

NATIONAL VOCATIONAL EDUCATION
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RESEARCH REPORT

Peer-mentoring of students in rural and low socioeconomic status schools: increasing aspirations for higher education

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SCHOOL OF EDUCATION, FLINDERS UNIVERSITY



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About the research

Peer-mentoring of students in rural and low socioeconomic status schools: increasing aspirations for higher education

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Students from rural and low socioeconomic backgrounds do not pursue university education at the same rate as those from metropolitan areas or from higher socioeconomic backgrounds. This has been a long-standing issue for government.

This study explores the aspirations and intentions for university education among low socioeconomic status (SES) and regional school students and looks at how peer-mentoring might influence them.

Through an analysis of the 2003 cohort from the Longitudinal Surveys of Australian Youth (LSAY), the study found that:

- Although there is a substantial difference in the rates of higher education participation of metropolitan and rural young people, this difference is not attributed simply to location but rather to other factors associated with location. These factors include the lower socioeconomic backgrounds of rural youth, the presence of fewer young people of immigrant backgrounds in rural communities and the lower aspirations for higher education and professional careers among rural youth.
- Compared with their peers from higher socioeconomic backgrounds, low-SES students have less favourable attitudes towards school, lower achievement at school, less ambitious post-school study and career aspirations and lower participation in higher education.

An analysis of data collected from school students who were being mentored by university students showed that:

- Students who received sustained mentoring revealed a significantly higher estimated likelihood of enrolling in a university course. Mentoring appeared to raise students' identification with university 'in-groups' and reduce perceived barriers to university study.
- While mentoring increased aspirations for university study, it did not reduce aspirations for vocational education and training (VET) programs.

While this study is limited to the findings from one program administered at two schools, it provides a useful case study, in that it demonstrates the potential benefits of mentoring.

Tom Karmel
Managing Director, NCVET

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Executive summary

The Bradley review of higher education in Australia (Bradley et al. 2008) indicated that rural and low socioeconomic status (SES) high school graduates did not pursue university education at the same rates as their metropolitan counterparts. In its response to the Bradley review, the Australian Government (Department of Education, Employment and Workplace Relations 2009) announced several changes in funding arrangements designed to address this limited access to higher education. Universities now receive additional funding (4% of total teaching and learning funding in 2012) for the enrolment of students from low-SES backgrounds. It is expected that universities will use this additional funding to provide support to students whose families might not have the social and cultural capital resources of high-SES families. The government also announced changes to student financial support. The 'age of independence' has been progressively lowered to 22 years, enabling more students who need to leave home to study to access financial assistance. The income threshold for students has been increased to \$400 per fortnight (in 2012) before government financial support is affected.

Here we report on two related investigations. In the first, we use data from the Longitudinal Surveys of Australian Youth (LSAY) to analyse data on students' intentions for and their subsequent enrolment in tertiary education. We are particularly interested in the influence of students' socioeconomic status and location (metropolitan or rural) on their tertiary study intentions and participation.

In the second investigation, we examine the influence of a mentoring program on students' intentions to pursue tertiary education undertaken in one rural and one low-SES secondary school.

Intentions, achievement and attainment of metropolitan and rural students

Although there is a marked difference in the participation rates of metropolitan and rural students in higher education (44.0% and 34.2% respectively), we find that this difference is explained largely by the lower socioeconomic status of rural compared with metropolitan students, their lower aspirations for post-school study and some related demographic characteristics, especially being of Australian rather than immigrant backgrounds. That is, location alone does *not* explain the lower rates of participation of rural youth in degree-level studies.

Lower aspirations for post-school study and for professional careers also characterise students from low-SES backgrounds.

The mentoring program

The finding that low aspirations are a barrier to participation led us to consider the use of a mentoring program. Prior research (see, for example, Houston 1999 cited in DuBois et al. 2011) has shown that peer-mentoring is an effective method for raising the aspirations for post-school study among disadvantaged students.

Students in two schools (one rural and one low socioeconomic status) were involved in the peer-mentoring program. Across seven school terms, beginning in the students' Year 9 classes, university mentors visited the school on average once a week during regular school hours. Each term lasted approximately 11 school weeks, with mentoring sessions ranging from an hour to a half a day. Mentors had discretion vis-a-vis the most effective use of their time, but in general they formed friendships

with students, answered questions about university, helped students with applicable areas of work and, where appropriate, mentored students on career possibilities.

We collected data from students at six-monthly intervals and investigated the differences in higher education intentions at four points in time. Forty-six students participated in all four rounds of data collection. Students who had consistently received little or no mentoring reported lower estimated chances of attending a university following graduation from secondary school ($M = 49\%$, $SD = 28\%$), than those who consistently received moderate to high levels of mentoring ($M = 65\%$, $SD = 28.44\%^1$), regardless of which school they were from. Analysis of individual time points (which contained a larger number of participants, due to many students being involved in only one or two points of data collection) showed that, while intentions were slightly elevated for students who were mentored for a short time only, these were small non-significant gains ($p > .05$). This may indicate that, for these students, short-term mentoring is unlikely to have sustained effects on intentions to attend university and a belief that attending university is possible. Intentions to attend a TAFE (technical and further education) institute remained stable, regardless of mentoring. These results are promising for university–TAFE partnerships, as they indicate that university and TAFE aspirations may develop independently.

¹ M = mean; SD = standard deviation.

Introduction

The Bradley review of higher education in Australia (Bradley et al. 2008) recommended that the percentage of 25 to 34-year-old Australians who held a first degree from a university be raised to 40% nationwide to ensure that Australia continued to be a competitive country, relative to Organisation for Economic Co-operation and Development (OECD) standards. The Australian Government subsequently proposed that this target should be met by the year 2025. The commitment from the government to increase the proportion of Australians with a first degree has important implications for university, TAFE (technical and further education) and private tertiary education providers. Further, the proposal raises an important question about the most effective method for achieving this target, while not restricting the number of skilled workers needed in the workforce who are trained through vocational education.

Two groups in which post-school university enrolment is low are rural students and those from low socioeconomic status (SES) areas (Bradley et al. 2008). While the Bradley review indicates that many moderate to high SES urban high schools have university transition rates of greater than 90%, the university transition rates of low-SES and rural groups were low and had declined between 2002 and 2007, which therefore makes these categories an obvious area of interest. The present report focuses on an analysis of extant data to identify the factors associated with the low school completion and post-school transition of rural and low-SES youth and reports on the use of one method for attempting to increase university participation: the use of mentoring programs to raise aspirations for university education.

