

Overconfidence of vocational education students when entering higher education

Vocational students' overconfidence

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Abstract

Purpose – There is evidence that students who attend Technical and Further Education (TAFE) prior to entering higher education underperform in their first year of study. The purpose of this paper is to examine the role of self-efficacy in understanding the performance of students who completed TAFE in the previous year in a first year subject of microeconomics in a dual sector university in Melbourne, Australia.

Design/methodology/approach – The study utilises data collected by surveys of 151 students.

Findings – A student's self-efficacy is positively associated with their marks in a first year subject of microeconomics. However, the relationship between final marks and self-efficacy is negative for those students who attended TAFE in the previous year suggesting that they suffer from the problem of overconfidence. When holding self-efficacy constant, using econometric techniques, TAFE attendance is found to be positively related to final marks.

Research limitations/implications – The findings are exploratory (based on a small sample) and lead to a need to conduct cross institutional studies.

Practical implications – The research points to the need for early interventions so that TAFE students perform well in their first year of higher education. It also points to potential issues in the development of Victorian Certificate of Applied Learning (VCAL) programs.

Originality/value – To the best of the authors' knowledge, this is the first paper to examine the inter-related impact of attendance at TAFE in the previous year and self-efficacy on the subsequent academic performance of TAFE students.

Keywords Self-efficacy, VET, Pathways, Low socio-economic, Overconfidence, TAFE

Paper type Research paper

1. Introduction

A key driver of Australian Federal Government higher education policy since the 1980s has been the recognition that greater participation in higher education is a central precondition for competitiveness, economic growth and higher living standards. In response to these influences, various initiatives by the federal and state governments, as well as policies established by educational institutions, have sought to offer more diverse and seamless pathways from vocational to higher education (Harris, 2009). In 2008, for example, Australian universities admitted approximately 9 per cent of their undergraduates on the basis of a vocational qualification, with the new generation of Australian universities admitting approximately seven times more undergraduates on the basis of such qualifications compared to the Group of Eight universities[1] (Moodie, 2010).

This paper examines the role of self-efficacy in explaining the differences in academic results between students who were enrolled in Technical and Further Education (TAFE) institutions in the previous year and other students as well as students from higher



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and lower socio-economic backgrounds. The paper utilises survey data collected from 151 students studying microeconomics, which is a core (or compulsory) first year business subject, in an Australian dual sector university. A dual sector university is one that offers both vocational education and higher education programs and guaranteed pathways for eligible students from one sector to the other.

We find that those students who completed TAFE in the previous period underperform relative to other students. Investigation reveals that this underperformance can be explained, in part, by overconfidence (where higher levels of self-efficacy is negatively related to academic performance) and prior academic ability. An examination of the literature suggests that the differences in assessment methods, teaching approaches and philosophies between Vocational Education and Training (VET) and higher education institutions create two problems. First, VET students are underprepared for the rigours of higher education. Second, VET students enter university with high marks and as a result they have higher academic self-efficacy beliefs which are unfounded in the higher education system. The focus of this paper is on the impact of overconfidence on the student's final marks.

We also find some evidence that students from lower socio-economic backgrounds are underperforming relative to other students due to lower levels of self-efficacy of this cohort. To the best of our knowledge this is the first paper to examine the inter-related impact of attendance at TAFE in the previous year and self-efficacy on the subsequent academic performance of TAFE students. It is also the first paper to examine the issue of socio-economic status (SES), performance and self-efficacy using quantitative analysis at the higher education level. Additionally, even though the majority of TAFE students study business-related subjects (National Centre for Vocational Education Research, 2012), there are few studies examining the experiences of business students in the transition from the vocational sector to university.

2. Literature review

2.1 TAFE to university (pathways)

Several studies examine the factors that impact on the performance of accounting students articulating from VET to university. TAFE is a main player in the VET sector along with registered training organisations and the schools that offer Victorian Certificate of Applied Learning (VCAL) which award similar qualifications. Students are able to articulate between VET and higher education. This paper looks specifically at the transition from TAFE to higher education. However, the research is situated within the broader literature on the transition from VET to higher education. As a result we review studies which consider the broader VET sector in addition to those that specifically focus on TAFE. In the interests of consistency with the cited papers we retain their reference to VET, TAFE and VCAL in our citations. Finally, we believe that our finding has implications for the transition from VET (including VCAL) to higher education. These implications are discussed in later sections.

A study by Burns (1994) concluded that accounting students articulating from the TAFE sector performed academically at close to the level of non-TAFE students and that full-time students were more successful than part-time students. Academic success was measured based on whether the student passed or failed the accounting subject. When the quality of academic performance based on Grade Point Average (GPA) was taken into account, vocational education students performed 10 per cent below the overall student reference group primarily because of the significantly lower results achieved by students from vocational education studying part-time.

