International Journal of Educational Research 85 (2017) 11–23

Contents lists available at ScienceDirect

International Journal of Educational Research

journal homepage: www.elsevier.com/locate/ijedures

Career guidance, school experiences and the university participation of young people from low socio-economic backgrounds

Wojtek Tomaszewski[a], Francisco Perales[a,*], Ning Xiang[b]

[a] ARC Centre of Excellence for Children and Families over the Life Course, Institute for Social Science Research, The University of Queensland, Australia

[b] Institute for Social Science Research, The University of Queensland, Australia

ARTICLE INFO

Keywords:
University participation
Socio-economic background
Disadvantage
Event-history models
Australia

ABSTRACT

University participation is a strong predictor of labour market success, personal health and wellbeing, and positive social outcomes. We leverage contemporary longitudinal data from a representative Australian sample of students and event-history regression models to examine the associations between socio-economic background and students' chances to enrol into University. We find evidence that low socio-economic background reduces the chances of University participation, whereas receipt of career guidance and positive school experiences increase these chances. Importantly, school factors more strongly predict subsequent University participation amongst young people from low socio-economic backgrounds. These findings suggest that policy initiatives aimed at improving school factors will result in expanded University enrolments, and smaller enrolment gaps between young people from advantaged and disadvantaged social strata.

1. Introduction

Since Australia's shift into a post-industrial economy and a post-modern society, the early life-course trajectories of young Australians have become more diverse and less structured (Gale & Parker, 2013). The traditional pathways from secondary school to work on the one hand, or to University on the other, have become only two options within a growing set of available alternatives (Brzinsky-Fay, 2014). Particularly, from the early 1990s, the increasing availability and popularity of Vocational Education and Training (VET) programs and the expansion of low-skilled, entry-level service jobs (predominantly in the retail and hospitality sectors) have created attractive alternatives to University for many young people (Ferrier, Dumbrell, & Burke, 2008).

However, these changes have not been randomly distributed across social strata. Instead, it has been documented that the emerging options acting as alternatives to tertiary education have been disproportionately chosen by young people from disadvantaged backgrounds. For example, Australian research shows that students from low socio-economic backgrounds and regional or remote areas within Australia are over-represented in the VET sector (Foley, 2007). This is important, as a further body of evidence

This research was funded by the National Centre for Student Equity in Higher Education (NCSEHE) at Curtin University under the 2016 Student Equity in Higher Education Research Grant program. This paper uses unit record data from the Longitudinal Survey of Australian Youth (LSAY). The LSAY project is managed by the National Centre for Vocational Education Research (NCVER). The authors would like to thank Ella Kuskoff for excellent research assistance, and participants at the 2016 International Sociological Association Research Committee 28 (ISA RC28) Summer Meeting (Bern, Switzerland) for helpful suggestions. This research was supported by the Australian Research Council Centre of Excellence for Children and Families over the Life Course (project number CE140100027). The views expressed herein are those of the authors and are not necessarily those of the Australian Research Council or the NCSEHE.

* Corresponding author.
E-mail addresses: w.tomaszewski@uq.edu.au (W. Tomaszewski), f.perales@uq.edu.au (F. Perales), n.xiang@uq.edu.au (N. Xiang).

http://dx.doi.org/10.1016/j.ijer.2017.06.003
Received 8 December 2016; Received in revised form 11 January 2017; Accepted 17 June 2017
Available online 10 July 2017
0883-0355/

indicates that VET is not an effective pathway to University for students from low socio-economic backgrounds (Wheelahan, 2009).

Participation in University and the attainment of tertiary-level educational qualifications are amongst the strongest predictors of subsequent success in the labour market, including the attainment of secure and continuous employment (ABS, 2015; OECD, 2006), high productivity and wage growth (Daly, Lewis, Corliss, & Heaslip, 2015 Perales and Chesters (2017)), and occupational standing (Hauser, Warren, Huang, & Carter, 2000; Perales and Chesters (2017). As a result of their improved work prospects, University-educated individuals are also less likely to live in households which fall below the poverty line, be dependent on income-support from Government, and report financial difficulties (McLachlan, Gilfillan, & Gordon, 2013; Perales et al., 2014; Raffo et al., 2007). In a similar vein, University qualifications are known precursors of health and wellbeing. For example, individuals with degree-level education are less likely to be in poor physical health (Ross & Wu, 1995), suffer from mental disorders (Anstey & Christensen, 2000), and adopt risky health behaviours, such as smoking, drinking and substance abuse (Hill, White, & Scollo, 1998). Hence, a social system that expands University participation is desirable, and so is a system which guarantees that the benefits of University participation are not restricted to individuals from advantaged social collectives.

In this context, it is of paramount importance that we understand the complex choices that young people face when deciding whether or not to enrol into University, the factors influencing such decisions, and whether or not these mechanisms operate differently for young people from advantaged and disadvantaged social strata. Many of these factors, such as parental guidance and peer support, are embedded within families and social networks, which are difficult for policymakers to influence (Fass & Tubman, 2002). However, other important factors operate through the institution of the school and its environment, and so they are more malleable and ripe for institutional intervention. Two important groups of school factors associated with young people's chances of enrolling into University are career guidance and school experiences. Career guidance refers to the support and advice students receive at school in planning their post-school educational and professional pathways (Gore et al., 2015). School experiences capture a broad set of processes defining students' interactions with the education system (e.g. their emotional attachment to their schools, relationships with teachers, etc.), and manifest through students' engagement with school and the process of learning (Bieg, Rickelman, Jones, & Mittag, 2013; Skinner, Furrer, Marchand, & Kindermann, 2008; Sanders, Munford, & Liebenberg, 2016).

These factors have been shown to have a substantial influence on young people's educational outcomes, including factors (such as educational aspirations) which may in turn impact their subsequent University participation (Alloway, Dalley, Patterson, Walker, & Lenoy, 2004; Gale & Parker, 2013; Gale, Parker, Rodd, Stratton, & Sealey, 2013). However, while the international evidence from countries such as the United States, the United Kingdom and Germany is rapidly growing, few studies have addressed this issue in the Australian context. This is an important omission, as the Australian educational system is internationally distinctive. For example, one of its distinctive features is the extra layer of complexity brought about by its dual funding model. In this model, state governments are responsible for running public schools, and for the accountability, regulatory and registration frameworks for primary and secondary education, whereas the Australian Commonwealth Government is responsible for the provision and allocation of funding for universities. Hence, the findings of studies in these other countries may not apply in the Australian context, and specific Australian evidence is required.

In addition, there is a paucity of evidence on whether or not school factors such as career guidance and school experiences affect the outcomes of students from advantaged and disadvantaged groups equally. On the one hand, it is possible that students from disadvantaged backgrounds benefit more from career guidance and positive school experiences than students from advantaged backgrounds, as these school factors may compensate for shortcomings in other domains (such as a lack of role models, or family and peer support). On the other hand, it is possible that career guidance and positive school experiences are equally effective amongst students from advantaged and disadvantaged backgrounds, if the latter have little capacity to enact their decisions to attend University due to a lack of resources in other domains (e.g. financial resources to fund their University participation). Understanding which of these scenarios prevails is important to successfully shaping educational policy, and efficiently allocating Government resources to close gaps in access to University by socio-economic background.

In this paper, we leverage high-quality, nationally representative longitudinal data from the 2003 cohort of the *Longitudinal Survey of Australian Youth*, and state-of-the-art event-history regression models to examine (i) whether and how socio-economic background is associated with University enrolment in contemporary Australia, (ii) whether and how career guidance and school experiences relate to young people's chances of enrolling into University, and (iii) whether these school factors have differential effects on the chances of University enrolment amongst young people from low and higher socio-economic background.

2. Background

2.1. Social disadvantage and university participation

A long-standing body of international research has demonstrated that, as for other educational outcomes, the decision to apply to University is strongly shaped by socio-economic background. For example, recent research from the US (Altbach, Reisberg, & Rumbley, 2009), Britain (Moore, Sanders, & Higham, 2013), and continental Europe (European Union, 2014) reveals increasing under-representation of students from low socio-economic backgrounds at University, resulting in widening gaps in tertiary-education attainment. Several mechanisms have been put forward to explain socio-economic differences in University participation. These can be grouped into two broad categories: one encompassing structural and material factors, and the other covering aspirational factors and socio-cultural capital (Archer, Hutchings, & Ross, 2003; Breen & Goldthorpe, 1997).

