



LONGITUDINAL SURVEYS OF AUSTRALIAN YOUTH
RESEARCH REPORT 57

Which paths work for which young people?

TOM KARMEL
SHU-HUI LIU



NCVER

Which paths work for which young people?



Longitudinal
Surveys of
Australian Youth

Tom Karmel

Shu-Hui Liu

*National Centre for
Vocational Education Research*

Funded by the Australian Government Department of Education, Employment and Workplace Relations with support from state and territory governments.

The views and opinions expressed in this document are those of the author and do not necessarily reflect the views of the Australian Government, state and territory governments or NCVER.

Any interpretation of data is the responsibility of the authors.

Publisher's note

Additional information relating to this research is in *Which paths work for which young people?: support document* and can be found at <<http://www.lsay.edu.au/publications/2397.html>>. Further information regarding the Longitudinal Surveys of Australian Youth (LSAY) can be found at <http://www.lsay.edu.au>.

To find other material of interest, search VOCED (the UNESCO/NCVER international database <<http://www.voced.edu.au>>) using the following keywords: apprenticeship; pathways; transition from education and training to work; vocational education and training; youth; LSAY.

© Commonwealth of Australia, 2011

This work has been produced by the National Centre for Vocational Education Research (NCVER) on behalf of the Australian Government and state and territory governments with funding provided through the Australian Department of Education, Employment and Workplace Relations. Apart from any use permitted under the *Copyright Act 1968*, no part of this publication may be reproduced by any process without written permission of the Commonwealth. Requests should be made to NCVER.

The views and opinions expressed in this document are those of the author(s) and do not necessarily reflect the views of the Australian Government or state and territory governments.

ISBN 978 1 921955 19 8 web edition

ISBN 978 1 921955 20 4 print edition

TD/TNC 104.13

Published by NCVER

ABN 87 007 967 311

Level 11, 33 King William Street, Adelaide SA 5000

PO Box 8288 Station Arcade, Adelaide SA 5000, Australia

ph +61 8 8230 8400 fax +61 8 8212 3436

email ncver@ncver.edu.au

<<http://www.ncver.edu.au>>

<<http://www.ncver.edu.au/publications/2397.html>>

About the research



Which paths work for which young people?

Tom Karmel and Shu-Hui Liu, NCVER

In this paper the researchers ask how completing Year 12 and undertaking vocational education and training (VET) and university studies assist young people to make a successful transition from school. As part of their research they analyse whether those who are less academically benefit from completing Year 12 and post-school education and training options to the same extent as the more academically inclined. Unlike other studies addressing the issue of successful youth transition, this research looks at the education path chosen (or not), rather than an individual's return from the completion of a particular path (qualification); not all those who embark on a path complete it. The researchers are interested in finding out how the route an individual chooses affects the later employment, wages, job status, financial wellbeing and happiness of young people. They do this by analysing data from the 1995 cohort of the Longitudinal Surveys of Australian Youth (LSAY).

The analysis suggests that, on average, completing Year 12 is no longer sufficient; rather, young people today need to have Year 12 plus further study to get them on a path to success. For males an apprenticeship after Year 12 is an attractive route, as is university study; for females the best choice is university, even for those with lower levels of academic orientation.

The researchers are not suggesting that everyone should be forced to complete Year 12 and to go on to further study. While the best paths involve Year 12 and certain types of post-school study, it is also the case that paths that include Year 12 do not necessarily lead to superior outcomes, relative to those involving leaving school before Year 12. In addition, Karmel and Liu find that the choice of path is not always of consequence. For males, paths only have salience for satisfaction with life, the occupational status of full-time workers and the pay of full-time workers. For the other variables they investigate—engagement with full-time work or study, full-time employment, financial wellbeing, satisfaction with work—the paths do not really matter. That is, the transition from school to adulthood can work well—in relation to these outcome measures—for young men following any of the paths. For females, educational paths matter for attaining full-time engagement and pay for full-time workers and occupational status for full-time workers, but do not matter for financial wellbeing, satisfaction with life and job status for part-time workers.

Finally, Karmel and Liu note that the analysis relates to people who did Year 12 in 1998, during a buoyant economic period, which, they point out, is also an important factor in contributing to good transitions for young people.

Tom Karmel
Managing Director, NCVER

Contents

Tables	6
Executive summary	8
Introduction	10
Defining the paths	14
Successful youth transitions	17
Results	20
Discussion	29
References	31
Appendices	
A Final propensity score models	32
B Full outcome models	36
C Final outcome models	49

Tables

1	The three-level taxonomy of paths	15
2A	Education paths, males	16
2B	Education paths, females	16
3	Summary of outcome measures used for a successful youth transition	18
4a	Average academic orientation propensities by paths, males	20
4b	Average academic orientation propensities by paths, females	21
5a	Significance of the paths, academic orientation and interactions, males	22
5b	Significance of the paths, academic orientation and interactions, females	22
6a	Significance of the paths, academic orientation and interactions, final models, males	23
6b	Significance of the paths, academic orientation and interactions, final models, females	23
7a	Correlations between predictions of outcome variables, males	23
7b	Correlations between predictions of outcome variables, females	24
8	Predicted occupation status for full-time workers, males	24
9	Predicted pay for full-time workers, males (\$ per week)	25
10	Predicted satisfaction with life, males	26
11	Summary of outcomes for different paths, males	27
12	Predicted probability of being 'engaged full-time', females	27
13	Predicted pay for full-time workers, females (\$ per week)	28
14	Summary of outcomes for different paths, females	28
A1a	Regression on university commencement, male	32
A1b	Regression on university commencement, female	34
B1a	Regression on full-time engagement, male	37
B1b	Regression on full-time employment, male	37
B1c	Regression on financial wellbeing, male	38
B1d	Regression on ANU3 for those in full-time employment, male	39
B1e	Regression on (log) gross weekly pay of those in full-time employment, male	40
B1f	Regression on life-related satisfaction, male	41
B1g	Regression on work-related satisfaction, male	41
B2a	Regression on full-time engagement, female	42
B2b	Regression on full-time employment, female	43
B2c	Regression on financial wellbeing, female	44
B2d	Regression on having no children, female	44
B2e	Regression on ANU3 for those in full-time employment, female	45
B2f	Regression on ANU3 for those in part-time employment and no full-time study, female	46

B2g Regression on (log) gross weekly pay of those in full-time employment, female	46
B2h Regression on life-related satisfaction, female	47
B2i Regression on work-related satisfaction, female	48
C1a Regression on ANU3 for those in full-time employment, male	50
C1b Regression on (log) gross weekly pay of those in full-time employment, male	50
C1c Regression on life-related satisfaction, male	51
C2a Regression on full-time engagement, female	51
C2b Regression on full-time employment, female	52
C2c Regression on having no children, female	53
C2d Regression on ANU3 for those in full-time employment, female	54
C2e Regression on (log) gross weekly pay of those in full-time employment, female	54
C2f Regression on work-related satisfaction, female	55

Executive summary

By and large, youth transitions can be seen as a process of movement from one state (of being a child and dependent on others) to another state (of being ‘grown up’ and largely independent of others). Normally, we would judge an individual’s transition from childhood successful if the individual becomes an adult who is fully engaged in employment or study (or a combination of both); financially independent of their parents; and making a positive contribution to the economy and broader society.

Higher levels of educational attainment are generally associated with more successful post-school outcomes. But how does vocational education and training (VET) or university study contribute to successful youth transitions and is the effect the same for different groups of young people? Do those who are less academic benefit from completing Year 12 or from undertaking post-school study to the same extent as their more academic peers?

This paper identifies various education pathways involving school and post-school study, and then assesses the effectiveness of these pathways in relation to post-school outcomes. In contrast to a more orthodox approach contingent on educational attainment, our approach focuses on early decisions about, rather than completion of, the various education pathways. This approach allows an individual to change their mind. For example, they may enter an apprenticeship but then decide not to complete it. Our definition of pathways relates to the initial choice of education path (or lack of it), not educational outcomes. The outcomes are measured at age 25 years, since the Longitudinal Surveys of Australian Youth (LSAY) data, which is the basis for the paper, cut off at this age. Coincidentally, this is a reasonable age to assume that youth transition has been or is nearly completed.

The pathways we consider capture the most important elements of Australia’s education and training system: completion of Year 12, apprenticeship and traineeships, institutional vocational education and training and university post-school study. To determine our criteria for a successful youth transition, we reviewed outcome measures used by other researchers and devised a set of ‘successful’ outcome measures within the constraints of the LSAY data. The selection of post-school outcomes drew heavily on employment-related measures, comprising full-time study or work, full-time employment only, job status of full-time employment, job status of part-time work (for women not in full-time work or study because of family commitments) and gross weekly pay of full-time employment. We also drew upon a number of lifestyle outcomes—financial wellbeing, life satisfaction, work satisfaction and having children (for women).

As individuals make their own decisions about their path, the characteristics of the individuals in each pathway may differ. In an experimental design setting, the background characteristics can be controlled by randomly assigning individuals to each of the given pathways. The level of success can then be measured and directly attributed to the pathways. In this paper, in order to overcome the self-selection of individuals into pathways, propensity score analysis has been used.

Essentially, we exploit the rich set of characteristics offered by LSAY to calculate the academic orientation of each individual. We then use this as a control variable in a multivariate regression which models success as a function of the various treatments. In addition, we add an interaction term between academic orientation and the pathway. This allows for the possibility that an

academic pathway might well be good for those with an academic inclination but not for someone whose academic orientation is low.

In examining which pathways are most successful, our first finding is that pathways are of little importance for a number of the outcome variables. For males, pathways only have salience for satisfaction with life, the occupational status of full-time workers and the weekly pay of full-time workers. For the other outcomes (engagement with full-time work or study, full-time employment, financial wellbeing, satisfaction with work), the paths do not really matter. For males we find that an apprenticeship after completing Year 12 offers the best pay at age 25 years; pathways involving apprenticeships or traineeships lead to greater levels of satisfaction with life than does university study; and university study leads to jobs with high occupational status.

While the best path for males differs across the outcomes, it is the case that Year 12 completion is part of each of these paths.

For females, paths play a more important role in achieving a successful outcome, but not for financial wellbeing, occupational status for part-time workers or satisfaction with life or work. The best pathway for females is clearly completion of Year 12 followed by university study. This is true for those with a relatively low academic orientation as well as those with a high academic orientation.

The analysis shows that neither the completion of Year 12 nor undertaking VET (relative to no further study) is necessarily a good thing in terms of the transition process. This suggests that policy pushes to promote Year 12 completion or further study must be tempered by a realisation that successful pathways do not necessarily involve these elements. That said, the best pathways for both males and females do involve the completion of Year 12. Year 12 and university is the best path for females, while for males the best pathways involve Year 12 followed by (depending on which outcome variable is considered) an apprenticeship, a traineeship or university study.

In making these observations we need to be very aware that we are talking about averages and that there will be a wide distribution of results. Further, we have considered a set of successful outcomes, with age 25 as the end point of the transition for youth. Outcomes at later ages will differ. Specifically, the high occupational status for the university pathway will translate into higher pay at later ages.

Finally, we note that the analysis is restricted to one cohort—those who completed Year 12 in 1998. This cohort of young people entered the labour market when it was buoyant. Therefore it is possible that the success of various pathways would differ in a less friendly labour market. This observation leads to another salient point: irrespective of the success of the education and training system in providing young people with appropriate skills, information and the like, good transitions are ultimately dependent upon a prosperous economy and a buoyant labour market.

Introduction

The concept of youth transition is by no means straightforward, but by and large transition can be seen as a process of movement from one state (of being a child and dependent on others) to another state (of being 'grown up' and largely independent of others). Normally, we would judge an individual's transition from childhood successful if the individual becomes an adult who is: fully engaged in employment or study (or a combination of both); financially independent of their parents; and making a positive contribution to the economy and broader society.

Attainment of higher education levels is generally associated with more successful outcomes, but how does vocational education and training or university study contribute to successful youth transitions and is the effect the same for different groups of young people? The fundamental question is whether those who are less academic benefit from completing Year 12 or post-school study to the same extent as those who are more academic.

The purpose of this paper is to look at these questions.

The orthodox approach to looking at the effectiveness of various levels of education and training is to condition on educational attainment, that is, to view 'success' or effectiveness in the context of educational attainment (see Ryan 2011, for example). Thus we can compare the return to the person from completing Year 12 or from obtaining a post-school qualification. However, much of the existing literature on the topic (see, for example, McMillan & Marks 2003; Khoo & Ainley 2005; Hillman 2005; Curtis 2008) indicates that paths through the education maze are becoming increasingly complex (and longer) and are frequently not linear. They are also not assured.

Our approach is to focus on a small number of decision points that revolve around education choices. The first decision point is whether to leave school or complete Year 12. Having left school, then a decision needs to be made about whether to continue with education and training post-school. Thus the two polar paths here are to leave school before completing Year 12 without enrolling in post-school VET (or getting an apprenticeship or traineeship) on the one hand, or completing Year 12 and undertaking tertiary education on the other. In between there are various combinations of paths, for example, the year left school, VET or higher education, or VET and then higher education, part-time study and part-time work etc. The combinations are endless.

