes, 0=no	"Have you done any of the following to FIND OUT about future careers or types of work?" [several response options of which one is] "Completed a questionnaire to find out about my interests or abilities"
		China	CFPS				
		Germany	NEPS	Vocational test	19-24	1= yes, 0=no	"What kind of vocational preparation activities did you take part in?" [several response options of which one is] "Test at the employment agency or the career information centre to find out which professions you are suitable for"
		Korea	KELS2005				
		United Kingdom	BCS70				

			LSYPE				
		United States	NLSY97				
			ELS				
		Uruguay	PIS03-UYLS	Vocational test	15/16	1= yes, 0=no	"What vocational suggestions and guidance did you receive from the school?" [Five options provided to select from, of which the second is]: "Vocational orientation test"
	Career Classes	Australia	LSAY	Career decision-making	17-18	Students who were helped to make career decisions at school = 1, Everyone else who was still at school in 2011 is coded 0.	Career decision-making - Students who were still at school in 2011 were asked: "Has anyone ever helped you to: Make a decision about what you want to do??" Yes No Those who said "yes", were next asked: "Did you learn this at school?" Yes No [Students who answered "Yes" to both questions above are coded as those who learnt about making career decisions at school (coded 1). Everyone else who was still at school in 2011 is coded 0]
		Canada	YITS	Taught how to find about available jobs after finishing school	15	1= yes, 0=no	"Has anyone ever taught you how to ..."find information on different types of jobs you may be interested in when you finish all your schooling?
		China	CFPS				
		Germany	NEPS	Career counselling in class	19 to 24	1= yes, 0=no	"What kind of vocational preparation activities did you take part in?" [several response options of which one is] "Career counselling in class"
		Korea	KELS2005	Career exploration time or related classes(y/n), Wave 5-10	17 to 24	No, Yes	"Have you ever received any of the following pathway and career-related programs at school? If so, was it helpful?" [several response options of which one is] "Career exploration time or related classes" (0~5 Likert-type response scale)
		United Kingdom	BCS70	Timetabled Career Classes (y/n)	15 to 16	1= yes, 0=no	"Since September 1984, have you attended any timetabled classes at which careers have been discussed?" (Yes/No/Don't Know; If "Yes", please indicate the number attended last school year (age 14-15) and this school year (age 15-16), where "No" is interpreted as zero attended in both years)
				School provision of information	by 16	School Provided Info: 0-5 point continuous variable	School Provided Information: Up to 5 points for the school providing info (+1 for a lot; +0.25 for a little) for each of the following topics: Choices for Further Education; Qualification Options; Youth Training Scheme; Employment Choices;
			LSYPE				

		United States	NLSY97				
			ELS				
		Uruguay	PIS03-UYLS	Teacher orientation activity	15/16	1= yes, 0=no	"What vocational suggestions and guidance did you receive from the school? (Please mark inside each of the options that correspond)" [five options of respond, of which the third is]: "Teacher orientation activity"
Career Conversations	With teachers	Australia	LSAY	Talked to a teacher individually	17 to 18	1= yes, 0=no	"Have you done any of the following to find out about what you will do after you leave school?" [five sub-questions, of which the second is] "Talked to a teacher individually about your career plans"
		Canada	YITS	Talked to a teacher at school	15	1= yes, 0=no	"Who have you talked to, to get information about work you may be interested in when you finish your schooling?" [eight sub-questions, of which the fifth is] "A teacher at school"
		China	CFPS				
		Germany	NEPS				
		Korea	KELS2005				
		United Kingdom	BCS70	Personal Teacher Conversation	14 to 16	1= yes, 0=no	"Since September 1984 have you had any personal contact with a teacher to discuss your career/Job/further education" (Excluding career lessons) (Yes, No, Don't Know)
			LSYPE				
		United States	NLSY97				
			ELS				
		Uruguay	PIS03-UYLS				
	With career guidance experts	Australia	LSAY	Talked to a career advisor individually	17 to 18	1= yes, 0=no	"Have you done any of the following to find out about what you will do after you leave school?" [five sub-questions, of which the first is] "Talked to a career advisor individually about your career plans"
		Canada	YITS	Talked to a school counsellor	15	1= yes, 0=no	"Who have you talked to, to get information about work you may be interested in when you finish your schooling?" [eight sub-questions, of which the sixth is] "Talked to a school counsellor"
		China	CFPS				
		Germany	NEPS	Individual career counselling (with career counsellor or teachers)	19-24	1= yes, 0=no	Having received individual career counselling, e.g. with a careers counsellor or a teacher
		Korea	KELS2005				

		United Kingdom	BCS70	Careers officer interview	14 to 16	1= yes, 0=no	"Since September 1984, which of the following has your school arranged for you" [three sub-questions, of which the third is] "Interview(s) with a Careers Officer (Guidance Officer Scotland) about careers guidance" (Yes, No, Don't Know)
			LSYPE				
		United States	NLSY97				
			ELS				
		Uruguay	PIS03-UYLS				
	With family members and peers	Australia	LSAY	Talked to parents or other family members	17 to 18	1= yes, 0=no	"Have you done any of the following to find out about what you will do after you leave school?" [five sub-questions, of which the fifth is] "Talked to friends or other students about careers"
				Talked to friends or other students	17 to 18		
		Canada	YITS	Talked to mother, father or other guardian	15	1= yes, 0=no	"Who have you talked to, to get information about work you may be interested in when you finish your schooling?" [eight sub-questions, of which the first and the third are, respectively] "Friends, relatives about same age", "Mother, father or other guardian"
				Talked to friends or relatives about my age	15		
		China	CFPS				
		Germany	NEPS				
		Korea	KELS2005	Advice from relatives	15	1= yes, 0=no	"To what extent did the following activities influence your career path for high school?" (If you've never done it, mark "No" and if you've done it, mark the degree of help.) [five response options of which the fourth is] "Advice from relatives". [Response options in a 0~5 scale, where 0= "no influence" and 5="'Influence"' later converted into a binary variable for analysis]
		United Kingdom	BCS70				
			LSYPE				
		United States	NLSY97				
			ELS	Speaking with father/mother/close relative about career of interest	14 to 16	Having had no conversations about the future with mother, father and close relative	Composite created of BYS66A, B & D measuring vocational guidance from (non-school) adults: "What do the following people think is the most important thing for you to do right after high school?" [Response options]: "A = mother, B = father, D = a close relative". Responses recoded to compare 1 = "Go to college OR get a full-time job OR enter a trade school or apprenticeship OR enter military service" VS 0 = "Does not apply OR get married OR they think I should do what I want OR they don't care OR I don't know." Total score in composite

						compared to having had 3 conversations about the future with the same three adults	would range from 0 to 3 (assuming more conversations with more non-school adults is better)
		Uruguay	PIS03-UYLS				
Engaging with people in work through career talks or job fairs		Australia	LSAY	Careers Advice: Attended a careers expo or fair	17-18	1='yes,' 0=no	Students who were still at school in 2011 were asked: "Have you done any of the following to find out about what you will do after you leave school?" [several response options of which one is] "Attended a careers expo or fair"
		Canada	YITS	Attended a presentation by people working in different types of jobs	15	1='yes,' 0=no	"Have you done any of the following to FIND OUT about future careers or types of work?" (MARK ALL THAT APPLY.) [Multiple options for selection of one or more]
		China	CFPS				
		Germany	NEPS	Visiting a careers fair	19-24	1= yes, 0=no	"What kind of vocational preparation activities did you take part in?" [Several response options of which one is]: "Visiting a careers fair"
		Korea	KELS2005	Visit a job fair	15	No, Yes	[Have you ever received any of the following pathway and career-related programs at school? If so, was it helpful?" [several response options of which one is] "Visit a job fair" [0~5 Likert-scale response options converted to a binary variable for having visited or not]
		United Kingdom	BCS70	Career talks	15 to 16	1= yes, 0=no	"Were the Career Talks useful?" [Response given in a Likert-scale form where the higher score corresponded to "more useful" converted into a binary variable for attending or not attending]
			LSYPE				
		United States	NLSY97				
			ELS				
		Uruguay	PIS03-UYLS	Guest talks	15/16	1= yes, 0=no	"What vocational suggestions and guidance did you receive from the school? (Please mark inside each of the options that correspond)" [five options of respond, of which the first is]: "Guiding talks on Higher Education given by guests at the school"

Workplace visits or job shadowing	Australia	LSAY	Attended an organised visit to a workplace	17 to 18	Students who attended an organised visit to a workplace= 1, Everyone else who was still at school in 2011 is coded 0.	IV11: Students who were still at school in 2011 were asked: Have you done any of the following to find out about what you will do after you leave school? Attended an organised visit to a workplace
	Canada	YITS	Attended an organised visit to a workplace	15	1= yes, 0=no	Have you done any of the following to FIND OUT about future careers or types of work? (MARK ALL THAT APPLY.)
	China	CFPS				
	Germany	NEPS	Day visit in a company	19 to 24	1= yes, 0=no	What kind of vocational preparation activities did you take part in?
	Korea	KELS2005	Job site visit company and factory	17 to 24	No, Yes	Have you ever received any of the following pathway and career-related programs at school? If so, was it helpful? 2) Job site visit company and factory (0~5 scale)
	United Kingdom	BCS70	School Provided Workplace Visit	14 to 16	1= yes, 0=no	"Since September 1984 have you visited from school any of the following" [three sub-questions of which the top is] "An office, factory, or other workplace"
		LSYPE				
	United States	NLSY97				
		ELS	Job shadowing/work-site visits	14 to 16	1='yes,' 0=no	Have you ever done: job shadowing or work-site visits during high school (school-arranged visits to work places to observe one worker or many workers)? 0 = no, and 1 = yes.
	Uruguay	PIS03-UYLS				

Application and interview skills development activities	Applying to jobs	Australia	LSAY	Job applications	17 to 18	Students who learnt about job applications at school = 1, Everyone else who was still at school in 2011 is coded 0.	Students who were still at school in 2011 were asked: "Now some questions about careers advice. Has anyone ever helped you to prepare to apply for a job?" (yes, no); Those who said "yes", were next asked: "Did you learn this at school?" (yes, no)
			YITS	CV training	15	1= yes, 0=no	Composite based on 4 Career guidance activities: "Has anyone ever taught you how to…" [Several response options of which one is] "Write a résumé or a summary of your job qualifications?"
		China	CFPS				
		Germany	NEPS	Application training	19-24	1= yes, 0=no	"What kind of vocational preparation activities did you take part in?" [Several response options of which one is]: "Application training (application letters and interviews)"
		Korea	KELS2005				
		United Kingdom	BCS70	Application Forms (y/n)	By 16	1= yes, 0=no	"Have you got a practical (working) knowledge of any of the following skills?" [Fourteen options of which one is] "How to write an application form (for a job, for career, etc.)" Any yes answer was accepted for the variable, either of "Yes, and got it mainly at school", "Yes and got it mainly outside school)", as opposed to "No. I know very little about it"
				Letters of Application (Cover Letter)	By 16	1= yes, 0=no	"Have you got a practical (working) knowledge of any of the following skills?" [Fourteen options of which three are] "How to write a letter of application (job, course, etc.)" Any yes answer was accepted for the variable, either of "Yes, and got it mainly at school", "Yes and got it mainly outside school)", as opposed to "No. I know very little about it"
			LSYPE				
		United States	NLSY97				
			ELS				
		Uruguay	PIS03-UYLS				
	Interviewing for jobs	Australia	LSAY				
		Canada	YITS	Interview training	15	1= yes, 0=no	"Has anyone ever taught you how to…" [several response options of which one is] "Prepare yourself for a job interview?"
		China	CFPS				
		Germany	NEPS				
		Korea	KELS2005				