First, structural factors associated with social disadvantage can hinder young people's chances of attending University. In particular, the cost of attending University −both real and perceived– has been identified as a major barrier for young people from low

socio-economic backgrounds (Naylor, Baik, & James, 2013). Relatedly, there are important differences in the characteristics of and practices within the schools that young people from advantaged and disadvantaged backgrounds are selected into: advantaged students are more often able to afford and secure access to 'advantaging' schools that better prepare them for enrolment into University (Croll & Attwood, 2013; Moore, Sanders, & Highman, 2013; Reay, Davies, David, & Ball, 2001). Schools in which young people from high socio-economic backgrounds are overrepresented feature 'school cultures' which assume University as the natural next step in the educational ladder, while schools in which young people from low socio-economic backgrounds are overrepresented implicitly or explicitly 'track' students into vocational education (Foskett, Dyke, & Maringe, 2008). These school cultures are enacted through school curricula and subject availability (Gore et al., 2015), the quality and quantity of career guidance provided to students (Reay et al., 2001), and the quality of the learning environment, including teachers' motivation, qualifications and job experience (Abbott-Chapman & Easthope, 1998; Bieg et al., 2013; Sanders et al., 2016).

Second, young people from disadvantaged backgrounds are also negatively affected by their limited socio-cultural capital (Bourdieu, 1996). They often face home environments which are not sufficiently intellectually stimulating, have parents who exert poorer parenting practices, and have only limited access to high-quality social networks (Aschaffenburg & Maas, 1997). Hence, young people from disadvantaged backgrounds are less able to use their cultural capital and social networks in decision-making processes concerning the choice of post-school destinations (Sellar, Gale, & Parker, 2011; Whitty, Hayton, & Tang, 2015). That is, they have lower 'navigational capacity' to access relevant information, and use it to their advantage (Gale et al., 2013). For example, young people from disadvantaged backgrounds may simply lack knowledge on the location of different Universities, the requirements to enrol in different University programs, or how to overcome the complexities of the University enrolment process (Kenway & Hickey-Moody, 2011). These issues are exacerbated if these young people are the first in their family or social circle to decide to attend University, as they would have a limited ability to rely on their networks to acquire the required knowledge (Ball & Vincent, 1998). These mechanisms often result in young people from disadvantaged backgrounds having lower and less developed academic aspirations than young people from advantaged backgrounds, with these socio-economic gaps being apparent from very early ages (Heckman, 2011). For many of them, the perceived barriers to access and succeed in Higher Education would be sufficient to portray such a pathway as unrealistic (Gale et al., 2010). In addition, young people from disadvantaged backgrounds tend to perform worse at primary and secondary school, which limits their choices when it comes to continuing their education at University (Jehangir, Glas, & van den Berg, 2015; Polidano, Hanel, & Buddelmeyer, 2013).

In contemporary Australia, low socio-economic background is associated with a range of disadvantage indicators (McLachlan et al., 2013). Hence, young people from low socio-economic backgrounds are more likely to be exposed to a combination of risk factors. For example, compared to their more advantaged peers, they live in lower-income and lower-wealth households, often within disadvantaged neighbourhoods, and have parents who are less educated, possess less social and cultural capital, have poorer physical and mental health, and exert comparatively poor parenting practices (AIHW, 2014). Young people from low-socioeconomic backgrounds in Australia are also more likely to be low achievers in primary and secondary school, leading to lower school-completion rates (James et al., 2008). In addition, the educational aspirations of these students are geared towards vocational education rather than University (AIHW, 2014; James, 2000), which has been tied to a lack of confidence in achieving the academic results necessary to perform well in tertiary education, a desire to earn income immediately after secondary school, and holding less positive views about University education (Naylor et al., 2013).

2.2. Career guidance, school experiences and university participation

A vast body of research has found strong links between school characteristics (including the quality of teachers and learning experience, the curriculum and services offered, and the classroom learning climate) and the subsequent University participation of students (see e.g. Bieg et al., 2013; Bradley, Noonan, Nugent, & Scales, 2008; Gale et al., 2010; Sanders et al., 2016). Here, we consider two key sets of factors which have been paid less attention and through which schools can influence students' decisions about whether or not to enrol into University: (i) school experiences (encompassing student engagement and perceived learning climate); and (ii) career guidance (particularly, the provision of advice and information about aspects important to University participation). These are critical factors to investigate because they are ripe for policy intervention. This is because, unlike other factors such as socio-economic background, they can be regulated by Government through schools relatively easily. In addition, investments into these factors can be seen as 'preventive strategies', with fewer costs and greater returns to investment than 'remedial strategies' to compensate for social disadvantage due to poor education.

Positive school experiences, as captured by students' engagement with schools and perceived learning climate (including teaching quality and positive relationships at school), can have a profound effect on students' outcomes (Abbott-Chapman et al., 2014; Ainley & Ainley, 2011; Pietarinen, Soini, & Pyhalto, 2014). These experiences may improve University enrolments by strengthening the affective (or emotional) bonds between students and the education system. For instance, students who enjoy learning, have a positive emotional attachment with their schools, and feel that they have established positive relationships with teachers and peers may feel that they belong in the education system, and be more likely to consider continuing education at University (Hossler & Stage, 1992; Pekrun, Goetz, Titz, & Perry, 2002; Sanders et al., 2016). Conversely, students whose interactions with the school system result in negative feelings and associations about going to school, are more likely to be disengaged from education at the secondary-school level, and unlikely to consider attendance to University as a desirable post-school pathway (Hossler & Stage, 1992; Pekrun et al., 2002).

The provision of career guidance at schools has been identified as another factor that can improve student outcomes (Bradley et al., 2008; Gale et al., 2010; Moore et al., 2013). We argue that this can also lead to increasing University enrolments. In contrast to

positive school experiences, career guidance increases University enrolments by strengthening the cognitive component of the process (i.e. the 'know how'). Detailed and encompassing advice can help students familiarise themselves with pragmatic aspects concerning the decision of whether or not to attend University, and the complex process of University enrolment (Aird, Miller, van Megen, & Buys, 2010). For example, students may require information on the benefits of University education for subsequent life outcomes, the breadth of programs available to them (e.g. content, duration, post-award career pathways), general and program-specific entry requirements (e.g. completion of certain subjects, attainment of sufficient test-score grades), the bureaucracy of enrolment (e.g. contacts, deadlines, forms), and how to fund their studies (e.g. part-time work options, student loans, stipends) (James & Devlin, 2006; Lamb et al., 2004). Career guidance sessions are also a good opportunity for students to share and resolve their worries and insecurities with supportive mentors. Altogether, receipt of positive advice on University enrolment at school empowers young people to make a life-defining decision with less uncertainty and more self-confidence.

Little is known about the role of career guidance and positive school experiences in promoting University participation in the Australian context. The limited Australian research in this area has identified links between University aspirations and school experiences (Abbott-Chapman et al., 2014; Gore et al., 2015), and between University participation and understanding of admission processes, and receipt of some forms of in-school career guidance (Alloway, Dalley, Patterson, Walker, & Lenoy, 2004; Alloway, Gilbert, Gilbert, & Muspratt, 2004; Gale & Parker, 2013; Gale et al., 2010).

2.3. Socio-economic background as a moderator of the impact of school factors on university participation

An important limitation of national and international studies on school experiences and career guidance as precursors of University enrolment is that they assume that the processes described before operate similarly amongst young people from advantaged and disadvantaged groups. That is, there is a paucity of research examining whether or not these sets of school factors affect the outcomes of students from advantaged and disadvantaged groups equally. However, there are theoretical reasons to suspect that group differences in such effects (i.e. 'moderation effects' in statistical jargon) may in fact exist.