Furthermore, individuals change their minds. The obvious example of this is a young person who completes Year 12 and decides not to go on to further study. That person may well decide after a year or two that further study is worthwhile, thus taking a 'gap year' (although taking a gap year is in the game plan of many young people today anyway). Another example is a young person taking up an apprenticeship but this does not automatically mean that the person will complete the apprenticeship. So our focus is the initial decision, not the educational outcomes from the decision. We know that on the whole completing a degree is worthwhile. But this is different from enrolling in first year university. Similarly, we know that completion rates for apprenticeships and traineeships are quite low, and therefore commencing an apprenticeship or traineeship is quite different from completing it.

We struggled with an appropriate term to describe the educational choices we are interested in. Initially, we thought 'pathway' would be an appropriate label, but the orthodox use of 'pathway, as

developed by Raffe (see Raffe 2003, for example), is a relationship between qualifications and their destinations. However, as we have made clear, we are not looking at this. We considered the term ‘gateway’ to capture our approach. The ‘gateway’ signals the beginning of a path but does not prescribe where the path leads to. However, this term is rather clumsy—it sounds odd to say that we are looking at five ‘gateways’. Thus in the end we have used ‘path’ to reflect that we are looking at something a little different from the relationship between a qualification and a destination, but with a definite beginning point. But we reiterate that our interest is in finding out where specific paths lead, where the beginning of the path is an educational choice.

The second issue is the criteria we use for success. Our focus is youth transitions and therefore we are interested in outcomes at the age of 25 years.¹ While much attention is given to transition to the workforce, our preference is to take a broader perspective and look at transition to adulthood. While we are limited in investigating the ‘rites of passage’ (Dawes 1998, p.1), the Longitudinal Surveys of Australian Youth also allow us to examine some aspects of the lives of young people, such as having children. We can also look at some subjective happiness measures, as well as harder edged workforce-related measures.

The literature review found extensive use of employment-related characteristics in determinations of successful transitions. For example, Curtis (2008) in a recent LSAY research report on VET pathways used full-time engagement (in study or work), labour force status, experience of unemployment, number of hours worked per week, as well as gross weekly earnings and participation in formal and informal job-related training, in addition to job satisfaction.

Overseas, Statistics Canada (2009) in a report on education and labour market transitions in young adults used a range of measures, including employment (have full-time job), in addition to measures of independent living (left parental home permanently), as well as whether or not the young person had been in a relationship, and whether or not they had children. Health measures such as level of smoking, nutrition and rates of exercise are also obvious candidates (see Wynn et al. 2008). The literature review later in the paper identifies the types of measures used by other researchers in their determination of successful youth transitions.

Our final set of outcome measures for a successful youth transition is as follows:

- ✧ full-time employment
- ✧ full-time engagement (full-time employment, full-time study, or a part-time combination of work and study)
- ✧ wages for those in full-time employment
- ✧ financial wellbeing
- ✧ occupational status for those in full-time employment
- ✧ occupational status for those in part-time employment with no full-time study—females only
- ✧ the presence of children (females only)
- ✧ satisfaction with life and job.

While there is a clear focus on employment, our selection of variables is somewhat broader. Our selection builds on earlier research but we are constrained by the dataset. Health and a measure of independence are two areas we would have liked to cover but these were beyond the capability of the dataset.

¹ On a practical matter, the Longitudinal Surveys of Australian Youth data used for the study end at age 25 years.

Before getting into the detail of the paper, we outline the thrust of our approach. If we were in an experimental setting we would assign individuals randomly to the various possible paths and then measure the level of success associated with the choice of path. However, individuals make their own decisions about their path and therefore the characteristics of the individuals in each path will differ. Thus a naive comparison of average success by path is likely to capture not only how successful the path is but also the characteristics of the individuals.

The approach we take is a variant on propensity score matching.² Essentially, we exploit the rich set of characteristics captured by LSAY to calculate the propensity of an individual to go to university. We then use this as a control variable in a multivariate regression that models success as a function of the various treatments. For convenience we have labelled this propensity ‘academic orientation’. In addition, we add an interaction term between academic orientation and the path. This allows for the possibility that a university path might well be good for those whose background characteristics are such that they are likely to go to university but not for those whose academic orientation is low. The main advantage of this method compared with a traditional multivariate regression with numerous control variables is that it is very parsimonious (that is, it is a model that uses the fewest possible variables), an important consideration when the sample size for each path is limited.³

The structure of the paper is straightforward. In the next section we list the paths and show how important each path is. Males and females are analysed separately because we know that there are gender differences in the paths young people take when they leave school. Paths to university are quite straightforward for males and females because completing high school is generally a pre-requisite for university entry. However for VET, the paths are a little more complex, with more differences between the genders. We find that for boys the most important path involving VET is an apprenticeship before or after completing Year 12, but, for girls, a VET course is more common, particularly for early school leavers.

In the second section, we investigate the characteristics of young people who take the various paths. The technique we use is to predict the academic orientation of each individual by modelling the probability of completing Year 12 and going on to university. Three sets of variables are used: institutional variables (such as state where they live); parental background; and academic achievement of the respondents at an average age of 14.5 years. This enables us to order paths from those with the lowest academic orientation to the most academic (completing Year 12 and going directly to university). We also characterise each path in terms of academic orientation.

In the third section, we explain how we measure a successful post-school transition. As noted earlier, we follow the current policy orthodoxy and define it in terms of employment, but we also include financial wellbeing, life and work satisfaction and (for women) having children.

In the fourth section we get to the core of the paper. Here, the focus is on which paths are most successful. Our first finding is that paths are of little importance for a number of the outcome variables. For males, paths only have an influence on satisfaction with life, the occupational status of full-time workers and the pay of full-time workers. For the other variables—engagement with full-time work or study, full-time employment, financial wellbeing, satisfaction with work—the paths do not really matter. That is, the transition from school to adulthood can work well (or poorly) for young men choosing and then following any of the paths. For females, paths influence a greater number of the outcome variables. (They do not matter for financial wellbeing, occupational status for part-time workers and satisfaction with life or work.) As it turns out, however, the

² See Sturmer et al. (2006) for a review article on propensity score matching compared with conventional multivariate methods. We have used the propensity score approach as a way of improving parsimony; we create one control variable that incorporates a large number of covariates.

³ The possibility of selection bias still exists. The method used to address selection bias is covariate adjustment using propensity scores (Rosenbaum 2007).

outcome variables are highly correlated for young women, making it easier to draw conclusions about the paths.

Finally we draw some conclusions on which paths work for which groups of young people. The major conclusions are that for males two paths stand out: Year 12 followed by university study; and Year 12 followed by an apprenticeship. Apprenticeships and traineeships score well for 'satisfaction with life'. For females, the best path is Year 12 followed by university study, and this is true for those with a relatively low academic orientation as well as those with a high academic orientation. In addition, neither the completion of Year 12 nor undertaking VET (relative to no further study) is necessarily a good thing in terms of the transition process. That is, there are both good and less successful paths involving Year 12 and, similarly, both good and less successful paths involving VET. This suggests that policy pushes to promote Year 12 completion or further study must be tempered by a realisation that successful paths do not necessarily involve these elements. A 'tidy' policy push may be not appropriate.

The one caveat to these results is that our data come from a period where the labour market was buoyant. But this caveat itself is important because it would imply that, without downplaying the importance of supply-side measures such as the provision of a good-quality educational foundation, good career self-management skills, good information systems, appropriate youth wages and the like, good transitions are ultimately dependent upon a prosperous economy and a buoyant labour market.

Defining the paths

Paths into university are linear for most young people who make this choice; they progress from Year 12 to a degree-level qualification and then perhaps to a higher degree. The only complexity is the incidence of ‘gap taking’, with around 20% of students taking a gap year before commencing university (Curtis, Mlotkowski & Lawley forthcoming).

Choosing a VET path is not so straightforward. VET is more complex, covering qualifications from elementary certificates, through to diplomas and advanced diplomas, typically requiring two years full-time study after the completion of Year 12. VET courses can be taught at school, after school in an institutional setting or within an apprenticeship or traineeship. VET qualifications can be aimed at those who have completed Year 12 or be suitable for those whose achievement at school is modest (that is, early school leavers). After school, the VET study could be contiguous, or could occur after one or two gap years. Thus there are potentially hundreds of paths a young person might choose.

To keep the exercise manageable, we define the following paths at three levels as shown in table 1. The first level has five paths, and is ordered such that the paths increase in academic orientation with the skills acquired. In the second and third levels the paths are expanded with the inclusion of the various qualification levels, but are not prioritised, since it is not possible to say that the skills acquired on some paths are greater or less than on others. The second level has 11 paths and the third level has 14 paths. The aim of this taxonomy is to provide a degree of richness, particularly in terms of the institutional setting of VET (apprenticeships, traineeships and other) and qualification level (certificates I and II, certificates III and IV and diplomas). In addition, we have decided not to take gap years into account in our analysis. Thus, young people who take gap years instead of undertaking further studies immediately after school will be designated as either *Early school leaver with no post-school study* or most likely *Completed Year 12 with no post-school study*, depending on when they leave school. Since our measure of success does not depend on the status of post-school qualifications undertaken (that is, completed or not), there should not be any significant adverse effect on the outcome of our analysis as a result of gap-taking.

Youth transition is a time when young people try different school and post-school options, so it would be naive to assume that each individual will only take a single path. In our analysis, we have adopted the convention that the first post-school qualification becomes the allocated path. For example, an individual who completes school and commences a VET qualification at certificate III level is assigned to path 4.3.1, irrespective of whether that individual goes on to a higher-level qualification. The paths are also independent of whether the individual completes the relevant qualification, although completion no doubt will play a role in whether the path leads to a successful transition. While levels 2 and 3 have a certain degree of richness, we do not pretend that there are no other paths. For example, school-based apprenticeships and traineeships are of considerable policy interest. However, the numbers of people in the dataset undertaking these options are relatively small (and our ability to track them very limited), so we choose not to investigate them further here.

Table 1 The three-level taxonomy of paths

Level 1	Level 2	Level 3	
1 Early school leaver, no post-school VET	1.1 Early school leaver, no VET in Schools, no post-school study	1.1 Early school leaver, no VET in Schools, no post-school study	
	1.2 Early school leaver, VET in Schools, no post-school study	1.2 Early school leaver, VET in Schools, no post-school study	
2 Early school leaver, post-school VET	2.1 Early school leaver, apprenticeship	2.1 Early school leaver, apprenticeship	
	2.2 Early school leaver, traineeship	2.2 Early school leaver, traineeship	
	2.3 Early school leaver, other VET	2.3.1 Early school leaver, other VET at cert. I/II 2.3.2 Early school leaver, other VET at cert. III+	
3 Completed Year 12, no post-school study	3.1 Completed Year 12, no VET in Schools, no post-school study	3.1 Completed Year 12, no VET in Schools, no post-school study	
	3.2 Completed Year 12, VET in Schools, no post-school study	3.2 Completed Year 12, VET in Schools, no post-school study	
4 Completed Year 12, post-school VET study	4.1 Completed Year 12, apprenticeship	4.1 Completed Year 12, apprenticeship	
	4.2 Completed Year 12, traineeship	4.2 Completed Year 12, traineeship	
	4.3 Completed Year 12, other post-school VET study	4.3.1 Completed Year 12, other post-school study, certificate I/II	4.3.1 Completed Year 12, other post-school study, certificate I/II
		4.3.2 Completed Year 12, other post-school study, certificate III/IV	4.3.2 Completed Year 12, other post-school study, certificate III/IV
4.3.3 Completed Year 12, other post-school study, diploma		4.3.3 Completed Year 12, other post-school study, diploma	
5 Completed Year 12, university study	5 Completed Year 12, university study	5 Completed Year 12, university study	

This paper uses data from the Y95 cohort of the LSAY program. This cohort of young people first joined LSAY when they were in Year 9 in 1995 (at an average age of 14.5 years) and were interviewed annually until 2006, when the average age was 25.5 years. An individual's school year level and the 'first' post-school qualification undertaken since the start of the survey in 1995 were matched to the paths summarised in table 1.

However, in our attempts to identify the education paths, separately by gender, according to our definitions shown in table 1, we found limited numbers of respondents undertaking VET qualifications at different levels. Hence, for both males and females, all VET activity is aggregated into two paths. In particular, paths 2.3.1 and 2.3.2 are now redefined as *Early school leaver with other VET study*. Similarly for 4.3.1, 4.3.2 and 4.3.3, we renamed them as *Completed Year 12 with other VET study*.

Due to the low proportion of students—both males and females—in this dataset who undertake VET in Schools (less than 25%), we also amalgamated paths 1.1 and 1.2 and renamed them as *Early school leaver with no post-school study*. Similarly, paths 3.1 and 3.2 are renamed as *Completed Year 12 with no post-school study*. In addition, for males, we combined paths 2.2 and 2.3 and renamed them as *Early school leaver, traineeship/ other post-school VET*. For females, we amalgamated paths 2.1, 2.2 and 2.3 and renamed it as *Early school leaver with further post-school study*. Finally, for females, paths 4.1 and 4.2 are redefined as *Completed Year 12 with apprenticeship/ traineeship*. The resultant education paths for analysis in this paper are presented in tables 2A and 2B for males and females respectively.