		United Kingdom	BCS70	Interview Skills (y/n)	By 16	1= yes, 0=no	Has a practical/working knowledge of them, whether gained mainly via school or outside-of-school
			LSYPE				
		United States	NLSY97				
			ELS				
		Uruguay	PIS03-UYLS				
Occupationally focused short programmes		Australia	LSAY				
		Canada	YITS	Attending a Co-op Program	15	1= yes, 0=no	"Have you done any of the following to FIND OUT about future careers or types of work? (MARK ALL THAT APPLY.)" [Several options, of which one is]: "Taken a school course where I spent time with an employer (such as a Co-op program)"
		China	CFPS				
		Germany	NEPS				
		Korea	KELS2005				
		United Kingdom	BCS70				
			LSYPE				
		United States	NLSY97				
			ELS	Co-operative education within general programmes of education	14 to 16	0 = no, and 1 = yes.	"Ever been in career academy courses or programs in high school?" [several response options of which one is] "Co-operative education (work experience that is part of a vocational class and for which you earn class credit)" 0 = no, and 1 = yes.
		Uruguay	PIS03-UYLS				

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.9. Distributions for "Application and interview skills development activities"

Indicator	Country and dataset		Application and interview skills development activities			
			Name of indicator per dataset	Sample size (N)	Percentage of students who said yes (%)	Percentage of missing cases (%)
Applying to jobs	Australia	LSAY	Job applications	2 247	61.0	
	Canada	YITS	In school CV	10 927	20.5	5.6
	China	CFPS				
	Germany	NEPS	Application training, e.g. practicing how to write application letters & practicing job interviews	5 589	53.2	
	Korea	KELS2005				
	United Kingdom	BCS70	Application Forms	5 409	91.0	
			Letters of Application (Cover Letter)	5 379	91.0	
		LSYPE				
	United States	NLSY97				
		ELS				
	Uruguay	PIS03-UYLS				
Interviewing for jobs	Australia	LSAY				
	Canada	YITS	Interview training	10 927	30.5	5.6
	China	CFPS				
	Germany	NEPS				
	Korea	KELS2005				
	United Kingdom	BCS70	Interview Skills	5 413	86.0	
		LSYPE				
	United States	NLSY97				
		ELS				
	Uruguay	PIS03-UYLS				

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.10. Distributions for indicators related with "School-based career reflection activities"

Indicator	Country and dataset		School-based career reflection activities			
			Name of indicator per dataset	Sample size (N)	Percentage of students who said yes (%)	Percentage of missing cases (%)
Career questionnaires	Australia	LSAY				
	Canada	YITS	Completed a questionnaire to find out about my interests or abilities	10927	37.9	7.6
	China	CFPS				
	Germany	NEPS	Aptitude test	5589	61.4	
	Korea	KELS2005				
	United Kingdom	BCS70				
		LSYPE				
	United States	NLSY97				
		ELS				
	Uruguay	PIS03-UYLS	Vocational test	1757	28.11	
Career classes	Australia	LSAY	Career decision-making	2247	81.0	
	Canada	YITS	Taught how to find information about jobs of interest when finishing school	10927	17.27	5.7
	China	CFPS				
	Germany	NEPS	Career counselling in class	5589	77.3	
	Korea	KELS2005	Career exploration time or related classes	6568	67.6	
	United Kingdom	BCS70	Timetabled Career Classes	5411	72.0	
		LSYPE				
	United States	NLSY97				
		ELS				
	Uruguay	PIS03-UYLS	Teacher orientation activity	1757	14.2	

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.11. Previous analyses that look for evidence of associations between career conversations and adult employment outcomes

Country	Study	Database and sample	Associations	Significant associations
United Kingdom	(Brown, Ortiz-Nuñez and Taylor, 2011[105]), "What will I be when I grow up? An analysis of childhood expectations and career outcomes", Economics of Education Review, Vol. 30/3, pp. 493-506	British National Child Development Study, age 16 in 1974	Teenagers who heard from a job from a teacher or a parent at age 16 were more likely (by 2 and 3%) to occupy the job in question as an adult. The effect's magnitude is slightly stronger for conversations with teachers than with parents, but this also varies according to the occupation type in question (manual, clerical, armed service, teacher, professional).	Yes
United Kingdom	(Mann, Kashefpakdel and Rehill, 2017[95]), Indicators of successful transitions: teenage attitudes and experiences related to the world of work, Education and Employers.	Longitudinal Study of Young People in England, age 14-15 in 2004, age 19-20 in 2009	Teenagers (at ages 14-15) who had spoken to a teacher at least once either inside or outside of lessons were 13% to 24% less likely to be NEET than comparable peers at age 19-20.	Yes
United Kingdom	(Percy and Kashefpakdel, 2018[113]), Insiders or outsiders, who do you trust? Engaging employers in school based career activities, Routledge	Longitudinal Study of Young People in England, age 14-15 in 2004, age 19-20 in 2009	No direct evidence for an association between teenage participation in school situations where careers were discussed earnings premia at age 26 was found.	No
United States	(University of Minnesota: Center for Urban and Regional Affairs; Mortimer, Jeylan T.; Rolando, Dominique J.; Zierman, Carol, 2017[122]), "Understanding Youth Resilience by Leveraging the Youth Development Study Archive", CURA Reporter, Vol. 47/1, pp. 10-17,	US Youth Development Study	Young people who report being influenced by a teacher or school professional in one's career decision-making as a teenager, increases the odds of becoming "successful" at age 26-27 by 44%. Success is defined in terms of economic independence, progress being made toward career goals, job satisfaction and the absence of physical and emotional problems.	Yes

Table A A.12. Distributions for indicators related with "Career Conversations"

Indicators	Country and datasets		Career conversations			
			Name of variables in each dataset	Sample size (N)	Percentage of students who said yes (%)	Percentage of missing cases (%)
With teachers	Australia	LSAY	Talked to a teacher individually about your career plans	2 247	59.0	
	Canada	YITS	Conversations with a teacher at school	10 927	36.0	7.0

	China	CFPS				
	Germany	NEPS				
	Korea	KELS2005				
	United Kingdom	BCS70	Personal Teacher Conversation	5 417	64.0	
		LSYPE				
	United States	NLSY97				
		ELS				
	Uruguay	PIS03-UYLS				
With career guidance counsellors	Australia	LSAY	Talked to a career advisor individually about your career plans	2 247	68.0	
	Canada	YITS	Conversations with a school counsellor	10 927	30.1	7.0
	China	CFPS				
	Germany	NEPS	Individual career counselling (with career counsellor or teachers)	5 589	58.9	
	Korea	KELS2005				
	United Kingdom	BCS70	Careers officer interview	4 991	82.6	
		LSYPE				
	United States	NLSY97				
		ELS				
	Uruguay	PIS03-UYLS				
With family members and peers	Australia	LSAY	Talked to your parents or other family members about future careers or types of work;	2 247	96.0	
			Talked to friends or other students about careers	2 247	95.0	
	Canada	YITS	Conversations with mother, father or other guardian	10 927	79.9	7.0
			Conversations with friends or relatives about my age	10 927	55.3	7.0
	China	CFPS				
	Germany	NEPS	Advice from relatives	6 524	60.3	
	Korea	KELS2005				
	United Kingdom	BCS70				
		LSYPE				
	United States	NLSY97				
		ELS	Speaking with father/mother/close relative about career of interest	12 082	66.2	25.4
	Uruguay	PIS03-UYLS				
Others	Australia	LSAY				

	Canada	YITS	Career conversations with another person	10 927	29.5	6.7
			Career conversations with no one yet	10 927	11.3	
	China	CFPS				
	Germany	NEPS				
	Korea	KELS2005				
	United Kingdom	BCS70				
		LSYPE				
	United States	NLSY97				
		ELS	Speaking with teacher or counsellor about career of interest	11 363	54.6	29.8
			Mentoring: School-arranged match w/ adult for advice and support	13 005	4.1	19.7
	Uruguay	PIS03-UYLS				

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.13. Distributions for indicators related with "Engaging with people in work through career talks or job fairs"

Country and dataset		Engaging with people in work through career talks or job fairs			
		Name of indicator per dataset	Sample size (N)	Percentage of students who said yes (%)	Percentage of missing cases (%)
Australia	LSAY	Careers Advice: Attended a careers expo or fair	2 247	61.0	
Canada	YITS	Attended a presentation by people working in different types of jobs	10 927	17.6	7.6
China	CFPS				
Germany	NEPS	Visiting a careers fair	5 589	60.4	
Korea	KELS2005	Visit a job fair	6 568	31.8	
United Kingdom	BCS70	Career talks	5 072	84.0	
	LSYPE				
United States	NLSY97				
	ELS				
Uruguay	PIS03-UYLS	Guest talks	1 757	41.2	

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.14. Distributions for indicators related with "Workplace visits or job shadowing"

Country and dataset		Workplace visits or job shadowing			
		Name of indicator per dataset	Sample size (N)	Percentage of students who said yes (%)	Percentage of missing cases (%)
Australia	LSAY	Attended an organised visit to a workplace	2 247	30.0	
Canada	YITS	Attended an organised visit to a workplace	10 927	17.5	7.6
China	CFPS				
Germany	NEPS	Day visit in a company	5 589	43.4	
Korea	KELS2005	Job site visit company and factory	6 568	32.0	
United Kingdom	BCS70	School Provided Workplace Visit Age 14-16	5 127	31.0	
	LSYPE				
United States	NLSY97				
	ELS	Job shadowing/work-site visits	13 005	10.7	19.7
Uruguay	PIS03-UYLS				

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.15. Previous analyses that look for evidence of associations between occupational short programmes and adult employment outcomes

Country	Study	Database and sample	Associations	Significant associations
Australia	(Misko, Chew and Korbel, 2020[103]), VET for secondary school students: post-school employment and further training destinations	Longitudinal Survey of Australian Youth 2009, age 15 in 2009, and 22 in 2016.	Teenagers who undertook the VET for Secondary School Students (VfSSS) programme were, 4 to 5 years after finishing school, more likely to report achieving VET certificate, less likely to have completed their final year of SS or a bachelor's degree or higher, and more likely to be in full-time and permanent employment, relative to comparable peers. This last effect may be due to simply entering the workforce earlier than their peers who undertook tertiary education. No significant association was found for being employed, or unemployed, or NEET between the two groups.	Yes
United States	(Bragg et al., 2002[138]), Transition from high school to college and work for Tech Prep participants in eight selected consortia, National Centers for Career and Technical Education	Longitudinal Study of Tech Prep implementation, age 15 in 1998, age 19 in 2002	No associations between participants and non-participants of tech prep programs with regard to college enrolment rates, percentage of students completing a degree or certificate, and employment rate of graduates.	No