First, it is plausible that students from disadvantaged backgrounds benefit more from career guidance and positive school experiences than students from advantaged backgrounds. This may be the case if positive school experiences and high-quality career advice help compensate for deficits amongst these students in other important drivers of University participation. For example, compared to students from more advantaged backgrounds, students from disadvantaged backgrounds may have more limited access to information about educational options, including University, from out-of-school sources, such as family and social networks (Alloway, Dalley et al., 2004; Alloway, Gilbert et al., 2004; Gale et al., 2010). These propositions resonate with research findings indicating that young people from disadvantaged backgrounds rely more on schools and teachers as sources of information and inspiration to make decisions about their future (Ball & Vincent, 1998), value their teachers' advice and encouragement more (Gore et al., 2015), place extra weight on the guidance provided by career advisors (James, 2000), and are more positive about their career-guidance experiences (Rothman & Hillman, 2008).

Seen from another perspective, there may be 'ceiling effects' in the degree to which school factors such as those described here can shift the outcomes of students from more advantaged groups. A large share of such students would enter secondary school and move through the education system with clearly formed aspirations and expectations of University participation – by virtue of their family and social networks. Hence, for many of these students, school inputs would be almost 'redundant'. In contrast, the margin for expanding the educational aspirations and expectations of students from more disadvantaged backgrounds would be larger.

However, it is also possible that career guidance and positive school experiences are equally effective amongst young people from advantaged and disadvantaged backgrounds. This would be the case if such school factors were successful in raising aspirations for University participation amongst young people from disadvantaged backgrounds, but other barriers still prevented these young people from enacting their newly acquired goals. An obvious example of such barriers would be difficulties in financing their University participation, or external pressures to move into income-generating activities immediately after secondary-school completion. This is consistent with research showing that young people from disadvantaged backgrounds who wish to attend University are less likely to have their aspirations realised than comparable young people from more advantaged backgrounds (Bowden & Doughney, 2010).

Gaining a robust understanding of which of these perspectives applies within the Australian context has important implications for Australian educational policy aimed at redressing socio-economic inequalities in access to University. More specifically, if career guidance and positive school experiences are more efficient in promoting University enrolment amongst young people from disadvantaged backgrounds, then promoting those factors would be an appropriate policy lever.

3. Data

3.1. Dataset

To examine the intersections between socio-economic background, school experiences, career guidance, and University enrolment amongst young people in Australia we use data from the *Longitudinal Surveys of Australian Youth* (LSAY). LSAY is a series of large, longitudinal cohort studies which track young Australians from age 15, collecting annual data from them until they turn 25 years old. Data are collected through a combination of telephone interviews and online surveys. The information covers topics such as education and training, employment and social development. There are currently 5 instalments of LSAY, beginning in 1995, 1998, 2003, 2006 and 2009, respectively.

Table 1
Sample descriptive statistics.

	Mean/%	SD
Outcome variable		
Student enrolled at University (by wave 11)	58.0%	
Key explanatory variable		
Low socio-economic background	24.7%	
School experiences		
Attitudes towards school index	0.27	1.05
Student-teacher relations index	0.22	0.92
Career guidance		
Ever listened to a talk by an employer representative	51.7%	
Ever listened to a talk by a TAFE/University representative	53.4%	
Ever listened to a talk by the school's career advisor	81.3%	
Ever spoke individually to the school's career advisor	57.3%	
Ever took part in a group discussion about careers	71.7%	
Ever received hand-outs/written material about careers	90.2%	
Ever looked online for career guidance	48.5%	
Control variables		
Respondent is female	50.7%	
Respondent's age (in years)	15.8	0.29
Respondent was born outside Australia	10.9%	
Respondent is Aboriginal or Torres Strait Islander	5.6%	
Respondent comes from a regional or remote area	17.0%	
Respondent comes from a non-English-speaking background	7.5%	
Respondent comes from a single-parent family	19.9%	
Number of siblings respondent has	2.0	1.27
Respondent's state/territory of residence		
Canberra and the Australian Capital Territory	7.1%	
New South Wales	22.8%	
Victoria	19.3%	
Queensland	15.7%	
South Australia	10.0%	
Western Australia	14.4%	
Tasmania	6.6%	
Northern Territory	4.1%	
School type		
Government school	63.8%	
Catholic school	20.6%	
Independent school	15.6%	
Plausible PISA math score	530.93	94.02

Notes: 2003 LSAY. All descriptive statistics apply to study wave 1, except for the variables capturing University enrolments (which is based on a Kaplan Meier function up to wave 11) and career guidance (which are cumulative measures spanning waves 1 to 5).

For the purposes of this research, we use the 2003 cohort of LSAY (2003 LSAY). This is because this is the only complete LSAY survey that was integrated within the OECD Programme for International Student Assessment (PISA) study. As is the case for other LSAY cohorts, the 2003 LSAY cohort sample is nationally representative. It was constructed by randomly selecting 50 students aged 15 years from a sample of schools representative of all states and sectors, for the purpose of participating in the 2003 PISA exercise. We use information from all eleven 2003 LSAY waves, spanning from 2003 to 2013.

The initial sample size comprises 71,385 observations from 10,370 individuals. We exclude observations from individuals who have missing data on analytic variables (n = 2,025 observations) and, since we use event-history models −see details below, all observations after individuals first enrolled into University (n = 19,102 observations). The resulting analytic sample size comprises 50,258 observations from 10,027 individuals.

3.2. Measures

3.2.1. University enrolment

Our outcome variable captures individuals' first enrolment into University, if such an event was observed to occur over the observation window. This is a dichotomous variable which takes the value 1 if the event was observed to have occurred, and the value 0 if the event was not (yet) observed to have occurred. As denoted by Kaplan Meier estimates (see below), about 58% of sampled individuals were observed to enrol into University, whereas 42% were never observed to do so (Table 1).

3.2.2. Low socio-economic background

To operationalize our key explanatory variable, low socio-economic background, we use a pre-existing survey indicator from study wave 1 (2003): the PISA index of Economic, Social and Cultural Status (ESCS). The ESCS is constructed by combining

information from the following aspects: the International Socio-Economic Index of Occupational Status (ISEI) of the student's parents; the highest level of education of the student's parents (in years of schooling); the PISA index of family wealth; the PISA index of home educational resources; and the PISA index of possessions related to classical culture in the family home (OECD, 2013, p.136). As recommended by the OECD, we use the ESCS to create a dichotomous variable capturing low socio-economic background: young people whose families were in the lowest quartile of the ESCS distribution were considered to come from *low* socio-economic backgrounds (value 1), while young people whose families were not in the lowest quartile of the ESCS distribution were considered to come from *higher* socio-economic backgrounds (value 0). Using this definition, in our analytic sample 2,481 individuals (or 24.5%) came from a low socio-economic background (Table 1).

3.2.3. School experiences

To capture the multidimensional concept of school experiences, we use two indices constructed out of the PISA questions available in the 2003 LSAY data. First, we make use of a pre-existing PISA index capturing students' attitudes towards school. This index is calculated by combining information from 4 items tapping different dimensions of the concept. Respondents are asked, *"Thinking about what you have learned in school: to what extent do you agree with the following statements?"*: (i) *"School has done little to prepare me for adult life when I leave school"*; (ii) *"School has been a waste of time"*; (iii) *"School helped give me confidence to make decisions"*; and (iv) *"School has taught me things which could be useful in a job"*. Response options were in a 4-point Likert scale: *"strongly agree"*, *"agree"*, *"disagree"* and *"strongly disagree"*. Where necessary, items were reverse coded so that higher values denote more positive attitudes towards school, and lower values denote less positive attitudes. The items were then combined into an index through complex techniques, such as item response models and weighted likelihood estimation (see OECD, 2005). The resulting index is standardised so that its overall mean score is 0 and its standard deviation is 1. In our 2003 LSAY sample, the attitudes towards school index ranges from −3.15 to 2.53, with a mean of 0.27 and a standard deviation of 1.05.