Table 2A Education paths, males

Paths	Weighted % who take each path by age 25.5 in 2006	Sample size
1.1 Early school leaver, no post-school study	9	170
2.1 Early school leaver, apprenticeship	5	91
2.2.1 Early school leaver, traineeship/other post-school VET study	5	91
3.1 Completed Year 12, no post-school study	23	413
4.1 Completed Year 12, apprenticeship	5	89
4.2 Completed Year 12, traineeship	4	71
4.3.1 Completed Year 12, other post-school VET study	13	238
5 Completed Year 12, university study	36	648

Table 2B Education paths, females

Paths	Weighted % who take each path by age 25.5 in 2006	Sample size
1.1 Early school leaver, no post-school study	9	185
2.1.1 Early school leaver, further post-school study	5	96
3.1 Completed Year 12, no post-school study	25	524
4.1.1 Completed Year 12, apprenticeship/traineeship	6	119
4.3.1 Completed Year 12, other post-school VET study	13	276
5 Completed Year 12, university study	43	902

Successful youth transitions

A quarter of a century ago there were clearly defined markers of the transition from youth to adulthood: leaving home, finishing school, starting work, buying a house, getting married and starting a family (Dwyer, Harwood & Tyler 1998). But structural labour market changes, including the casualisation of the workforce, the increasing trend for part-time employment (often combined with study) and societal changes, such as more informal, enduring and acceptable personal relationships, have all blurred these markers, making the definition of a successful youth transition more complex—and more difficult to determine.

However, irrespective of the complexity, a successful youth transition typically occurs when a young person leaves school and/or further study and becomes employed (in various states), rather than being unemployed or not actively participating in the labour force. But is being employed an adequate measure of a successful youth transition? Consideration could also be given to the quality of employment, which may be measured by earnings, job status, the nature of employment (contract or permanent), job security, training opportunities, flexibility, promotional opportunities or self-assessed job satisfaction. Determining the success of a transition into adulthood also lends itself to the use of additional measures, including leaving the family home and living independently and making a positive contribution to the economy and broader society.

In exploring the notion of a successful youth transition, we undertook a literature review to identify the types of measures being used by other researchers for their definitions of a successful youth transition. The literature review found extensive use of employment-related indicators. For example, Curtis (2008) in a recent LSAY research report on VET paths used full-time engagement (in study or work), labour force status, experience of unemployment, number of hours worked per week, gross weekly earnings and job satisfaction, as well as participation in formal and informal job-related training, to arrive at his definition of a successful transition, while Statistics Canada (2009) in a report on the education and labour market transitions of young adults used a range of measures, including employment (have full-time job), independent living (left parental home permanently), as well as whether or not the young person had been in a relationship and whether or not they had children. All of these measures were considered independently, rather than combining them into a single 'success' measure. Thomson and Hillman (2010) take a more multidimensional approach: using LSAY data they created a single measure of successful youth transition by combining satisfaction with life and whether the young person is fully occupied with education and/or employment, thereby providing a more rounded view of outcomes than has been used in the past. Wyn (2009) uses less orthodox measures, including good mental and physical health, the opportunity or potential to earn cash, the ability to acquire marketable skills and the capabilities for lifelong learning.

Amongst the measures of a successful youth transition noted above, that of independent living seemed to be problematic. The literature review found that independent living does not necessarily constitute a successful outcome, as it could result from family conflict or living with a partner/getting married, and it underplays the importance of family relationships (Wyn 2009; ABS 2009). Further, many young people return to the family home after moving out: as many as a third of young people move back into the family home after trying independent living. A social trends

report by the Australian Bureau of Statistics (ABS 2009) found that, after first leaving home, there was an almost 50% probability that an individual would return at least once before turning 35.

Table 3 below presents a summary of our findings from the literature review.

Table 3 Summary of outcome measures used for a successful youth transition*

Source	Outcome measure
Statistics Canada 2009, <i>Education and labour market transitions in young adulthood</i> .	Common paths from school to work: <ul style="list-style-type: none"> ✧ Left parental home permanently ✧ Have full-time job ✧ In or have been in a relationship ✧ Have children
Dwyer, P, Harwood, A & Tyler, D 1998, <i>Life patterns, choices, careers: 1991–1998</i>	Based on respondents' last comments relevant to the issues they raised in the 1996 survey, the discussion by many seemed to centre on successful transition into adulthood, including: <ul style="list-style-type: none"> ✧ Getting married and having a family ✧ Having a well-paid job and career ✧ Owning homes/cars
Wyn, J 2009, <i>Youth health and welfare: the cultural politics of education and wellbeing</i>	<ul style="list-style-type: none"> ✧ Good mental and physical health ✧ The opportunity or potential to earn cash ✧ The ability to acquire marketable skills ✧ Capabilities for lifelong learning
ABS 2009, <i>Home and away: the living arrangements of young people</i>	<ul style="list-style-type: none"> ✧ Percentage living at home ✧ Percentage returning to family home
Curtis, D 2008, <i>VET paths taken by school leavers</i>	<ul style="list-style-type: none"> ✧ Full-time engagement (in study or work) ✧ Labour force status in 2004 ✧ Experience of unemployment during 2004 (categorised into groups of none, less than 4 weeks, 4 to 10 weeks and more than 10 weeks) ✧ No. of hours worked per week (used median values) ✧ Participation in formal and informal job-related training ✧ Weekly gross earnings (used median values) ✧ Job satisfaction (used a single job satisfaction score by Rasch scaling)
Thomson, S & Hillman, K 2010, <i>Against the odds: influences on the post-school success of low 'performers'</i>	✧ The definition of a 'successful outcome' takes a multidimensional approach, and uses a combination of satisfaction with life, as well as whether an individual is fully occupied with education, employment or a combination of these activities, providing a more rounded view of outcomes than has been used in the past.
Wynn, J et al. 2008, 'Generations and social change: negotiating adulthood in the 21st century'	✧ Health-related indicators such as level of smoking, nutrition and rates of exercise

Note: * Full citations given in the list of references.

It is worth noting that gender differences play a significant role in youth transition. For example, many more females choose to work part-time because of having a family or because of caring responsibilities. Using full-time employment only as a successful outcome for females therefore may not be appropriate. Hence, we considered two additional outcome measures for females in our analysis: the job status of those in part-time employment and no full-time study; and having children. This would allow us to capture those who may have made a successful youth transition, despite their decision to put their study or career on hold because of other priorities in life such as having a family.

Our final set of outcome measures for a successful youth transition was therefore:

- ✧ full-time engagement (full-time work or study, or the part-time equivalent)
- ✧ full-time employment

- ✧ financial wellbeing
- ✧ job status for those in full-time employment (categorised by ANU3 score)
- ✧ job status for those in part-time employment with no full-time study (categorised by ANU3 score)—females only
- ✧ gross weekly earnings of those working full-time
- ✧ children—females only
- ✧ The following variables were identified using a factor analysis across a range of ten variables (results of the factor analysis appear in the support document):
 - ◆ satisfaction with life
 - ◆ satisfaction with work.

Results

As outlined in the introduction, the approach is to calculate a propensity score relating to the academic orientation of each individual and then use this as a control in a series of regressions (one for each outcome measure), in which the various paths are the treatment variables. This exercise is conducted separately for males and females, noting that the labour market and family-formation patterns differ between young men and young women.

The propensity scores (appendix A) are based on a simple logistic regression, in which the dependent variable is whether the individual goes to university or not, and the independent variables cover:

- ✧ institutional variables: state, school type
- ✧ individual background variables: locality, Indigenous status, home language, country of birth
- ✧ parental background variables: occupation (based on father's ASCO⁴ occupation; if missing mother's occupation was used), education
- ✧ academic achievement variables: literacy score, numeracy score.

Stepwise regression was used to eliminate insignificant variables.⁵ The final reduced models are in appendix C.

Tables 4a and 4b give the average propensity scores (for males and females) for each path, together with the corresponding probability of going to university (calculated by transforming the propensity appropriately).

Table 4a Average academic orientation propensities by paths, males

Paths	Probability of going to university
1.1 Early school leaver, no post-school study	0.38
2.1 Early school leaver, apprenticeship	0.36
2.2.1 Early school leaver, traineeship/other post-school VET study	0.37
3.1 Completed Year 12, no post-school study	0.52
4.1 Completed Year 12, apprenticeship	0.43
4.2 Completed Year 12, traineeship	0.46
4.3.1 Completed Year 12, other post-school VET study	0.52
5 Completed Year 12, university study	0.70

⁴ ASCO = Australian Standard Classification of Occupations.

⁵ The regressions undertaken in this paper are unweighted. The use of a propensity scores based regressions reduces the need to use weights; however, readers must be cautious in generalising the results to all 15-year-olds.

Table 4b Average academic orientation propensities by paths, females

Paths	Probability of going to university
1.1 Early school leaver, no post-school study	0.51
2.1.1 Early school leaver, further post-school study	0.38
3.1 Completed Year 12, no post-school study	0.59
4.1.1 Completed Year 12, apprenticeship/traineeship	0.5
4.3.1 Completed Year 12, other post-school VET study	0.58
5 Completed Year 12, university study	0.75

Table 4a shows us, for example, that males who are early school leavers with no post-school study paths have characteristics which lead us to predict that the probability of going to university is 0.38. As we can see, the ordering of the propensity scores is pretty much as would be expected. The paths for males fall into four clear groups. In order of increasing academic orientation, the groups are: early school leavers, irrespective of whether they go on to an apprenticeship or traineeship or other study or no further study; those completing Year 12 and going on to an apprenticeship or traineeship; those completing Year 12 and either not going on to further study or undertaking VET; and, finally, those going on to university.

The paths for females similarly fall into a number of groups, although the effect of Year 12 is less clear-cut than is the case for males. In order of increasing academic orientation the groups are: early school leavers who undertake further post-school study; early school leavers who undertake no post-school study or those who complete Year 12 and undertake an apprenticeship or traineeship; those who complete Year 12 and either go to VET or undertake no further post-school study; and finally those who go to university.

As explained earlier, the propensity scores are then used as controls when we look at the relationship between the paths and the series of success variables. In addition to including the propensities as a control, we also included an interaction term, which allows the propensity score coefficient to vary by path. This allows for the possibility that a person with a high academic orientation may get more from undertaking a university path, for example, than a person who has low academic orientation.

The interaction terms are an important consideration. Without interactions there will be a single ordering of the paths, irrespective of the academic orientation of the individual. By contrast, the interactions allow for different paths to suit different people. Common sense tells us that this must be the case. We know that some people are better at working with their hands or that some people prefer dealing with people than do others. However, the issue is whether there is sufficient statistical evidence to justify this view. If there is not, then the implication is that policy goals become much simpler because we can say that one path is better than another for everyone.

Table 5a (males) and table 5b (females) show, for each of the success variables, the significant independent variables. In order to make judgments about the importance of paths we examine the level of significance of the three groups of dependent variables: the paths, academic orientation and an interaction between the paths and academic orientation. Each of these is assigned a significance level of *yes* (if significant at the 5% level), *marginal* (if significant at the 15% level) and *no* otherwise. We have added another column indicating our treatment of the model with three categories: *keep* if all the groups are individually significant, *reject* if all of the groups have been assigned a *no* vis-a-vis significance and *refine* if at least one variable has been assigned a marginal or yes level of significance.⁶

⁶ We reject a model if each of the three input variable groups is not significant. Even in these cases the null hypothesis of a constant is rejected (see appendix B, which documents the models). However, we do not proceed with the model because it is clear that there is 'little action' in our groups of variables. That is, the pathway does not have a substantive effect on the outcome we are using to measure success.

Table 5a Significance of the paths, academic orientation and interactions, males

Outcome	Paths	Academic orientation	Academic orientation* paths	Keep, reject or refine
Full-time engagement	No	No	No	Reject
Full-time employment	No	No	No	Reject
Financial wellbeing	No	No	No	Reject
Job status for those in full-time employment	Yes	Yes	No	Refine
Gross weekly earnings of those working full-time	Yes	Yes	Yes	Keep
Satisfaction with life	Marginal*(0.093%)	No	No	Refine
Satisfaction with work	No	No	No	Reject

Note: * Significance level in parenthesis.

Table 5b Significance of the paths, academic orientation and interactions, females

Outcome	Paths	Academic orientation	Academic orientation* paths	Reject or refine
Full-time engagement	Marginal*(0.056%)	No	No	Refine
Full-time employment	Marginal*(0.092%)	No	No	Refine
Financial wellbeing	No	No	No	Reject
Not having children	Yes	Marginal*(0.105%)	No	Refine
Job status for those in full-time employment	Marginal*(0.166%)	Yes	No	Refine
Job status for those in part-time employment	No	No	No	Reject
Gross weekly earnings of those working full-time	No	Yes	No	Refine
Satisfaction with life	No	No	No	Reject
Satisfaction with work	No*(0.726)	Yes	No*(0.429)	Refine

Note: * Significance level in parentheses.

Several points emerge from these tables. The first is that the paths do not matter for a number of the outcome variables. For males, we conclude that the path is not important for the majority of the outcomes. It is only worth thinking about the impact of paths on job status for full-time workers, weekly earnings for full-time workers and satisfaction with life. In relation to the other outcome variables—full-time employment or engagement, financial wellbeing and satisfaction with work—it appears that things sort themselves out by the age of 25 years. For females the paths play a more important role, but there are still outcome variables in which paths do not play an important part: financial wellbeing; job status for part-time employment; weekly earnings for full-time workers; and satisfaction with life and work. The second point is the only outcome variable for which the interaction between academic orientation and the path matters is the weekly earnings for full-time males. For the other outcome variables the ranking of the paths is the same for someone who has a high academic orientation as that for someone with a low orientation.

