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Does Regionality Influence Students' Perceived Employability and Career Orientation?: A Study of Students at an Australian University

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Abstract

Insufficient access to specialised career development within many rural, regional and remote (RRR) areas contributes to persistent differences in the higher education participation rates of young people from these areas. This paper reports on research conducted with 4,993 students at a university in Western Australia who self-assessed their perceived employability (career capabilities) and career orientation. Data were analysed by year and mode of study, location, gender and discipline. Comparisons were made between RRR students and their metropolitan peers. The findings compare perceptions of employability and career orientation among RRR students in comparison with domestic metropolitan students. This shows a level of commonality between the two groups, with lessons from research on RRR students being applicable to metropolitan students.

Keywords: employability, career orientation, student equity, higher education, regionality, rural, regional and remote

Introduction

Starting a degree is a significant step in a person's career development. Some students experience the transition to further study as a well-planned and direct transition from secondary to university education. However, for many students from rural, regional and remote (RRR) areas, the pathway to higher education is less straightforward and entails substantial life changes and risks. They face an increased likelihood of being unemployed in the years following secondary school (Andrews et al., 2004) while also having to navigate distinct geographical, social, academic and financial challenges in transitioning to university (Raciti, 2019). The ultimate desired outcome from this process is employment and how this outcome emerges requires a

complex assessment, one where educational qualifications and broad occupational choices are major determinants (Mallik et al., 2014).

This study of how students at a university in Western Australia (WA) conceptualise their employability sheds light not only on differences between RRR and metropolitan students, but more generally, how the evidence on RRR students translates to a broader understanding of these issues in higher education. The paper looks at an important aspect of this process, namely the formation of student self-assessments around issues of employability. In doing so, we asked two key research questions:

1. How does regionality influence students' perceived employability and career orientation?
2. Are there differences between RRR and metropolitan students in the perceptions of employability and career orientation and what can we learn from RRR students that informs us about the metropolitan student experience?

Perceptions of Employability and Higher Education

Australian higher education has been characterised by high levels of participation and a relatively strong vocational focus (Marginson, 2016). However, participation is only one component of lessening the impacts of disadvantage; students need also to succeed in their studies and to realise the benefits of study by securing graduate level work. Graduate success is strongly correlated with self-beliefs or efficacy beliefs: "*individuals who have higher perceived employability are likely to appraise a situation at work more favourably, and consequently experience better health and well-being*" (Berntson & Marklund, 2007, p. 279). In the higher education setting, students with higher perceived employability are also likely to demonstrate higher self-determination (Parker et al., 2010).

As Donald et al. (2019) attest, "*understanding the student self-perception of graduate employability is essential, to highlight areas of agreement, or potential mismatch with perceptions of other stakeholders*" (p. 611). The study reported here was grounded in social cognitive career theory (SCCT), which is derived from Bandura's (1986) social cognitive theory (SCT). SCCT is an established framework with which to understand student perception and decision-making (Janz & Nichols, 2010) because it recognises the social construction of career identity, the influences of proximal and distal factors, and the role of psychological capital.

SCCT theories have evolved over time from an original focus on interest, goals and performance (Lent et al., 1994) through to wellbeing (Lent & Brown, 2008), adaptive behaviour (Lent & Brown, 2013), and self-management (Lent & Brown, 2013). Lent, Brown, and Hackett (1994) emphasise that efficacy appraisals are largely the result of cognitively mediating "*the effects of learning experiences on future career behavior*" (p. 87). In line with this view and illustrating the intersection of SCCT with human capital theory (Becker, 1964), the study focussed on students' inner-value capital, defined by Baruch and Peiperl (2000) as self-awareness, self-esteem, self-efficacy, and confidence.

Many students align their higher education study decisions with institutional discourses of employability (Knight, 2019). The ability to critique dominant discourses and make cognisant careers and study pathways decisions is impacted by multiple factors, many of which are also definitive in characterising disadvantage in higher education. These include socio economic status (SES), with higher SES students tending to have higher levels of social and cultural capital (Morgan, 2020) and greater access to careers and study pathways advice (Archer & Hutchings, 2000; Gore et al., 2017). The relevance here is that RRR higher education students in Australia are more likely to be female, Indigenous and from a low-SES background (Commonwealth of Australia, 2018; Devlin & McKay, 2017), with the somewhat simplistic assumption that greater

access to higher education delivers positive individual and societal benefits being subject to the same confounding factors that shape access in the first place (see Webb et al., 2017).