Tickell and Smyrniotis (2005) examined the effects of a range of demographic, behavioural and educational variables on the academic performance of Year 12-to-university and TAFE-to-university accounting students. They find that in the early years of university study, TAFE articulators' academic performance was below that of the Year 12-to-university cohort. However, by final year, university entry mode (Year 12 vs TAFE) was not a significant predictor of academic grades. In relation to first year students' performance in an accounting subject, Tickell and Smyrniotis (2005) find that for Year 12-to-university student's significant predictors include age when commencing university, mother's country of birth and Year 12 Accounting score. For TAFE-to-university students, they find that the only significant predictor of first year accounting results is secondary school teachers' advice in respect to choosing accounting as a major area of study.

Research on the efficiency aspects[2] of the pathways framework examines the academic and social challenges faced by students moving from TAFE institutions to the higher education sector. Such challenges include dealing with uncertainty about what is expected in higher education, managing larger workloads with reduced support, achieving appropriate levels of self-discipline and negotiating language difficulties (Milne *et al.*, 2006); adjusting to the more demanding teaching and learning environment in higher education (Dickson, 2000; Keating *et al.*, 2006; Watson, 2008); dealing with financial pressures and balancing work, family and education commitments (Whittington and Thompson, 2010); adjusting to different learning approaches and different types of knowledge emphasised in higher education (Aitchison *et al.*, 2006; Harris, 2009) and adjusting to the cultural differences between TAFE institutions and university (Cameron, 2004; Heirdsfield *et al.*, 2008).

2.2 Self-efficacy and academic performance

Self-efficacy is central to the ways in which human beings think, feel, become motivated and act (Elias and Loomis, 2002). It is defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1977). More recently De Feyter *et al.*, (2012) defined self-efficacy "as the individual's belief in their own capabilities to succeed". Consistent with both definitions self-efficacy beliefs are seen as future orientated; assessed prior to the specific task being performed (Zimmerman, 2000). They are specific to distinct domains of functioning (Bandura, 2006) and task and situation specific (Elias and Loomis, 2002; Elias and MacDonald, 2007; Klassen, 2006; Pajares, 1996).

Academic self-efficacy involves a student's judgment of his or her ability to undertake actions aimed at successfully attaining educational goals (Elias and Loomis, 2002; Elias and MacDonald, 2007). Academic self-efficacy beliefs provide students with the motivation to succeed in learning activities and academic subjects (Klassen and Usher, 2010).

There is a well-established positive link between self-efficacy and academic performance. In a meta analysis, Multon *et al.* (1991) report such a relationship across various dimensions including subjects, experimental design and assessment methods. In a more recent meta analysis Robbins *et al.* (2004) find that the best psychosocial and study skill predictors of GPA are academic self-efficacy and achievement motivation. Self-efficacy beliefs provide a sense of agency to motivate student learning through use of such self-regulatory processes as goal setting, self-monitoring, self-evaluation and strategy (Zimmerman, 2000). These factors influence the level of effort students will devote on academic activity, the extent to

which they will persist in completing tasks in the face of obstacles, and how students will respond when confronted with difficult situations (Klassen, 2006; Klassen and Usher, 2010). As noted by Bong (2001), students with a strong sense of self-efficacy are willing to invest greater effort and persistence in completing challenging tasks. Successful past performance increases a student's self-efficacy beliefs while unsuccessful previous efforts lower self-efficacy (Elias and MacDonald, 2007; Pajares 1997; Schunk and Meece, 2006); see Klassen and Usher (2010) and Pajares (2012) for recent and thorough reviews of the literature on self-efficacy in educational settings.

2.3 SES and self-efficacy

Previous research on academic self-efficacy [3] has found that first-generation and low SES students are more likely to consider that their abilities are inferior to those of other students (McMurray and Sorrells, 2009). Where students display low academic self-efficacy, they are more likely to lose motivation and give up on persisting with challenging academic tasks, such as those undertaken in tutorials (Bandura, 1993), as well as lose motivation to spend time studying for tutorials and preparing for tutorial exercises (Torres and Solberg, 2001; Zajacova *et al.*, 2005).

Many researchers have attributed inadequate academic self-efficacy and low self-esteem to low levels of cultural capital [4]. According to Bourdieu (1997), cultural capital promotes educational success through providing students with knowledge, language and behavioural characteristics necessary for them to succeed in higher education (Jaeger, 2011). Cultural capital is often passed from parents to children (Walpole, 2003), and students at university whose parents have also attended university have a distinct advantage in the accumulation of cultural capital over first generation students (Dumais and Ward, 2010).

Where cultural capital is insufficient in first generation university students, the type of teaching undertaken at university level has a significant impact on the success or failure of such students. As Crozier *et al.* (2010) point out, in educational institutions where teaching is loosely framed and tutorials and lectures are somewhat informal, students with low cultural capital can feel anxious about their abilities, the level of learning they have achieved and their progress in the subject. These anxieties create dependent learners, who desire being told by their tutors and lecturers what they need to do and know under a more structured learning environment.