Many factors may contribute to the difference in tertiary education participation between metropolitan and rural young people. Alloway et al. (2004) found that youth in rural areas were strongly interested in pursuing higher education following completion of a high school certificate. They attribute the perceived barriers to pursuing higher education (for example, distance, leaving one's family) as reasons for rural students remaining in their community rather than pursuing higher education. Their view is not universally held, with James and colleagues attributing the low participation of rural students in higher education to low aspiration and low achievement (James, 2002; James et al. 2004; James, Anderson et al. 2008). In related research, Kilpatrick and Abbott-Chapman (2002) suggest that low family and community social capital contributes to rural students' low participation rate.

Bornholt, Gientzotis and Cooney (2004) and Rothman et al. (2009) show that many rural students who are accepted into urban universities choose to defer their studies (or let their offers lapse). Many of these students report distance being a reason for deferral or letting their offers lapse. The Rural Regional Affairs and Transport References Committee (2009) argued that 'rural and remote students face extreme financial and emotional hardships in their endeavour to access and complete tertiary education' (p.75). Perhaps for these reasons there is strong support for higher education provision in rural areas (Drummond, Halsey & van Breda 2012), which would be consistent with the view that equal access to higher education should be seen as a fundamental human right (Godden 2007; United Nations 1948). However, the exercising of this right by students in rural and low-SES areas is unlikely to be straightforward, given the possible influences on their post-school intentions arising from community and family sources.

Khoo and Ainley (2005) found a strong connection between high school students' intentions pre-completion and their actual educational pathways after completing school. This suggests that relevant

topics for investigation are the relationships between these intentions and students' location and socioeconomic status, and whether intentions to attend university can be modified through interventions. The first of these questions is the subject of the first investigation reported here.

With respect to the second investigation, Gale et al. (2010) identified numerous university outreach programs operating in Australia in an attempt to redress the low participation of rural and low-SES students in higher education. However, despite finding 59 individually identified projects in Australia operated by 26 individual university units, Gale and colleagues claim that many of these programs were aimed at Year 10 students and that many were one-off events. In light of this, the second investigation seeks to evaluate the effectiveness of a long-term intervention beginning in Year 9 – peer-mentoring. It is currently unknown if student intentions can be modified through programs such as these, and if so, how.

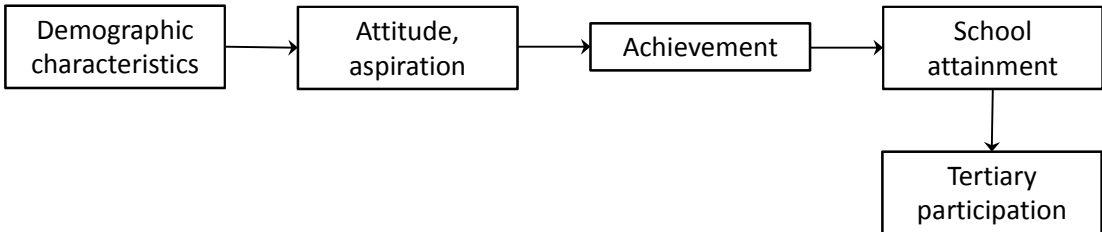
Investigation 1: intentions, achievement and attainment of metropolitan and rural students

Our primary interest in the first investigation is in the influence of location and socioeconomic status on tertiary education participation. We use a simple dichotomous classification of location (metropolitan or rural). More precise information on location is available, but the number of students in remote locations is small and could lead to unreliable estimates, so the non-metropolitan location classifications were merged.

As we note above, rural and low-SES students are under-represented in higher education, with several factors identified in the literature considered to contribute to this. There is some disagreement about differences between metropolitan and rural students' motivations and aspirations for post-school education: Alloway et al. (2004) argue that rural students hold high aspirations for tertiary study, while James (2002) contends that rural students have lower aspirations for post-school education.

We represent the problem of understanding the factors that influence tertiary education participation as a simplified sequence of relationships, as shown in figure 1. Tertiary participation, especially higher education, depends upon successful completion of Year 12. School attainment is likely to be related to student achievement and this in turn is predicted by attitude towards school and by aspirations for school completion and post-school study and employment. It seems likely, and indeed it is known from previous research, that some demographic characteristics are related to lower aspirations, lower achievement and a reduced likelihood of Year 12 completion and tertiary education participation. As highlighted above, the Bradley review (2008) drew attention to the low participation rates in tertiary education of low-SES and rural youth. Other differences in school attainment and tertiary participation have been associated with gender, language background, immigrant status and family structure (Curtis 2008; Curtis & McMillan 2008).

Figure 1 Postulated relationships between sets of variables in understanding influences on school completion and tertiary education participation



As a consequence of the findings of the Bradley review (2008), we investigate the influences of two particular demographic characteristics – location and socioeconomic status – on tertiary participation, but given the factors that mediate demographic characteristics and tertiary participation, we also examine the relationships between these characteristics and attitude – achievement and attainment.

Data

We used data from the 2003 (Y03) cohort of 15-year-old students recruited into LSAY. The majority of the 10 370 students were in Year 10 in 2003 and they were tracked to 2010 (the most recent year for which data are available), by which time 4903 participants, whose average age is 22.7 years, remained. By this time, all who were going to complete secondary school had done so (most in 2005), and most who were planning tertiary study had commenced it. However, it should be noted that individuals might delay entry into tertiary education for some years, so the final proportion of this cohort to enter post-school education will be slightly higher than that reported here.

The LSAY dataset includes information on the following variables:

- *Demographic characteristics:* variables are available for gender; location (metropolitan or rural); language background (English or other than English as the main home language); immigrant status (Australian-born of Australian parents, Australian-born, but with at least one parent born in another country, or born in another country); family structure (nuclear family or other); number of siblings; and economic, social and cultural status (ESCS, see OECD 2005, p.382). We use the Council of Australian Governments' definition of low-socioeconomic status as being the lowest quartile of the ESCS variable.

In this investigation, we classify location as either metropolitan or non-metropolitan (including regional cities and rural locations). While information is classified into finer categories, the small numbers of individuals in rural locations, coupled with attrition from the study, render the use of these finer classifications unreliable. For convenience, we use the term 'rural' to refer to all individuals in other than metropolitan locations.