Second, we use another pre-existing PISA index capturing student-teacher relations. This combines information from 5 items asking young people: *"Thinking about the teachers at your school: To what extent do you agree with the following statements?"* (i) *"Students get along well with most teachers"*; (ii) *"Most teachers are interested in students' well-being"*; (iii) *"Most of my teachers really listen to what I have to say"*; (iv) *"If I need extra help, I will receive it from my teachers"*, and (v) *"Most of my teachers treat me fairly"*. Response options were in a 4-point Likert scale from *"strongly agree"* to *"strongly disagree"*. All items were inverted for scaling, so that higher values in this index denote more fulfilling student-teacher relations, whereas lower values denote less fulfilling student-teacher relations. In the 2003 LSAY sample, the attitudes towards school index ranges from −3.09 to 2.86, with a mean of 0.22 and a standard deviation of 0.92.

3.2.4. Career guidance

The 2003 LSAY cohort also contains rich information on whether young people received different forms of career guidance while at school. This information was collected for the initial 5 survey waves (2003–2007). The question wording read: *"The next few questions are about careers advice at school. During (last year), have you done any of the following at your school?"*: (i) *"Listened to a talk from the school's career advisor"*; (ii) *"Received handouts or written material about careers"*; (iii) *"Taken part in a group discussion about careers"*; (iv) *"Spoken individually to the school's career advisor"*; (v) *"Looked online for career guidance or advice"*; (vi) *"Listened to a talk by an employer representative"*; and (vii) *"Listened to a talk by someone from a TAFE or University"*. For each of these, young people were asked to answer either *"yes"* or *"no"*. We use this information to create 7 dummy variable taking the value 1 if the young person answered *"yes"*, and the value 0 if the young person answered *"no"*. We then created longitudinal indicators for each of these variables taking the value 1 if the young person had *ever* taken part in the activity, and the value 0 otherwise. For example, an individual who spoke individually to the school's career advisor in 2004 would score 1 on the associated variable for 2004 and also for all subsequent years, whether or not this individual received more of such advice in subsequent years. These variables therefore capture cumulative experience, with the length of 'exposure' related to the first instance of receiving guidance of a given kind. As can be seen in Table 1, in our analytical sample, the most common form of school career guidance was hand-outs or written material about careers (received by 90.2% of young people), followed by listening to a talk by the school's career advisor (81.3%), and taking part in group discussions about careers (71.7%). In contrast, individual conversations with the school's career advisor (57.3%), talks by a TAFE or University representative (53.4%) or employer representatives (51.7%), and self-driven online searches for career guidance (48.5%) were less common forms of school career guidance.

3.2.5. Control variables

Our multivariate analyses also include a comprehensive set of control variables representing factors which may confound the associations between socio-economic background, career guidance, school experiences and University enrolment. These were selected following theory and previous studies in the field. A list of these, accompanied by descriptive statistics, can be found in Table 1.

4. Statistical modelling

We begin by describing the average trajectories into University enrolment for young people from low socio-economic backgrounds through Kaplan-Meier hazard functions (Box-Steffensmeier & Jones, 2004). These give the 'hazard rate' for University enrolment at each wave of the survey; that is, the proportion of young people who enrol at University out of the total pool of young people who are 'at risk' of enrolling. If a young person eventually enrols at University (or leaves the panel), the individual also leaves the pool of individuals who are at 'risk' of enrolling and no longer contributes to estimation.

We then estimate more robust multivariate models that adjust for a range of potential confounders. Specifically, we model the factors predicting whether (and when) young people enrol into University using multivariate Cox regression models (Cox, 1972). Cox regression models are semi-parametric regression techniques of the event-history family which are useful to determine how different factors influence the occurrence of an event (Box-Steffensmeier & Jones, 2004). In the context of Higher Education research, event-history models are commonplace in studies of University student retention/dropout (Bahi, Higgins, & Staley, 2015; Gury, 2011; Reisel & Brekke, 2010; Vallejos & Steel, 2017) and time to degree completion (Lassibille & Gómez, 2011; Wao, 2010). They have also been used to examine routes to University amongst non-traditional students (Brändle, 2016) and returns to University after intermissions (Johnson, 2006). Their application in the context of socio-economic background and University enrolment is relatively novel −see Aina (2013) and Laplante et al. (2016) for exceptions.

In our context, event-history models are preferable over traditional cross-sectional regression models (e.g. simple logit models) for several reasons. First, event-history models enable us to incorporate into the estimation the fact that young people from some background, e.g. disadvantaged backgrounds, experience more complex and heterogeneous pathways into University, resulting in 'delayed' enrolments outside the typical ages of 18–19 years. This is because such models consider the probability of event occurrence longitudinally, rather than at a single point in time. Second, event-history models can handle sample attrition. When estimating the effect of different covariates on the hazard, these models only consider observations from those individuals who remain in the sample (i.e. 'at risk' individuals). This is important given 2003 LSAY's relatively high attrition rates. As an illustration, sample retention rates were 90.4% in wave 2, 64.2% in wave 5, and 36.1% in wave 11.

Formally, the Cox regression models that we fit can be expressed as:

$$h_i(t) = h_o(t)^{*}exp(SEB_i\beta_1 + SE_i\beta_2 + CG_i\beta_3 + X_i\beta_4) \quad (1)$$

where subscripts i and t stand for individual time, respectively; $h_0(t)$ is the baseline hazard function of University enrolment; *SEB* is a dummy variable capturing low socio-economic background; *SE* is a set of two index variables capturing school experiences; *CG* is a set of seven dummy variables capturing school career guidance; *X* is a vector of control variables; and the βs are vectors of estimated model parameters (see Box-Steffensmeier & Jones, 2004, p.48). We express model coefficients as hazard ratios. These can be interpreted in a similar way as traditional odds ratios, and give the expected change in the ratio of the odds of experiencing the 'hazard' (i.e. University enrolment) associated with a one-unit increase in the explanatory variables. As is common when dealing with non-experimental data, the associations identified may not represent causal relationships.

5. Results

5.1. University enrolment rates by socio-economic background

Kaplan-Meier hazard rates showing the rate of enrolling into University for young people from low and higher socio-economic background are shown in Fig. 1. A few young people enrol into University between study waves 3 and 4. A slightly larger proportion of young people from higher socio-economic backgrounds than of young people from low socio-economic backgrounds do so. However, the socio-economic background gap in enrolment becomes larger by wave 5, by when 51.6% of young people from higher socio-economic background have already enrolled at University, compared to just 24.1% of young people from low socio-economic background. This University enrolment gap remains fairly constant up to the end of the observation period (wave 11). At that point in time, 63.9% of young people from higher socio-economic background and 35.1% of young people from low socio-economic background were observed to have enrolled into University. Hence, we find a large gap in University enrolment by socio-economic background, one which emerges largely due to differential enrolment rates at a "typical" enrolment time, i.e. ages 18–19.

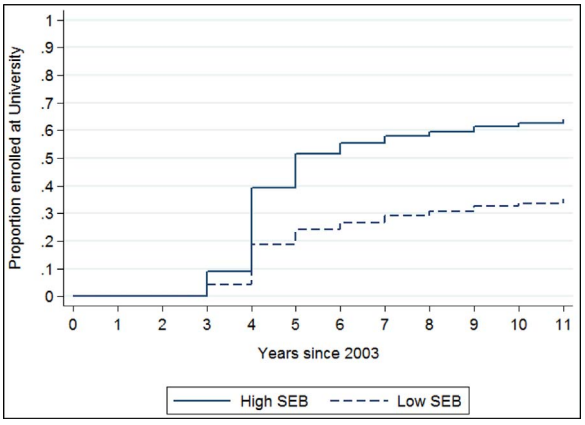

Fig. 1. Kaplan–Meier failure estimates, by socio-economic background.
Notes: 2003 LSAY.

Table 2
Mean career guidance and school experiences, by socio-economic background.