3. The present study

Data were collected via a survey conducted in first and again in second semester of 2012 from students studying a one semester subject on introductory microeconomics, which is a core subject for students undertaking the business degree. The study was undertaken in a dual sector university in Australia which has significant enrolments into their business degree programs from TAFE-pathway students. Students were advised that participation in the surveys was voluntary and that individual students' personal and academic data would not be identifiable. The survey took approximately 30 minutes to complete. Ethical clearance to conduct the research was obtained from the university's Human Research Ethics Committee prior to collecting data (SUHREC Project No: 2011/275). A total of 151 students completed the surveys. Of these, we had the final results of 147 students. The descriptive statistics are presented in Table I.

Variable	TAFE		Other than TAFE		Full sample	
	Mean/Count	SD	Mean/Count	SD	Mean/Count	SD
Results	53.75	11.86	58.36	13.95	57.55	13.69
ATAR	62.09	17.07	76.10	10.60	73.43	13.21
Self-efficacy	4.05	1.09	4.57	1.23	4.45	1.21
Number of subjects taken	3.63	0.76	3.88	0.94	3.83	0.91
Number of male students	14		64		78	
Number of students with major other than accounting and finance	13		61		74	
Number of international students	7		25		32	
Number of part time students	3		9		12	
Number of students	30		115		147	

Notes: Those students who did not answer a specific question in the questionnaire are not included in the tables one to four. Three students did not answer the question on gender; 4 did not answer the question on major; two students did not indicate whether they were domestic or international students; three did not answer the question on enrolment status; and two students did not indicate whether they attended a TAFE institution in the previous year of study

Table I.
Descriptive statistics

3.1 Methodology

We examine the inter-related impact of self-efficacy and attendance at TAFE in the previous year on the subsequent academic performance of these students by estimating the following equation using ordinary least squares (OLS) regression modelling:

$$\begin{aligned}
 \text{Finalmarks} = & \beta_0 + \beta_1(\text{self-} \text{efficacy}) + \beta_2(\text{TAFE}) + \beta_3(\text{self-} \text{efficacy} \times \text{TAFE}) \\
 & + \beta_4(\text{ATAR}) + \beta_5(\text{part-time}) + \beta_6(\text{major}) + \beta_7(\text{status}) \\
 & + \beta_8(\text{part-time} \times \text{subjects}) + \beta_9(\text{fulltime} \times \text{subjects}) \quad (1)
 \end{aligned}$$

The dependent variable in the analysis is the final marks that the student obtained in microeconomics. The three key independent variables are: the student's self-efficacy; whether the student attended a TAFE institution in the previous year of study; and the SES of the student. There are also a number of control variables which are discussed below.

From this equation we test the following two hypotheses:

H1. β_1 is positive and statistically significant.

That is, students who did not attend TAFE have a positive relationship between self-efficacy and final marks:

H2. $(\beta_1 + \beta_3)$ is negative and both coefficients are statistically significant.

That is, students who attend TAFE in the previous year have a negative relationship between self-efficacy and final marks (suggesting that they suffer from overconfidence).

A second equation was also run to determine if the same interaction effects between TAFE and self-efficacy applies to low SES students:

$$\begin{aligned} \text{Final marks} = & \beta_0 + \beta_1(\text{self-} \text{efficacy}) + \beta_2(\text{TAFE}) + \beta_3(\text{self-} \text{efficacy} \times \text{TAFE}) \\ & + \beta_4(\text{self-} \text{efficacy} \times \text{low SES}) + \beta_5(\text{ATAR}) + \beta_6(\text{part-time}) \\ & + \beta_7(\text{major}) + \beta_8(\text{status}) + \beta_9(\text{part-time} \times \text{subjects}) \\ & + \beta_{10}(\text{fulltime} \times \text{subjects}) \end{aligned} \quad (2)$$

From this equation we test a third hypothesis:

H3. β_4 is statistically not significant.

That is, there is no cross relationship between self-efficacy and low SES with final marks (suggesting that low socio-economic students do not suffer from overconfidence in the same way as TAFE students).