- *Attitude and aspiration:* variables are available for attitudes towards school; perceptions of teacher–student relationships; sense of belonging at school; intention to complete Year 12 at school and post-school study intentions.
- *Academic achievement:* the first wave of the LSAY data collection uses the results of the OECD Programme for International Student Assessment (PISA) survey and testing. Achievement results are available in four domains: mathematics, reading, science and problem-solving. We use a composite measure of achievement based on all four domains.
- *School attainment:* using responses to questions in successive waves of the longitudinal survey, students' progress through school is tracked. In particular, we are interested in whether students completed Year 12, whether they reported receiving a tertiary entrance score (here referred to as an ATAR – Australian Tertiary Admission Rank), and if so, what that score is.
- *Post-school study:* this includes participation in any post-school education and training. In this study, we did not examine completion of tertiary study, simply whether and which forms of tertiary study were commenced. We identified no tertiary study, commencement of a lower certificate (certificate I or II), a higher certificate (certificate III or IV), a diploma program, or a degree course.

Each of the demographic, attitude and aspiration variables was selected for inclusion in the analysis, as previous research has shown that these variables are related to school achievement and attainment. Several measures of school achievement are used. Data are available on students' performance at age 15 on tests of reading, mathematical and scientific literacy and problem-solving. Data are also available on the highest level of school attained, and from this, a dichotomous variable is derived for Year 12 completion. In addition, information is available on whether students reported

an Australian Tertiary Admission Rank, and if so what that score was. Achieving an ATAR score is thought to be more indicative of the quality of educational attainment than completion of Year 12.

Methods

In order to investigate the postulated relationships, exploratory analyses using cross-tabulations were undertaken, followed by regression modelling. Sample weights are used to account for sampling design and survey attrition (Lim 2011).

Results

We are interested mainly in differences in participation in tertiary study by location and socioeconomic status. We report on other relationships where they impinge upon the progression of rural and low-SES students to tertiary study.

In addition to the main interests of the study, the current data confirm findings from previous research: that many other factors influence transitions from school to post-school destinations. For example, attitudes towards school and achievement at school influence Year 12 completion, and Year 12 completion influences post-school destinations (Curtis & McMillan 2008).

Our main findings are:

- There is a difference in the highest level of tertiary education participation between metropolitan and rural students in tertiary education, specifically:
 - 44.0% of metropolitan youth had completed or were studying at degree level compared with 34.2% of rural young people.
 - 35.3% of metropolitan youth had completed or were undertaking a VET program compared with 43.1% of rural young people.
 - 79.3% of metropolitan youth had completed or were undertaking some tertiary study (either VET or higher education) compared with 77.3% of rural young people.
- There is a difference in the highest level of tertiary education participation by socioeconomic status, specifically:
 - Low-SES students make up 15.2% of university enrolments, while high-SES students constitute 40.1% of those enrolments.

Demographic characteristics

Rural and metropolitan students differ on several demographic variables that are also associated with differences in achievement and attainment.

- The socioeconomic status of rural students is slightly lower than that of metropolitan students, with there being 22% low-SES students in metropolitan locations compared with 33% in rural ones, and 27% high-SES students in metropolitan locations compared with 17% in rural areas.
- There are fewer individuals from non-English speaking backgrounds in rural locations (1.5%) than in metropolitan areas (12.0%).
- Rural locations have fewer young people from immigrant backgrounds (6.6%) than do metropolitan areas (30.7%).

Past research (for example, Curtis 2008) has shown that young people of immigrant backgrounds are more likely than those of Australian heritage to pursue higher education, while low-SES students are less likely to pursue that level of study. We need to know whether rural students' low participation in higher education is attributable to location or to other characteristics, such as socioeconomic status and cultural heritage, correlated with location, and we investigate this matter through regression modelling, outlined briefly below.

Demographic characteristics, attitude, intention, aspiration and achievement

Low-SES students have significantly less favourable attitudes towards school than do their high-SES peers ($r = 0.206$, $p < 0.001$). Students who were born overseas have slightly more favourable attitudes towards school than do other students, but this effect is small. On other variables, such as sex and location, there were no significant differences in attitude towards school.

Students' intentions and aspirations for completing school, for post-school education and for careers do vary by location and socioeconomic status.

- Fewer rural than metropolitan students indicate that they plan to complete Year 12 at school, although this difference in intention is small (88.8% of rural compared with 92.0% of metropolitan students).
- More rural than metropolitan students nominate Year 12 as the end of their education (30.3% cf. 20.2%). Correspondingly, fewer rural than metropolitan students indicate an intention to pursue a university degree (55.4% cf. 67.2%).
- Occupational aspirations follow post-school educational intentions closely. Fewer rural than metropolitan students expect to have a white-collar high-skill job by age 30 (55.3% cf. 64.4%).
- A strong relationship exists between socioeconomic status and intention to complete Year 12, with the following percentages of students in successive SES quartiles (from low to high) indicating an intention to complete Year 12: 86.2%, 91.8%, 90.9% and 97.8%.
- A similar but stronger relationship exists between socioeconomic status and intention for post-school study. The following proportions of students in successive SES quartiles intend to undertake degree-level study: 44.3%, 58.0%, 67.0% and 83.9%.
- Expectations for occupations are closely allied with tertiary study intentions, with the following proportions of students, by SES quartile, expecting to have a white-collar high-skill (professional) job by age 30: 47.6%, 61.5%, 64.2%, 74.7%.

According to the theory of planned behaviour (Ajzen 1999), intentions are powerful predictors of actions, so we now consider the influences of demographic and attitudinal variables on attainment and tertiary participation.

Influences on school attainment

In order to investigate the complex set of relationships between demographic characteristics, school attitude and achievement variables and school attainment, we develop a series of regression models.

First, we examine influences on school attainment as an intermediate stage in developing a model of tertiary participation. We focus on whether students complete Year 12 and whether they report an ATAR as outcome variables. We believe that achieving an ATAR is a more informative measure of school success than others because of the assessment and associated processes used to calculate it. As this is a dichotomous variable, we undertake logistic regression modelling. We specify the model in

stages, first including only demographic characteristics, then adding attitude, achievement and finally intention variables. We present summary results here only.

Year 12 completion is weakly related to location, with rural students slightly less likely than metropolitan ones to complete Year 12. The factors that are strongly related to Year 12 completion are intention to complete it (see, for example, Khoo & Ainley 2005) and socioeconomic status, with low-SES much less likely than high-SES students to express this intention.