Higher education access is often framed in terms of a binary between those living in city settings, which is understood as synonymous to urban, and people living outside the cities, who are contrasted as 'other' (Roberts & Guenther, 2021). This study did not wish to follow this tradition in being metrocentric (Fuqua & Roberts, 2021), but instead sought to also look at differences in career development and employability thinking of people who live outside city centres, by drawing on contemporary career development theory to look at whether being outside metro centres can be seen to impact career development pathways.

We did not wish to define the factor of not living in cities in a negative metrocentric (Fuqua & Roberts, 2021) way, but we did wish to recognise structural inequalities that pose barriers to access to higher education (Halsey, 2018). We therefore selected the term 'regionality' and used established policy terms (Halsey, 2018) such as RRR status to define those students who have residential addresses outside metro cities. We also recognised both the great variation of lived experiences (Guenther & Roberts, 2021) between people who reside in a large regional town with a university campus and those living in remote areas with limited access to internet and other resources.

We note from the extant literature that the very status of living outside metro centres has been previously discussed as having significant impact on participation (Halsey, 2018) and that the implications of regionality extend to students' choice of major, with RRR students more likely than their peers to select fields of study perceived to have stable employment outcomes (Lehman, 2009) and to see education as a functional means to accessing the world of work (Dalley-Trim & Alloway, 2010; Jackson, 2016).

Locational disadvantage manifests itself across the educational cycle. Cardak et al. (2017) have observed that, after controlling for SES, RRR students in Australia are 10% less likely than metropolitan students to make plans to attend university, 7% less likely to complete high school, and 5% less likely to attend university, after controlling for entrance scores. Once at university, RRR students are 6% less likely to graduate. Some of the immediate reasons for these outcomes are geographical, in that the combined costs of accommodation, transport and income support are active deterrents to RRR participation (Alloway & Dalley-Trim, 2009; Kirby & Conlon, 2005).

In the Australian context, the Independent Review into Regional, Rural and Remote Education ("the Halsey Review", Halsey, 2018) and the *National Regional, Rural and Remote Tertiary Education Strategy* ("the Napthine Review", Napthine et al., 2019) have made key recommendations in relation to reducing relocation and living costs for RRR students. Noting that people from RRR areas of Australia are around 40% less likely than other people to gain a Bachelor's degree, Napthine et al. (2019) recommended a number of targeted policy changes in the final report of their review of regional education in Australia.

Some of the authors' recommendations have been addressed in the recent release of the Federal government's *Job-ready Graduates: Higher Education Reform Package 2020*, including the introduction of the Tertiary Access Payment (TAP) for students moving to metropolitan areas (Department of Education, Skills and Employment, 2020). Another key recommendation, which could be actioned through collective effort, is to "*enhance the role and positive impact of schools and career advice [to] increase tertiary education aspiration, participation and attainment*" (Napthine et al., 2019, p. 5). Against this background, the research reported here describes the thinking of current students and seeks to understand how RRR students' self-perceptions of employability differ from those of their metropolitan peers.

Table 1: ***Competencies Self-Assessed by Students Using the Employability Tool Survey***

Competency set	Description and source
Communication skills	The Communication scale (eight items) refers to the use of language and technology when communicating with others. Items were derived from Coetzee (2014).
Digital and technological	The four-item scale asks students to rate their ability to learn and use digital technologies relating to study, work and career planning.
Problem solving and decision making	Problem solving and decision are measured using 10 items derived from Coetzee (2014).
Goal-directed behaviour	From an SCT perspective, learners' employability development is underpinned by their ability to operate as self-regulated learners. Expressed as goal-directed behaviour, the scale was derived from Coetzee (2014).
Career (study) commitment	The extent to which students identify with, and are committed to their chosen study pathway, is assessed using Mancini et al.'s (2015) eight-point career commitment scale.
Self-esteem	Self-esteem is measured using the positive wording version of Rosenberg's (1965) 10-item self-esteem scale.
Academic self-efficacy	Academic self-efficacy refers to learners' confidence in their ability to perform academic tasks. Items were adapted from Byrne et al's (2014) academic self-efficacy measure.
Ability and willingness to learn	The seven items were derived from Coetzee (2014).
Perceived program relevance	Perceived program relevance refers to students' confidence and includes students' motivation, study retention and completion, and knowledge retention. Three of the four items were derived from Smith et al. (2014).
Career exploration and awareness	In line with SCCT, career exploration and awareness is measured using Lent et al.'s (2016) eight-point decisional self-efficacy factor.
Occupational mobility	Lent et al.'s (2016) four-point decisional coping efficacy factor is used to measure occupational mobility.
Emotional	The four aspects of emotional intelligence included in the tool follow Brackett et al. (2006).
Ethical and responsible behaviour	Employability is an aspect of social citizenship and should consider both individual and broader societal impacts. The scale incorporates aspects of ethical and responsible behaviour derived from Coetzee (2014).