We now refine the models by using stepwise regression, by which the least significant block of variables is dropped and the model re-run. Table 6 summarises the structure of the final models (full results are in appendix B).

Table 6a Significance of the paths, academic orientation and interactions, final models, males

Outcome	Paths	Academic orientation	Academic orientation.paths
Job status for those in full-time employment	Yes	Yes	No
Gross weekly earnings of those working full-time	Yes	Yes	Yes
Satisfaction with life	Yes	No	No

Table 6b Significance of the paths, academic orientation and interactions, final models, females

Outcome	Paths	Academic orientation	Academic orientation.paths
Full-time engagement	Yes	Yes	No
Full-time employment	Yes	Yes	No
Not having children	Yes	No	No
Job status for those in full-time employment	Yes	Yes	No
Gross weekly earnings of those working full-time	Yes	Yes	No
Satisfaction with work	No	Yes	No

In refining the models we find that paths do not matter for females in relation to satisfaction with work, and consequently we no longer consider this outcome.

To make the results rather easier to understand, we provide some predictions based on the models. However, before we do this we look at the relationship between the outcome variables: if they are highly correlated, then we further simplify by reducing our set of outcome variables to those that are uncorrelated, with each outcome variable telling a further story. The results are shown in tables 7a and 7b.

Table 7a Correlations between predictions of outcome variables, males

Outcome	Life satisfaction	Job status for those in full-time employment	Gross weekly earnings of those working full-time
Life satisfaction	1	0.36	0.04
Job status for those in full-time employment		1	0.24
Gross weekly earnings of those working full-time			1

Table 7b Correlations between predictions of outcome variables, females

Outcome	Full-time engagement	Full-time employment	Not having children	Job status for those in full-time employment	Gross weekly earnings of those working full-time
Full-time engagement	1	0.96	0.93	0.48	0.63
Full-time employment		1	0.91	0.32	0.45
Not having children			1	0.66	0.68
Job status for those in full-time employment				1	0.92
Gross weekly earnings of those working full-time					1

The correlations in the tables 7a and 7b make our life a little easier. For males the correlations are quite low, implying that we need to consider each of the three outcome variables separately. For females there are more outcome variables to consider, but the correlations are all relatively high, suggesting a certain level of consistency across the various outcome variables. If we group the very highly correlated outcome variables for females, we end up with two groups:

- ✧ full-time engagement, full-time employment, and having no children (correlations between these variables are all over 0.9)
- ✧ job status of full-time workers and pay for full-time workers (a correlation of .92).

We choose two variables to represent the outcomes for females: full-time engagement and pay for full-time workers.

Thus we are able to summarise our results with three outcome variables for males and two for females. The way we present the models is to take two hypothetical individuals: one with low academic orientation and one with high academic orientation and then predict outcomes for each path. For the logistic regressions, we express these as probabilities of a successful outcome; for the occupation regressions, we use the ANU3 scale. For the gross weekly pay we use dollars, and for satisfaction with life we use a normalised score with a mean of zero and a variance of one.

We first consider males, beginning with the occupation outcome. The ordering of the paths is the same for our two hypothetical individuals, but those with a higher academic orientation obtain a higher-level occupation for a given path.

Table 8 Predicted occupation status for full-time workers, males

Paths	Low academic orientation (p = .38)	High academic orientation (p = .70)
Early school leaver, no post-school study	24.9	30.9
Early school leaver, apprentice	32.7	38.8
Early school leaver, trainee/other VET	30.4	36.5
Completed Year 12, no post-school study	36.5	42.6
Completed Year 12, apprentice	31.9	38.0
Completed Year 12, trainee	25.8	31.9
Completed Year 12, other VET	37.3	43.3
Completed Year 12, university study	45.9	51.9

The values come from the ANU occupational status scale. To give some idea how to interpret the results, box 1 shows the values for the major ASCO groups.

Box 1 Occupational status (ANU3) of occupations (at major group level)

Professionals	61.4
Managers and administrators	58.2
Associate professionals	38.7
Advanced clerical and service workers	32.1
Intermediate clerical, sales and service workers	27.1
Tradespersons and related workers	25.5
Elementary clerical sales and service workers	21.9
Intermediate production and transport workers	10.7
Labourers and related workers	8.8

The paths do matter for occupational status. Because there is no interaction term, the ordering is the same, irrespective of whether an individual is academically oriented or not. However, the academic orientation does matter, with those with a higher academic orientation getting higher-status jobs. In terms of which is the best path, it is clear that embarking on university study gives the highest expected occupational status, followed by completing Year 12 and either undertaking VET or undertaking no further study. At the other end of the scale, leaving school early with no further study or completing Year 12 and getting a traineeship provides the least satisfactory expected outcome. Apprenticeships do not provide a path to particularly high-status jobs—because the trades are accorded relatively low-status.

The pay outcome is arguably more interesting than occupational status, because for this model there is an interaction between academic orientation and the path (refer table 6a).

Table 9 Predicted pay for full-time workers, males (\$ per week)

Paths	Low academic orientation (p = .38)	High academic orientation (p = .70)
	\$	\$
Early school leaver, no post-school study	907	889
Early school leaver, apprentice	934	916
Early school leaver, trainee/other VET	944	750
Completed Year 12, no post-school study	880	963
Completed Year 12, apprentice	1033	1153
Completed Year 12, trainee	863	907
Completed Year 12, other VET	854	944
Completed Year 12, university study	934	1002

Note: The log of weekly pay is used in the regressions. The predicted values have been calculated by back transforming the predicted value obtained from the regressions.

The most obvious finding is that undertaking an apprenticeship after completing Year 12 gives the highest predicted pay (this is, at age 25 years), regardless of an individual’s academic orientation. An apprenticeship taken after leaving school early does not provide the same reward. The most likely explanation for this is that the apprenticeships that require higher cognitive skills (such as electrotechnology) pay better than other apprenticeships. The second point is that early school leaving is very unattractive to those with a high academic propensity, irrespective of an individual’s post-school destinations. By contrast, leaving school early is a good proposition for those (who undertook no post-school study or who went on to undertake a traineeship/other VET) with a low academic orientation; the only path better is completing Year 12 and getting an apprenticeship (with \$1033 compared with \$934 for those leaving school early). This finding is supported by Fok

and Tseng (2009), who found positive returns from apprenticeships (and traineeships) in both earnings and employment, with trainees having higher starting earnings, but apprentices having steeper earnings profiles.

While apprenticeship paths provide the best path in this model, it must be remembered that we are observing pay at age 25 years. University graduates are at the beginning of a career and therefore have not benefited from the more rapid salary progression that is a feature of most professional jobs. This explains why apprenticeships have come out top for pay but not for occupational status, where the university path is superior.

The final outcome variable is that of satisfaction with life. In this model academic propensity is not significant (refer table 6a) and therefore we can present a very straightforward story. The scale here is a continuous one, with the three quartiles being defined by -0.83 (least satisfied), 0.06 (median), 0.91 (most satisfied).

Table 10 Predicted satisfaction with life, males

Early school leaver, no post-school study	-0.07
Early school leaver, apprentice	0.12
Early school leaver, trainee/other VET	0.09
Completed Year 12, no post-school study	0.00
Completed Year 12, apprentice	0.17
Completed Year 12, trainee	0.26
Completed Year 12, other VET	0.05
Completed Year 12, university study	-0.07

Note: in the regression, a lower score indicates greater satisfaction with life. To aid interpretation, the signs have been reversed from those that appear in appendix C.

It appears that those who have chosen an apprenticeship or traineeship are happier than those choosing other paths, although the values are all reasonably close to the centre of the distribution of life satisfaction. In fact all the paths involving vocational education and training look good. This finding seems to be consistent with that of Dockery's paper (2010) on education and happiness: that those who undertook intermediate vocational qualifications (particularly an apprenticeship or traineeship) are always relatively happier than those who went on to university study.

Thus we do not find a consistent story as to whether one path is better than another. In a sense we already knew this from the low correlations presented earlier. We pull together this discussion in a summary as presented in table 11.

To sum up, three points stand out in terms of a successful transition by age 25 years for males: apprenticeships and traineeships score well in terms of satisfaction with life; apprenticeships, after completing Year 12, offer the best pay; and university study offers the highest occupational status (and therefore the best longer-term pay prospects). An additional point to emerge is that the effect of completing Year 12 or undertaking vocational studies (either through an apprenticeship or traineeship or otherwise) is ambiguous. So we cannot say that it is always better to complete Year 12 than not, or that it is always better to undertake vocational studies by comparison with no further study. For example, for a male with low academic orientation in relation to, say, 'pay for full-time workers', Year 12 followed by an apprenticeship is the best path, while Year 12 followed by other VET study is the worst path. Similarly, undertaking vocational studies after Year 12 pays the best if the vocational studies are an apprenticeship, but Year 12 and no further study pays better than Year 12 followed by a traineeship.

Table 11 Summary of outcomes for different paths, males

	Life satisfaction	Occupational status for full-time workers	Pay for full-time workers
Best path	✧ Year 12, followed by traineeship	✧ Year 12, followed by university study	✧ Year 12, followed by an apprenticeship
Worst path	✧ Early school leaver, followed by no further study ✧ Year 12, followed by university study	✧ Early school leaver, followed by no further study	✧ Year 12, followed by other VET study (if not academic) ✧ Early school leaver, followed by traineeship (if academic)
Impact of Year 12 completion	Ambiguous	Ambiguous	Ambiguous
Impact of VET	Unambiguously good	Ambiguous	Ambiguous

We now turn to the results for females.

To represent females with low academic orientation we choose an individual with the average propensity of early school leavers who go onto a traineeship or VET study, while females with a high academic orientation are represented by an individual with the average propensity of those choosing the university path.

We begin with the full-time engagement variable.

Table 12 Predicted probability of being ‘engaged full-time’, females

Paths	Low academic orientation (p = .38)	High academic orientation (p = .75)
1.1 Early school leaver, no post-school study	0.55	0.64
2.1.1 Early school leaver, further post-school study	0.46	0.55
3.1 Completed Year 12, no post-school study	0.65	0.73
4.1.1 Completed Year 12, apprenticeship/ traineeship	0.69	0.76
4.3.1 Completed Year 12, other post-school VET study	0.70	0.77
5 Completed Year 12, university study	0.74	0.81

The best path for females is to complete Year 12 and go to university, although the probabilities of being ‘engaged full-time’ are also high for the other paths involving completion of Year 12. The worst path for females is to leave school early and then undertake a VET course or a traineeship, irrespective of academic orientation. No doubt this reflects the types of courses open to young women who do not complete Year 12.

We now present the results for pay for full-time workers.

The university study path clearly offers the best expected pay. The second point to emerge is that there is very little between the other paths; expected earnings are very similar. It appears that, at least from a wages perspective, the benefit of completing Year 12 is that it opens up the possibility of going to university and getting a degree. Academic orientation is also important, not in determining which path is best, but in affecting likely pay. That is, a female with low academic orientation is still better off going to university, but is unlikely to end up in a job with the same pay as a person with a higher academic orientation.

Table 13 Predicted pay for full-time workers, females (\$ per week)

Paths	Low academic orientation (p = .38) \$	High academic orientation (p = .75) \$
1.1 Early school leaver, no post-school study	750	821
2.1.1 Early school leaver, further post-school study	742	812
3.1 Completed Year 12, no post-school study	750	821
4.1.1 Completed Year 12, apprenticeship/ traineeship	742	812
4.3.1 Completed Year 12, other post-school VET study	728	796
5 Completed Year 12, university study	863	944

Note: The log of weekly pay is used in the regressions. The predicted values have been calculated by back transforming the predicted value obtained from the regressions.

Thus the results are quite stark for females. Completion of Year 12 and then university is unambiguously the best path. This is a striking finding because it implies that we should encourage all young women to aspire to university, irrespective of their academic abilities. This attractiveness of university for girls differs from that for boys, most likely reflecting the gendered nature of the labour market. Males have a broader set of opportunities than females. For men there are attractive jobs which do not require a degree. For women, much less so.

However, what other conclusions can we draw? In particular can we say whether completing Year 12 is worthwhile or whether undertaking VET is to be recommended relative to no further study? Table 14 sets up a matrix which summarises our findings for each of the two outcome variables: the best path, the worst path and commentary about the efficacy of completing Year 12 or undertaking VET (either directly or through an apprenticeship or traineeship).

Table 14 Summary of outcomes for different paths, females

	Full-time engagement	Pay for full-time workers
Best path	✧ Year 12, followed by university study	✧ Year 12, followed by university study
Worst path	✧ Early school leaver, followed by VET study	✧ Year 12, followed by other VET
Impact of Year 12 completion	Unambiguously good	Ambiguous
Impact of VET	Ambiguous	Unambiguously bad

The conclusions are relatively clear. Completion of Year 12 followed by university study is the best path (even if an individual has a poor academic orientation). However, we cannot say that completion of Year 12 or undertaking VET is necessarily a good thing, even on average. For those not going to university, it would seem that advice needs to be personalised, and that neither completing school nor undertaking other study should be promoted for their own sake.