United States	(Kemple, 2001[128]), Career Academies: Impacts on Transitions to Post-secondary Education and Employment, MDRC	Career Academies Evaluation, age 14-15 in 1993, age 24-25 in 2003	No particular association found between being enrolled in the "Career Academies" and high school graduation rate, college enrolment, and future employment. This might be due to specificities in terms of the school-level population in schools with Career Academies.	No
United States	(Nicholas et al., 2015[141]), "School-to-Work Revisited: Did Work-Based Learning Experiences Improve Prospects for Students in Career and Technical Education?", SSRN Electronic Journal	Education Longitudinal Study of 2002, age 16 in 2002, age 25 in 2011	No significant relationship between income and participation in "work-based learning experiences". No significant relationship between post-secondary educational attainment and participation in "work-based learning experiences".	No
United States	(Kemple, 2008[129]), Career Academies: Long-Term Impacts on Work, Education, and Transitions to Adulthood, MDRC	Career Academies Evaluation, age 14-15 in 1993, age 24-25 in 2003	Teenagers who had participated in a course of study rich in career exploration and work-based learning earned on average 11% more than their peers at age 26. Average graduates of US Career Academies programmes earn 11% more than comparable peers (the equivalent of one extra year of education), the quartile presenting the greatest risks of dropout as teenagers went on to earn 17% more at age 26. The wage premia are of greater magnitude for men than for women.	Yes
United States	(Page, 2012[130]), "Understanding the Impact of Career Academy Attendance: An Application of the Principal Stratification Framework for Causal Effects Accounting for Partial Compliance", Evaluation Review, Vol. 36/2, pp. 99-132	MDRC evaluation of career academies 1993	Teenager boys and young men who are enrolled in a Career Academies school benefit from a $588 monthly wage premium compared to non-participating peers.	Yes
United States	(Bishop and Mane, 2003[126]), "The Impacts of Career-Technical Education on High School Completion and Labor Market Success", Economics of Education Review, Vol. 23/4, pp. 381-402	National Educational Longitudinal Study 1988, age 14 in 1988, age 26 in 2000	Analysis of 12 years of longitudinal data found that those who devoted about one-sixth of their time in high school to occupation-specific vocational courses earned at least 12% extra one year after graduating and about 8% extra seven years later (holding attitudes and ability in 8th grade, family background and college attendance constant). This was true both for students who did and did not pursue post-secondary education. Computer courses had particularly large effects on earnings eight years after graduating. No apparent association between the career-tech share and on academic achievement at age 15, school attendance rates of 20–29 year-olds or on the expected number of years (full-time equivalent) spent in school between age 5 and 60. This suggests that giving a career focus to a majority of a nation's upper-secondary schools does not inevitably result in lower levels of academic achievement at age 15. Students who took Career Technical Education (CTE) courses (both computer and non-computer based) were 5.6% pts more likely to have a "good job" at age 20, and earned between 20% and 5.8% more over the 8 years post-secondary	Yes

			(variation according to CTE concentration of secondary school curricula, and times spent since graduation).	
United States	(Dalton et al., 2013[119]), From Track to Field: Trends in Career and Technical Education Across Three Decades, National Assessment of Career and Technical Education (NACTE)	High School and Beyond, age 15 in 1980, age 19 in 1984.	Teenagers in occupational curricula concentrations experienced an increase in their expectation of a professional occupation at age 20 by 25% pts between 1982 and 2004. However, teenagers with a non-occupational concentration saw greater percentages of expectations compared to their peers in occupational concentrations. There were no statistically significant differences for expected earnings across occupational course taking groups, either overall or by academic orientation. Nonetheless, Occupational concentrators in the 1992 and 2004 cohorts averaged more months of employment than did their non-investor peers, and were more likely to have a first-job type of craftsperson.	Yes
		National Education Longitudinal Study, age 14 in 1988, age 20 in 1994		Yes
		Education Longitudinal Study, age 15 in 2002, age 19 in 2006		Yes
United States	(Fletcher . and Zirkle, 2009[137]), "The Relationship of High School Curriculum Tracks to Degree Attainment and Occupational Earnings", Career and Technical Education Research, Vol. 34/2, pp. 81-102	National Longitudinal Survey of Youth 1997, 12 to 18 in 1997, 21 to 27 in 2006	Teenagers in the CTE track are expected to have higher earnings by $3,279 per annum than their General track counterparts, when all other independent variables are held constant.	Yes
United States	(Neumark, 2004[134]), The Effects of School-to-Career Programs on Postsecondary Enrolment and Employment, Public Policy Institute of California	National Longitudinal Survey of Youth 1997, 12 to 18 in 1997	Teenagers enrolled in School-to-Career (STC) programmes experience a 8% pts increase in the likelihood of attending college relative to comparable peers. Tech Prep STC programs are associated with a significantly lower likelihood of college education, but a higher likelihood of full-time employment at age 21. co-op STC programs are associated with approximately 13% increases in the likelihood of post-secondary school employment, and internship/apprenticeship programs with increases of about 9%. Internship/apprenticeship programs may be particularly advantageous for the less advantaged, as these programs boost college enrolment among those with the lowest test scores and boost employment among blacks and those with less-educated mothers and living in non-traditional arrangements.	Yes
United States	(Neumark and Rothstein, 2005[135]), Do School-To-Work Programs Help the "Forgotten Half"?, National Bureau of Economic Research	National Longitudinal Survey of Youth 1997, 12 to 18 in 1997	Programmes related to three activities (school enterprises, co-operative education and internships/apprenticeships) are particularly beneficial for students from the more disadvantaged half. For disadvantaged women in, there is less evidence that short-time work (STW) programs are particularly effective, although internship/apprenticeship programmes do lead to positive earnings effects for women.	Yes
United States	(Enayati and Karpur, 2018[133]), "Impact of participation in school-to-work programs on postsecondary outcomes for youth with disabilities from low-income families", Journal of	National Longitudinal Study of Adolescent to Adult Health, 12 to 17 in 1994, age 24 to 32 in 2008	Youth with disabilities from welfare-beneficiary homes participating in STW programmes have a 20% higher likelihood of ever being employed relative to comparable non-participating peers. Youth with disabilities without welfare experience a 8% increase in the probability of being employed. However,	Yes

	Disability Policy Studies, Vol. 29/4, pp. 235-244		participating in STW programmes is associated with a 41% earnings penalty for youth with disabilities (both from welfare receiving and no-receiving homes).	
United States	(Shandra and Hogan, 2008[136]), "School-to-work Program Participation and the Post-High School Employment of Young Adults With Disabilities", Journal of Vocational Rehabilitation, Vol. 29/2, pp. 117-130	National Longitudinal Survey of Youth 1997, 12 to 18 in 1997 - 2004	School-based programmes are positively associated with stable employment and full-time work while work-based programmes most consistently increase the likelihood that youth with disabilities will be employed in jobs that provide fringe benefits (insurance, sick leave).	Yes

Table A A.16. Distributions for indicators related with "Occupationally-focused short programmes"

Country and dataset		Occupationally-focused short programmes			
		Name of indicator per dataset	Sample size (N)	Percentage of students who said yes (%)	Percentage of missing cases (%)
Australia	LSAY				
Canada	YITS	Attending a Co-op Programme	10 927	9.8	7.6
China (People's Republic of)	CFPS				
Germany	NEPS				
Korea	KELS2005				
United Kingdom	BCS70				
	LSYPE				
United States	NLSY97				
	ELS	Co-operative education	13 005	10.9	19.7
Uruguay	PIS03-UYLS				

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.17. Previous analyses that look for evidence of associations between teenage part-time working and adult employment outcomes

Country	Study	Database and sample	Associations	Significant associations
Australia	(Anlezark and Lim, 2011[100]), Does combining school and work affect school and post-school outcomes?, National Centre for Vocational Education Research	Longitudinal Surveys of Australian Youth, age 15 in 2003, age 19 in 2007	Teenage boys age 18 working more than 20 hours weekly are less likely to pursue tertiary education than their comparable peers by 16 pts (13 pts difference for girls). Teenagers who complete school but do not pursue tertiary, working for more than 5 hours a week in their senior year is beneficial over not working at all. Working between 10 and 15 hours a week in year 12 is associated with a 27 point difference of being in full-time employment at age 19 compared to non-working peers.	Yes
Australia	(Marks, 2006[101]), The transition to full-time work of young people who do not go to university, Australian Council for Educational Research	Longitudinal Surveys of Australian Youth, age 15 in 1995, age 21 in 2002	Teenagers working part-time at school are more likely to be in full-time employment 4 years after secondary school than non-working peers by 11 percentage points. They are also less likely to be unemployment, by 7 points. The beneficial effects of part-time work on labour-market outcomes is stronger for men than for women. Teenage boys who worked part-time in school are 4.7 times more likely to work full time than to be unemployed 4 years after graduating secondary school. Comparable teenage girls are "only" twice as likely to work full time than to be unemployed.	Yes
Australia	(Robinson, 1999[62]), The effects of part-time work on school students, Australian Council for Educational Research	Longitudinal Surveys of Australian Youth, age 17 in 1992, age 19 in 1994	Teenagers working part-time during secondary school were 45% less likely to experience unemployment at age 19 than comparable peers, controlling for socio-economic predictors and academic achievement. The magnitude of the effect on employment status at age 19 was slightly correlated with the intensity and frequency of part-time work during school years. No significant association was found between part-time work during school and job-type at 19, or earnings at 19.	Yes
Australia	(Vickers, Lamb and Hinkley, 2003[98]), Student workers in high school and beyond: the effects of part-time employment on participation in education, training and work, Australian Council for Educational Research	Longitudinal Surveys of Australian Youth, age 15 in 1995, age 18 in 1998	Teenagers working longer hours part-time (5 to 15 hours, and 60 hours weekly) were more likely to not complete high school, by 40% and 60% respectively. The risk of dropping out is reduced for teenage girls. Teenagers working part-time during secondary school are 65% more likely to gain apprenticeship or traineeship than being unemployed, and 46% more likely to be in full time employment, than being unemployed, aged 18.	Yes

United Kingdom	(Crawford et al., 2010[110]), Young people's education and labour-market choices aged 16 to 17 and 18 to 19, Department for Education	Longitudinal Study of Young People in England, age 16/17 in 2007, age 18/19 in 2009.	Teenagers who combine full-time education and work at age 16/17 are significantly more likely to be in some kind of work (either work with training,	Yes
		Labour Force Survey 1993-2008.	Teenagers who combine full-time education and work have a lower probability of becoming NEET in the short term compared to those who are in full-time education only, by 3-6 percentage points. Teenagers with experience of work (part-time or full-time) before the age of 16 are more likely to be in work after 16, relative to comparable peers.	Yes
		British Household Panel Survey 1991-2008.	There is some evidence of a positive relationship between having early work experience (e.g. working whilst in full-time education) and outcomes five (but not ten) years down the line. For example, 16/17 (18/19) year olds who combine full-time education and work are 4.1 (5.8) percentage points less likely to be NEET five years later than 16/17 (18/19) year olds who are in full-time education only	Yes
United Kingdom	(Duckworth and Schoon, 2012[94]), "Beating the odds: exploring the impact of social risk on young people's school-to-work transitions during recession in the UK", National Institute Economic Review, Vol. 222, pp. R38-R51	British Cohort Study	Young people who worked part-time at age 16 were half as likely to be NEET between the ages of 16 and 18 than comparable peers.	Yes
United Kingdom	(Holford, 2020[112]), "Youth employment, academic performance and labour-market outcomes: Production functions and policy effects", Labor Economics, Vol. 63	UK Next Steps (a continuation of the Longitudinal Survey of Young People in England), age 14 in 2004, age 25 in 2015	Teenagers working part-time during school were more likely to achieve lower than expected examination results at age 16. Wage penalties were incurred because of this lower than expected academic performance. In addition, working part-time at age 15 was associated with an increase of 2 months of unemployment for the first 10 years after school, per weekly hours worked as a teenager. For example, a teenager working 5 hours	No