	Socio-economic background		
	Higher	Low	Diff. (p)
School experiences			
Attitudes towards school index	0.34	0.06	***
Student-teacher relations index	0.27	0.06	***
Career guidance (%)			
Ever listened to a talk by an employer representative	52.9%	47.7%	***
Ever listened to a talk by a TAFE/University representative	53.6%	52.7%	
Ever listened to a talk by the school's career advisor	82.2%	78.6%	***
Ever spoke individually to the school's career advisor	58.6%	53.6%	***
Ever took part in a group discussion about careers	72.4%	69.6%	**
Ever received hand-outs/written material about careers	90.9%	88.1%	***
Ever looked online for career guidance	49.3%	46.1%	**

Notes: 2003 LSAY. p values denote the statistical significance of group differences in means and are obtained from t-tests. Statistical significance: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5.2. Career guidance and school experiences by socio-economic background

Table 2 shows how school experiences and career guidance are distributed amongst young people from low and higher socio-economic backgrounds. Differences between group means are compared statistically through the use of t-tests. Attitudes towards school ($p < 0.001$) and student-teacher relations ($p < 0.001$) are more positive amongst young people from higher socio-economic background than young people from low socio-economic background. In addition, young people from higher socio-economic background are significantly more likely to have received career guidance by means of a talk by an employer representative ($p < 0.001$) or the school's career advisor ($p < 0.001$), an individual conversation with the school's career advisor ($p < 0.001$), a group discussion about careers ($p < 0.01$), hand-outs or written material about careers ($p < 0.001$), and online career guidance ($p < 0.01$).

5.3. University enrolment by career guidance and school experiences

Results in Table 3 indicate that attitudes towards school are related to University enrolment. For example, 76.8% of students in the top quartile of the distribution of the attitudes-to-school index had enrolled into University by the end of our observation period, compared to 66.6% of students in the two middle quartiles, and 53.7% of students in the lowest quartile. Similarly, we find evidence that student-teacher relations also relate to University enrolments: 75.8% of students in the top quartile of this index's distribution had enrolled into University by the end of the observation period, compared to 67.6% of students in the two middle quartiles, and 50.5% of students in the lowest quartile. In both cases, these relationships were highly statistically significant, as denoted by the results of ANOVA tests. Similarly, exposure to certain forms of school career guidance is also statistically significantly related to a higher incidence of University enrolments, as inferred from the results of t-tests. For example, by the end of the observation window, young people were more likely to have enrolled at University if they had ever received career guidance in the form of a talk by a TAFE/University representative ($p < 0.001$), a talk by the school's career advisor ($p < 0.001$), an individual conversation with the school's career advisor ($p < 0.05$), a group discussion about careers ($p < 0.05$), or hand-outs/written material about careers ($p < 0.001$).

5.4. Event-history models of university enrolment

Our descriptive analyses point towards the existence of strong associations between socio-economic background, school experiences, school career guidance, and enrolment into University in the 2003 LSAY data. We now turn our attention to estimating these relationship more robustly through the use of multivariate event-history models (Cox regression models). The results, expressed as hazard ratios, are presented in Table 4. In a base model including only socio-economic background as an explanatory variable and no control variables (Model 1), the hazard ratio of enrolling into University for young people from low socio-economic background is just 44% ($p < 0.001$) of that for young people from higher socio-economic background. Model 2 adds to Model 1 variables that may confound the associations of interest. The addition of these controls does little to change the estimated hazard ratio on the low socio-economic background variable (HR = 0.68, $p < 0.001$). This constitutes evidence that the relationship between socio-economic background and University enrolment is robust to the introduction of confounding factors.

Model 3 adds to Model 2 the variables capturing school experiences. The coefficients on the new variables confirm earlier descriptive findings, and indicate that −holding all other variables in the model constant– having positive attitudes towards school (HR = 1.11, $p < 0.001$) and experiencing positive student-teacher relationships at school (HR = 1.12, $p < 0.001$) are both statistically significantly associated with higher chances of subsequent University enrolment. However, the inclusion of these variables does not substantially alter the pattern of results pertaining to low socio-economic background (HR = 0.70, $p < 0.001$). Therefore,

Table 3
University enrolments, by career guidance and school experiences.

	% enrolled, by age…		
	19	22	25
School experiences			
Attitudes towards school index			
Top quartile	59.3%	70.6%	76.8%
Middle two quartiles	48.2%	59.4%	66.6%
Bottom quartile	32.8%	45.6%	53.7%
Group difference (p)	***	***	***
Student-teacher relations index			
Top quartile	59.4%	69.9%	75.8%
Middle two quartiles	49.4%	60.6%	67.6%
Bottom quartile	29.5%	42.5%	50.5%
Group difference (p)	***	***	***
Career guidance			
Ever listened to a talk by an employer representative			
Yes	47.2%	59.1%	66.4%
No	48.4%	60.0%	67.3%
Group difference (p)			
Ever listened to a talk by a TAFE/University representative			
Yes	49.9%	61.8%	68.9%
No	30.6%	41.1%	49.5%
Group difference (p)	***	***	***
Ever listened to a talk by the school's career advisor			
Yes	48.4%	60.1%	67.4%
No	30.4%	44.1%	50.0%
Group difference (p)	***	***	***
Ever spoke individually to the school's career advisor			
Yes	48.7%	60.4%	67.4%
No	41.2%	53.7%	62.6%
Group difference (p)	***	**	*
Ever took part in a group discussion about careers			
Yes	47.7%	59.6%	67.4%
No	45.8%	57.3%	62.3%
Group difference (p)			*
Ever received hand-outs/written material about careers			
Yes	47.7%	59.6%	66.9%
No	25.0%	33.9%	36.8%
Group difference (p)	***	***	***
Ever looked online for career guidance			
Yes	50.2%	61.7%	68.8%
No	37.8%	50.3%	57.9%
Group difference (p)	***	***	

Notes: 2003 LSAY. p values denote the statistical significance of group differences in means and are obtained from ANOVA tests (school experience measures) and t-tests (career guidance measures). Statistical significance: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

differences in University enrolment across young people from low and higher socio-economic background are *not* driven by differential school experiences across these subpopulations.

Model 4 adds to Model 3 the variables capturing school career guidance. The estimated hazard ratios on these variables suggest heterogeneous effects on University enrolment of different forms of career guidance. All else being equal, several types of career guidance affect University enrolments positively. These include listening to a talk by a TAFE or University representative (HR = 1.43; $p < 0.001$), listening to a talk by the school's career advisor (HR = 1.26; $p < 0.05$) and looking online for career guidance (HR = 1.17; $p < 0.001$). In contrast, other forms of guidance affect University enrolments negatively. This pattern of results is observed for listening to a talk by an employer representative (HR = 0.90; $p < 0.01$) and taking part in a group discussion about careers (HR = 0.89; $p < 0.01$). The remaining career guidance variables, speaking individually to the school's career advisor (HR = 0.95; $p > 0.1$) and receiving hand-outs or written material about careers (HR = 1.24; $p > 0.1$), were not statistically significantly associated with the propensity of young people to enrol into University. Importantly, the inclusion of the school career guidance variables in the model does not alter the magnitude, direction or statistical significance of the estimated hazard ratio on the variable capturing low socio-economic background (HR = 0.71; $p < 0.001$). This means that differences in the propensity to enrol at University between young people of low and higher socio-economic background do not stem from differences in exposure to school career guidance.

Finally, Model 5 uses interaction terms to test whether the association between socio-economic background and University enrolment is moderated by school experiences and career guidance. We only retain in the models and show in the table interaction effects which were statistically significant. There are two statistically significant interaction effects, indicating that having positive

Table 4
Event-history models of University enrolment.