Measure of self-efficacy. In our study self-efficacy was assessed using the self-efficacy for learning and performance sub-scale of the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich *et al.* (1991). The MSLQ is an instrument designed to measure students' motivation and self-regulated learning as they relate to a specific course (Artino, 2005). The MSLQ consists of 81 self-report items divided into two broad sections – a motivation section and a learning strategies section. The instrument consists of 15 sub-scales; six of these are in the motivation section and nine in the learning strategies section. The sub-scales can be used together or individually depending on the research questions being examined. Within the motivation section, the self-efficacy for learning and performance sub-scale consists of eight items (set out in Appendix 1)[5]. This sub-scale had robust internal consistency and scale reliability with a Cronbach's α of 0.93 in Pintrich *et al.* (1991). The Cronbach's α of the self-efficacy measure for the data in our survey was 0.92. According to Duncan and McKeachie (2005) the MSLQ has been used extensively by hundreds of researchers and countless instructors and is still used today by many educational psychologists. Recent examples of the use of MSLQ to assess self-efficacy include Al-Harthly *et al.* (2010), Bandalos *et al.* (2003) and Phan (2011).

Measure of SES. The study classifies students into socio-economic groups based on the highest educational level achieved by their parents. There are three groups within this classification: those who had completed Year 12 or less education (but with neither parent having completed any higher qualification), those who had completed a TAFE qualification and those whose parents had a university degree. Granulated data on parental education is a significantly more reliable indicator of SES compared to methods which measure average education and income levels in the individual student's postcode area (Bowden and Doughney, 2010; James, 2002; McMillan and Western, 2000).

Control variables. The key control variable for the study is the students' Australian Tertiary Admission Rank (ATAR) which is used as an indicator of prior ability. The ATAR is used by tertiary institutions to compare the overall achievement of students who have completed different combinations of final year high school units. The ATAR is an overall ranking reflecting a student's comparative final year of high school achievement relative to other students completing high school in a given year.

The ranking is between 0 and 99.95 in intervals of 0.05. There are also other socio-demographic variables and variables relating to academic studies including: student's study mode (full-time or part-time study); student's major area of study; student's status (international or domestic student); and the number of subjects being undertaken during the academic period.

4. Results

4.1 *The inter-related impact of enrolment in TAFE and self-efficacy on academic performance*

The study's main objective was to explore the differences in academic results between: students who attended TAFE in the previous year and other students and students from higher and lower socio-economic backgrounds. Those students who attended TAFE two or more years ago were included as "other students" as we anticipate that the transitional effect is greatest in students who had most recently completed a TAFE qualification.

From Table I it is clear that TAFE students in the sample, on average, achieve a lower result in microeconomics. Nevertheless, to confirm this we ran an OLS regression model with first year students' final marks in microeconomics as the dependent variable. This confirmed that attending TAFE in the previous year was negatively related to student's marks holding constant the students major; whether they were part-time or full-time; international or local; and how many subjects the students were undertaking[6].

To explore what factors might be underlying the poor performance of those students who completed TAFE in the previous year we ran the regression analysis as outlined in Equation 1 of Section 2. Two models were run the first model being the "base case", while the second model included one additional independent variable self-efficacy \times TAFE. By adopting this approach we were able to carefully consider the power of the variable self-efficacy \times TAFE to explain differences in results between students. The results of the analysis for model two are set out in Table II.

Variable	Coef.	Prob
Constant	28.09	0.014
TAFE	28.59	0.005
TAFE missing	24.01	0.061
ATAR	0.36	0.002
ATAR missing	23.42	0.007
Major	-2.47	0.267
Major missing	-18.43	0.155
Part time	40.37	0.041
Part time missing	33.76	0.062
International	3.73	0.219
Subjects \times fulltime	-1.91	0.232
Subjects \times part time	-24.22	0.015
Subjects missing	-22.77	0.233
Self-efficacy	2.66	0.008
Self-efficacy missing	-12.72	0.567
Self-efficacy \times TAFE	-7.08	0.004
Adj R^2	18.50%	

Table II.
Relationship
between TAFE and
self-efficacy with
final result in
microeconomics