Quite surprisingly, location does *not* exert a net influence on gaining an ATAR ($p = 0.228$). It is apparent that other demographic variables that are correlates of location, such as socioeconomic status and home background, do predict this outcome. The variables that do account for having an ATAR and which are correlated with location are socioeconomic status, immigrant background and language other than English background. Socioeconomic status is a particularly strong predictor of gaining an ATAR: a student who is just in the highest SES quartile is more than twice as likely to report an ATAR as a student of average socioeconomic status. Immigrant-background students, despite having slightly lower achievement results at age 15 years, are significantly more likely than students from an Australian background to report achieving an ATAR.

Other variables, which are not related to location, such as sex, family structure and the number of siblings, also explain some of the variation in gaining an ATAR.

In predicting school completion, when attitude towards school and intention to complete Year 12 are added as predictors, the predictive power of the model improves. Location remains non-significant, but socioeconomic status remains a very strong predictor. When academic achievement at age 15 years is added to the model, it becomes the strongest predictor, but others such as intention and socioeconomic status, remain strong predictors.

Influences on tertiary participation

We note above that tertiary participation is lower for rural than metropolitan youth and lower for low-SES compared with young people with a higher socioeconomic status.

We now turn to an examination of influences on participation in post-school education. We do this by using two outcome variables; namely, enrolment in university study or participation in any form of VET.

Despite the headline difference in higher education participation between metropolitan and rural young people (44.0% cf. 34.2%), when other factors are included in models of university study, location is *not* a significant predictor.

Factors that do predict university study are achievement at age 15 years, sex, socioeconomic status, intention to pursue a degree and attitude towards school. Females, high-SES individuals, students with an intention to undertake university study and immigrant-background young people are more likely to undertake university study.

It is worth noting that rural students tend to have lower socioeconomic status than metropolitan youth and that there are fewer young people of immigrant background in rural locations. Thus, while there is no doubt that rural students do face cost barriers to university study, it would appear that the lower level of participation of rural students in this level of study can be attributed to the associated factors of socioeconomic status, cultural heritage and intention. It is distinctly possible that the lower intention for university study of rural students reflects the barriers they perceive to participation. (This speculation is borne out in the mentoring study reported below).

Quite a different set of predictors is found for participation in vocational education and training (VET) programs.

Although there is a difference in VET participation (35.3% metropolitan cf. 43.1% rural young people), we find no effect for location when other variables such as socioeconomic status, gender and country of birth are included in the model; metropolitan and rural students are equally likely, net of other influences, to pursue VET study.

Low-SES young people are slightly more likely than high-SES youth to pursue VET, but this effect is much weaker than that favouring high-SES young people in higher education.

In contrast to the situation for higher education, males are more likely than females and Australian background youth more likely than those of immigrant backgrounds to undertake post-school VET study.

Summary and implications of findings

Rural young people have lower rates of participation than metropolitan youth in higher education. Similarly, low-SES young people are less likely than those of high-SES backgrounds to enter higher education.

The mechanisms by which rural background and low socioeconomic status operate on higher education participation include achievement, attitude and aspiration. We find no differences between rural and metropolitan students in their achievement at age 15 years and their attitudes towards school. We do find differences in their aspirations for post-school study and careers, with rural students holding lower aspirations for post-school education and lower career expectations than metropolitan students.

Low-SES students are very much less likely than high-SES youth to enter higher education. Low-SES students tend to have lower achievement, less favourable attitudes towards school and lower aspirations for post-school study and careers.

Our multivariate analyses reveal that location itself does not predict higher education participation, but we do find a very strong effect for socioeconomic status. Moreover, we find possible mediating influences, specifically, that rural and low-SES students have lower aspirations for post-school study and lower career expectations. In addition, low-SES students also have less favourable attitudes towards school. Both aspiration and attitude towards school are positively correlated with participation in post-school education.

One of the ways of addressing low aspirations and intentions for post-school study is through mentoring programs. Through mentoring, rural and low-SES students recognise barriers to post-school participation, but also find models and means by which these barriers can be reduced.

Government policy responses (Department of Education, Employment and Workplace Relations 2009) to the Bradley et al. (2008) recommendations to establish targets for low-SES participation in higher education appear to be well supported. Increasing funding to universities for low-SES enrolments, reducing the age of independence to facilitate student income support and raising the income threshold should all assist low-SES and rural students, the latter who must leave home and find part-time work to support themselves in order to participate in higher education. The extent to which these changes influence intentions for and enrolment in higher education by low-SES and rural young people remain to be seen. The current study uses the most recently available data (2010) for the Y03 cohort, and this predates the introduction of the revised Youth Allowance and Austudy arrangements, which are being fully implemented in 2012 (Department of Education, Employment and Workplace Relations 2009).

Investigation 2: the effects of a mentoring program

The analyses from the intentions, achievement and attainment of metropolitan and rural students section of this report indicate that location acts upon higher education attainment through the mechanisms of achievement, attitude and aspiration. Both rural and low-SES schools have low transition rates to university following school completion (Bradley et al. 2008). Therefore, in order to increase rural and low-SES participation in higher education, one starting point is to target the attitudes toward, and aspirations for, higher education of students in rural and low-SES schools. This is the aim of the mentoring aspect of the present project.

Youth mentoring is one area which has been extensively examined in relation to a range of other issues, such as raising achievement levels, social adjustment and reducing behavioural conduct problems (for a comprehensive review, see Dubois et al. 2011). Clarke's (2009, cited in Dubois et al. 2011) doctoral research involved a mentoring-based intervention to increase the academic performance of students at risk of failure; it purportedly found that the mentoring project had a substantial impact on the academic performance of students. Similarly, de Blank's (2009, cited in Dubois et al. 2011) doctoral research reportedly found a small academic increase among female students mentored within a leadership program.

Although the literature demonstrates that academic performance can be improved by mentoring programs (Dubois et al. 2011), one area that has received little attention is the effect of mentoring programs on raising the aspirations for post-school study. Houston's (1999, cited in Dubois et al. 2011) unpublished doctoral research involved raising the aspirations of disadvantaged African-American students, reportedly raising student aspirations a relatively small amount.

To date, no published work has specifically investigated the role of mentoring in increasing student aspirations for higher education and certainly not within the Australian context. The present project sought to investigate the effectiveness of a mentoring program undertaken in one low-SES and one semi-rural school (a school that approached but did not meet the cut-offs for a rural school in terms of physical distance from metropolitan areas) in raising aspirations for post-school university study. Further, it sought to investigate what effects, if any, the mentoring program would have upon aspirations for vocational education in the form of intentions to attend a TAFE institute.