	(i)	(ii)	(iii)	(iv)	(v)
Low socio-economic background	0.44***	0.68***	0.70***	0.71***	0.24***
School experiences					
Attitudes towards school index			1.11***	1.11***	1.11***
Student-teacher relations index			1.12***	1.11***	1.08***
Career guidance					
Ever listened to a talk by an employer representative				0.90**	0.90*
Ever listened to a talk by a TAFE/University representative				1.43***	1.50***
Ever listened to a talk by the school's career advisor				1.26*	1.13
Ever spoke individually to the school's career advisor				0.95	0.95
Ever took part in a group discussion about careers				0.89*	0.86**
Ever received hand-outs/written material about careers				1.24	1.23
Ever looked online for career guidance				1.17***	1.17***
Interaction effects					
Low SES * Student-teacher relations index					1.13*
Low SES * Talk by the school's career advisor					3.01**
Controls	No	Yes	Yes	Yes	Yes
N (observations)	50,258	50,258	50,258	50,258	50,258
N (individuals)	10,027	10,027	10,027	10,027	10,027
Pseudo R^2	0.005	0.032	0.034	0.035	0.035

Notes: 2003 LSAY. Cox regression models; results presented as hazard ratios. Controls include young people's gender, age, place of birth, whether live in remote area, whether come from non-English speaking family background, Indigenous background, non-English-speaking background, coming from a regional/remote area of Australia, single-parent family origin, number of siblings, state of residence, school type, and Plausible PISA value in math. Full sets of estimates are available from the authors upon request. Statistical significance: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

student-teacher relationships (HR = 1.13, $p < 0.05$) and listening to a talk by the school's career advisor (HR = 3.01, $p < 0.01$) are more strongly conducive to subsequent University enrolment amongst young people from low socio-economic background, compared to young people from higher socio-economic background.

6. Discussion and conclusion

6.1. Discussion of key findings

In this paper we have provided new, Australian evidence on the interrelations between low socio-economic background, school factors (specifically, career guidance and school experiences), and young people's propensity to enrol at University. To accomplish this, we used representative, longitudinal data from the 2003 cohort of the *Longitudinal Survey of Australian Youth*, and state-of-the-art event-history models.

Our results are consistent with expectations: young people from low socio-economic backgrounds are less likely to enrol into University than young people from high socio-economic backgrounds. These results hold even when adjusting for a comprehensive set of confounding factors, and resonate with a vast body of previous evidence reporting educational disadvantage by socio-economic background, both in Australia and in other developed countries. For example, a similar pattern of results pertaining to University enrolment was apparent in Britain (Anders & Micklewright, 2013), the United States (Altbach et al., 2009) and continental Europe (European Union, 2014).

Our two sets of school factors were generally associated with an increasing probability of attending University, *ceteris paribus*. That is, students who held positive attitudes towards school, who reported having a positive relationship with their teachers, and who received different forms of career guidance were more likely to enrol at University, and did so at earlier ages. However, not all forms of career guidance were found to be equally associated with the probability of University enrolment. The strongest positive effects were found for talks by a TAFE or University representatives, and schools' career advisors. In contrast, employer representative talks and group discussion about careers affected the chances of University enrolment negatively, all else being equal. We also find evidence that positive student-teacher relations and talks by school career advisors more strongly predict subsequent University enrolment amongst young people from low socio-economic background. These results are consistent with findings previously reported for Australia and other advanced economies. For example, positive school experiences were associated with positive student outcomes in research by Bieg et al. (2013) in Germany, Skinner et al. (2008) in the United States, or Sanders et al. (2016) in New Zealand, whereas positive associations between the receipt of career guidance and students' educational aspirations and career decisions have been reported for a range of OECD countries (OECD, 2004).

Overall, our findings are consistent with the broad theoretical approaches used to motivate our empirical analyses. First, our results lend support to long-standing sociological perspectives identifying socio-economic background as an important factor predicting young people's educational attainment, including the decision about whether or not to attend University (Bourdieu, 1986; Archer et al., 2003; Breen & Goldthorpe, 1997). Structural factors (e.g. financial help) and socio-cultural capital (e.g. familial role

models) are unequally distributed across social strata, with young people from advantaged socioeconomic backgrounds having access to and reaping the benefits of these resources (Archer et al., 2003; Bourdieu, 1986; Breen & Goldthorpe, 1997). Critically, our results highlight that socio-economic background is important even in the presence of other associated markers of disadvantage (e.g. single-parent family structure or residence in regional areas), and after accounting for academic achievement and school factors such as career advice and school experiences.

Second, our findings are consistent with theoretical perspectives in educational research highlighting the importance of schools as 'enabling' as well as 'equalizing' agents. Concerning the former, evidence that career advice and school experiences have positive effects on young people's chances to enrol into University add to a robust body of evidence demonstrating that processes that take place within the contexts of schools critically influence young people's concurrent and subsequent educational outcomes (Foskett et al., 2008; Hossler & Stage, 1992). Concerning the latter, the finding that career advice and school experiences have stronger positive effects on the chances of University participation amongst young people from disadvantaged than advantaged backgrounds lends support to theoretical arguments that place schools at the centre of debates about how to best intervene to produce more socially equitable educational outcomes (Bernardi & Ballarino 2016).

6.2. Implications for education policy and practice

The findings from this study have important implications for policy and practice. First, we provide evidence in the Australian context of the importance of in-school career guidance and school experiences in shaping the chances of University participation amongst young people, particularly those from disadvantaged backgrounds. This indicates that policy initiatives aimed at improving these school factors will result in expanded and more representative University enrolments.

Interventions to widen participation in Higher Education can be implemented at all phases of the student life course, including pre- and post-admission. Our study highlights the importance of early interventions that take place during secondary school, prior to students facing the decision of whether or not to attend University. Many such initiatives are already in place. These include campus visits, mentoring programmes, and joint activities between schools and universities, with their effectiveness being confirmed by research and evaluation (e.g. Fleming & Grace, 2015; Gale et al., 2010; Reed, Karavias, & Smith, 2013). These activities often focus on building Higher Education aspirations amongst students, raising their motivation and confidence, and providing them with information around the practical aspects of enrolling into and attending University. While undoubtedly relevant, these activities should complement rather than substitute other forms of help addressing structural barriers, such as a lack of financial resources, which are more commonly experienced by students from disadvantaged backgrounds. The Higher Education Contribution Scheme (HECS) financial support program, and the income-contingent loans of the Higher Education Loan Program (HELP) are examples of this.

We are the first to examine whether the effects of school experiences and career guidance on subsequent University enrolment differ between advantaged and disadvantaged students. Hence, our finding that positive student-teacher relations and talks by the school's career advisor have stronger positive effects on the chances of University enrolment amongst young people from disadvantaged than advantaged backgrounds is particularly significant. This bears the question of whether or not this pattern of results, as well as its flow-on policy implications described above, are likely to apply to other country contexts. Numerous studies in countries such as Britain, Germany, Canada or the United States find, as we do for Australia, that social disadvantage decreases the chances of University participation (e.g. Altbach et al., 2009; ; Anders & Micklewright, 2013; Moore, Sanders, & Higham, 2013), while career advice and positive school experiences increase it (Bradley et al., 2008; Gale et al., 2010; Hooley et al., 2012; Lapan, Gysbers & Sun, 1997; McKillip, Rawls & Barrry, 2012). Therefore, while we are not aware of any other studies that directly examine the interaction effect between social disadvantage and school factors, we believe that such effect is also likely to also occur in other country contexts. It is also likely that the recommendations for educational policy made above apply to these countries. Most developed countries have a base of students from low socio-economic background, and their Governments have the potential to implement school-level policies involving the provision of more and better career advice and programs aimed at enhancing students' school experiences (Hooley et al., 2012; McKillip et al., 2012). Notwithstanding, more international research on whether or not our novel Australian findings hold empirically in other countries is needed.

6.3. Study limitations and avenues for further research

Despite the importance and significance of our findings, our study has several limitations that must be acknowledged. These shortcomings point towards potential avenues for further research. First, despite our methodological innovations we are unable to establish whether or not the relationships between school experiences, career guidance, and University enrolment are of a causal nature. More direct tests of causal relationships would likely require experimental rather than observational data, e.g. randomised control trials. Second, despite the uniqueness and richness of the 2003 LSAY data, this suffered from high attrition. For example, only 36.1% of young people who appeared in the first wave of the survey participated in the last wave. In addition, our preliminary analysis shows that such panel attrition is non-random, with young people from lower social-economic backgrounds and with lower PISA scores being more likely to drop out. There are few robust ways to correct for non-random attrition in longitudinal modelling. While the LSAY data provide longitudinal weights, their use is questionable given that they can only be applied to a balanced panel (Lim, 2011) (i.e. the subsample of respondents who were found and agreed to participate across all 11 survey waves). However, such subsample is unlikely to be a random segment of the initial population, and so the use of longitudinal weights introduces other sources of selection. Third, the measures of career guidance and school experiences available in LSAY are not perfect. Particularly, the information on career guidance does not capture its intensity (e.g. number and duration of sessions) or contents (e.g. the benefits of

University, how to enrol at University, or how to finance one's studies), or students' perceptions of its importance in their subsequent decisions about whether or not to enrol at University. We also lack information on whether the career guidance received by young people was school initiated or student initiated. This is important, as student-initiated career guidance sessions may result in bias to our estimates due to self-selection.