Discussion

In interpreting these results, it must be remembered that the analysis is contingent on the choice of path, not successful completion of the path. For example, an individual choosing to go to university may not complete his/her degree and therefore may not end up in a well-paying, high-status job. But the analysis indicates that on average this will be the result relative to other paths. Another point worth noting is that the university path appears to pay off on average for those who do not have a high academic orientation. This bodes well for recent government policy endeavouring to increase the proportion of the population with a degree. Although the more academic tend to do better, those who are less academic can benefit from a university path.

However, although the university path is best for females, the picture is far less clear for males. It is still the best path in terms of leading to a high-status occupation, but an apprenticeship after completing Year 12 offers the best pay at age 25 years, and paths involving apprenticeships or traineeships lead to greater levels of satisfaction with life than does university study.

While the results on the whole point to the benefit of a university path, the same cannot be said for the completion of Year 12. For males, it is Year 12 followed by university study or an apprenticeship that offers a good path rather than Year 12 completion as such. Similarly for females, Year 12 is clearly worthwhile if followed up by university, but not otherwise. We seem to be moving into a world in which Year 12 is losing its importance. For males, university or an apprenticeship (not a traineeship) offers good paths. For females it is the university path that dominates. Paths leading to lower-level qualifications do not on average produce the same quality outcomes. It seems that the Year 12 or equivalent debate is missing the point—that the successful paths tend to be Year 12 plus further study. Year 12 is no longer sufficient, and other paths involving Year 11 plus further training are not as good as Year 12 plus university or, for males, Year 12 plus an apprenticeship. Another point to emerge is that VET study is not always advantageous. Apprenticeships for males are clearly an attractive path for males, but traineeships or other VET study are generally ambiguous in their impact. It is more a matter of ‘it depends’—in some circumstances no doubt a VET path will be beneficial, but not necessarily.

In making these observations we need to be very aware that we are talking about averages and that there will be a wide distribution of results. For example, one would be very wary of forcing an individual into completing Year 12 and going on to university if that person had no interest in academic study. However, the analysis does suggest that the university path is also beneficial for those with lower levels of academic orientation. We also need to remember that, for a number of variables, success (at age 25 years) is not a function of the path at all—notably, financial wellbeing and satisfaction with work. We are also talking about successful outcomes at age 25, which we are taking to be the end point of the transition for youth. Outcomes at later ages will differ, particularly in terms of occupational status and pay. However, judging outcomes at later points in the life cycle are almost certainly going to emphasise the benefit of the Year-12-to-university path.

Finally, we note that the analysis is restricted to one cohort—those who completed Year 12 in 1998. This cohort of young people entered the labour market when it was buoyant. Therefore it is possible that the success of various paths would differ in a less friendly labour market. This

observation leads to another salient point: good transitions are ultimately dependent upon a prosperous economy and a buoyant labour market, although providing a good-quality educational foundation, good career self-management skills, good information systems, appropriate youth wages and the like are all bound to help.

References

- ABS (Australian Bureau of Statistics) 1990, *Australian Standard Classification of Occupations (first edition): occupation definitions*, cat.no.1223.0, Canberra.
- 2009, *Home and away: the living arrangements of young people*, *Australian social trends*, cat.no.4102.0, Canberra.
- Curtis, D 2008, *VET pathways taken by school leavers*, Longitudinal Surveys of Australian Youth research report no. 52, ACER, Camberwell.
- Curtis, D, Mlotkowski, P & Lawley, M (forthcoming), *Who takes a gap year and why?*, NCVER, Adelaide.
- Dawes, G 1998, *Break on through: Indigenous youth subcultures and education*, Centre for Social Research, James Cook University, Townsville.
- Dockery, AM 2010, *Education and happiness in the school–work transition*, NCVER, Adelaide.
- Dwyer, P, Harwood, A & Tyler, D 1998, *Life patterns, choices, careers: 1991–1998*, Research report 17, Youth Research Centre, Melbourne.
- Fok, YK & Tseng, YP 2009, *Wage transitions of apprentices*, Melbourne Institute of Applied Economic and Social Research, University of Melbourne, Melbourne.
- Hillman, K 2005, *Young people outside the labour forces and full-time education*, Longitudinal Surveys of Australian Youth research report no.45, ACER, Camberwell.
- Jones, FL 2001, 'Occupational prestige in Australia: a new scale', *Australian and New Zealand Journal of Sociology*, 25, August, pp.187–99.
- McMillan, J & Jones, FL 2000, 'The ANU3_2 scale: a revised occupational status scale for Australia', *Journal of Sociology*, 36, March, pp.64–80.
- Khoo, S & Ainley, J 2005, *Attitudes, intentions and participation*, Longitudinal Surveys of Australian Youth research report no.41, ACER, Camberwell.
- McMillan, J & Marks, G 2003, *School leavers in Australia: profiles and pathways*, Longitudinal Surveys of Australian youth research report no.31, ACER, Camberwell.
- Newgard, CD, Hedges, JR, Arthur, M & Mullins, R.J 2004, 'Advanced statistics: the propensity score – a method for estimating treatment effect in observational research', *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine*, vol.11, no.9, pp.953–61.
- Raffe, D 2003, 'Pathways linking education and work: a review of concepts, research and policy debates', *Journal of Youth Studies*, vol.6, no.1, pp.3–19.
- Ryan, C 2011, *Year 12 completion and youth transitions*, NCVER, Adelaide.
- Rosenbaum, PR 2007, 'Covariance adjustment in randomized experiments and observational studies', *Statistical Science*, vol. 17, no.3, pp.386–72.
- Statistics Canada 2009, *Education and labour market transitions in young adulthood*, cat.no.81-595-M, no.075, Ottawa.
- Sturmer, T, Joshi, M, Glynn, RJ, Avorn, J, Rothman, KJ & Schneeweiss 2006, 'A review of the application of propensity score methods yielded increasing use, advantages in specific settings, but not substantially different estimates compared with conventional multivariable methods', in *Journal of Clinical Epidemiology*, vol.59, pp.437–47.
- Thomson, S & Hillman, K 2010, *Against the odds: influences on the post-school success of 'low performers'*, NCVER, Adelaide.
- Wyn, J 2009, *Youth health and welfare: the cultural politics of education and wellbeing*, Oxford University Press, Melbourne.
- Wynn, J, Smith, G, Stokes, H, Tyler, D & Woodman, D 2008, *Generations and social change: negotiating adulthood in the 21st century*, Research report 29: Report on the Life-patterns Research Program 2005–2007, Youth Research Centre, University of Melbourne.

Appendix A

Final propensity score models

Estimating propensity scores of university commencement using logistic regression:

Let $p = \Pr(Y = 1|x)$, then

$$\text{logit}\left(\frac{p_i}{1-p_i}\right) = \alpha_i + \beta_i x_i + \varepsilon$$

$$p_i = \frac{\exp(\alpha_i + \beta_i x_i)}{1 + \exp(\alpha_i + \beta_i x_i)}$$

where

Y is the binary response variable where $Y = 1$ if individual commenced university, and 0 otherwise

p_i is the predicted probability of university commencement given the response variable $Y = 1$. The predicted probabilities are the estimated propensity scores.

α_i is the intercept parameter

β_i is the vector of regression coefficients for the explanatory variables

x_i is the vector of explanatory variables

ε is the vector of residuals.

All the regression analyses were carried out using SASv9.0 and the results are presented in the following tables.

Table A1a Regression on university commencement, male

Model fit statistics			
Criterion	Intercept only	Intercept and covariates	
AIC	1710.3060	1385.1010	
SC	1715.4320	1528.6310	
-2 Log L	1708.3060	1329.1010	
R - Square	0.2627		
Testing global null hypothesis			
Testing	Chi-Square	DF	Pr > ChiSq
Likelihood ratio	379.2051	27	<.0001
Score	328.9402	27	<.0001
Wald	249.9928	27	<.0001

Type 3 Analysis of effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
State	7	3.8959	0.7917
School type	2	20.8947	<.0001
Indigenous status	1	1.0616	0.3029
Locality	2	3.1347	0.2086
Parental occupation	7	32.6372	<.0001
Home language	1	18.1844	<.0001
Country of birth	2	5.7630	0.0561
Parental education	3	20.9264	0.0001
Math score	1	67.2328	<.0001
Reading score	1	13.8547	0.0002

Analysis of maximum likelihood estimates

Parameter	DF	Estimate	Standard error	P-value
Intercept	1	-2.0626	0.4690	<.0001
ACT	1	-0.5803	0.3648	0.1117
NSW	1	-0.2671	0.2085	0.2002
NT	1	-0.2492	0.5108	0.6256
QLD	1	-0.1744	0.2135	0.4141
SA	1	-0.1562	0.2281	0.4933
Tas.	1	-0.4411	0.4010	0.2713
WA	1	-0.2436	0.2447	0.3195
Catholic school	1	-0.2502	0.2338	0.2846
Government school	1	-0.7846	0.1883	<.0001
ATSI	1	-0.7252	0.7039	0.3029
Regional area	1	-0.1931	0.1705	0.2575
Rural and remote	1	-0.3144	0.1869	0.0925
Clerks	1	0.2959	0.3323	0.3733
Labourers & related workers	1	-0.1853	0.2685	0.49
Manager or administrator	1	-0.7611	0.2099	0.0003
Para-professionals	1	-0.6271	0.3091	0.0425
Plant & machine operators & drivers	1	-1.1521	0.3044	0.0002
Salespersons & personal service workers	1	-0.2893	0.2838	0.308
Tradesperson	1	-0.7071	0.2263	0.0018
Other than English	1	1.6017	0.3756	<.0001
Born overseas Eng.-speaking country	1	-0.4452	0.4468	0.3191
Born overseas non-Eng.-speaking country	1	1.0710	0.4999	0.0322
Completed secondary school	1	-0.6750	0.1933	0.0005
Didn't complete secondary school	1	-0.8541	0.1929	<.0001
Trade/technical qualification	1	-0.7043	0.2445	0.004
Math score	1	0.1994	0.0243	<.0001
Reading score	1	0.0882	0.0237	0.0002

Table A1b Regression on university commencement, female

Model fit statistics				
Criterion	Intercept only	Intercept and covariates		
AIC	2007.9270	1682.0580		
SC	2013.2670	1831.5830		
-2 Log L	2005.9270	1626.0580		
R - Square	0.2185			
Testing global null hypothesis				
Testing	Chi-Square	DF	Pr > ChiSq	
Likelihood ratio	379.8690	27	<.0001	
Score	338.4379	27	<.0001	
Wald	263.6424	27	<.0001	
Type 3 Analysis of effects				
Effect	DF	Wald Chi-Square	Pr > ChiSq	
State	7	10.0597	0.1852	
School type	2	25.1707	<.0001	
Indigenous status	1	0.3395	0.5601	
Locality	2	0.6346	0.7281	
Parental occupation	7	29.8530	0.0001	
Home language	1	1.0874	0.2970	
Country of birth	2	5.2522	0.0724	
Parental education	3	23.4116	<.0001	
Math achievement score	1	58.9004	<.0001	
Reading achievement score	1	33.8229	<.0001	
Analysis of maximum likelihood estimates				
Parameter	DF	Estimate	Standard error	P-value
Intercept	1	-2.1991	0.4532	<.0001
ACT	1	-0.0650	0.3273	0.8425
NSW	1	-0.2943	0.1872	0.1158
NT	1	-0.2605	0.3768	0.4893
QLD	1	0.0523	0.1965	0.7901
SA	1	-0.1352	0.2070	0.5136
Tas.	1	-0.8369	0.3206	0.009
WA	1	-0.1908	0.2162	0.3776
Catholic school	1	0.3689	0.2243	0.1001
Government school	1	-0.4295	0.1864	0.0212
ATSI	1	-0.2979	0.5113	0.5601
Regional area	1	-0.0539	0.1541	0.7266
Rural and remote	1	-0.1298	0.1631	0.426
Clerks	1	-0.7706	0.2840	0.0067
Labourers & related workers	1	-0.5022	0.2579	0.0515
Manager or administrator	1	-0.3845	0.2092	0.066
Para-professionals	1	-0.7751	0.2929	0.0081
Plant & machine operators & drivers	1	-1.2224	0.2664	<.0001
Salespersons & personal service workers	1	-0.8924	0.2636	0.0007
Tradesperson	1	-0.7912	0.2182	0.0003
Other than English	1	0.3400	0.3261	0.297

Born overseas Eng.-speaking country	1	-0.2412	0.3876	0.5337
Born overseas non-Eng.-speaking country	1	0.9170	0.4216	0.0296
Completed secondary school	1	-0.7397	0.1770	<.0001
Didn't complete secondary school	1	-0.7067	0.1678	<.0001
Trade/technical qualification	1	-0.2848	0.2422	0.2396
Math score	1	0.1722	0.0224	<.0001
Reading score	1	0.1348	0.0232	<.0001

Appendix B

Full outcome models

The full regression models are presented in this section. In this section, the following models are used with no model selection procedure, noting that logistic regression is used for those outcomes which are binary in nature (yes/no), and ordinary least squares regressions are used when the outcome is continuous:

Let $p = \Pr(Y = 1|x)$, then

$$\text{logit}\left(\frac{p_i}{1-p_i}\right) = \mu + \alpha_i x_i + \beta_j z_j + \gamma_{ij} x_i z_j + \varepsilon$$

where

Y is the binary response variable with indicator variables 1 and 0

p_i is the predicted probability that the response variable $Y = 1$

μ is the intercept parameter

α_i is the parameter estimates associated with the explanatory variable pathways

β_j is the parameter estimates associated with the explanatory variable propensity

γ_{ij} is the explanatory variable associated with the interaction term between pathways and propensity

ε is the residual

Model selection using generalised linear modelling:

$$y_i = \mu + \alpha_i x_i + \beta_j z_j + \gamma_{ij} x_i z_j + \varepsilon$$

where

y_i is the observed value for the response variable

μ is the intercept parameter

x_i, z_j are the explanatory variables, pathways and propensity

$\alpha_i, \beta_j, \gamma_{ij}$ are the parameter estimates for the corresponding explanatory variables, and the interaction term between them

ε is the residual

Table B1a Regression on full-time engagement, male

Model fit statistics				
Criterion	Intercept only	Intercept and covariates		
AIC	986.9290	990.1890		
SC	992.0550	1072.2060		
-2 Log L	984.9290	958.1890		
R - Square	0.0213			
Testing global null hypothesis				
Testing	Chi-Square	DF	Pr > ChiSq	
Likelihood ratio	26.7400	15	0.0309	
Score	22.3880	15	0.0980	
Wald	20.3162	15	0.1601	
Type 3 Analysis of effects				
Effect	DF	Wald Chi-Square	Pr > ChiSq	
Pathways	7	9.4924	0.2192	
Propensity	1	0.9231	0.3367	
Propensity*Pathways	7	8.1357	0.3208	
Analysis of maximum likelihood estimates				
Parameter	DF	Estimate	Standard error	P-value
Intercept	1	1.6018	0.4635	0.0005
Early school leaver, no post-school study	1	0.0210	0.6623	0.9747
Early school leaver, apprentice	1	1.9742	1.2978	0.1282
Early school leaver, trainee/other VET	1	0.2590	0.8813	0.7689
Completed Year 12, no post-school study	1	0.0450	0.5917	0.9394
Completed Year 12, apprentice	1	2.1964	1.5026	0.1438
Completed Year 12, trainee	1	5.3100	2.3948	0.0266
Completed Year 12, other VET	1	-0.0140	0.7033	0.9841
Propensity	1	0.6273	0.6529	0.3367
Propensity*Early school leaver, no post-school study	1	-0.6046	1.2380	0.6253
Propensity*Early school leaver, apprentice	1	-3.0426	2.5212	0.2275
Propensity*Early school leaver, trainee/other VET	1	-0.3483	1.8957	0.8542
Propensity*Completed Year 12, no post-school study	1	-0.9114	0.9030	0.3128
Propensity*Completed Year 12, apprentice	1	-3.0416	2.6757	0.2556
Propensity*Completed Year 12, trainee	1	-8.2636	3.4167	0.0156
Propensity*Completed Year 12, other VET	1	-0.7240	1.1201	0.5180

Table B1b Regression on full-time employment, male

Model fit statistics		
Criterion	Intercept only	Intercept and covariates
AIC	1250.3210	1241.4750
SC	1255.4470	1323.4930
-2 Log L	1248.3210	1209.4750
R - Square	0.0307	

Testing global null hypothesis

Testing	Chi-Square	DF	Pr > ChiSq
Likelihood ratio	38.8459	15	0.0007
Score	31.2167	15	0.0082
Wald	26.0572	15	0.0374

Type 3 Analysis of effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Pathways	7	9.9539	0.1912
Propensity	1	0.0447	0.8325
Propensity*Pathways	7	7.4426	0.3843

Analysis of maximum likelihood estimates

Parameter	DF	Estimate	Standard error	P-value
Intercept	1	1.4061	0.3883	0.0003
Early school leaver, no post-school study	1	0.1103	0.5977	0.8536
Early school leaver, apprentice	1	1.4678	1.0786	0.1736
Early school leaver, trainee/other VET	1	0.0160	0.7762	0.9835
Completed Year 12, no post-school study	1	0.0766	0.5129	0.8812
Completed Year 12, apprentice	1	2.3936	1.3822	0.0833
Completed Year 12, trainee	1	5.5056	2.3813	0.0208
Completed Year 12, other VET	1	0.1341	0.6264	0.8305
Propensity	1	-0.1124	0.5314	0.8325
Propensity*Early school leaver, no post-school study	1	0.0799	1.1370	0.944
Propensity*Early school leaver, apprentice	1	-1.2328	2.2559	0.5847
Propensity*Early school leaver, trainee/other VET	1	0.8952	1.7378	0.6065
Propensity*Completed Year 12, no post-school study	1	-0.6820	0.7704	0.376
Propensity*Completed Year 12, apprentice	1	-2.7791	2.4247	0.2517
Propensity*Completed Year 12, trainee	1	-7.5237	3.3954	0.0267
Propensity*Completed Year 12, other VET	1	-0.6784	0.9772	0.4875

Table B1c Regression on financial wellbeing, male

Model fit statistics			
Criterion	Intercept only	Intercept and covariates	
AIC	1449.394	1460.115	
SC	1454.52	1542.132	
-2 Log L	1447.394	1428.115	
R - Square	0.0154		
Testing global null hypothesis			
Testing	Chi-Square	DF	Pr > ChiSq
Likelihood ratio	19.2791	15	0.2014
Score	19.2255	15	0.2037
Wald	18.8908	15	0.2187

Type 3 Analysis of effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Pathways	7	3.3565	0.8502
Propensity	1	2.4651	0.1164
Propensity*Pathways	7	3.3599	0.8498

Analysis of maximum likelihood estimates

Parameter	DF	Estimate	Standard error	P-value
Intercept	1	0.6991	0.3595	0.0518
Early school leaver, no post-school study	1	-0.4908	0.5167	0.3422
Early school leaver, apprentice	1	0.1931	0.6914	0.7801
Early school leaver, trainee/other VET	1	0.1862	0.6605	0.778
Completed Year 12, no post-school study	1	0.1115	0.4679	0.8116
Completed Year 12, apprentice	1	0.8411	0.8811	0.3398
Completed Year 12, trainee	1	0.0058	0.8281	0.9944
Completed Year 12, other VET	1	0.1893	0.5660	0.738
Propensity	1	0.7927	0.5049	0.1164
Propensity*Early school leaver, no post-school study	1	0.5001	1.0193	0.6237
Propensity*Early school leaver, apprentice	1	-0.3358	1.5485	0.8283
Propensity*Early school leaver, trainee/other VET	1	-0.5922	1.3938	0.6709
Propensity*Completed Year 12, no post-school study	1	-0.9096	0.7211	0.2072
Propensity*Completed Year 12, apprentice	1	-1.0980	1.7495	0.5303
Propensity*Completed Year 12, trainee	1	-0.1987	1.6071	0.9016
Propensity*Completed Year 12, other VET	1	-0.9414	0.9062	0.2989

Table B1d Regression on ANU3 for those in full-time employment, male

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	15	114277.8395	7618.5226	25.9300	<.0001
Error	972	285590.0343	293.8169		
Corrected total	987	399867.8738			
R - Square	0.2858				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	7	7865.9737	1123.7105	3.8200	0.0004
Propensity	1	6367.4131	6367.4131	21.6700	<.0001
Propensity*Pathways	7	1917.2561	273.8937	0.9300	0.4805

Parameter estimates

Parameter	Estimate	Standard error	P-value
Intercept	40.2190	2.9857	<.0001
Early school leaver, no post-school study	-21.3947	4.4571	<.0001
Early school leaver, apprentice	-12.0213	5.7016	0.0352
Early school leaver, trainee/other VET	-13.0252	5.5337	0.0188
Completed Year 12, no post-school study	-15.1618	4.0488	0.0002
Completed Year 12, apprentice	-17.4168	6.3821	0.0065
Completed Year 12, trainee	-14.6260	6.9445	0.0354
Completed Year 12, other VET	-10.6656	5.0068	0.0354
Completed Year 12, university	0.0000	.	.

Propensity	16.7799	4.1000	<.0001
Propensity*Early school leaver, no post-school study	-0.8306	8.4074	0.9213
Propensity*Early school leaver, apprentice	-5.3349	12.7522	0.6758
Propensity*Early school leaver, trainee/other VET	-8.3535	11.5221	0.4686
Propensity*Completed Year 12, no post-school study	10.6735	6.3330	0.0922
Propensity*Completed Year 12, apprentice	6.7471	12.8269	0.599
Propensity*Completed Year 12, trainee	-14.1292	14.0602	0.3152
Propensity*Completed Year 12, other VET	3.2403	8.2450	0.6944
Propensity*Completed Year 12, university	0.0000		

Table B1e Regression on (log) gross weekly pay of those in full-time employment, male

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	15	5.3126	0.3542	3.0100	0.0001
Error	726	85.2950	0.1175		
Corrected total	741	90.6076			
R - Square					
	0.0586				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	7	1.6973	0.2425	2.0600	0.0452
Propensity	1	0.0613	0.0613	0.5200	0.4702
Propensity*Pathways	7	1.8285	0.2612	2.2200	0.0306
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	6.7533	0.0697	<.0001		
Early school leaver, no post-school study	0.0832	0.1062	0.4333		
Early school leaver, apprentice	0.1062	0.1366	0.437		
Early school leaver, trainee/other VET	0.3641	0.1380	0.0085		
Completed Year 12, no post-school study	-0.0851	0.0927	0.3589		
Completed Year 12, apprentice	0.0422	0.1452	0.7715		
Completed Year 12, trainee	-0.0375	0.1570	0.8114		
Completed Year 12, other VET	-0.1129	0.1223	0.3562		
Completed Year 12, university	0.0000				
Propensity	0.2273	0.0950	0.017		
Propensity*Early school leaver, no post-school study	-0.2985	0.1992	0.1345		
Propensity*Early school leaver, apprentice	-0.2907	0.3165	0.3587		
Propensity*Early school leaver, trainee/other VET	-0.9452	0.2916	0.0012		
Propensity*Completed Year 12, no post-school study	0.0645	0.1443	0.6548		
Propensity*Completed Year 12, apprentice	0.1422	0.2815	0.6135		
Propensity*Completed Year 12, trainee	-0.0982	0.3024	0.7455		
Propensity*Completed Year 12, other VET	0.0661	0.2015	0.7429		
Propensity*Completed Year 12, university	0.0000				

Table B1f Regression on life-related satisfaction, male

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	15	20.0123	1.3342	1.3300	0.1754
Error	1205	1207.7602	1.0023		
Corrected total	1220	1227.7725			
R - Square	0.0163				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	7	12.2950	1.7564	1.7500	0.0932
Propensity	1	0.0038	0.0038	0.0000	0.9511
Propensity*Pathways	7	5.8485	0.8355	0.8300	0.5594
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	0.3270	0.1578	0.0319		
Early school leaver, no post-school study	-0.2756	0.2380	0.3233		
Early school leaver, apprentice	-0.2707	0.3066	0.3364		
Early school leaver, trainee/other VET	-0.9100	0.2956	0.0018		
Completed Year 12, no post-school study	-0.3949	0.2110	0.0544		
Completed Year 12, apprentice	-0.1521	0.3549	0.5913		
Completed Year 12, trainee	-0.7864	0.3719	0.0296		
Completed Year 12, other VET	-0.3086	0.2558	0.2014		
Completed Year 12, university	0.0000				
Propensity	-0.3723	0.2174	0.0791		
Propensity*Early school leaver, no post-school study	0.3257	0.4488	0.5124		
Propensity*Early school leaver, apprentice	0.2570	0.6805	0.6963		
Propensity*Early school leaver, trainee/other VET	1.1102	0.6190	0.0885		
Propensity*Completed Year 12, no post-school study	0.4835	0.3266	0.1283		
Propensity*Completed Year 12, apprentice	-0.3524	0.7058	0.6570		
Propensity*Completed Year 12, trainee	0.7662	0.7071	0.2683		
Propensity*Completed Year 12, other VET	0.3006	0.4124	0.4734		
Propensity*Completed Year 12, university	0.0000				

Table B1g Regression on work-related satisfaction, male

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	15	18.2193	1.2146	1.2400	0.2354
Error	1205	1181.4598	0.9805		
Corrected total	1220	1199.6792			
R - Square	0.0152				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	7	4.3333	0.6190	0.6300	0.7302
Propensity	1	2.5530	2.5530	2.6000	0.1069
Propensity*Pathways	7	5.0362	0.7195	0.7300	0.6433