			weekly in school would experience 10 additional months of unemployment during their first 10 years out of school, than a non-working peer. However, young women who worked part-time at school enjoy higher than expected pay and occupational status than non-working comparable peers at age 25.	
United Kingdom	(Mann, Denis and Percy, 2020[2]), "Career ready? : How schools can better prepare young people for working life in the era of COVID-19", OECD Education Working Papers, No. 241, OECD Publishing, Paris	British Cohort Study (age 16 in 1986, age 26 in 1996)	Teenage boys who work part-time experience an increase in full-time employment of 5.8% pts on average, and 2.9% increase in wages, relative to non-working peers. Teenage girls who work part-time experience an increase in full-time employment of 3.4% pts on average, and 5.4% increase in wages, relative to non-working peers. Among non-degree holders, the effect of part-time work at school is slightly larger, with non-degree holding men who worked part-time being in full-time employment by 7.2% pts more than non-working comparable peers (4.3% pts increase for non-degree holding women). A similar pattern is found for wages of non-degree holders who worked as teenagers. Non-degree holding men who worked part-time see a 6.3% increase in wages compared to non-working peers (6.1% increase for non-degree holding women). Job-type also saw associations with labour-market outcomes. Part-time jobs in shop were associated with higher likelihood of full-time employment, but lower earnings. On the other hand, babysitting was associated with lower likelihood of full-time employment, but higher wages.	Yes
United States	(Light, 1999[115]), "High school employment, high school curriculum, and post-school wages", Economics of Education Review, Vol. 18/3, pp. 291-309	National Longitudinal Survey of Youth, age 15 to 22 in 1979, age 27 to 34 in 1991 (Males only)	Teenagers who work 25h per week throughout their last 2 years of secondary school earn on average 7.5% more over a 9-year period after leaving school than non-working comparable peers. The wage premium drops to 3% for teenagers working 10h per week.	Yes
United States	(Light, 2001[118]), "In-School Work Experience and the Returns to Schooling", Journal of Labor Economics, Vol. 19/1, pp. 65-93	National Longitudinal Survey of Youth, (Males only)	Teenagers who accumulate 2 years of work experience while completing 16 years of school enter the labour-market earning on average 10% more than their peers without experience of work in secondary school.	Yes
United States	(Mortimer, 2005[121]), Working and Growing Up in America, Harvard University Press	Youth Development Study, age 14-15 in 1987-88, age 18-19 in 1991-92	Adolescents who worked most intensively during secondary school (regardless of frequency) earned on average 5629 US$ more annually at age 21, than non-working comparable peers. Working teens also achieved fewer months of tertiary education than non-working peers: between 13 and 26 fewer months depending on gender, and the level of investment in work during secondary school.	Yes
United States	(Mortimer et al., 2008[123]), "Tracing the timing of 'career' acquisition in a contemporary youth cohort", Work and Occupations, Vol. 35/1, pp. 44-84	Youth Development Study, age 15 in 1988, age 30 in 2003	Youth who did not work during secondary school were 53% less likely to report career attainment in the subsequent years after leaving school. Teenagers who worked during school were slightly more likely to report working a "career-relevant" job at age 30, than non-working comparable peers. No evidence was found for an association between part-time job quality as a teenager, or volunteering experience, with reporting "career	Yes

			acquisition". As hypothesized, work investment during the high school years is found to be predictive of subjective career achievement	
United States	(Vuolo, Mortimer and Staff, 2013[124]), "Adolescent Precursors of Pathways From School to Work", Journal of Research on Adolescent, Vol. 24/1, pp. 145-162,	Youth Development Study, age 15 in 1988, age 32 in 2005	Multinomial logistic regression models demonstrate that academic orientations, socio-economic background, and steady paid work during high school help adolescents avoid subsequent floundering during the school-to-work transition. Teenagers who experience "steady" part-time work (over many years, low weekly hourly total) are more likely to have smoother STW transitions, such as a Bachelor to Career pathway. Teenagers working part-time sporadically (only few instances of large hour blocks) were 76% less likely to enter a Bachelor to Career pathway than to enter NEET status following secondary school. Types of part-time work during secondary school do not seem to be a predictor of the type of tertiary education experienced (Bachelors versus Associate/Vocational courses).	Yes
United States	(Connors et al., 2014[140]), "Longitudinal Analysis of Factors Associated with Successful Outcomes for Transition-Age Youths with Visual Impairments", Journal of Visual Impairment and Blindness, Vol. March-April, pp. 95-106	National Longitudinal Transition Study 2, age 13 to 16 in 2000, age 23 to 26 in 2010	Youths with visual impairments who worked for pay during secondary school were 3.6 times more likely to be in full-time employment age 23-26, compared to those who did not work for pay. Those who completed high school were 3.3 times more likely to be in full-time employment age 23-26, when compared to those who aged out or dropped out of high school.	Yes
United States	(Carter, Austin and Trainor, 2011[139]), "Predictors of Post-school Employment Outcomes for Young Adults With Severe Disabilities", Journal of Disability Policy Studies, Vol. 23/1, pp. 50-63	National Longitudinal Transition Study 2, age 13 to 16 in 2000, age 23 to 26 in 2010	Youths with a wide range of disabilities experiencing paid work during their time in secondary school were 2.4 times more likely be employment 2 years after school than their comparable peers.	Yes
United States	(Hotz et al., 1999[116]), Are There Returns to the Wages of Young Men from Working While in School?, National Bureau of Economic Research	National Longitudinal Survey of Youth 1979, age 14 to 21 in 1979, age 26 to 43 in 1991	Finds that with controls, positive benefits disappear. Teenagers who worked part-time during secondary school earn wages between 6 to 19% higher among those who worked in high school compared to those who did not at ages 22 and 27. However, this effect of part-time work at school on future earnings is highly heterogeneous. When controlling for respondent race for example. Black men working 1 extra year in secondary school experience a 2.1 to 2.9% raise in hourly wage rate relative to comparable peers. For Hispanic men, the premium is between 1.7 and 2.5%. For White men, the premium is estimated between 2.2 and 3%.	No
United States	(Leventhal, Graber and Brooks-Gunn, 2001[114]), "Adolescent Transitions to Young Adulthood: Antecedents, Correlates, and Consequences of Adolescent Employment", Journal of Research on Adolescence, Vol. 11/3, pp. 297-323	The Baltimore Study, Teenage African American mothers (age 18) and their children (age 0) in 1966, age 46 and 28 in 1994	Logistic regression analysis was used to examine the association between adolescent employment and full-time employment at age 19–20. No significant models were found. Next, similar analyses were conducted via OLS regression to examine monthly earnings and job satisfaction at age 19–20. Teenagers who entered the labour market earlier than their peers were more likely to complete secondary school than their peers. Stable employment during teenage years also had a positive effects on young	No

			men's chances of attending college (weaker effect for young women). No specific associations were measured between part-time work at school and labour-market outcomes age 19-20 and 26-27.	
United States	(Ruhm, 1995[117]), "Is High School Employment Consumption or Investment?", National Bureau of Economic Research, Working Paper 2030	National Longitudinal Survey of Youth 1979, age 14-21 in 1979, 26-33 in 1991. Sample restricted to 14/15 in 1979, and did not drop out of high school	Work in senior year is positively correlated with earnings 6 to 9 years after graduation. There is no significant relationship between work in sophomore and junior years with future earnings. Seniors who work 10 hours in the reference week experience 14% greater future earnings, an 8% increase in hourly wage, a 2.8 point higher Duncan Score (socio-economic wealth index); an 8 percentage-point increase in the probability of obtaining group health insurance, and a 9 percentage-point increase in the probability of obtaining pension coverage. Predicted gains are substantially larger for those working 20 hours per week, although the expected benefits are maximised at between 19 and 27 hours per week. Controlling for high school class at, demographics, geography, immigrant, behavioural controls.	Yes

Table A A.18. Description of how the indicators related with experiencing the future were measured for each dataset

Indicators	Country	Dataset	Age-range targeted the by question	Name of variables in each dataset	Measured as	Associated question(s)
Part-time work	Australia	LSAY	up to age 15	IV6_Part-time-work	Binary 1-yes, 0-no	Q70 PISA 2009: Do you currently have a part-time or casual job? This means a job that you do during school term, NOT just during holidays, and for which you are paid. Please do not include jobs you do at home to help out or for pocket money. 1. Yes, I have a part-time or casual job 0. No, I do not currently have a job
	Canada	YITS	age 15	work_school_year	G15 is used to create a variable that's "worked during the school year" (part-time school year work did not yield anything interesting). 1='did' work during the school year, 0='did' not work	G15 This school year, in a TYPICAL WEEK that you worked, how many HOURS IN TOTAL did you work at all your jobs and odd jobs… [Monday through Friday (enter number of hours); Saturday and Sunday (enter number of hours); No job]
	China	CFPS				

	Germany	NEPS	ages 14 to 16	Had side-job during school (age 14-16)	Binary 1-all others, 0-None	Y3S13 Have you ever worked part-time this year (2007)? [None, Less than 1 week, Less than 1 week to 1 month, 1 month to less than 3 months, 3 months or more and less than 6 months, 6 months or more]
	Korea	KELS2005	age 15	PARTJOB part-time employment	Binary 1-all others, 0-None	Have you ever worked part-time this year? 1) None 2) Less than 1 week 3) Less than 1 week to less than 1 month 4) 1 to 3 months 5) 3 to 6 months 6) more than 6 month
	United Kingdom	BCS70	up to age 16	Ever Had Paid Work	Binary 1-yes, 0-no	"Have you got a paid job now, or have you had a paid job in the past?"
		LSYPE				
	United States	NLSY97	ages 14 to 16	Part-time work 1997	Binary 1-worked at 14-16, 0-did not work at 14-16	Respondent's weekly employment status in 1997; calculated for each week beginning with the month after respondent turned 14
		ELS	up to age 15	Ever worked for pay (not around the house)	Binary 1-yes, 0-no [recoded so that 0 = no and 1 or 2 = yes]	BYS72: Have you ever worked for pay, not counting work around the house? 0 = no, 1 = yes & currently employed, 2 = yes & not currently employed
	Uruguay	PIS03-UYLS				
Work placements	Australia	LSAY	up to age 15	IV7a_No_wk_exp	Binary 1-yes, 0-no	As a part of your schooling, have you done any work experience this year? (Please colour in only one bubble): IV7a) No, I am not doing work experience this year; IV7b) No, not yet but I will do work experience between now and the end of the year; IV7c)Yes, I have done work experience this year; IV7d) No response
	Canada	YITS				
	China	CFPS				
	Germany	NEPS	15/16-18	Internship of several days in a company	Binary 1-yes, 0-no. The operationalized dummy variable take the value 1 if an individual ever took part in this type of internship. There is no multi-collinearity with the other internship variable (Had an internship during school)	What kind of vocational preparation activities did you take part in? 4: Internship of several days in a company
	Korea	KELS2005				
	United Kingdom	BCS70	ages 14-16	School Organised Work Experience	Binary 1-yes, 0-no	"Since September 1984 have you taken part in any work experience arranged by the school?"
		LSYPE				