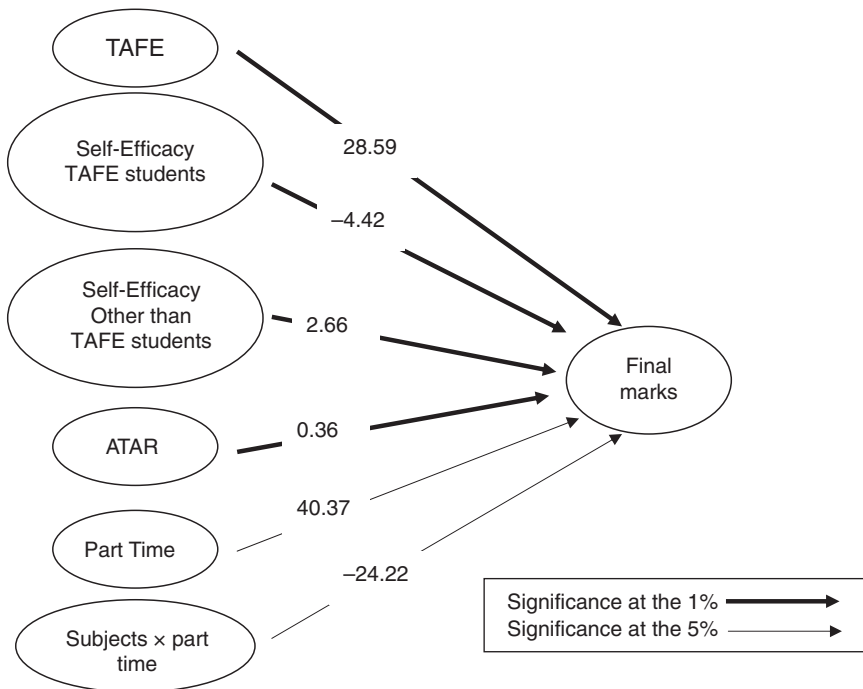
Understanding the interacting effects of TAFE and self-efficacy on performance. Analysis of Equation 1 reveals that, in support of *H1*, self-efficacy is positively related for most students in the sample with a coefficient for self-efficacy of 2.66 which is statistically significant at the 1 per cent level. For students attending TAFE in the previous year of study self-efficacy is negative suggesting that students who were enrolled in TAFE in the previous year suffer from overconfidence (supporting *H2*). For every additional point of self-efficacy their final mark decreased by 4.42 (2.66-7.08) marks. This result is also significant at the 1 per cent level. In an analysis not presented in the paper we also re-ran the regression analysis without including the self-efficacy \times TAFE variable (i.e. base case)[7]. First, we find that self-efficacy was no longer significant when the self-efficacy \times TAFE variable is not including in the analysis. Secondly, by comparing the respective adjusted R^2 of the two equations we find that including the self-efficacy \times TAFE variable explains an additional 4.83 per cent of the total variation in the final results, which is considerable. This highlights the fact that different groups of students react differently in response to high levels of academic self-efficacy beliefs. Further, these differences must be captured in any analysis to ensure that results are not spurious.

The second relationship that emerges from the regression analysis is that TAFE students outperformed other students by 28.59 marks when holding ATAR and self-efficacy constant for both groups[8]. This result is significant at the 1 per cent level. In our sample all TAFE entry students have completed additional study compared to Year 12 direct entry students and this additional year is having a positive effect consistent with human capital theory in economics. However, if in doing this year the student's self-efficacy is increased then this works against the student's performance[9]. Because model 2 is superior to model 1 in its ability to explain final marks we refer to this as our "preferred model".

Control variables in the preferred model. Turning now to the control variables, the coefficient for ATAR is positive and significant at the 1 per cent level. For every point in ATAR achieved by the student we find a 0.36 increase in marks. The results of part time students are strongly linked to the number of subjects that they enrol in. Students who enrol in only one subject will achieve on average 16.15 extra marks (40.37-24.22) over other students. However, if part-time students enrol in two subjects then their mark will be 8.07 less than that gained by other students. We did not find a similar situation for full-time students. Neither the major of the student, nor their status (domestic or international) were found to explain their final marks.

Figure 1 provides a graphic representation of the preferred model (Equation 1). Variables that are not statistically significant have been omitted.

Our research is consistent with previous studies which found a negative correlation between self-efficacy and academic performance (De Feyter *et al.*, 2012; Dunlosky and Rawson, 2012; Vancouver and Kendall, 2006; Yeo and Neal, 2006). Vancouver and Kendall (2006), for example, suggest that students with high self-efficacy will allocate fewer resources than required to achieve particular tasks and as a result may achieve lower performance than they would have attained otherwise. Similar conclusions were reached by DeFeyter *et al.* (2012), who find that students with high levels of self-efficacy suffer from overconfidence in terms of their prior expectation of the number of credits obtained during the exam period as compared to the actual level of credits obtained. In a different context, Yeo and Neal (2006), using an air traffic control simulation concluded that overconfidence can lead to a negative relationship between task-specific self-efficacy and performance.



Note: All effects shown in the figure are marginal effects (changes in one variable holding all other variables constant)

Figure 1. Graphic representation of the preferred model (Equation 1)

There is also evidence in an economic context that previous success can lead to overconfidence. Novarese (2009) and Grimes (2002) found that past success can result in overconfidence and that this situation is not restricted to students but also applies to experts (see Hilary and Menzly (2006) for an example from finance). Nowell and Alston (2007) find that overconfidence can lead to students studying less and that overconfidence was inversely proportional to grades. Finally there is evidence that the relationship between self-efficacy and results can vary between different groups of students. Klassen (2006) finds that students with specific learning difficulties are sometimes overconfident about their academic skills and consequently fail to adequately prepare to carry out academic tasks.