Why might mentoring raise students' aspirations to attend university? There are several psychological theories that offer potential mechanisms for such an effect. First, a powerful determinant of human behaviour is the need to belong (Tajfel et al. 1971; Billig & Tajfel 1973). For this reason, people form social groups, classifying themselves as either in, or out of a designated group. Comparisons are then made between the groups the person identifies with (the 'in-group') and groups that the person does not identify with (the out-groups). As a result, behaviours that are considered concordant with the in-group norms are undertaken at a higher rate (Tajfel et al. 1971; Billig & Tajfel 1973). If mentoring leads students to identify more with university students as an in-group, then this may, in turn, lead them to consider university to be a more viable education option for their future.

A second possible reason mentoring might affect education intentions is the availability heuristic. When information about choices is limited, people tend to evaluate options as more likely when they can more readily remember information about them (Tversky & Kahneman 1973). If mentors

were to improve the amount of information students had about university, then this might lead them to recall that information more easily and thus evaluate university education as a more likely option for their future.

Thirdly, students who are mentored might alter their perception of the cognitive distance associated with university education. Cognitive distance includes both social distance and physical distances, which have been shown to be interrelated (Stephan, Lieberman & Trope 2010). Physical distances to desirable locations are typically remembered as being closer than distances to less desirable locations (Alter & Balcetis 2011), and threatening locations are typically represented as even further away (Xiao & Van Bavel 2012). The increased social contact with mentors may lead students to perceive university students as socially closer, while the contact with mentors may prompt students to perceive the university as being physically closer. In combination, these 'perceptions' may increase students' likelihood of attendance.

Finally, we examined whether participants' perceptions of the costs of attending university were lowered by contact with mentors, thereby removing the fear of excessive costs involved with attending university. Economic theories predict that, when perceptions of costs decrease, demand for a product increases (Shin 1985). If students in these schools perceive costs as high, but mentors reduce perceptions of the difficulties associated with meeting these costs, this may lead to an increase in intention to attend university.

One concern with any attempt to increase post-school university attendance is that the increase in the number of students who choose to attend university may reduce the number of students pursuing vocational education. At the time of this report, more than half of the skills listed as in shortage in Australia are vocational skills, typically available from a VET institution (Department of Education, Employment and Workplace Relations 2011). The pursuit of an increase in the numbers with a university education could result in the inadvertent decrease in the trades-based skills of the country. Therefore, the present research sought to investigate whether the mentoring of students towards university uptake adversely affected their aspirations for further education in the form of VET courses.

Method

In order to attempt to redress the lower participation in higher education of low-SES and rural students, and based on the literature on mentoring interventions, we chose to implement a school-based peer-mentoring program. The peers selected were recently graduated high school students who are now enrolled at Flinders University and who volunteered to participate in the program. Peer-mentoring was chosen because it has been shown to be effective in raising disadvantaged students' aspirations for post-school study (Houston 1999, cited in DuBois 2011).

Participants

Forty-eight 14- and 15-year-olds (23 males) participated in the project at all four time points (when follow-up questionnaires were administered). All participants began the project while they were in Year 9 and completed the study when they were in Year 10. This represented an entire class from the semi-rural school and a sub-set of students from the low-SES school. The entire Year 9 participated from the semi-rural school. The low-SES students were chosen by teachers as those whom they judged may or may not attend university, depending upon their experiences across the next few years. Participation was entirely voluntary. Ethics approval was obtained for conducting the study and the parents of all students gave informed consent.

Schools

Students in two schools were involved, one low-SES school and one semi-rural area school in South Australia. The semi-rural area school approached but did not exceed the 80-km distance from a metropolitan region required for a rural school definition (Department of Education and Children's Services 2009; Jones 2000). In 2006 the median weekly household income for the low-SES school district was \$794, while the semi-rural school had a median weekly household income of \$975, compared with a median weekly household income of \$1027 Australia-wide (ABS 2012).

Mentors

As part of the Flinders University 'Inspire Peer Mentoring' program, university student mentors visited the two schools participating in this research. All mentors underwent a current police check and initial mentor training.

Mentoring

Across seven school terms, beginning in the students' Year 9 classes, mentors visited the school once a week on average during regular school hours. The duration of each term was approximately 11 weeks, and mentoring sessions ranged from an hour to a half a day. Mentors exercised discretion in determining the most effective use of their time, but in general they formed friendships with students, answered questions about university, helped students with applicable areas of work and, where appropriate, mentored students on career possibilities; that is, mentors were free to use their time flexibly, but in a manner consistent with the underlying values of the program. Underpinning the mentoring were the following principles (adapted from Sipe & Roder 1999):

- 1 'Good mentors focus on building trust and friendship' (Campbell 2006, p.13).
- 2 Effective mentors involve the young person in deciding how the time with the mentor is spent.
- 3 Since consistent and reliable mentoring is important, mentors will maintain a steady presence throughout the mentoring relationship.
- 4 The mentor should take responsibility for ensuring the continuation of the relationship.
- 5 Mentors should engage the mentored in learning activities that are also fun.
- 6 Mentors should show respect for the views of the young person.
- 7 Mentors should seek and apply help from program staff.

Of critical importance was that mentors did not seek to attempt to transform or reform the mentored, nor instil values different from or inconsistent with the young person's home values. Because mentors were highly collaborative in their student-mentor relationships and activities, mentoring was highly individualised. For more details about the mentoring program, visit <http://www.flinders.edu.au/careers/services/mentor/inspire.cfm>.

As mentoring was performed in small groups, students received different amounts of mentor contact, and mentoring fluctuated throughout the year. A questionnaire with self-report scales assessed individual student-mentor contact (1, none; 7, a lot).

Campus visits

On two occasions (once during the second and third terms in the first year of mentoring), students visited the university campus. These visits involved participation in structured activities (that is,

scavenger hunt, appropriate teaching tasks). Teaching tasks were undertaken by university staff and involved the construction of origami cubes by following simple mathematical rules and participation in a physical education activity/game.

Measures

Students were asked to complete an identical questionnaire on four separate occasions. The questionnaire sought demographic information, as well as student responses to a number of critical questions, which are listed below. The first time point was obtained one week after the commencement of mentoring in the schools. This was undertaken at this time to reduce demand effects due to the students being unfamiliar with the mentors and the researchers. Subsequent measures were obtained at approximately six-monthly intervals. A complete list of measures is available in appendix A.