Parameter estimates

Parameter	Estimate	Standard error	P-value
Intercept	0.2760	0.1561	0.4412
Early school leaver, no post-school study	-0.0055	0.2353	0.5462
Early school leaver, apprentice	-0.2850	0.3033	0.4744
Early school leaver, trainee/other VET	-0.0798	0.2924	0.9417
Completed Year 12, no post-school study	-0.2594	0.2087	0.2364
Completed Year 12, apprentice	-0.4321	0.3511	0.4216
Completed Year 12, trainee	-0.4770	0.3678	0.4393
Completed Year 12, other VET	-0.0936	0.2530	0.9562
Completed Year 12, university	0.0000		
Propensity	-0.4252	0.2150	0.2782
Propensity*Early school leaver, no post-school study	-0.1958	0.4438	0.4091
Propensity*Early school leaver, apprentice	-0.3883	0.6731	0.815
Propensity*Early school leaver, trainee/other VET	0.0201	0.6122	0.8478
Propensity*Completed Year 12, no post-school study	0.4819	0.3231	0.0797
Propensity*Completed Year 12, apprentice	0.7968	0.6981	0.4039
Propensity*Completed Year 12, trainee	0.3840	0.6993	0.9149
Propensity*Completed Year 12, other VET	0.0243	0.4079	0.9126
Propensity*Completed Year 12, university	0.0000		

Table B2a Regression on full-time engagement, female

Model fit statistics				
Criterion	Intercept only	Intercept and covariates		
AIC	1787.4070	1735.5180		
SC	1792.7480	1799.6000		
-2 Log L	1785.407	1711.518		
R - Square	0.0468			
Testing global null hypothesis				
Test	Chi-Square	DF	Pr > ChiSq	
Likelihood ratio	73.8891	11	<.0001	
Score	79.0880	11	<.0001	
Wald	72.6265	11	<.0001	
Type 3 Analysis of effects				
Effect	DF	Wald Chi-Square	Pr > ChiSq	
Pathways	5	10.7936	0.0556	
Propensity	1	1.3449	0.2462	
Propensity*Pathways	5	2.1376	0.8298	
Analysis of maximum likelihood estimates				
Parameter	DF	Estimate	Standard error	P-value
Intercept	1	0.9717	0.3942	0.0137
Early school leaver, no post-school study	1	-1.5538	0.5863	0.008
Early school leaver, further study	1	-1.6058	0.6448	0.0128
Completed Year 12, no post-school study	1	-0.9203	0.5000	0.0657
Completed Year 12, apprentice/trainee	1	-0.5460	0.7374	0.459
Completed Year 12, other VET	1	-0.3476	0.6274	0.5796
Propensity	1	0.6015	0.5187	0.2462

Propensity*Early school leaver, no post-school study	1	1.2195	0.9526	0.2005
Propensity*Early school leaver, further study	1	0.6138	1.2520	0.624
Propensity*Completed Year 12, no post-school study	1	0.7144	0.7230	0.3231
Propensity*Completed Year 12, apprentice/trainee	1	0.3745	1.2937	0.7722
Propensity*Completed Year 12, other VET	1	0.1261	0.9637	0.8959

Table B2b Regression on full-time employment, female

Model fit statistics				
Criterion	Intercept only	Intercept and covariates		
AIC	1971.0470	1947.8970		
SC	1976.3880	2011.9790		
-2 Log L	1969.0470	1923.8970		
R - Square	0.0289			
Testing global null hypothesis				
Test	Chi-Square	DF	Pr > ChiSq	
Likelihood ratio	45.1507	11	<.0001	
Score	46.8193	11	<.0001	
Wald	44.7032	11	<.0001	
Type 3 Analysis of effects				
Effect	DF	Wald Chi-Square	Pr > ChiSq	
Pathways	5	9.4516	0.0924	
Propensity	1	0.0326	0.8567	
Propensity*Pathways	5	3.3311	0.6491	
Analysis of maximum likelihood estimates				
Parameter	DF	Estimate	Standard error	P-value
Intercept	1	0.9885	0.3617	0.0063
Early school leaver, no post-school study	1	-1.2902	0.5581	0.0208
Early school leaver, further study	1	-1.6514	0.6267	0.0084
Completed Year 12, no post-school study	1	-0.9904	0.4699	0.0351
Completed Year 12, apprentice/trainee	1	-0.5880	0.7112	0.4083
Completed Year 12, other VET	1	-0.8682	0.5854	0.1381
Propensity	1	-0.0847	0.4692	0.8567
Propensity*Early school leaver, no post-school study	1	0.7098	0.8949	0.4277
Propensity*Early school leaver, further study	1	1.1934	1.2306	0.3322
Propensity*Completed Year 12, no post-school study	1	1.0519	0.6734	0.1183
Propensity*Completed Year 12, apprentice/trainee	1	0.8860	1.2466	0.4773
Propensity*Completed Year 12, other VET	1	1.1661	0.8997	0.1949

Table B2c Regression on financial wellbeing, female

Model fit statistics				
Criterion	Intercept only	Intercept and covariates		
AIC	1998.2340	1990.7190		
SC	2003.5740	2054.8010		
-2 Log L	1996.2340	1966.7190		
R - Square	0.0190			
Testing global null hypothesis				
Test	Chi-Square	DF	Pr > ChiSq	
Likelihood ratio	29.5149	11	0.0019	
Score	29.9666	11	0.0016	
Wald	29.3865	11	0.0020	
Type 3 Analysis of effects				
Effect	DF	Wald Chi-Square	Pr > ChiSq	
Pathways	5	2.4973	0.7769	
Propensity	1	0.2277	0.6332	
Propensity*Pathways	5	2.6443	0.7546	
Analysis of maximum likelihood estimates				
Parameter	DF	Estimate	Standard error	P-value
Intercept	1	0.7075	0.3526	0.0448
Early school leaver, no post-school study	1	-0.5022	0.5515	0.3626
Early school leaver, further study	1	-0.3328	0.6140	0.5878
Completed Year 12, no post-school study	1	-0.3862	0.4625	0.4037
Completed Year 12, apprentice/trainee	1	-0.3935	0.6982	0.573
Completed Year 12, other VET	1	0.2964	0.5849	0.6123
Propensity	1	0.2192	0.4594	0.6332
Propensity*Early school leaver, no post-school study	1	-0.5320	0.8875	0.5489
Propensity*Early school leaver, further study	1	-0.9362	1.2164	0.4415
Propensity*Completed Year 12, no post-school study	1	0.0103	0.6606	0.9876
Propensity*Completed Year 12, apprentice/trainee	1	0.5425	1.2221	0.6571
Propensity*Completed Year 12, other VET	1	-1.0241	0.8782	0.2435

Table B2d Regression on having no children, female

Model fit statistics			
Criterion	Intercept only	Intercept and covariates	
AIC	1422.8770	1307.0430	
SC	1428.2170	1371.1250	
-2 Log L	1420.8770	1283.0430	
R - Square	0.0856		
Testing global null hypothesis			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood ratio	137.8340	11	<.0001
Score	151.9944	11	<.0001
Wald	127.8801	11	<.0001

Type 3 Analysis of effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Pathways	5	12.1162	0.0332
Propensity	1	2.6305	0.1048
Propensity*Pathways	5	1.4306	0.9209

Analysis of maximum likelihood estimates

Parameter	DF	Estimate	Standard error	P-value
Intercept	1	1.5589	0.5316	0.0034
Early school leaver, no post-school study	1	-2.0152	0.6837	0.0032
Early school leaver, further study	1	-1.6471	0.7351	0.025
Completed Year 12, no post-school study	1	-1.0515	0.6268	0.0395
Completed Year 12, apprentice/trainee	1	-1.3416	0.8711	0.1235
Completed Year 12, other VET	1	-0.2930	0.7779	0.7065
Propensity	1	1.1614	0.7161	0.1048
Propensity*Early school leaver, no post-school study	1	0.2737	1.0616	0.7966
Propensity*Early school leaver, further study	1	0.0866	1.3807	0.95
Propensity*Completed Year 12, no post-school study	1	0.1481	0.9051	0.8701
Propensity*Completed Year 12, apprentice/trainee	1	1.3761	1.5973	0.3889
Propensity*Completed Year 12, other VET	1	-0.6057	1.1867	0.6098

Table B2e Regression on ANU3 for those in full-time employment, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	11	82646.8213	7513.3474	27.0400	<.0001
Error	1010	280664.2660	277.8854		
Corrected total	1021	363311.0873			
R - Square	0.2275				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	5	2182.5127	436.5025	1.5700	0.1656
Propensity	1	5602.7428	5602.7428	20.1600	<.0001
Propensity*Pathways	5	849.5152	169.9030	0.6100	0.6912
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	38.1235	3.1730	<.0001		
Early school leaver, no post-school study	-6.7963	6.0304	0.26		
Early school leaver, further study	-3.2019	7.4437	0.6672		
Completed Year 12, no post-school study	-8.9411	4.4906	0.0467		
Completed Year 12, apprentice/trainee	-11.2017	6.4068	0.0807		
Completed Year 12, other VET	-13.2623	5.6333	0.0188		
Completed Year 12, university	0.0000				
Propensity	21.5432	4.1234	<.0001		
Propensity*Early school leaver, no post-school study	-14.3029	9.8552	0.147		
Propensity*Early school leaver, further study	-8.6083	14.8236	0.5616		
Propensity*Completed Year 12, no post-school study	-5.5608	6.4028	0.3853		
Propensity*Early school leaver, apprentice/trainee	-4.6641	10.8211	0.6665		
Propensity*Completed Year 12, other VET	2.1365	8.4803	0.8011		
Propensity*Completed Year 12, university	0.0000				

Table B2f Regression on ANU3 for those in part-time employment and no full-time study, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	11	19365.6582	1760.5144	6.3000	<.0001
Error	263	73527.0354	279.5704		
Corrected total	274	92892.6937			
R - Square	0.2085				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	5	2070.8102	414.1620	1.4800	0.1961
Propensity	1	2.7216	2.7216	0.0100	0.9215
Propensity*Pathways	5	1123.1117	224.6223	0.8000	0.5480

Parameter estimates			
Parameter	Estimate	Standard error	P-value
Intercept	44.1151	6.9713	<.0001
Early school leaver, no post-school study	-20.6121	9.7573	0.0356
Early school leaver, further study	-8.2963	9.7333	0.3948
Completed Year 12, no post-school study	-20.1873	8.4383	0.0174
Completed Year 12, apprentice/trainee	-15.6366	15.5668	0.3161
Completed Year 12, other VET	-12.6596	11.1382	0.2567
Completed Year 12, university	0.0000	.	.
Propensity	3.1269	9.1832	0.7338
Propensity*Early school leaver, no post-school study	6.5099	15.6727	0.6782
Propensity*Early school leaver, further study	-25.0646	18.3798	0.1738
Propensity*Completed Year 12, no post-school study	9.1504	12.0461	0.4482
Propensity*Early school leaver, apprentice/trainee	-3.7523	28.8593	0.8967
Propensity*Completed Year 12, other VET	-1.7738	16.8337	0.9162
Propensity*Completed Year 12, university	0.0000	.	.

Table B2g Regression on (log) gross weekly pay of those in full-time employment, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	11	9.2851	0.8441	10.5000	<.0001
Error	770	61.9200	0.0804		
Corrected total	781	71.2050			
R - Square	0.1304				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	5	0.5077	0.1015	1.2600	0.2782
Propensity	1	0.7220	0.7220	8.9800	0.0028
Propensity*Pathways	5	0.1923	0.0385	0.4800	0.7926

Parameter estimates

Parameter	Estimate	Standard error	P-value
Intercept	6.6737	0.0619	<.0001
Early school leaver, no post-school study	-0.0273	0.1357	0.8409
Early school leaver, further study	-0.1840	0.1605	0.2521
Completed Year 12, no post-school study	-0.1710	0.0866	0.0487
Completed Year 12, apprentice/trainee	-0.2318	0.1205	0.0547
Completed Year 12, other VET	-0.1249	0.1035	0.2277
Completed Year 12, university	0.0000		
Propensity	0.2359	0.0811	0.0037
Propensity*Early school leaver, no post-school study	-0.1979	0.2175	0.3632
Propensity*Early school leaver, further study	0.0823	0.3499	0.8141
Propensity*Completed Year 12, no post-school study	0.0415	0.1234	0.7364
Propensity*Early school leaver, apprentice/trainee	0.1612	0.2004	0.4214
Propensity*Completed Year 12, other VET	-0.0854	0.1575	0.5877
Propensity*Completed Year 12, university	0.0000		

Table B2h Regression on life-related satisfaction, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	11	13.5720	1.2338	1.2900	0.2226
Error	1490	1422.5518	0.9547		
Corrected total	1501	1436.1238			
R - Square	0.0095				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	5	3.9292	0.7858	0.8200	0.5331
Propensity	1	0.7344	0.7344	0.7700	0.3806
Propensity*Pathways	5	2.6550	0.5310	0.5600	0.7337

Parameter estimates

Parameter	Estimate	Standard error	P-value
Intercept	0.0906	0.1600	0.9665
Early school leaver, no post-school study	0.0078	0.2620	0.8003
Early school leaver, further study	-0.1258	0.2948	0.5128
Completed Year 12, no post-school study	-0.3570	0.2162	0.4579
Completed Year 12, apprentice/trainee	-0.1264	0.3276	0.7402
Completed Year 12, other VET	0.0375	0.2700	0.4451
Completed Year 12, university	0.0000		
Propensity	-0.0755	0.2079	0.958
Propensity*Early school leaver, no post-school study	0.0076	0.4252	0.9511
Propensity*Early school leaver, further study	-0.1631	0.5881	0.8177
Propensity*Completed Year 12, no post-school study	0.3106	0.3095	0.8454
Propensity*Early school leaver, apprentice/trainee	-0.2631	0.5744	0.7824
Propensity*Completed Year 12, other VET	-0.2930	0.4097	0.2607
Propensity*Completed Year 12, university	0.0000		

Table B2i Regression on work-related satisfaction, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	11	11.3971	1.0361	1.0600	0.3931
Error	1490	1460.5538	0.9802		
Corrected total	1501	1471.9509			
R - Square	0.0077				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	5	2.7739	0.5548	0.5700	0.7262
Propensity	1	6.7536	6.7536	6.8900	0.0088
Propensity*Pathways	5	4.8013	0.9603	0.9800	0.4288
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	0.0610	0.1619	0.6545		
Early school leaver, no post-school study	0.1748	0.2655	0.2433		
Early school leaver, further study	0.4628	0.2987	0.0062		
Completed Year 12, no post-school study	0.0828	0.2191	0.4194		
Completed Year 12, apprentice/trainee	-0.0075	0.3319	0.9679		
Completed Year 12, other VET	0.0370	0.2733	0.2655		
Completed Year 12, university	0.0000	.	.		
Propensity	-0.1599	0.2107	0.9332		
Propensity*Early school leaver, no post-school study	-0.2965	0.4309	0.2764		
Propensity*Early school leaver, further study	-1.2479	0.5959	0.006		
Propensity*Completed Year 12, no post-school study	-0.0411	0.3136	0.4276		
Propensity*Early school leaver, apprentice/trainee	-0.0549	0.5820	0.7846		
Propensity*Completed Year 12, other VET	0.0108	0.4152	0.4569		
Propensity*Completed Year 12, university	0.0000	.	.		