	United States	NLSY97				
		ELS	age 14 to 15/16	Internship during high school	Binary 1-yes, 0-no	BYS71B: internship during high school (work experience arranged by school, but not necessarily part of a vocational class)? 0 = no, and 1 = yes
	Uruguay	PIS03-UYLS				
Volunteering	Australia	LSAY	up to age 15	IV8_Volunteer	Binary 1-yes (Students who reported doing between 1 and 131 hours of unpaid or voluntary work), 0-no (others)	Q61 PISA 2009: "On average, how many hours do you spend each week on the following? (When answering include time at the weekend too) - Doing unpaid or voluntary work"
	Canada	YITS	up to age 15	volun_intensity	Composite scale: Every week for at least one item (volun_intensity='5);' At most 1-3 times a month for one item (volun_intensity='4);' At most 4-10 times this year for one item (volun_intensity='3);' At most 1-3 times this year for one item (volun_intensity='2);' Never (volun_intensity='1)' (5 categories). Grouping all types of volunteering	F1 Think about unpaid volunteer activities you may have done THIS YEAR for groups or organisations such as charities, schools, religious organisations or community associations. As an unpaid volunteer, in the past 12 months, about how often did you…. (7 items possible), A: Never this year, 1-3 times this year, 4-10, 1-3 times a month, every week,
	China	CFPS				
	Germany	NEPS	age 14 (2010) and 18 (2014)	Part of association or other organization outside of school have a second look at the results table	Binary 1-belongs to at least 1 club, 0-belongs to no clubs	We have compiled a list of different clubs or groups. Do you participate in any of them? a) Voluntary aid organisations such as fire department, Technical Relief Service (THW), German Red Cross (DRK), German Lifesaving Association (DLRG), etc. b) Sports club c) Church, denominational or religious youth groups (including YMCA, BDKJ, DITIB, AAGB) d) Fan club e) Culture club such as a theatre group, youth orchestra, club cultivating local history, folklore club, etc. f) Political association such as a youth party organisation, citizens association, labour union youth group g) Other i) I do not belong to any club
	Korea	KELS2005				
	United Kingdom	BCS70	up to age 16	Ever Done Volunteering	Binary 1-yes, 0-no	"Have you ever taken part in any of the following spare time activities : helping old people, nature conservation, helping single parents, or other voluntary activities in the community [2 other options available]"

		LSYPE				
	United States	NLSY97				
		ELS	age 15	Community service	Binary 1-yes, 0-no	In which of the following work-based learning experiences have you participated during high school? Community service (volunteer work arranged by your school to support your local community). 0 = no, and 1 = yes
	Uruguay	PIS03-UYLS				

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.19. Distributions of the indicators related with experiencing the future

Country	Dataset	Part-time work			Work placement			Volunteering		
		Sample size (N)	Age-range targeted by the question	Percentage of students who worked part-time as teenagers (%)	Sample size (N)	Age-range targeted by the question	Percentage of students who did a work placement (%)	Sample size (N)	Age-range targeted by the question	Percentage of students who volunteered as a teenager (%)
Australia	LSAY	2933	age 15	42.0	2395	age 15	77.0	2933	age 15	31.0
Canada	YITS	10927	age 15	42.7				10927	up to age 15	14.4 (4-10 times a year) 34.8 (never)
China	CFPS									
Germany	NEPS	5589	age 15	37.7	5589	15/16-18	82.3	5589	age 14-18	86.7
Korea	KELS2005	6489	age 15	13.3						
United Kingdom	BCS70	5170	up to age 16	63.0	5438	ages 14-16	33.0	5511	up to age 16	52.0
	LSYPE									
United States	NLSY97	5442	ages 14 to 16	40.6						
	ELS	13111	up to age 15	58.7	13005	age 14 to 15/16	5.2	13005	age 15	23.8
Uruguay	PIS03-UYLS									

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.20. Previous analyses that look for evidence of associations between work placements and adult employment outcomes

Country	Study	Database and sample	Associations	Significant associations
United Kingdom	(Mann, Denis and Percy, 2020[2])	BCS70 aged 16 in 1986 and 26 in 1996	Teenagers who undertook work placements reported greater life satisfaction at 26. Women from disadvantaged backgrounds earn 5.6% more at 26 if they had undertaken a placement by 16 with impact rising to 8.1% if they had not worked part-time as teenagers.	Yes

Table A A.21. Previous analyses that look for evidence of associations between teenage volunteering and adult employment outcomes

Country	Study	Database and sample	Associations	Significant associations
United States	(Kim and Morgül, 2017[131]), "Long-term Consequences of Youth Volunteering: Voluntary Versus Involuntary Service", Social Science Research, Vol. 67/May, pp. 160-175	National Longitudinal Study of Adolescent to Adult Health, age 13 in 1994, age 27 in 2008	Young people who volunteered as teens earned more by age 30 (regardless of whether volunteering was an option or a requirement) than comparable peers. They are also more likely to complete more years of education. The psychological benefits (related to life satisfaction) of youth volunteering accrue only to voluntary participants	Yes
United States	(Ballard, Hoyt and Pachucki, 2019[132]), "Impacts of Adolescent and Young Adult Civic Engagement on Health and Socioeconomic Status in Adulthood", Child Development, Vol. 90/4, pp. 1138-1154	National Longitudinal Study of Adolescent to Adult Health, age 13 in 1994, age 32 in 2013	Teenage volunteers saw an increase in their years of education, their earnings in adulthood, their household income. Volunteering was also associated with decreased risky health behaviours and decreased depressive symptoms.	Yes
United States	(Chan, Ou and Reynolds, 2014[120]), "Adolescent Civic Engagement and Adult Outcomes: An Examination among Urban Racial Minorities", Journal of Youth and Adolescence, Vol. 43/1, pp. 1829–1843	Chicago Longitudinal Study (56.6 % were female; 93 % were African Americans and 7 % were Latinos), age 6 in 1986, age 16 in 1996	Young people who volunteered as teenagers were more likely to experience higher levels of future optimism, life satisfaction, participation in civic activities, and educational attainment during emerging adulthood than peers who did not volunteer.	Yes
Australia	(Sikora and Green, 2020[73]), "Gifts as gains? The impact of volunteering on young people's educational and occupational attainment in Australia", Australian Journal of Education	Longitudinal Surveys of Australian Youth, age 16 in 2006, age 26 in 2016	Young people who volunteered as teenagers perceived their experience as predictive of successful labour-market outcomes. Between 26% to 28% of teenagers agreed that their volunteer activities had already helped them get a job. Between 48% and 54% of respondents felt that their volunteer activities gave them new skills which could be applied in a job or a business. Teenagers who volunteered also experienced a concrete increase in occupational status relative to peers who did not volunteer.	Yes

Table A A.22. Description of how the qualifying indicators related with experiencing the future were measured for each dataset

Indicators	Country	Dataset	Age-range targeted by the question	Name of variables in each dataset	Measured as	Associated question(s)
Perceived usefulness of experience of work	Germany	NEPS	age 14-16	Gathered professional experience in side-job (age 14-16)	Binary-1 if they answered with "does rather apply" or "does completely apply", 0- "does not apply"	When you think of these jobs on the whole – to what extent do the following statements apply? b) I have gained experience that I may need later in my job. This question was only asked to those who had a part-time job besides going to school. The dummy takes value 1 if they answered with "does rather apply" or "does completely apply".
	United Kingdom	BCS	up to age 16	Work Experience Described as Useful	Binary 1-yes, 0-no AND can't say	“Have you found the opportunity useful in your career planning?”
Frequency of working or volunteering	Germany	NEPS	ages 14-16	Side-job was regular (age 14-16)	Dummy variable that marks those whose part-time job during school was on a regular basis. This excludes those who work only every few weeks or more seldom	Did you have a part-time job during this or the last school year in addition to school attendance and school vacation? c) Yes, on a regular basis.
	United Kingdom	BCS70	up to age 16	Frequency Volunteering Index	Index on a scale from 0-8 capturing the frequency of 4 types of volunteering. Original questions is composed of 4 items relevant to volunteering, for which respondents score the frequency of the listed activity: 0-never, 1-hardly ever AND sometimes, 2-often	"Have you ever taken part in any of the following spare time activities: helping old people, nature conservation, helping single parents, or other voluntary activities in the community [2 other options available]".
	United States	NLSYE97	ages 14-19	Weeks worked as a teenager	Binary 1-greater than 51, 0-less than 51	Cumulative weeks worked at an employee-type job from age 14 through age 19 as of the interview date.
		ELS	age 15	How many hours usually works a week	Binary 1- more than 10 hrs/week. 0- 10 hrs/week or less	BYS75: How many hours/week on your current or most recent job? Response = # hours. [note: set threshold at 10 hours].
		ELS	age 15	How often volunteers or performs community service	4 point ordinal (Rarely or never/Less than once a week/Once or twice a week/Everyday or almost everyday). We compare "once or twice a week" -1, to all three other options -0	BYS44C: How often do you spend time volunteering or performing community service. 1 = rarely or never, 2 = less than once a week, 3 = once or twice a week, 4 = every day or almost every day.

Instrumental motivation as a reason for working or volunteering	Australia	LSAY	age 15	ST74N01	4 point ordinal ("Strongly disagree" coded as 0, "disagree" coded as 0.33, "agree" coded as 0.66 and "strongly agree" coded as 1.). We compare "Strongly disagree" coded as 0, to "Strongly agree" coded as 1	Q74 PISA 2009 What are your reasons for working? I work because... It is the kind of work I want to do as a career Strongly disagree Disagree Agree Strongly Agree
	Canada	YITS	age 15	jobexper_volunteer	Composite binary 1-volunteering to improve job opportunities (4), 0-other (1-3 and 5-8)	F3 What were your main REASONS for STARTING the volunteer activities mentioned above? (MARK ALL THAT APPLY.) A: § 1 I had to volunteer in order to graduate from high school. § 2. I was asked to do them. § 3 I was told to do them by the police, a judge, a lawyer, or by some other LEGAL authority. § 4 I wanted to improve my job opportunities. § 5 I wanted to explore my own abilities and interests. § 7 I thought it would be fun. § 6 I wanted to help a cause in which I personally believe. § 8 I did not do any unpaid volunteer activities this year.
	Canada	YITS	age 15	reason_experience	Binary 1-option 05 selected for either G10 or G16 0-any other option selected for either G10 or G16	G16 This school year, what were the MAIN REASONS you decided to work at a job or an odd job? (MARK ALL THAT APPLY.) [1 I wanted money to buy things I want. § 2 I wanted money to save for education after high school. § 3 I needed money to help my parent(s). § 4 Someone asked me to do the job. § 5 I wanted to get work experience. § 6 I was bored and had nothing else to do. § 7 My parent(s) wanted me to work. § 8 Another reason. § 9 I did not have a job or an odd job last summer].