Methodology

The study utilised Bennett's (2019, 2021) validated measure of perceived employability, which is delivered to students as an online self-assessment questionnaire.[1] The tool took between 20 and

30 minutes to complete, with the initial outcome being a personalised profile report that included further information and embedded links to developmental resources. Demographic data were amassed on age, sex, location, highest completed level of education, and institution in which the student is enrolled.

The measure integrates principles of Bandura's (1986) SCT and Lent et. al.'s (1994) SCCT into a formative self-measure of perceived employability, captured across 13 constructed career and study competencies presented in Table 1. The reliability for each construct within the measure has been previously estimated using Cronbach's (1951) alpha coefficient. All constructs have alphas over 0.70, indicating acceptable internal consistency (Bennett & Ananthram, 2021).

Using Likert-style scales, the tool required students to report their employability confidence in relation to the career and study competencies. Noted earlier, the study focussed on students' inner-value capital. As such, the study focussed on the competencies that related to self- and career-awareness, self-esteem, and academic self-efficacy. Five open questions and a single prompt to "*write whatever you think we need to know about students and higher education*" enabled the collection and analysis of qualitative data.

Data collection and analysis

Ethical approvals were obtained before the study commenced and invitations to participate were issued via the university's academic networks, senior leaders, program coordinators and heads of school. Students received an information sheet and an assurance of anonymity, and they completed a consent form within the online instrument. The self-assessment was most often set as a required reading task or an in-class activity within first-year curriculum.

Students were given the choice of whether or not their online tool responses were included in the research dataset and this decision did not affect their subsequent access to the tool or resources. Further, as the value of data from the online self-assessment tool is enhanced when it is linked to enrolment records, in 2019 permission was sought from first-year students for their responses to be linked to administrative student records using a protocol which protected their anonymity. This enabled the authors to create a linked dataset which included information on demographic details, course enrolment and progress (academic performance and progression).

The first-year student sample included an explanatory variable set relating to gender, age, area of residence (a regionality measure), area of residence SES, citizenship/permanent residency status, disability if disclosed, and mode of study, among others. In cases of duplicate records, the information set containing the current or most recent degree course information was retained. A complete case approach was adopted to address observations with missing information for the variables of interest. The final dataset consisted of 4,993 unique observations.

Descriptive statistics for the full sample are presented in Table 2, where they are disaggregated by geographical origin. The majority of students were female and had a mean age of 21.6 years. Almost 90% of the students studied on-campus. Around 17% of students were from a low-SES background, 11.7% were from a non-English speaking background (NESB), and 16% were from RRR locations; 4% of the students were from a culturally and linguistically diverse (CALD) background, 3% had a physical or mental disability and nearly 21% were the first in their family to participate in university education.

Table 2: ***Summary Statistics of the Sample***

Variable	*Full sample*	*Metropolitan*	*RRR*
Demographics			
Female	0.664	0.650	0.737
Male	0.336	0.350	0.263
Age	21.699	21.611	22.159
On-campus	0.879	0.899	0.773
Low SES	0.172	0.146	0.304
NESB	0.117	0.129	0.055
RRR	0.161	NA	NA
CALD	0.040	0.044	0.020
Disability	0.033	0.033	0.029
First in Family	0.209	0.203	0.241
Field of study			
Natural and Physical Sciences	0.039	0.041	0.031
Information Technology	0.026	0.028	0.017
Engineering and Related Technologies	0.005	0.006	0.002
Architecture and Building	0.043	0.045	0.035
Agriculture, Environmental and Related Studies	0.009	0.009	0.010
Health	0.400	0.414	0.328
Education	0.150	0.133	0.241
Management and Commerce	0.187	0.189	0.176
Society and Culture	0.092	0.091	0.099
Creative Arts	0.041	0.039	0.055
Perceived employability construct			
Communication skills	4.802	4.801	4.808
Digital and technological literacy	4.936	4.947	4.876
Problem solving and decision making	4.618	4.618	4.617
Goal-directed behaviour	4.551	4.551	4.552
Career (study) commitment	3.186	3.189	3.172
Self-esteem	2.204	2.200	2.228
Academic self-efficacy	5.405	5.405	5.405
Ability and willingness to learn	4.692	4.692	4.690
Perceived program relevance	4.210	4.205	4.232
Career exploration and awareness	6.982	6.980	6.995
Occupational mobility	6.372	6.354	6.467
Emotional literacy	3.509	3.509	3.506
Ethical and responsible behaviour	5.241	5.238	5.257
Observations	4993	4187	806

There were some differences in characteristics when the sample was stratified by geographical location. For example, there was greater female representation in the RRR cohort compared to the metropolitan cohort, at 74% and 65% respectively. RRR students were slightly older at an average of 22.2 years, compared to 21.6 years for the metropolitan cohort. A smaller proportion of RRR students studied on-campus. Compared to the metropolitan cohort, there were higher proportions of RRR students who came from either low-SES backgrounds and/or were the first in their family to attend university. Conversely, lower proportions of RRR students were observed to come from a NESB or CALD background.