Appendix C

Final outcome models

Stepwise procedure using logistic regression:

Let $p = \Pr(Y = 1|x)$, then

$$\text{logit}\left(\frac{p_i}{1-p_i}\right) = \mu + \alpha_i x_i + \beta_j z_j + \gamma_{ij} x_i z_j + \varepsilon$$

where

Y is the binary response variable with indicator variables 1 and 0

p_i is the predicted probability that the response variable $Y = 1$

μ is the intercept parameter

α_i is the parameter estimates associated with the explanatory variable pathways

β_j is the parameter estimates associated with the explanatory variable propensity

γ_{ij} is the explanatory variable associated with the interaction term between pathways and propensity

ε is the residual

In the stepwise procedure, the methodology involves both forward and backward procedures where the model starts with only a constant term. Then variables are included one at a time for consideration, while variables included previously are also assessed for elimination in each step using the Wald statistics with p-value of 5% as a threshold.

Model selection using generalised linear modelling:

$$y_i = \mu + \alpha_i x_i + \beta_j z_j + \gamma_{ij} x_i z_j + \varepsilon$$

where

y_i is the observed value for the response variable

μ is the intercept parameter

x_i, z_j are the explanatory variables, pathways and propensity

$\alpha_i, \beta_j, \gamma_{ij}$ are the parameter estimates for the corresponding explanatory variables, and the interaction term between them

ε is the residual

In selecting the final models, we used p-value of 5% as selection criteria to assess significance of the variables in each model. What follows are the results of the regression analyses.

Table C1a Regression on ANU3 for those in full-time employment, male

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	8	112360.5833	14045.0729	47.8300	<.0001
Error	979	287507.2905	293.6745		
Corrected total	987	399867.8738			
R - Square	0.2810				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	7	41331.3417	5904.4774	20.1100	<.0001
Propensity	1	17754.4544	17754.4544	60.4600	<.0001
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	38.7075	1.9059	<.0001		
Early school leaver, no post-school study	-21.0161	2.1484	<.0001		
Early school leaver, apprentice	-13.1498	2.6450	<.0001		
Early school leaver, trainee/other VET	-15.4548	2.6083	<.0001		
Completed Year 12, no post-school study	-9.3335	1.5608	<.0001		
Completed Year 12, apprentice	-13.9635	2.5365	<.0001		
Completed Year 12, trainee	-20.0678	2.7506	<.0001		
Completed Year 12, other VET	-8.6112	1.9976	<.0001		
Completed Year 12, university	0.0000	.	.		
Propensity	18.9485	2.4370	<.0001		

Table C1b Regression on (log) gross weekly pay of those in full-time employment, male

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	15	5.3126	0.3542	3.0100	<.0001
Error	726	85.2950	0.1175		
Corrected total	741	90.6076			
R - Square	0.0586				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	7	1.6973	0.2425	2.0600	0.0452
Propensity	1	0.0613	0.0613	0.5200	0.4702
Pathways*Propensity	7	1.8285	0.2612	2.2200	0.0306
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	6.7533	0.0697	<.0001		
Early school leaver, no post-school study	0.0832	0.1062	0.4333		
Early school leaver, apprentice	0.1062	0.1366	0.4370		
Early school leaver, trainee/other VET	0.3641	0.1380	0.0085		
Completed Year 12, no post-school study	-0.0851	0.0927	0.3589		
Completed Year 12, apprentice	0.0422	0.1452	0.7715		
Completed Year 12, trainee	-0.0375	0.1570	0.8114		
Completed Year 12, other VET	-0.1129	0.1223	0.3562		
Completed Year 12, university	0.0000				
Propensity	0.2273	0.0950	0.0170		

Propensity*Early school leaver, no post-school study	-0.2985	0.1992	0.1345
Propensity*Early school leaver, apprentice	-0.2907	0.3165	0.3587
Propensity*Early school leaver, trainee/other VET	-0.9452	0.2916	0.0012
Propensity*Completed Year 12, no post-school study	0.0645	0.1443	0.6548
Propensity*Completed Year 12, apprentice	0.1422	0.2815	0.6135
Propensity*Completed Year 12, trainee	-0.0982	0.3024	0.7455
Propensity*Completed Year 12, other VET	0.0661	0.2015	0.7429
Propensity*Completed Year 12, university	0.0000		

Table C1c Regression on life-related satisfaction, male

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	7	14.0011	2.0002	2.0100	0.0508
Error	1779	1771.9989	0.9961		
Corrected total	1786	1786.0000			
R - Square	0.0078				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	7	14.0011	2.0002	2.0100	0.0508
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	0.0716	0.0386	0.0639		
Early school leaver, no post-school study	0.0009	0.0840	0.9912		
Early school leaver, apprentice	-0.1912	0.1132	0.0914		
Early school leaver, trainee/other VET	-0.1643	0.1143	0.1511		
Completed Year 12, no post-school study	-0.0720	0.0630	0.2529		
Completed Year 12, apprentice	-0.2374	0.1168	0.0423		
Completed Year 12, trainee	-0.3306	0.1223	0.0069		
Completed Year 12, other VET	-0.1168	0.0793	0.1407		
Completed Year 12, university	0.0000				

Table C2a Regression on full-time engagement, female

Model fit statistics		
Criterion	Intercept only	Intercept and covariates
AIC	1787.4070	1727.6830
SC	1792.7480	1765.0640
-2 Log L	1785.4070	1713.6830
R - Square	0.0455	

Testing global null hypothesis

Test	Chi-Square	DF	Pr > ChiSq
Likelihood ratio	71.7244	6	<.0001
Score	75.0417	6	<.0001
Wald	69.9574	6	<.0001

Residual Chi-Square Test

Chi-Square	DF	Pr > ChiSq
2.1436	5	0.8289

Type 3 Analysis of effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Pathways	5	27.7496	<.0001
Propensity	1	14.1273	0.0002

Analysis of maximum likelihood estimates

Parameter	DF	Estimate	Standard error	P-value
Intercept	1	0.6312	0.2271	0.0054
Early school leaver, no post-school study	1	-0.8387	0.2131	<.0001
Early school leaver, further study	1	-1.2079	0.2963	<.0001
Completed Year 12, no post-school study	1	-0.4375	0.1550	0.0048
Completed Year 12, apprentice/trainee	1	-0.2489	0.2651	0.3478
Completed Year 12, other VET	1	-0.1959	0.2024	0.3331
Propensity	1	1.0654	0.2835	0.0002

Table C2b Regression on full-time employment, female

Model fit statistics

Criterion	Intercept only	Intercept and covariates
AIC	1971.0470	1941.2650
SC	1976.3880	1978.6460
-2 Log L	1969.0470	1927.2650
R - Square	0.0267	

Testing global null hypothesis

Test	Chi-Square	DF	Pr > ChiSq
Likelihood ratio	41.7826	6	<.0001
Score	43.1666	6	<.0001
Wald	41.3773	6	<.0001

Residual Chi-Square Test

Chi-Square	DF	Pr > ChiSq
3.3411	5	0.6476

Type 3 Analysis of effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Pathways	5	22.9004	0.0004
Propensity	1	4.8306	0.0280

Analysis of maximum likelihood estimates

Parameter	DF	Estimate	Standard error	P-value
Intercept	1	0.4873	0.2145	0.0231
Early school leaver, no post-school study	1	-0.7696	0.2045	0.0002
Early school leaver, further study	1	-0.9492	0.2916	0.0011
Completed Year 12, no post-school study	1	-0.2686	0.1435	0.0614
Completed Year 12, apprentice/trainee	1	0.0188	0.2550	0.9413
Completed Year 12, other VET	1	-0.0876	0.1869	0.6395
Propensity	1	0.5867	0.2670	0.028

Table C2c Regression on having no children, female

Model fit statistics				
Criterion	Intercept only	Intercept and covariates		
AIC	1422.8770	1298.5010		
SC	1428.2170	1335.8830		
-2 Log L	1420.8770	1284.5010		
R - Square	0.0847			
Testing global null hypothesis				
Test	Chi-Square	DF	Pr > ChiSq	
Likelihood ratio	136.3756	6	<.0001	
Score	147.3495	6	<.0001	
Wald	126.0853	6	<.0001	
Residual Chi-Square Test				
Chi-Square	DF	Pr > ChiSq		
1.4400	5	0.9199		
Type 3 Analysis of effects				
Effect	DF	Wald Chi-Square	Pr > ChiSq	
Pathways	5	70.2239	<.0001	
Propensity	1	14.9818	0.0001	
Analysis of maximum likelihood estimates				
Parameter	DF	Estimate	Standard error	P-value
Intercept	1	1.4786	0.2712	<.0001
Early school leaver, no post-school study	1	-1.8542	0.2356	<.0001
Early school leaver, further study	1	-1.5760	0.3212	<.0001
Completed Year 12, no post-school study	1	-0.9511	0.1932	<.0001
Completed Year 12, apprentice/trainee	1	-0.6835	0.3139	0.0294
Completed Year 12, other VET	1	-0.6080	0.2493	0.0147
Propensity	1	1.2732	0.3289	0.0001

Table C2d Regression on ANU3 for those in full-time employment, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	6	81797.3061	13632.8844	49.1500	<.0001
Error	1015	281513.7812	277.3535		
Corrected total	1021	363311.0873			
R - Square	0.2251				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	5	37123.3545	7424.6709	26.7700	<.0001
Propensity	1	13733.8889	13733.8889	49.5200	<.0001
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	40.4835	2.0887	<.0001		
Early school leaver, no post-school study	-15.0028	2.2678	<.0001		
Early school leaver, further study	-7.8180	3.4594	0.0240		
Completed Year 12, no post-school study	-12.7676	1.3680	<.0001		
Completed Year 12, apprentice/trainee	-14.3378	2.3524	<.0001		
Completed Year 12, other VET	-12.4849	1.7400	<.0001		
Completed Year 12, university	0.0000				
Propensity	18.3919	2.6136	<.0001		

Table C2e Regression on (log) gross weekly pay of those in full-time employment, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	6	9.0928	1.5155	18.9100	<.0001
Error	775	62.1122	0.0801		
Corrected total	781	71.2050			
R - Square	0.1277				
Source	DF	Type III SS	Mean square	F value	Pr > F
Pathways	5	3.9458	0.7892	9.8500	<.0001
Propensity	1	1.7543	1.7543	21.8900	<.0001
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	6.6722	0.0404	<.0001		
Early school leaver, no post-school study	-0.1378	0.0455	0.0026		
Early school leaver, further study	-0.1515	0.0725	0.0368		
Completed Year 12, no post-school study	-0.1454	0.0263	<.0001		
Completed Year 12, apprentice/trainee	-0.1477	0.0444	0.0009		
Completed Year 12, other VET	-0.1740	0.0327	<.0001		
Completed Year 12, university	0.0000				
Propensity	0.2379	0.0508	<.0001		

Table C2f Regression on work-related satisfaction, female

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	1	5.4726	5.4726	5.6000	0.0181
Error	1500	1466.4782	0.9777		
Corrected total	1501	1471.9509			
R - Square	0.0037				
Source	DF	Type III SS	Mean square	F value	Pr > F
Propensity	1	5.4726	5.4726	5.6000	0.0181
Parameter estimates					
Parameter	Estimate	Standard error	P-value		
Intercept	0.1463	0.0763	0.0553		
Propensity	-0.2637	0.1115	0.0181		



Longitudinal
Surveys of
Australian Youth



Australian Government
Department of Education, Employment
and Workplace Relations



NCVER

National Centre for Vocational Education Research Ltd
Level 11, 33 King William Street, Adelaide, South Australia
PO Box 8288, Station Arcade, SA 5000 Australia
Telephone +61 8 8230 8400 Facsimile +61 8 8212 3436
Website www.ncveredu.au Email ncver@ncveredu.au