Table A A.23. Previous analyses of longitudinal studies that look for evidence of adult employment outcomes linked to teenage career certainty

Country	Study	Database and sample	Associations	Significant associations
Australia	(Sikora and Saha, 2011[99]), *Lost talent? The occupational ambitions and attainments of young Australians.*	Longitudinal Surveys of Australian Youth (LSAY) 1998 (age 15) to 2008 (age 25)	Teenagers who are certain at age 15 about their career plans enjoy higher levels of "occupational status" at age 25 (effects greater for young women than young men).	Yes
Australia	(Sikora, 2018[102]),"Aimless or flexible? Does uncertainty in adolescent	Longitudinal Surveys of Australian Youth 2006 (age 15) to 2016 (age 25)	Teenagers who are uncertain at age 15 about their career plans can expect to earn 6% less over their lifetimes than comparable peers (effects greatest for young people going into professional employment).	Yes

	occupational expectations matter in young adulthood?"			
Australia	(Thomson and Hillman, 2010[93]), *Against the odds: influences on the post-school success of "low performers".*	Longitudinal Surveys of Australian Youth 2003 (age 15) to 2007 (age 19)	Low achieving teenagers who are certain at age 15 about career plans are more likely to be in education or employment and happier with their lives at 19 than comparable peers.	Yes
Australia	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2003 (age 15) and Longitudinal Surveys of Australian Youth (LSAY) (age 25)	No significant associations between career certainty and NEET status, earnings, or job satisfaction	No
Denmark	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2000 (age 15) and PIAAC (age 26-27)	In Denmark, at ages 26-27, an academically high-performing respondent who was uncertain about his or her career expectations at 15, earned less than a comparable respondent who was not uncertain about career expectations at 15. The expected financial penalties are around -20%.	Yes
United Kingdom	(Gutman, Sabates and Schoon, 2014[109]), "Uncertainty in educational and career aspirations: gender differences in young people" in Schoon, I. and Eccles, J. S. (eds), *Gender differences in aspirations and attainment – a life course perspective.*	British Cohort Study 1986 (age 16) to 1988 (age 18)	Teenagers who are uncertain about career plans at age 16 are three times more likely to not be in education, employment or training (NEET) for at least six months between the ages of 16 and 18 (effects stronger for young men).	Yes
		Longitudinal Study of Young People in England (LSYPE) 2004 (age 13/14) to 2008 (age 17/18)	Teenagers who are uncertain about career plans at ages 13/14 are at the same risk of being not in education, employment or training (NEET) at ages 16/17 and 17/18 as comparable peers.	No
United Kingdom	(Gutman and Schoon, 2018[111]), "Aiming high, aiming low, not knowing where to go: Career aspirations and later outcomes of adolescents with special educational needs."	Longitudinal Study of Young People in England 2004 (age 14) to 2010 (age 20)	Teenagers requiring high levels of support due to learning difficulties, physical disabilities or behavioural problems who are uncertain about career plans at age 14 spend more time not in education, employment or training (NEET) by the age of 20 than peers.	Yes
United Kingdom	(Sabates, Harris and Staff, 2010[87]), "Ambition gone awry: the long-term socioeconomic consequences of misaligned and uncertain ambitions in adolescence."	British Cohort Study (BCS70) 1986 (age 16) to 2004 (age 34)	Teenagers who are uncertain about career plans earn up to 17% less at age 34 than comparable peers (uncertain women also spend more time unemployed than peers with high occupational and educational ambitions).	Yes
United Kingdom	(Sabates, Gutman and Schoon, 2017[107]), "Is there a wage penalty associated with degree of indecision in career aspirations? Evidence from the BCS70."	British Cohort Study (BCS70) 1986 (age 16) to 2004 (age 34)	Teenagers who are uncertain about their career plans at age 16 earn less than comparable peers at age 34 (effect reduced among the highest academic achievers by age 34).	Yes
United Kingdom	(Yates et al., 2010[108]), "Early Occupational Aspirations and Fractured	British Cohort Study (BCS) 1986 (age 16) to 1988 (age 18)	Teenagers who are uncertain about career plans at age 16 are three times more likely to not be in education, employment or training (NEET) for at least six months by the age of 18 (effect greatest for low-SES young men).	Yes

	Transitions: A Study of Entry into 'NEET' Status in the UK."			
United States	(Staff et al., 2010[127]), "Uncertainty in early occupational aspirations: role exploration or aimlessness?"	National Education Longitudinal Study (NELS) 1990 (age 16) to 2000 (age 26)	Teenagers who are uncertain about career plans at age 16 earn less at age 26 than comparable peers with professional ambitions (men and women) and certain peers with non-professional ambitions (women only).	Yes
United States	(University of Minnesota: Center for Urban and Regional Affairs; Mortimer, Jeylan T.; Rolando, Dominique J.; Zierman, Carol, 2017[122]), "Understanding Youth Resilience by Leveraging the Youth Development Study Archive".	Youth Development Study 1988 (age 14-15) to 2000 (age 26-27)	Teenagers who are certain about their career plans at 14-15 can expect greater success in transitions into adulthood (combining outcomes linked to employment, educational attainment, career progression, job satisfaction, economic self-sufficiency and physical and emotional well-being).	Yes
Switzerland	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2000 (age 15) and Transition from education to employment (TREE1) (age 25)	In Switzerland, at ages 25, an academically high-performing respondent who was uncertain about his or her career expectations at 15, earned less than a comparable respondent who was not uncertain about career expectations at 15. The expected financial penalties are around -11%.	Yes

Table A A.24. Distributions of the qualifying indicators of experiencing the future

Country	Dataset	Perceived usefulness of experience of work[1]			Instrumental motivation as a reason for working or volunteering[2]			Frequency of working or volunteering[3]		
		Sample size (N)	Age-range targeted by the question	Percentage of students who perceived their experience of work as useful (%)	Sample size (N)	Age-range targeted by the question	Percentage of students who present instrumental motivation for working or volunteering (%)	Sample size (N)	Age-range targeted by the question	Percentage of students who worked or volunteered frequently (%)
Australia	LSAY[4]				1 225	age 15	4.0 (Strongly agree)			
							41.0 (Strongly disagree)			
Canada	YITS (jobexp_volunteer)				10 927	age 15	22.3			
	YITS (reason_expr)				10 927	age 15	54.9			
China	CFPS									

Germany	NEPS	5 589	age 15 (2011)	23.7		5 589	age 14 (2010) and 18 (2014)	18.8		
Korea	KELS2005									
United Kingdom	BCS70[5]	1 582	up to age 16	77.0		4 968	up to age 16	Min	Mean	Max
								0	0.87	8
	LSYPE									
United States	NLSY97					5 092	ages 14-19	54.9		
	ELS (How often work week)					7 015	age 15	55.6		
	ELS (How often community service)					14 181	age 15	10.2 (once or twice a week)		
								68.0 (rarely or never)		
Uruguay	PIS03-UYLS									

1. For some datasets, data was only collected for respondents who volunteered as teenagers
2. For some datasets, data was only collected for respondents who volunteered or worked as teenagers
3. For some datasets, data was only collected for respondents who volunteered or worked as teenagers
4. In LSAY, the instrumental motivation for working was a standardised continuous variable between 0 and 1. The mean value of the sample on the instrumental motivation for working was 0.65.
5. In BCS70, the frequency of volunteering was an index ranging from 0 to 8. Observed data could take integer values between 0 and 8. The mean value of the sample on the frequency of volunteering index was 0.8.

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.25. Description of how the indicators related with thinking about the future were measured for each dataset

Indicators	Country	Dataset	Name of variables in each dataset	Age of respondents	Measured as	Associated question(s)
Career certainty	Australia	LSAY	Ability to name a job expected at age 30	15/16	1 - named a job, 0- no answer	What kind of job to expect to have when you're about 30 years old? Write the job title
	Canada	YITS	Ability to name a job expected at age 30	15	1 - named a job, 0- no answer	What kind of career or work would you be interested in having when you are about 30 years old?, Module: Education and Work Aspirations
	China	CFPS	Ability to name a job student wants to have in future	10 to 15	One for "don't know" and "bad descriptions that cannot be classified" and zero otherwise	What specific occupation do you want to pursue when you grow up?
	Germany	NEPS				

	Korea	KELS2005	Ability to select a job expected in the early 30s[1]	16	Selected a top 30 job OR not	What job does the student want to have in his early 30s? Select only two. 01 teacher 02 doctor 03 Office employee· bank employee 04 Public employee 05 Scientist 06 Professors and researchers (excluding scientists) 07 Soldier 08 Technician/Engineer 09 Aircraft pilot/Captain 10 Nurse 11 Pharmacist 12 Judge (judge, prosecutor, lawyer) 13 Athletes 14 Drivers, craftsmen, and manufacturers 15 Artists (painters, musicians, writers, etc.) 16 journalists 17 Broadcasters 18 National Assembly members and politicians 19 Entertainers 20 Police officers and firefighters 21 Farmer fisherman 22 Chef Hair designers 23 Accountant Patent Attorney 24 Clergy (pastor, priest, monk, etc.) 25 The manager or store owner of a small company 26 The president or manager of a large company 27 Coordinator 28 Pro Gamer 29 Others( ) 30 Not sure
	United Kingdom	BCS70	Named of desired Job	14 to 15	0 = No; 1 = Don't Know; 2 = Yes	Is there an ACTUAL JOB you would like to do as opposed to the trade industry or profession in which you hope to work either now or when your education is complete?
		LSYPE				
	United States	NLSY97				
		ELS	Select expected occupation at age 30 from a range of options[1]	14 to 16	Selected option or not	Write in the name of the job or occupation that you expect or plan to have at age 30. I don't plan to work when I'm 30 I don't know The responses were later reclassified, NameOcc: BYS64/BYOCC30 (composite--17 categories): occupation at age 30. Responses are 1 = clerical, 2 = craftsperson, 3 = farmer, farm manager, 4 = homemaker, 5 = labourer, 6 = manager, administrator, 7 = military, 8 = operative, 9 = professional a, 10 = professional b, 11 = proprietor or owner, 12 = protective service, 13 = sales, 14 = school teacher, 15 = service, 16 = technical, and 17 = other. VS. -1 = “I don’t know” (28.89%)
	Uruguay	PIS03-UYLS				

Career alignment	Australia	LSAY	Alignment versus underestimation	15/16	Binary variable	Career Alignment: matching of occupational and educational expectations As requested in the March meeting this variable contrasts only students who expected to complete university (Q58) and become a professional or a manager (Q69) with students who did not expect to go to university (Q58) but expected to become a manager or a professional (Q69). Everyone else is excluded from the analysis
	Canada	YITS	Alignment versus underestimation	15	1= underestimation, 0=aligned	How much education do you think is needed for this type of work? A: same as YSDV_A11, Module: education and work aspiration
	China	CFPS	Career alignment	10 to 15	1= aligned, 0='over' or underestimation	Career alignment: matching of occupational and educational expectations
	Germany	NEPS	Career misalignment	14 to 16	1 = Misaligned (underestimation), 0 = aligned	Dummy variable matching career ambition and educational aspirations of students in grade 9, Germany, if these were below the 'Abitur level (ISCED5) in the German educational system
	Korea	KELS2005	Alignment versus overestimation	15	Yes OR No	It uses career ambition variables that distinguish students who want higher education from those who do not. In other words, students who have career ambience and have higher educational expectations were distinguished from the rest. [all students in the sample aspired to complete HE but not all students aspired to careers which needed HE]
	United Kingdom	BCS				
		LSYPE				
	United States	NLSY97				
		ELS				
	Uruguay	PIS03-UYLS				
Career ambition	Australia	LSAY	Interest in progressing to managerial employment:	15/16	1 = categories 1 “Managers ”or 2 “Professionals”, 0 = everyone other valid answer	Respondents whose answers to Q69 were coded by the OECD to ISCO Major categories 1 “Managers ”or 2 “Professionals” are coded 1, everyone else, who provided a valid answer is coded 0
	Canada	YITS				
	China	CFPS	Occupational expectation	10 to 15	1 = interest in attending higher education and pursuing professional/managerial jobs; 0= No interest in progressing to higher education or professional/managerial employment, or both	"What specific occupation do you want to pursue when you grow up?" and "What is the highest level of education you wish you can complete?" The answers were coded by the Chinese Standard Classification of Occupations (CSCO), which could be mapped into a job in ISCO88