4.2 Relationship between SES, self-efficacy and academic performance

As noted in Section 2.3 it is possible that students from low socio-economic backgrounds and students with low cultural capital may experience anxiety in learning environments that are relatively informal and unstructured. At the host institution lectures and tutorials in microeconomics are relatively informal (see Section 4.3). To test whether the informal learning environment impacts negatively on low SES students' results, we first consider the differences between the mean levels of self-efficacy for different groups of SES; grouping TAFE and non-TAFE students separately. The results are presented in Table III.

It can be seen from Table III that students' level of self-efficacy decreases with the reduction in level of parental education (column 3). The level of self-efficacy of students

who were enrolled in TAFE in the previous year is also lower than for those who were not enrolled in TAFE for every level of parental education. Consistent with the literature, Table II shows that, as self-efficacy is a significant positive driver of results, low SES students are likely to achieve lower results than other students. What is of particular concern is that low SES students who attended TAFE have such low levels of self-efficacy when compared to low SES students who did not attend TAFE. Further, those low SES students who attend TAFE, and do increase in self-efficacy, then suffer from overconfidence and potentially perform even worse than their non-TAFE attending counterparts. The question must be asked whether pathways is assisting the low SES students to perform well at the higher education level.

It is also possible that lower SES students (whether they come from TAFE or not) suffer from similar overconfidence issues as experienced by TAFE articulants. To examine this possibility we add a low SES cross self-efficacy variable into the regression analysis; the results are presented in Table IV. Low SES is defined as students whose parents' education level is Year 12 or less.

It can be seen that while self-efficacy \times TAFE continues to be negative and significant, self-efficacy \times low SES is not significant and the coefficient is small thus supporting *H3*. This strongly suggests that there is no relationship between low SES and overconfidence with results. Therefore, for low SES students the main impact on

Table III.
Socio-economic
Status, TAFE and
average levels
of self-efficacy

		Not enrolled in TAFE in previous year	Enrolled in TAFE in previous year	Average by SES level
Level of Parental Education	Bachelor degree	4.71	4.39	4.65
	TAFE	4.56	4.20	4.47
	Year 12 or less	4.33	3.83	4.18

Table IV.
Overconfidence and
low socio-economic
status

Variable	Coef.	Prob
Constant	27.34	0.020
TAFE	28.50	0.006
TAFE missing	24.15	0.060
ATAR	0.36	0.002
ATAR missing	23.99	0.007
Major	-2.33	0.303
Major missing	-18.86	0.148
Part time	40.46	0.042
Part time missing	34.48	0.059
international	3.81	0.212
Subjects \times fulltime	-1.91	0.233
Subjects \times part time	-24.24	0.015
Subjects missing	-22.78	0.225
self-efficacy	2.62	0.009
Self-efficacy \times TAFE	-7.05	0.004
Self-efficacy \times lowSES	0.18	0.731
Self-efficacy missing	-12.96	0.561
Adj R^2	17.95%	

their academic results is lower self-efficacy. To check the robustness of this result we conducted the same analysis but defined low SES students as those whose parents' level of education is TAFE or less with similar result.

5. Discussion

5.1 Potential sources of overconfidence in TAFE students

Three potential sources of overconfidence in higher education students who attended TAFE in the previous year have been identified. Firstly, we find that the TAFE students are weaker academically as indicated by their lower average ATAR and final marks. There is evidence that academically weaker students display high levels of overconfidence (Ochse, 2003) and that overconfidence is a cause of poor results. For example, the authors concluded that overconfident students achieved results which were 11.46 per cent below the class average, and Potgieter *et al.* (2010) showed that overconfidence is a significant predictor of the risk of failure. Overconfident students are likely to believe that academic success is a result of intelligence rather than hard work which can lead them to reduce their levels of motivation and effort (Goldfinch and Hughes, 2007; Mueller and Dweck, 1998).

A second source of overconfidence is past success (Billett and Qian, 2008; Deaves *et al.*, 2010; Hilary and Menzly, 2006; Novarese, 2009). It is possible that TAFE students who had performed well in the TAFE environment may have an unrealistic perception of their own academic abilities. These students may, nevertheless, lack some of the skills required to undertake more demanding and rigorous academic work associated with higher education. A number of studies have reported that many students entering higher education from TAFE expect that they will perform well at university based on the high marks that they had previously received at TAFE and the relative ease with which they had completed assessment activities in those institutions (Aitchison *et al.*, 2006; Catterall *et al.*, 2013; Watson, 2006). It is likely that some of these students display a level of overconfidence which leads to the lower academic results observed in our study.

Finally, sources of overconfidence of TAFE students (and VET students more generally) may stem from the differences in assessment methods, teaching approaches and pedagogic philosophies between TAFE and higher education institutions. These differences appear to be more significant than those between the traditional Year 12 and higher education[10]. Higher education focuses on the development of more complex, abstract, higher order analytical and reflective thinking (Catterall *et al.*, 2013) with primary emphasis placed on theoretical frameworks and contexts (Candy *et al.*, 1994; Watson, 2008). However, TAFE is primarily focused on competency based training with a strong emphasis on workplace integrated learning (TAFE Directors Australia, 2013). Competency based training emphasises the attainment and demonstration of specific knowledge and skills required for the workplace (Blake, 2007). Vocational learning involves the creation of workplace learning experiences which are undertaken in real workplaces or simulated work settings (McDonald, 2011) and strive to develop practical work related competencies.