The following are the critical questions:

- *Mentor contact*: two questionnaire items assessed, on a seven-point scale, the amount and perceived usefulness of the mentoring students had received (1, not at all; 7, extremely).
- *Estimated likelihood of attendance*: two questions assessed students' perceptions of how likely they were to attend a university or a TAFE institute following their completion of high school. Responses were given in percentage likelihood from 0 to 100% in 10% increments.
- *Cognitive distance*: students reported how close they perceived Flinders University to be to them physically. Flinders University was chosen as it was the nearest university campus to the students' locations and was the campus students visited for orientation sessions and where their mentors were students. The reason for using this scale is that past research has demonstrated that more desirable locations are remembered as being closer (Alter & Balci 2011). Students marked a line on a 72-mm visual analogue scale from 0 mm (closer) to 72 mm (further). Such scales have been found to be accurate, reliable and easily used by participants in both medical and psychological research (Carlsson 1983; Harvey, Kemps & Tiggemann 2005; Hill, Weaver & Blundell 1991; Price & McGrath 1983), and have also been found to be easily used by quite young children (Shields et al. 2003).
- *University in-group identification*: two sets of five questionnaire items assessed the level of the students' in-group identification with the university and with university students. Items were averaged across the ten seven-point items to give an average in-group identification rating. Example items for in-group identification included: 'University students are just like me' and 'How much do you trust the people at university?' (1, not at all, strongly disagree, to 7, almost completely, strongly agree).
- *Financial burden*: three items assessed the financial burden of attending a university on a seven-point scale; these items were then averaged to give a financial-burden rating. A sample question was: 'Financially, I can afford to attend university (1, strongly disagree; 7, strongly agree).
- *Understanding of university*: using a seven-point scale four items assessed student understanding of what happens at a university. These items were averaged for an overall understanding rating. An example of an understanding question was: 'I understand what happens at university' (1, strongly disagree; 7, strongly agree).

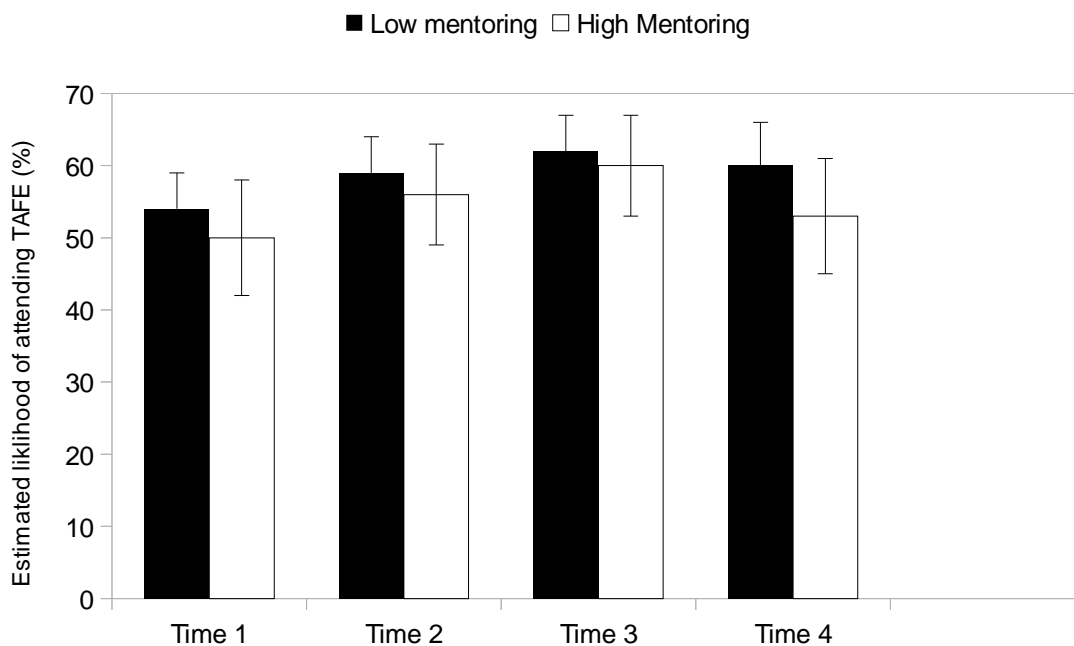
Results

Data were analysed using mixed-model analyses of variance (ANOVA), with effect sizes reported in Cohen's *d* (Cohen 1988). We were able to get four points of data for 46 students, 24 from the low-SES school and 22 from the semi-rural school. A median split was performed on the sample to determine those students who had received more intensive amounts of mentoring and those who had received low levels of mentor contact.

Likelihood of attending university and TAFE

Participants who had consistently higher levels of mentoring² had a higher score on intentions to go to university across all four time points than those who had received minimal or no mentoring.³ The difference in intention to attend university between students who had received consistently high levels of mentoring and those who had received minimal or no mentoring was similar at each time point, resulting in a non-significant time by mentoring interaction ($p = .231$). Figure 2 shows that students who received mentoring were consistently more inclined to attend university following high school graduation than those who received no such mentoring. The mentoring had no effect on intention to go to TAFE.⁴ Figure 3 shows the intention to go to TAFE over time.

Figure 2 Students' estimated likelihood they would attend university over time split by high and low levels of mentoring