In addition to accounting for these data-driven limitations, future studies in this area could expand on our analyses in several ways. First, we only examine *access* to Higher Education, as measured by enrolment. We do not consider enrolment at elite universities and fields of study, student retention or program completion. Future research in these areas is needed, as disadvantaged students are less likely to study at prestigious universities, enrol into highly competitive fields of study, and complete their degrees (AIHW, 2014; James et al., 2008). Second, our research highlights the importance of considering how socio-economic background, school experiences and career guidance intersect to affect young people's chances of enrolling at University. Yet, statistical analyses of this sort are not designed to provide finely grained explanations for the underlying mechanisms. Hence, our study could be complemented by qualitative research that generates greater insights into which school factors and aspects of career guidance make the biggest difference in improving their chances of participating in Higher Education, and thorough which channels. Such knowledge would pave the way for more targeted and efficient evidence-based policies aimed at improving equity in the Australian Higher Education system.

6.4. Concluding remarks

Participation in University is a life-lasting source of personal and familial wellbeing, and so it is critical that different stakeholders work together to increase Higher Education participation and build a system that is fair, inclusive and transparent. Doing so is consistent with Universal social justice principles, and aligns with the distinctive Australian ethos of the 'fair go'. Evidence also points towards an economic imperative, whereby University education expansion is a demonstrated pathway to enhancing societal outputs through human capital maximisation, and reducing the costs of remedial policies associated with adult and intergenerational disadvantage. The results of this research suggest that fostering inclusive and positive school environments in which students from less advantaged backgrounds feel engaged and integrated, and incentivising the provision of comprehensive in-school career guidance programs that empower these young people when making the life-defining decision of whether or not to enter Higher Education are important policy levers to improve the University participation of young people from low socio-economic backgrounds in contemporary Australia.

References

ABS (2015). *Education and work*. Canberra: Australian Bureau of Statistics.

AIHW (2014). *Towards a performance measurement framework for equity in higher education*. Canberra: Australian Institute of Health and Welfare.

Abbott-Chapman, J., & Easthope, G. (1998). Participation and inclusion-a discourse of welfare or a discourse of rights? *The Australian Journal of Social Issues*, *33*(2), 99–118.

Abbott-Chapman, J., Martin, K., Ollington, N., Venn, A., Dwyer, T., & Gall, S. (2014). The longitudinal association of childhood school engagement with adult educational and occupational achievement: Findings from an Australian national study. *British Educational Research Journal*, *40*(1), 102–120.

Aina, C. (2013). Parental background and university dropout in Italy. *Higher Education*, *65*(4), 437–456.

Ainley, M., & Ainley, J. (2011). Student engagement with science in early adolescence: The contribution of enjoyment to students' continuing interest in learning about science. *Contemporary Educational Psychology*, *36*(1), 4–12.

Aird, R., Miller, E., van Megen, K., & Buys, L. (2010). *Issues for students navigating alternative pathways to higher education: Barriers, access and equity*. Brisbane: Queensland University of Technology.

Alloway, N., Dalley, L., Patterson, A., Walker, K., & Lenoy, M. (2004). *School students making education and career decisions: Aspirations, attitudes and influences: Final report*Canberra: Department of Education, Science and Training.

Alloway, N., Gilbert, P., Gilbert, R., & Muspratt, S. (2004). *Factors impacting on student aspirations and expectations in regional Australia*. Canberra: Department of Education, Science and Training.

Altbach, P., Reisberg, L., & Rumbley, L. (2009). *Trends in global higher education: Tracking an academic revolution*. Paris: UNESCO.

Anstey, K., & Christensen, H. (2000). Education, activity, health, blood pressure and apolipoprotein E as predictors of cognitive change in old age: A review. *Gerontology*, *46*(3), 163–177.

Archer, L., Hutchings, M., & Ross, A. (2003). *Higher education and social class: Issues of exclusion and inclusion*. London: Routledge Falmer.

Aschaffenburg, K., & Maas, I. (1997). Cultural and educational careers: The dynamics of social reproduction. *American Socio-logical Review*, *62*(4), 573–587.

Bahi, S., Higgins, D., & Staley, P. (2015). A time hazard analysis of student persistence: A US university undergraduate mathematics major experience. *International Journal of Science and Mathematics Education*, *13*(5), 1139–1160.

Ball, S. J., & Vincent, C. (1998). 'I heard it on the grapevine': 'Hot' knowledge and school choice. *British Journal of Sociology of Education*, *19*(3), 377–400.

Bernardi, F., & Ballarino, G. (2016). Education as the great equalizer: A theoretical framework. In F. Bernardi, & G. Ballarino (Eds.), *Education, occupation and social origin: A comparative analysis of the transmission of socio-economic inequalities* (pp. 1–19). Cheltenham: Edward Elgar.

Bieg, S., Rickelman, R., Jones, J., & Mittag, W. (2013). The role of teachers' care and self-determined motivation in working with students in Germany and the United States. *International Journal of Educational Research*, *60*, 27–37.

Bourdieu, P. (1996). *The state nobility: Elite schools in the field of power*. Cambridge: Polity Press.

Bowden, M. P., & Doughney, J. (2010). Socio-economic status, cultural diversity and the aspirations of secondary students in the Western Suburbs of Melbourne, Australia. *Higher Education*, *59*(1), 115–129.

Box-Steffensmeier, J., & Jones, B. (2004). *Event history modelling: A guide for social scientists*. Cambridge: Cambridge University Press.

Brändle, T. (2016). How Availability of Capital Affects the Timing of Enrolment: The Routes to University of Traditional and Non-Traditional Students. *Studies in Higher Education* published online: 25 Feb. 2016, ttp://www.tandfonline.com/doi/full/10.1080/03075079.2016.1141401.

Bradley, D., Noonan, P., Nugent, H., & Scales, B. (2008). *Review of Australian higher education*. Canberra: Department of Education, Employment and Workplace Relations.

Breen, R., & Goldthorpe, J. (1997). Explaining educational differentials: Towards a formal rational action theory. *Rationality and Society*, *9*(3), 275–305.

Brzinsky-Fay, C. (2014). The measurement of school-to-work transitions as processes. *European Societies*, *16*(2), 213–232.

Cox, D. R. (1972). Regression models and life tables. *Journal of the Royal Statistical Society Series B*, *34*, 187–202.

Croll, P., & Attwood, G. (2013). Participation in higher education: Aspirations, attainment and social background. *British Journal of Educational Studies*, *61*(2), 187–202.

Daly, A., Lewis, P., Corliss, M., & Heaslip, T. (2015). The private rate of return to a university degree in Australia. *Australian Journal of Education*, *59*(1), 97–112.

European Union (2014). *Education and training monitor*. European Commission.