	Germany	NEPS	Expected profession/uncertainty	14 to 16	Name of profession - Ambitious professional aspiration (ISCO group 1 and 2) in grade 9	Question 55134 asks: "Think about everything you know right now. Which profession do you think you will actually have later?" The answer is open, selected according to ISCO group 1 and 2
	Korea	KELS2005	Professional/managerial occupation[2]	15	Divided into those that require higher education and those that do not	Teacher, doctor, scientist, professors and researchers (except scientists), technician and engineer, aircraft pilot and captain, chemist, Judge (judge, prosecutor, lawyer), artist (painter, musician, writer), journalist, broadcaster, Congressman and politician, accountant and patent attorney, clergy (pastor, priest, monk, etc.), president or manager of a large company
	United Kingdom	BCS				
		LSYPE				
	United States	NLSY97				
		ELS	Professional/managerial occupation at 30[2]	14 to 16	Professional/managerial jobs group includes: 6 = manager, administrator, 9 = professional a, 10 = professional b, 11 = proprietor or owner, 14 = school teacher, 16 = technical. [Coded to 0 vs 1]	Write in the name of the job or occupation that you expect or plan to have at age 30. a) _____ b) I don't plan to work when I'm 30 C) I don't know. Responses to the open-ended question were classified by ELS into 17 categories, and from these, the expert analyst selected those which grouped into professional/managerial jobs.
	Uruguay	PIS03-UYLS				
Instrumental motivation	Australia	LSAY	Instrumental motivation (Attitudes to school)	15/16	Two measurement values in a continuous variable were compared: -2 was selected to represent negative attitude to school (not having instrumental motivation), and 2 was selected to represent positive attitude to school (having instrumental motivation). Both values were away from 0 (neutral) by the same magnitude	An OECD created scale (ATSCHL) involving Q34 in the 2009 PISA questionnaire documented https://www.oecd.org/pisa/pisaproducts/50036771.pdf p. 293 "Four items measuring attitude towards school were included. All items which are negatively phrased (items ST33Q01, ST33Q02) were reverse scored for item response theory (IRT) scaling such that positive weighted likelihood estimates (WLE) scores on this new index for PISA 2009 indicate a better attitude towards school." To what extent do you agree or disagree with the following statements? School has done little to prepare me for adult life when I leave school School has been a waste of time School helped give me confidence to make decisions School has taught me things which could be useful in a job Likert/scale response: Strongly disagree, Disagree, Agree, Strongly Agree. A composite variable was constructed from the response scores in each item. To that effect, positive attitudes to school were measured by a four-item scale, where disagreement with these two items: "school has done little to prepare me for adult life when I

						leave school, school has been a waste of time" and agreement with "school helped give me the confidence to make decisions" and "school has taught me things which could be useful in a job"
	Canada	YITS	school attitude (agreement or disagreement with statements): [school_waste][3]	15	Strongly disagree, Disagree, Agree, Strongly agree (Measurements 'agree' and 'strongly disagree' used to report results)	"school is a waste of time" YSA9L (Q: How do you feel about the following this year? I- school is often a waste of time, A: Strongly disagree-disagree-agree-strongly agree) [school_waste]
	China	CFPS				
	Germany	NEPS				
	Korea	KELS2005	Motivation good job/ good job	15	1-3 Scale variable: Not satisfied, neutral and satisfied (all measurements were used to report results)	Question asked student ""Why are you studying" and provided different alternatives that they had to mark their level of agreement /disagreement with. One of them was ""I am studying to get a good job" of them was "I am studying to get a good job". The responses were converted into 3 categories
	United Kingdom	BCS70	School Waste Time	16	school waste: 0 = not true at all; 1 = partly true; 2 = very true (all measurements were used to report results)	"I feel school is largely a waste of time"
		LSYPE	School as a waste of time[3]	15/16	1. Strongly agree, 2. Agree, 3. Disagree, 4. Strongly disagree (measurements 'Strongly agree' and strongly disagree' used to report results)	Feelings about school: School is a waste of time for me (W3)
	United States	NLSY97				
		ELS	Career Thinking	14 to 16	1 to 4 scale (measurements 'agree' and 'disagree' used to report results)	• BYS27D_R <- BYS27D: I go to school because education is important for getting a job later on. 1 = Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree. [rekey these reverse coded items] • BYS27G_R <- BYS27G: I go to school because I'm learning skills that I will need for a job. 1 = Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree. [rekey these reverse coded items] • BYS89H: I study to increase my job opportunities. 1 = almost never, 2 = sometimes, 3 = often, 4 = always • BYS89P: I study to ensure that my future will be financially secure. 1 = almost never, 2 = sometimes, 3 = often, 4 = always
	Uruguay	PIS03-UYLS	Attitudes to school	15/16	Continuous point score variable generated from the scale 1) strongly agree; 2) Agree; 3) Disagree; 4) Strongly disagree	1) school has done little to prepare me for adult life, school as a waste, school for confidence, school taught things useful for job

Career Originality	Canada	YITS	Career originality: expected career not among the top 10	15	o List of top 10 jobs (alphabetical code order) o C021 Biologist o C063 Computer programmer o D011 Specialist physician o D012 General Practitioner and Family Physician o D014 Veterinarian o E012 Lawyer o E021 Psychologist o E130 (E131 Secondary school teacher, E132 Primary school teacher) o F151 Athlete o G611 Police officer	YSOCC91 (occupation of expected job at age 30, coded using the Standard Occupational Classification (SOC) of 1991) is used to create a top 10 of most stated jobs. A "top 10" variable is then created as equal to 1 if the stated job is in the top 10, 0 if not. [top10]
Education ambition	Australia	LSAY	Interest in progressing to higher education:	15/16	1 = who answered "a university degree, 0 = everyone else	Q58 in the PISA 2009 questionnaire: Which of the following do you expect to complete? a) Year 10 b) Year 10 or 11 and then a Technical and Further Education (TAFE) certificate, etc.
	Canada	YITS	Interest in progressing to higher education	15	1 = College or University (Higher education), 0= otherwise	What is the highest level of education you would like to get? Mark all that apply, A: Less than HS, HS or equivalent, Trade or vocational, College/CEGEP, One university degree, More than one university degree, Don't know, Module: Education and Work aspirations
	China	CFPS	Educational plan	10 to 15	Seven measures referencing the highest degree respondents wish to obtain: primary school; junior high school; high school or equivalence; vocational college; BA/BS degree; Master's degree; or Ph.D. (including a "don't know" option and a "no need to go to school" option)	What is the highest level of education you wish you can complete?
	Germany	NEPS				
	Korea	KELS2005				
	United Kingdom	BCS70				
		LSYPE				
	United States	NLSY97				
		ELS	Expecting tertiary education	14 to 16	[3 or higher represents Career Ambition]; 1 = Less than high school graduation, 2 = High school	As things stand now, how far in school do you think you will get?

					graduation or GED only, 3 = Attend or complete a 2-year school course in a community or vocational school, 4 = Attend college, but not complete a 4-year degree, 5 = Graduate from college, 6 = Obtain a Master's degree or equivalent, 7 = Obtain a Ph.D., M.D., or other advanced degree	
	Uruguay	PIS03-UYLS	Educational expectation	15/16	1 - HE, 0 - other	Which of the following do you expect to complete? (8 options all the way to PhD/MA)

1. Career certainty was derived from a closed question in the KELS2005 and ELS datasets where respondents were asked to select an option from a range of options provided
2. Career ambition was derived from a closed question in the KELS2005 and ELS datasets and analysed according to what was considered a job requiring HE (KELS205) or a professional job (ELS)
3. YITS and LSYPE datasets presented data from responses to more than one item where instrumental motivation could be derived from. Only one item was selected which made reference to "school being a waste of time" to be more comparable with data available from other datasets
Note: Grey Shade: Data analyses not performed for these variables.

Table A A.26. Distributions of career certainty, alignment, ambition, originality, and education ambition

Country	Dataset	Career certainty		Career alignment		Career ambition		Career originality		Education ambition	
		Sample size (N)	Percentage of students who were career certain (%)	Sample size (N)	Percentage of students who were career aligned (%)	Sample size (N)	Percentage of students who were career ambitious	Sample size (N)	Percentage of students with career originality	Sample size (N)	Percentage of students with education ambition
Australia	LSAY	2 933	74.0	1 471	91.0	2 933	67.0			2 933	75.0
Canada	YITS	10 927	94.3	10 927	89.0			10927	72.43	10 927	76.7
China	CFPS	2 078	77.6	2 078	59.1	2 078	42.2			2 082	64.8
Germany	NEPS			4 220	92.8	5 727	54.0				
Korea	KELS2005	6 119	86.7	6 519	42.9	6 524	52.3				
United Kingdom	BCS70	5 296	64.5								
	LSYPE										
United States	NLSY97										
	ELS	13 418	54.0			13 355	45.7			13 794	78.3
Uruguay	PIS03-UYLS									1 779	56.9

Note: Grey Shade: Data analyses not performed for these variables.

Table A A.27. Distribution of instrumental motivation

		Instrumental motivation										
		Question statements	Sample size (N)	Percentage/Valid Percentage distribution per scale point					Mean	Min	Max
Australia	LSAY	Composite from response scores to 4 statements	2933						0.3[1]	-3.1	2.5
Canada	YITS	"School is often a waste of time"	10927	Strongly disagree	Disagree	Agree	Strongly agree				
				17.9	55.7	20.2	6.2				
China	CFPS										
Germany	NEPS										
Korea	KELS2005	Instrumental motivation composite	19433	Disagree	Neutral	Agree	Missing				
				3.8	52.1	43.9	0				
United Kingdom	BCS70	"I feel school is largely a waste of time"	5511	"not true at all"	"partly true"		"very true"	Missing			
				67.9	26.9		3.1	2.1			

	LSYPE	"School is a waste of time for me"	11925	Strongly agree	Agree	Disagree	Strongly disagree	Missing			
United States	NLSY97										
	ELS	"Education is important to get a job later"	14475	Strongly disagree	Disagree	Agree	Strongly agree	Missing			
				1.0	2.0	30.4	56.1	10.6			
Uruguay	PIS03-UYLS	Composite from response scores to 5 statements	1757						0.1	-2.4	2.5

1. Mean of composite continuous variable where from 3 measurement values are used in regression analysis: values -2/ selected to represent negative attitude to school (not having instrumental motivation), 0. (neutral) and 2/ selected to represent positive attitude to school (having instrumental motivation)
Note: Grey Shade: Data analyses not performed for these variables.