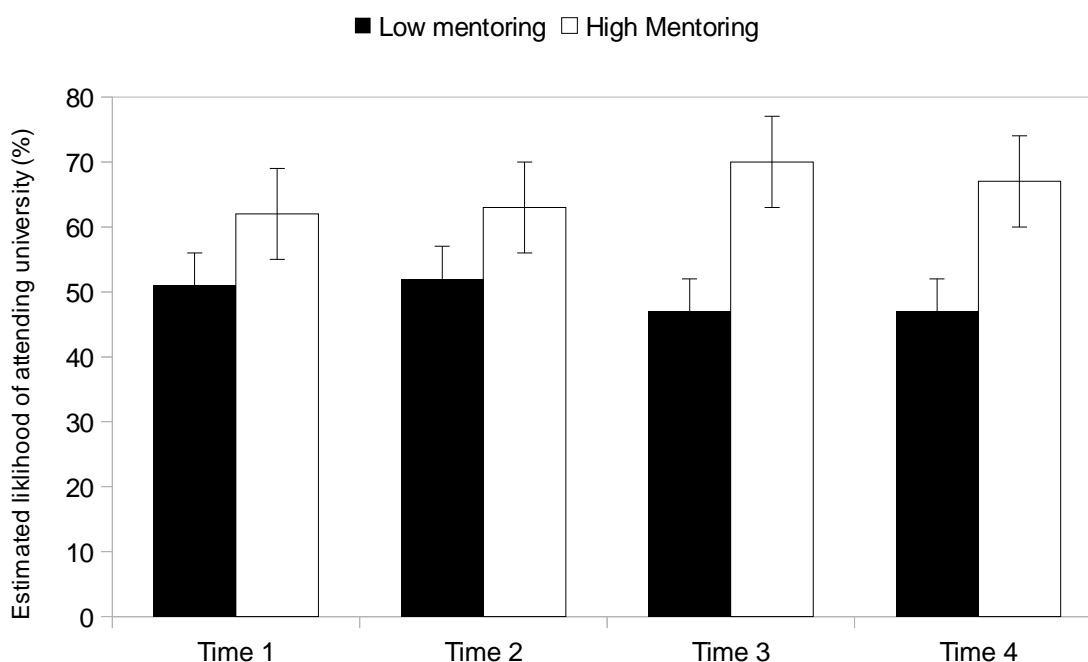
Note: Error bars denote standard error.

² ($M = 65\%$, $SD = 28.44\%$).

³ ($M = 49\%$, $SD = 28\%$) $F(1, 42) = 4.36$, $p = .043$, $d = 0.57$.

⁴ ($F < 1$, $p = .589$).

Figure 3 Students' estimated likelihood they would attend TAFE over time split by high and low levels of mentoring



Note: Error bars denote standard error.

At each single time point, we had more students than in the complete analyses due to drop-outs and late enrolments. At each time point we conducted an analysis of how likely participants were to attend university, split by how much mentoring they had received. Participants at time 1 indicated that they were more likely to attend university when they had received higher levels of peer mentoring.⁵ At all other points in time, participants were not significantly more likely to attend university when mentored, although marginal trends were observed at time 2⁶ and time 4.⁷ This may indicate that, for mentoring to be successful, it must be ongoing, as the primary analysis reveals a significantly higher level of intention to go to university among those students who received mentoring across all four time points.

- *University in-group identification*: students who received high levels of mentoring identified themselves as significantly more affiliated with university students as an in-group⁸ than those who received low levels of mentoring.⁹
- *Financial burden*: there was a significant main effect of time on predictions of the financial burden of attending university, in which, over time, all students tended to estimate the costs of attending university as lower, irrespective of mentoring.¹⁰ This represented a small to moderate decline in cost estimates from time 1 to time 4.¹¹ As there was no effect of mentoring on cost perceptions, this indicates that the effect of mentoring was not produced through the mentors affecting the students'

⁵ $t(159) = 2.70, p = .008$ ($M = 61, SD = 26$, vs $M = 50, SD = 27$).

⁶ $t(100) = 1.86, p = .066$ ($M = 62, SD = 26$ vs $M = 53, SD = 26$).

⁷ $t(100) = 1.68, p = .096$, ($M = 57, SD = 29$ vs $M = 47, SD = 28$).

⁸ ($M = 4.5, SD = 0.52$).

⁹ ($M = 4.1, SD = 0.53$), $F(1, 36) = 6.70, p = .014, d = 0.77$.

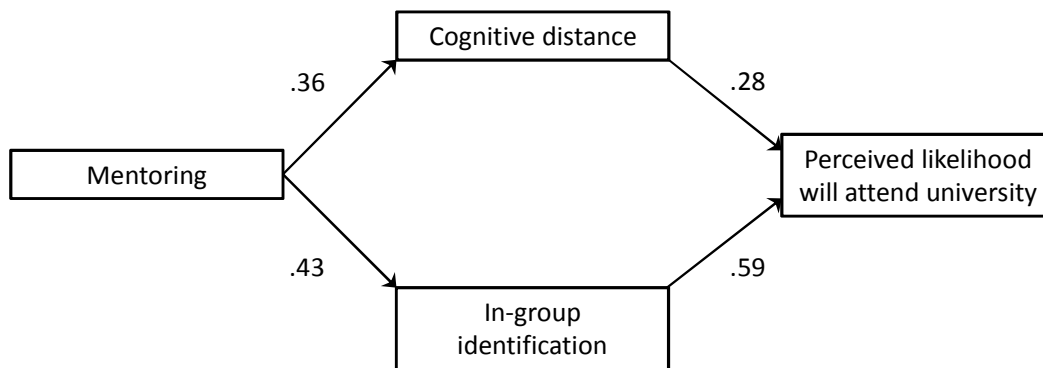
¹⁰ $F(3, 123) = 12.12, p = .001$.

¹¹ Time 1: $M = 5.67, SD = 1.3$; time 4 ($M = 5.08, SD = 1.4$), $F(3, 129) = 2.86, p = 0.40, d = 0.28$.

perceptions of cost. As cost perceptions tended to regress to the mid-point across the four time points, it may be that students' perceptions tend to become more closely aligned to the actual cost of university as they increase in age and gain an appreciation of the costs of goods and services.

- *Understanding of university*: there was no significant effect of mentoring or time on self-reported understanding of university and what occurs at a university.
- *Cognitive distance*: there was a marginal tendency for students who had received high levels of mentoring to believe that Flinders University was physically closer to them¹² than students who had received little or no mentoring.¹³
- *Mediation analyses*: a multiple linear regression showed that, when controlling for the effect of which school participants attended, mentoring had a significant effect on cognitive distance.¹⁴ After controlling for in-group identification and intent to attend university, a multiple linear regression showed that the effect of the mentoring on the perceived likelihood of attending university became non-significant.¹⁵ This indicates that the effects of the mentoring were completely accounted for by the reduction of cognitive distance and the increase of university in-group identification, as shown in figure 4. The total variance explained by the combined effect of cognitive distance and in-group identification, after controlling for the school participants attended, was 54.6% of the difference between the mentored and non-mentored group. It is highly likely that a predisposition towards attending university and other factors account for the remainder of the variance.