Additionally, the principles underpinning the assessment of student learning differ significantly between VET and higher education (Watson *et al.*, 2002). VET assessment is primarily designed to determine student competence in relation to work-related skills. Focusing on the narrower TAFE sector, Watson (2008) observes that TAFE assessment requires students to demonstrate that they can perform work-based tasks, rather than to understand the reason why those tasks need to be performed in

a particular way. As an example assessment practices generally involve ongoing tasks that are often completed in class and with assistance provided by the instructor. This sort of practice is especially used when the assessment involves research. Further, TAFE assessment involves short, simple problem questions, requiring limited theoretical knowledge or multiple choice questions. There is a limited use of academic essays and of complex assignments as assessment tools (Pearce *et al.*, 2000). Research has also shown that the level of academic literacy expected at TAFE is lower than that required at university (Catterall *et al.*, 2013; Watson, 2008). Finally, TAFE students receive greater learning support than higher education students, the material taught is at a simpler level and it is supplemented by extensive material provided in class, thus requiring limited note taking and research (Pearce *et al.*, 2000).

These principles are evident in the institution being examined in this study. TAFE is based on the principles of competency based training and assessment which involves the “gathering and judging of evidence in order to decide whether a person has achieved a standard of competence”[11]. For example, the host institution’s vocational learning model is centred on industry-engaged learning (IEL) and is aimed at:

[...]ensuring our students acquire relevant and recognised workplace skills. Students may be encouraged by their Learner Mentor to explore options to learn and be assessed at work to make the learning and assessment experience as relevant as possible. IEL also includes embedding opportunities to participate in structured learning and assessment that involve direct, active involvement with industry (Sourced directly from literature provided by the institution of study, 2013).

5.2 *Insights from, and implications for, the VCAL*

In recent years a number of schools in Victoria have introduced the new VCAL. The new certificate allows many secondary school students to take advantage of VET programs; as well as combining VET and VCE subjects. A number of studies have undertaken a comparison between the different pedagogies of VCE and VCAL. These studies provide some insights into the differences between the Victorian Certificate of Education (VCE)[12] and TAFE in terms of preparing students for higher education.

Compared to VCAL, VCE is largely an academic curriculum designed to prepare students for entry into higher education (Riele and Crump, 2002). VCE uses a content-based assessment rather than the applied assessment methods of VCAL (Gallagher, 2013). First, VCAL students choose to undertake their studies in a TAFE institution as they are more comfortable in an environment where they relate to teachers on an adult to adult basis unlike the student-to-teacher basis found in VCE (Blake, 2007). These students do not perform well in a learning environment that focuses on learning abstract knowledge through transmissive pedagogies which dominate VCE (Gallagher, 2013). Crump and Stanley (2005) examined how well students perform in VET subjects relative to traditional Year 11 and 12 subjects using students studying both VET and the New South Wales Higher School Certificate or HSC (this is equivalent to the students studying VCAL and VCE subjects). While there are relatively few students who take common subjects across VET and HSC, Crump and Stanley (2005) find that students typically do better in their VET subjects than in the more academically orientated courses.

5.3 *Relationship between SES and self-efficacy*

We find that the low SES students in our sample display low levels of self-efficacy. As outlined in Section 2.3 low SES students exhibit low levels of self-efficacy beliefs

which has been linked to low levels of cultural capital. Essentially, students with low levels of cultural capital perform poorly in a loosely framed learning environment. At the institution in which this study was conducted lectures and tutorials in microeconomics are relatively informal and tutorials in particular are unstructured. The emphasis is on autonomous and self-directed learning aimed at developing students' abilities to solve problems, make connections and take responsibility for their learning outcomes. Participation in lectures and tutorials, and completion of tutorial questions, are not assessed, and students are not provided with explicit guidance on the topics and concepts that they need to master in order to perform well in exams and tests. Students are given model answers to tutorial questions but these are provided as guidance only and this is stressed to students in the first lecture.

This paper extends the literature by examining whether low SES student also suffer from the same problems of overconfidence as found with TAFE students. There is reason to believe that such a link exists given that academically weaker students are overconfident. We did not find any evidence of this in our sample; therefore, any underperformance of low SES students is due to their lack of self-efficacy beliefs.