** In a 1 to 5 scale
*** In a scale where 0 = No; 1 = Don't Know; 2 = Yes

Table A A.28. Previous analyses of longitudinal studies that look for evidence of associations between teenage career ambition and adult employment outcomes

Country	Study	Database and sample	Associations	Significant associations
Australia	(Sikora and Saha, 2011[99]), *Lost talent? The occupational ambitions and attainment of young Australians*	Longitudinal Surveys of Australian Youth Age 15 (1998) to age 25 (2008)	Having ambitious career plans in high school is a good predictor of gaining higher-status employment in young adulthood.	Yes
Australia	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2003 (age 15) and Longitudinal Surveys of Australian Youth (LSAY) (age 25)	Career ambitious teenagers are 1.2 percentage points less likely to be NEET as adults compared to their less ambitious peers. On average, career ambitious students who completed upper secondary and did not complete tertiary education earn 11% more in Australia than their comparable peers at 25.	Yes
Denmark	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2000 (age 15) and PIAAC (age 26-27)	No significant associations between career ambition and NEET status, earnings, and job satisfaction	No
Switzerland	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2000	Job satisfaction at age 25 is 5.6 percentage-point higher in those workers who were career ambitious at age 15 than in those who were not. On average, career ambitious individuals earn 14% more than their comparable peers at age 25.	Yes

			In addition, career ambitious men earn 7% more than ambitious females; and ambitious students who completed upper secondary and did not complete tertiary education earn 12% more than their comparable peers at 25; and ambitious VET students earn 16% more than their comparable peers at 25.	
United Kingdom	(Ashby and Schoon, 2010[78]), "Career success: The role of teenage career aspirations, ambition value and gender in predicting adult social status and earnings"	British Cohort Study Age 16 (1986) and age 34 (2004)	Higher levels of teenage career aspiration and ambition (desire to work in a challenging job with prospects of promotion) are associated with higher adult earnings and social status attainment (combining occupational status and highest qualification) at age 34.	Yes
United Kingdom	(Croll, 2008[79]), "Occupational choice, socio-economic status and educational attainment: a study of the occupational choices and destinations of young people in the British Household Panel Survey"	British Household Panel Survey (BHPS) - Young Person's Survey Age 15 (1994-99) to age 20-24 (2004)	Teenagers at age 15 with higher levels of career ambition (expecting to achieve a professional or managerial job) are more likely to be working in such a profession in their early twenties than comparable peers. High levels of career ambition can compensate for social disadvantage.	Yes
United Kingdom	(Green et al., 2017[76]), "Dreaming big? Self-valuations, aspirations, networks and the private-school earnings premium"	British Cohort Study age 16 (1986) to age 42 (2012)	Teenage job-quality aspirations (combining teenage views on the quality of future employment in terms of earnings, interesting and challenging work, job security etc.) for males and occupational aspirations (interest in professional or managerial professions for girls) have a significant if small effects on earnings at age 42.	Yes
United Kingdom	(Gutman and Schoon, 2018[111]), "Aiming high, aiming low, not knowing where to go: Career aspirations and later outcomes of adolescents with special educational needs"	Longitudinal Study of Young People (LSYPE) in England age 14 (2004) and ages 16 to 20 (2006 to 2010)	Teenagers (aged 14) with learning and/or physical disabilities who aspire to a professional/managerial adult occupation experience fewer months of being NEET between the ages of 16 and 20 than peers aspiring to skilled jobs, unskilled jobs or who were uncertain. Only a negligible difference is found in the number of months being NEET for those without learning and/or physical difficulties.	Yes
United Kingdom	(Schoon and Parsons, 2002[106]), "Teenage Aspirations for Future Careers and Occupational Outcomes"	National Child Development Study age 16 (1974) to age 33 (1991)	The findings show that in both datasets teenage career aspirations are a good predictor of adult occupational attainment: young people with high aspirations are more likely than their less ambitious peers to enter a professional or managerial career.	Yes
		British Cohort Study age 16 (1986) to age 26 (1996)		Yes
United Kingdom	(Schoon and Polek, 2011[77]), "Teenage career aspirations and adult career attainment: The role of gender, social	National Child Development Study age 16 (1974) to age 33 (1991)	For both datasets, compared to their less ambitious peers, teenagers aspiring to professional jobs are more likely to participate in continuing education, and are more likely to achieve a professional career in their adult years.	Yes

	background and general cognitive ability"	British Cohort Study age 16 (1986) to age 34 (2004)		Yes
United States	(Mello, 2008[125]), "Gender Variation in Developmental Trajectories of Educational and Occupational Expectations and Attainment From Adolescence to Adulthood"	National Education Longitudinal Study age 14 (1988) to age 26 (2000)	Teenage boys reporting high occupational expectations in adolescence had higher occupational attainment in adulthood compared to males with low occupational expectations, whereas females' adult occupational attainment did not vary by their adolescent occupational expectations.	Yes
United States	(University of Minnesota: Center for Urban and Regional Affairs; Mortimer, Jeylan T.; Rolando, Dominique J.; Zierman, Carol, 2017[122]), "Understanding Youth Resilience by Leveraging the Youth Development Study Archive"	*Youth Development Study* Age 14-15 (1988) to age 26-27 (2000)	High teenage occupational expectations are associated with more successful adult outcomes (combining adult employment status, career progression, job satisfaction, presence of physical/emotional problems).	Yes

Table A A.29. Previous analyses of longitudinal studies that look for evidence of associations between teenage career misalignment and adult employment outcomes

Country	Study	Database and sample	Associations	Significant associations
Australia	(Sikora and Saha, 2011[99]), *Lost talent? The occupational ambitions and attainments of young Australians*	Longitudinal Surveys of Australian Youth 1998 (age 15) to 2008 (age 25)	Teenagers whose educational and occupational objectives are inconsistent experience lower levels of occupational attainment.	Yes
Australia	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2003 (age 15) and Longitudinal Surveys of Australian Youth (LSAY) (age 25)	No significant association between misalignement and job satisfaction, earnings, and NEET status. With a P-value (11%) marginally higher than what is being reported in this paper, it is noteworthy that Australian youth who were not in education, employment or training (NEET) at 25 tended to be more misaligned at 15 than those who were not NEET at 25.	No
United Kingdom	(Sabates, Harris and Staff, 2010[87]), "Ambition Gone Awry: The Long-Term Socioeconomic Consequences of Misaligned	British Cohort Study 1986 (age 16) to 2004 (age 34)	Teenage career mis/alignment at age 16 explains approximately 8 percent of the variation in wages for women and 7 percent of the variation in men's earnings at age 34.	Yes

	and Uncertain Ambitions in Adolescence"			
United Kingdom	(Yates et al., 2010[108]), "Early Occupational Aspirations and Fractured Transitions: A Study of Entry into 'NEET' Status in the UK"	British Cohort Study 1986 (age 16) to 1988 (age 18)	Teenage young men who have misaligned career plans at age 16 are 90% more likely to be not in education, employment or training (NEET) for at least six months by the age of 18.	Yes
United States	(Kim, Klager and Schneider, 2019[85]), "The Effects of Alignment of Educational Expectations and Occupational Aspirations on Labor Market Outcomes: Evidence from NLSY97"	National Longitudinal Survey of Youth 1979 (NLSY97) 1979 (age 14) to 2012 (age 42)	Teenagers who overestimate the education required for their occupational ambition go on to earn an average of 11% more during the mid-career than under-aligned individuals (who underestimate the education needed to secure job ambitions). Over-aligned high school students are predicted to have an hourly wage 8% above that of under-aligned individuals at age 26. The wage gap between over-aligned and under-aligned increases up to 14% by the end of the 30s and then steadily decreases to 11% at age 42 and to 7% at age 46.	Yes
United States	(Schmitt-Wilson and Faas, 2016[86]), "Alignment of Educational and Occupational Expectations Influences on Young Adult Educational Attainment, Income, and Underemployment"	National Education Longitudinal Study of 1988 (NELS:88) 1998 (age 14) to 2000 (age 26)	Teenagers who overestimate the education required for their occupational ambition earn higher salaries in young adulthood compared to those who are either aligned or under-aligned.	Yes

Table A A.30. Previous analyses of longitudinal studies that look for evidence of associations between instrumental motivation towards school and adult employment outcomes

Country	Study	Database and sample	Association	Significant associations
Australia	(Thomson and Hillman, 2010[93]), *Against the odds: influences on the post-school success of 'low performers'*	2003 cohort of the Longitudinal Surveys of Australian Youth (LSAY), age 15 in 2003, age 19 in 2007.	The study considers a large sample of lower achieving 15-year-old students. Students who responded positively to a series of statements highlighting the value of the study of Mathematics to future success, including in employment, were found to be significantly more likely to be successful at age 19 (defined in terms of satisfaction across difference aspects of their lives, including "career prospects").	Yes
Australia	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2003 (age 15) and Longitudinal Surveys of Australian Youth (LSAY) (age 25).	There is a difference of 15.1 percentage points in reported job satisfaction between youth who did not agree that school had been a waste of time and those who agreed or strongly agreed.	Yes

Denmark	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2000 (age 15) and PIAAC (age 26-27).	There is a five percentage point difference between the job satisfaction at age 25 of young adults who, as teenagers, agreed or strongly agreed that "I study to get a good job" and those who did not agree with this statement. There is a 3.7 percentage-point difference in NEET status between youth who disagreed or strongly disagreed that "I study to get a good job" and youth who agreed or strongly agreed with the statement.	Yes
Switzerland	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2000	No significant associations between instrumental motivation towards school and adult employment outcomes	No
United Kingdom	(Duckworth and Schoon, 2012[94]), "Beating the Odds: Exploring the Impact of Social Risk on Young People's School-to-Work Transitions during Recession in the UK"	British Cohort Study 1970 (BCS70), age 16 in 1986, age 18 in 1988.	Young people, at 16, who have a positive view of the effectiveness of schooling (e.g. disagreeing that "school was largely a waste of time") are 25% less likely to be NEET at age 18.	Yes
		Analysis of Longitudinal Study of Young People in England (LSYPE), age 16 in 2005-06, age 18 on 2007-08.	Young people, at 16, who have a positive view on the effectiveness of schooling (e.g. disagreeing with "school was largely a waste of time") are 30% less likely to be NEET at age 18.	Yes
United Kingdom	(Mann, Kashefpakdel and Rehill, 2017[95]), *Indicators of successful transitions: Teenage attitudes and experiences related to the world of work*	British Cohort Study 1970 (BCS70), age 16 in 1986, age 26 in 1996.	Teenagers, at age 16, who agree that "school is largely a waste of time" earn, on average 16% less at age 26 than comparable peers who disagreed with the statement.	Yes
		Longitudinal Study of Young People in England (LSYPE). Sample: approx. 8 400 individuals, age 14-15 in 2004, age 19-20 in 2009.	Teenagers, at age 14-15, who agree that "school is a waste of time for me" are two times more likely to be NEET at age 19-20 than those who disagreed.	Yes

Table A A.31. Previous analyses of longitudinal studies that find evidence of associations between career originality and adult employment outcomes

Country	Study	Database and sample	Associations
Australia	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2003 (age 15) and Longitudinal Surveys of Australian Youth (LSAY) (age 25)	Individuals who aspired at age 15 to non-popular jobs that are not managerial or professional went on to earn on average 6% more at age 25 than their comparable peers aspiring to popular jobs that are not managerial or professional.

Denmark	(Covacevich et al., 2021[3]), "Thinking about the future: Career readiness insights from national longitudinal surveys and from practice"	PISA 2000 (age 15) and PIAAC (age 26-27)	Ambitious individuals who as teenagers expected to have occupations that were not among the 10 most popular earned on average 15% more than their comparably ambitious peers expecting to have popular occupations. Students of the most advantaged quarter who expected to have jobs that were not among the 10 most popular could expect to earn around 10% more at age 25 than peers who planned on working in one of the most popular occupational choices.