Fass, M., & Tubman, J. (2002). The influence of parental and peer attachment on college students' academic achievement. *Psychology in the Schools*, *39*(5), 561–573.
Ferrier, F., Dumbrell, T., & Burke, G. (2008). *Vocational education and training providers in competitive training markets*. Adelaide: National Centre for Vocational Education Research.
Fleming, M., & Grace, D. (2015). Beyond aspirations: Addressing the unique barriers faced by rural Australian students contemplating university. *Journal of Further and Higher Education*, 1–13.
Foley, P. (2007). *The socio-economic status of vocational education and training students in Australia*. Adelaide: National Centre for Vocational Education Research.
Foskett, N., Dyke, M., & Maringe, F. (2008). The influence of the school in the decision to participate in learning post-16. *British Educational Research Journal*, *34*(1), 37–61.
Gale, T., & Parker, S. (2013). *Widening participation in Australia in higher education*. Leicester: Higher Education Funding Council for England.
Gale, T., Sellar, S., Parker, S., Hattam, R., Comber, B., Tranter, D., et al. (2010). *Interventions early in school as a means to improve higher education outcomes for disadvantaged (particularly low SES) students*. Canberra: Department of Education, Employment and Workplace relations.
Gale, T., Parker, S., Rodd, P., Stratton, G., & Sealey, T. (2013). *Student Aspirations for Higher Education in Central Queensland: A survey of school students' navigational capacities*. Melbourne: National Centre for Student Equity in Higher Education.
Gore, J., Holmes, K., Smith, M., Lyell, A., Ellis, H., & Fray, L. (2015). *Choosing university: The impact of schools and schooling: Final report to the National Centre for Student Equity in Higher Education*Perth: Teachers & Teaching Research Program.
Gury, N. (2011). Dropping out of higher education in France: A micro-economic approach using survival analysis. *Education Economics*, *19*(1), 51–64.
Hauser, R. M., Warren, J. R., Huang, M.-H., & Carter, W. Y. (2000). 'Occupational status, education, and social mobility in the meritocracy'. In K. Arrow, S. Durlauf, & S. Bowles (Eds.), *Meritocracy and economic inequality* (pp. 89–117). Princeton: Princeton University Press.
Heckman, J. J. (2011). 'The economics of inequality: The value of early childhood education'. *American Educator*, *35*(1), 31–36.
Hill, D. J., White, V. M., & Scollo, M. M. (1998). Smoking behaviours of Australian adults in 1995: Trends and concerns. *Medical Journal of Australia*, *168*(5), 209–215.
Hooley, T., Marriott, J., Watts, A. G., & Coiffait, L. (2012). *Careers 2020: options for future careers work in english schools*. London: Pearson.
Hossler, D., & Stage, F. (1992). Family and high school experience influences on the postsecondary educational plans of ninth-grade students. *American Educational Research Journal*, *29*(2), 425–451.
James, R., & Devlin, M. (2006). *Improving Indigenous outcomes and enhancing Indigenous culture and knowledge in Australian higher education*. Canberra: Indigenous Higher Education Advisory Council.
James, R., Anderson, M., Bexley, E., Devlin, M., Garnett, R., Marginson, S., et al. (2008). *Participation and equity: A review of the participation in higher education of people from low socioeconomic backgrounds and Indigenous people*. Canberra: Universities Australia.
James, R. (2000). Non-traditional students in Australian higher education: Persistent inequities and the new ideology of 'student choice'. *Tertiary Education and Management*, *6*(2), 105–118.
Jehangir, K., Glas, C., & van den Berg, S. (2015). Exploring the relation between socio-economic status and reading achievement in PISA 2009 through an intercepts-and-slopes-as-outcomes paradigm. *International Journal of Educational Research*, *71*, 1–15.
Johnson, I. Y. (2006). Analysis of stopout behavior at a public research university: The multi-spell discrete-time approach. *Research in Higher Education*, *47*(8), 905–934.
Kenway, J., & Hickey-Moody, A. (2011). Life chances, lifestyle and everyday aspirational strategies and tactics. *Critical Studies in Education*, *52*(2), 151–163.
Lamb, S., Walstab, A., Teese, R., Vickers, M., & Rumberger, R. (2004). *Staying on at school: Improving student retention in Australia*. Brisbane: Centre for Post-compulsory Education and Lifelong Learning.
Lapan, R., Gysbers, N., & Sun, Y. (1997). The impact of more fully implemented guidance programs on the school experiences of high school students: A statewide evaluation study. *Journal of Counseling and Development*, *75*(4), 292–302.
Laplante, B., Doray, P., Bastien, N., & Chenard, P. (2016). A tale of two logics: Social reproduction and mobilisation in university access in Quebec, 1945–2000. *British Journal of Sociology of Education*, *37*(2), 313–333.
Lassibille, G., & Gómez, M. L. N. (2011). How long does it take to earn a higher education degree in Spain? *Research in Higher Education*, *52*(1), 63–80.
Lim, P. (2011). *Weighting the LSAY programme of international student assessment cohorts*. Adelaide: National Centre for Vocational Education Research.
McKillip, M., Rawls, A., & Barry, C. (2012). Improving college access: A review of research on the role of high school counselors. *Professional School Counseling*, *16*(1), 49–58.
McLachlan, R., Gilfillan, G., & Gordon, J. (2013). *Deep and persistent disadvantage in Australia*. Canberra: Productivity Commission.
Moore, J., Sanders, J., & Higham, L. (2013). *Literature review of research into widening participation to higher education*. London: Aimhigher Research and Consultancy Network.
Naylor, R., Baik, C., & James, R. (2013). *A Critical Interventions Framework for advancing equity in Australian higher education*. Canberra: Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education.
OECD (2005). *PISA 2003 technical report*Paris: OECD Publishing.
OECD (2006). *Education at a glance OECD indicators 2006*. Paris: OECD Publishing.
OECD (2013). *Annex A: PISA 2012 technical background*. Paris: OECD Publishing.
OECD (2004). *Career Guidance and Public Policy: Bridging the Gap*. Paris: OECD Publishing.
Pekrun, R., Goetz, T., Titz, W., & Perry, R. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, *37*(2), 91–105.
Perales, F., Higginson, A., Baxter, J., Western, M., Zubrick, S., & Mitrou, F. (2014). *Intergenerational welfare dependency in Australia: A review of the literature*. *LCC working papers 2014–2009*.
Perales, F., & Chesters, J. (2017). 'The Returns to Mature-Age Education in Australia'. *International Journal of Educational Research* Forthcoming.
Pietarinen, J., Soini, T., & Pyhalto, K. (2014). Students' emotional and cognitive engagement as the determinants of well-being and achievement in school. *International Journal of Educational Research*, *67*, 40–51.
Polidano, C., Hanel, B., & Buddelmeyer, H. (2013). Explaining the socio-economic status school completion gap. *Education Economics*, *21*(3), 230–247.
Raffo, C., Dyson, D., Gunter, H. M., Hall, D., Jones, J., & Kalambouka, A. (2007). *Education and poverty: A critical review of theory, policy and practice*. York: Joseph Rowntree Foundation.
Reay, D., Davies, J., David, M., & Ball, S. J. (2001). Choices of degree or degrees of choice? Class, race and the higher education choice process. *Sociology*, *35*(4), 855–874.
Reed, R., Karavias, S., & Smith, R. (2013). *Investigating the impact of social inclusion: A case study of seven widening participation programs at Macquarie University*. National Centre for Student Equity in Higher Education.
Reisel, L., & Brekke, I. (2010). Minority dropout in higher education: A comparison of the United States and Norway using competing risk event history analysis. *European Sociological Review*, *26*(6), 691–712.
Ross, C. E., & Wu, C.-L. (1995). The links between education and health. *American Sociological Review*, 719–745.
Rothman, S., & Hillman, K. (2008). *Career advice in Australian secondary schools: Use and usefulness*. Camberwell: Australian Council for Educational Research.
Sanders, J., Munford, R., & Liebenberg, L. (2016). The role of teachers in building resilience of at risk youth. *International Journal of Educational Research*, *80*, 111–123.
Sellar, S., Gale, T., & Parker, S. (2011). Appreciating aspirations in Australian higher education. *Cambridge Journal of Education*, *41*(1), 37–52.
Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, *100*(4), 765–781.
Vallejos, C. A., & Steel, M. F. J. (2017). Bayesian survival modelling of university outcomes. *Journal of the Royal Statistical Society, Series A*, *180*(2), 613–631.
Wao, H. O. (2010). Time to the doctorate: Multilevel discrete-time hazard analysis Educational Assessment. *Evaluation and Accountability*, *22*(3), 227–247.
Wheelahan, L. (2009). Do educational pathways contribute to equity in tertiary education in Australia? *Critical Studies in Education*, *50*(3), 261–275.
Whitty, G., Hayton, A., & Tang, S. (2015). Who you know, what you know and knowing the ropes: A review of evidence about access to higher education institutions in England. *Review of Education*, *3*(1), 27–67.