6. Conclusion and implications

This paper has examined the performance (based on final results) of students who attended TAFE in the previous year, and low SES students, in a first year microeconomics unit in an Australian dual sector university. Students who completed TAFE in the previous year underperform relative to other students. We find that this underperformance can be explained by prior ability and the students' self-reported levels of self-efficacy. In particular, while, on average, a student's results are positively related to their level of self-efficacy, students who recently completed their TAFE studies are more likely to suffer from overconfidence leading to a negative relationship between self-efficacy and final marks for this cohort. We also find some evidence that lower SES students have lower levels of self-efficacy and as a result are underperforming relative to other students, holding all other variables constant.

TAFE, and more broadly VET, subjects are designed for students who do not perform well in a learning environment that focuses on learning abstract knowledge through transmissive pedagogies which dominate VCE and most higher education courses. However, when articulating to higher education TAFE students face a number of adjustment difficulties as they shift back to the more traditional pedagogies that were used in VCE. Our study highlights that TAFE articulants underperform relative to other students (predominantly direct entry students) in higher education due to issues associated with overconfidence. We believe that this finding requires further exploration with larger samples across multiple institutions.

There are two key implications of the research. The first is the importance of early interventions at the higher education level so that these students perform well from the first year of higher education. A starting point for this intervention is the link between overconfidence and the different pedagogies and forms of assessment used in VET and higher education. More research is required to understand why the different pedagogies and forms of assessment contribute to overconfidence. We then need better strategies to minimise any difficulties associated with the transition between TAFE and higher education.

The second implication is that the root cause of the adjustment difficulties needs to be addressed within the VET sector (i.e. prior to students entering higher education), if TAFE is to be a successful pathway to higher education. In this regard our findings

have implications for education policy makers, administrators of TAFE as well VCAL programs. As noted in this paper, there is some evidence that the difficulties experienced by students in their first year of study are generally overcome as they perform on a par with other students in subsequent years (Tickell and Smyrnios, 2005). We believe that this finding requires further exploration and can be helpful in identifying how students overcome the difficulties of the transition from TAFE to higher education including issues of overconfidence that have been explored in this paper.

Notes

1. New generation universities are relatively newer universities most of which were created during the 1980s as a result of amalgamations between various institutions such as colleges of advanced education and institutes of technology. The Group of Eight (Go8) is a grouping of Australian universities which are considered the leading universities in terms of research intensity and which provide comprehensive general and professional education.
2. The efficiency aspects refer to the extent to which pathways from vocational to higher education promote an “educational ladder of opportunity” allowing students to move from one sector to another (Wheelahlan, 2009a, b).
3. Self-efficacy is defined as people’s beliefs about their ability to achieve a level of performance that allows them to influence the events that affect their lives (Bandura, 1993).
4. Cultural capital is defined as the general cultural background, knowledge, disposition, and skills that are passed on from one generation to another (McLaren, 2003).
5. There was a very minor adjustment made to a question to refer to tests rather than assignments.
6. The key independent variable in the OLS regression analysis was a dummy variable indicating whether the student attended TAFE in the previous period. We also controlled for the students major; whether they were part time or fulltime; international or local; and how many subjects the students were undertaking; by including them in the analysis. We found that TAFE was negatively associated with results with a co-efficient of -4.92 . The co-efficient was significant at the 10 per cent level. The results of this analysis are available upon request to the lead author.
7. This analysis is available from the lead author upon request.
8. While 29 marks is a very considerable amount it must be recalled that TAFE students have on average lower ATAR and suffer from overconfidence which erodes this advantage.
9. In the host university students can complete Year 10, undertake one additional year of TAFE, and then articulate to first year of higher education. This would mean that such students have completed one year less than students entering directly from Year 12. To examine whether there are any TAFE entry students in the sample who may have entered higher education with fewer years of study we looked at the backgrounds of all 17 and 18 year old students. We found that all of the 17 and 18 year-old students attended Year 12.
10. As mentioned in the introduction the differences in assessment methods, teaching approaches and philosophies between VET and Higher Education institutions can also directly lead to lower results as students may be underprepared for the rigours of higher education.
11. Quote sourced directly from TAFE NSW 3 February 2014: http://lrrpublic.cli.det.nsw.edu.au/lrrSecure/Sites/Web/13289/resources/assessment_vet.htm
12. VCE subjects are completed in Years 11 and 12 of the students’ secondary years of schooling and form the two years of post-compulsory studies undertaken in Victoria. In Victoria Year 11 students are typically 17 years of age.

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Appendix. Measure of self-efficacy

I believe I will receive an excellent grade in this class.

I am certain I can understand the most difficult material presented in the readings of this course.

I am confident I can learn the basic concepts taught in this subject.

I am confident I can understand the most complex material presented by the lecturer in this subject.

I am confident I can do an excellent job on the tests in this subject.

I expect to do well in this class.

I am certain I can master the skills being taught in this subject.

Considering the difficulty of this subject, the lecturer, and my skills, I think I will do well in this subject.

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