Figure 4 The effect of mentoring through cognitive distance and in-group identification



In late November 2011, a further step, in addition to collecting data via questionnaires, was conducted: five Year 10 students (one female) were interviewed as a group about their experience of being in the mentoring program. The interviews showed that visits from mentors and the interactions with them, mostly during school time but occasionally outside school (for example, at the local supermarket), did influence students' thinking about what they intended to do when they left school. For example, 'both mentors were doing teaching [and] it seemed like fun ... this helped me because this is what I want to do'. Another student found the mentor's advice and experience helpful, but in a way that indicated to them what they did not want to study: '[it's] hard to work with little kids, too hard, not what I wanted to do ... helped me realise what I didn't want to do'.

¹² M = 44 mm, SD = 10 mm.

¹³ (M = 50 mm, SD = 10 mm) F(1, 45) = 3.05, p = 0.59, d = 0.56.

¹⁴ R = .353, p = .036, R² = .125.

¹⁵ (t < 1, p = .859, R² change = .000).

In addition to specific career-oriented advice, the opportunities for visiting the Flinders University campus were positively endorsed by each student, encapsulated in comments such as ‘a good introduction to university, had no idea what it was like before going’; ‘opens your mind to what you can do’; ‘can see you can do what you like – yeah’. The group was also clear about how they would like to see the mentoring program develop: ‘more visits to schools by mentors’; organise it ‘so that everyone [in the school] gets the experience’; ‘have some mock lectures ... so you know what is coming’; and more hands-on activity during visits to the university.

Discussion and implications

Although there is a marked difference in the participation rates between metropolitan and rural students in higher education (44.0% and 34.2% respectively), we find that this difference is explained largely by the lower socioeconomic status of rural compared with metropolitan students, their lower aspirations for post-school study, and some related demographic characteristics, especially being of Australian rather than immigrant backgrounds.

Low-SES students have lower aspirations for post-school study and careers and lower levels of achievement at school than high-SES students. Even when other factors are considered, low socioeconomic status remains a significant predictor of not undertaking post-school study or training, especially university study.

The finding that the low aspirations of both rural and low-SES students represent a barrier to post-secondary participation led to the consideration of a mentoring program whose aim was to inform students about university attendance, with the hope of changing the expectations of students from these two groups.

The mentoring study had three primary aims. First, we sought to investigate the effectiveness of a mentoring program in raising student intentions to attend university after the completion of high school. Second, the project aimed to assess the impact, if any, of university mentoring programs on intentions to attend a TAFE institute after high school. Finally, we investigated what mechanisms might be responsible for any change in aspirations following the mentoring program.

Do university mentoring programs have an effect on student intentions to pursue university education following high school completion? The answer is 'yes'. Our results show higher intentions to attend university for those students who received mentoring by comparison with those who had not. Further, the analyses show that those students who received mentoring over only one or two data collection points did not experience intention gains as large as those students who received sustained mentoring. These findings suggest that sustained mentoring is much more effective in raising and maintaining student intentions than small bursts of the same mentoring program.

Do university mentoring programs adversely affect aspirations for vocational education? We find they do not: our results show no differences in intentions to pursue vocational education and training between the mentored and non-mentored groups. If anything, the intention to undertake VET is higher in the high-mentoring group at time 4 than at time 1. This is good news for university and vocational education mentoring programs, as it indicates that aspirations for these two forms of further education may develop independently.

What aspects of the mentoring project are responsible for the increase in university aspirations? Mediation analyses indicate that the mentoring project may have raised students' identification with university in-groups and reduced the cognitive distance from the university campus. Alter and Balcetis's (2011) findings indicate that more desirable locations are remembered as closer, which may explain why the mentored group tended to think that the university was physically closer to them. The mentoring project did not appear to impact upon the students' perceptions of the cost of attendance or their understanding of the university itself, ruling out the idea that contact with a university demystifies what happens at a university. Indeed, in the present study, the effects of mentoring on aspirations occur completely through cognitive distance reduction and in-group

identification. This indicates that, if students are provided with contact with university students and staff, they may form friendships, which in turn may result in their intentions to attend higher education being raised.

From a policy standpoint, the present results indicate that mentoring projects are an effective method for selectively raising student aspirations to participate in higher education. It is likely that similar mentoring projects in vocational education may result in an increase in aspirations for VET. That the university mentoring did not negatively affect VET intentions suggests that mentoring projects in both sectors should be able to work together to ensure a better standard of education for all young Australians, whether they wish to pursue vocational or academic career paths.

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Appendix A

Questionnaire measures

In Group/Out Group Measures

How much do you like University? (Circle a number)

1 2 3 4 5 6 7
Not A moderate A
at all amount lot

How much do you like TAFE? (Circle a number)

1 2 3 4 5 6 7
Not A moderate A
at all amount lot

How much do you trust the people at University? (Circle a number)

1 2 3 4 5 6 7
Not A moderate Almost
at all amount completely

How much do you trust the people at TAFE? (Circle a number)

1 2 3 4 5 6 7
Not A moderate Almost
at all amount completely

University Students are just like me: (Circle a number)

1 2 3 4 5 6 7
Strongly Unsure Strongly
Agree Disagree

TAFE students are Just like me (Circle a number)

1 2 3 4 5 6 7
Strongly Unsure Strongly
Agree Disagree

I like the same things as University Students (Circle a number)

1 2 3 4 5 6 7
Strongly Unsure Strongly
Agree Disagree

TAFE is scary (Circle a number)

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____

Strongly Agree Unsure Strongly Disagree

I understand what happens at university (Circle a number) (RC)

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____

Strongly Agree Unsure Strongly Disagree

I understand what happens at TAFE (Circle a number) (RC)

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____

Strongly Agree Unsure Strongly Disagree

I don't know much about university (Circle a number) (RC)

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____

Strongly Agree Unsure Strongly Disagree

I need more information before I make a decision about attending university (Circle a number)

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____

Strongly Agree Unsure Strongly Disagree

Moderation

How much contact have you had with University Mentors? (Circle a number)

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____

None Moderate A Lot

How much contact have you had with Vocational Educational Programs? (Circle a number)

Outcome Measures

What do you think the chance is that you will attend University? (Circle a number)

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

What do you think the chance is that you will attend TAFE? (Circle a number)

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

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The NVETR research program aims to improve policy and practice in the VET sector. The research effort itself is a collaborative one, which requires strong relationships with the research community in Australia's universities and beyond. NCVET may also involve various stakeholders, including state and territory governments, industry and practitioners to inform the commissioned research, using a variety of mechanisms such as project roundtables and forums.

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