Course enrolment patterns of the RRR students aligned with those seen more generally among students from disadvantaged backgrounds, with RRR students more likely to be studying for degrees in *Education* (24.1%, compared to 13.3% for metropolitan students) and *Society and Culture* (9.9% versus 9.1%), and less likely to be studying in *Natural and Physical Sciences* (3.1 %versus 4.1%) or *Engineering and Related Technologies* (0.2% versus 0.6%). We note that variation in discipline enrolment in the sample, compared with Australian population enrolment shares, in part reflects student engagement with the online tool during the rollout.

Quantitative analysis

Multivariate linear regression was undertaken to assess the relationship between a range of explanatory variables in the online self-assessment tool data for five of the competencies outlined in Table 1 for which exploratory t-tests revealed statistical differences by RRR status – Self-esteem; Academic Self-efficacy; Career Identity and Commitment; Career Exploration and Awareness; and Occupational Mobility – denoted as Ci below.

The same set of explanatory variables was used to identify influences on each scale. The focus explanatory variable was for regionality or remoteness (RRR), with controls for other characteristics included: gender status (Female); age (Age); mode of study (On-campus); school type (Govt. School); statuses, specifically low SES status (Low SES); non-English speaking background (NESB); disability (Disability); and first-in-family status (First in Family). Also included, were individual variables for each field of study (denoted as Field of Study below), ranging from Natural and Physical Sciences to Creative Arts, with Management and Commerce as the omitted group. For each competency (Ci) chosen, the following ordinary least squares (OLS) linear regression was estimated:

> Ci = f (Female, Age, On-campus, Govt. School, Low SES, NESB, RRR, Disability, First in Family, Field of Study)

Qualitative analysis

The linking of the online self-assessment tool data and institutional data enabled identification of all RRR student responses to the open prompt question: "*Use this space to write* whatever you think we need to know about students and higher education." Of the 3,992 qualitative responses in the dataset to this question, 440 responses were from RRR students, and it is this response set which formed the basis for the qualitative analysis.

Textual analysis of all 440 responses began inductively, with researchers iteratively moving over the verbatim text, classifying the comments and then revising as required as the result of a second reading. Next, and following Gioia and colleagues (2013), we manually coded the responses to ascertain positive or negative emotion and the key theme of each response. Synonyms in the themes were grouped and readings of each complete case confirmed that these words could be coded together (Weber, 1990). In the final phase of analysis, we moved from basic coding of stemmed themes through to the development of themes and conceptual categories. We apply these themes within the Discussion section to enrich the quantitative findings and showcase the student voice.

Findings from the Quantitative Analysis

Table 3 reports findings from the multivariate linear regression model. This represents findings from an analysis of the entire EmployABILITY tool sample, with a particular focus on our first research question: How does regionality influence students' perceived employability and career orientation?

We found that regionality (RRR) was not associated with a statistically significant effect on perceived employability across the five measures examined, with the exception of Occupational Mobility where the effect was positive, indicating that RRR students reported higher levels of occupational mobility compared with metropolitan peers. An intuitive interpretation of this result is that RRR students are already thinking about mobility in relation to university attendance, and more prospectively, in relation to occupational participation, to a greater extent than students from metropolitan areas. This makes RRR students more likely to consider issues around occupational mobility. We discuss this finding below in relation to the qualitative evidence from students' open responses.

In this model, we control for a variety of other factors that may moderate or alternatively compound RRR status in affecting student attitudes to the five competencies examined. For instance, results for gender were mixed. Female students reported lower confidence relative to male students for Self-esteem, Career Identity and Commitment and Occupational Mobility. However, females recorded higher confidence for Academic Self-efficacy and Career Exploration and Awareness.

A school effect was identified across the five competencies, with students from government schools reporting lower confidence levels in all five employability constructs compared to students from non-government schools. This was statistically significant across all literacies, except for Career Exploration and Awareness.

There were also some statistically significant effects for Field of Study. In relation to Self-esteem, students in Natural and Physical Sciences, Information Technology, Education and Creative Arts fields were less confident compared to students in the reference group Management and Commerce. For Academic Self-efficacy, students in Information Technology and Creative Arts were less confident than students in Management and Commerce, while Health students were more confident.

Compared to Management and Commerce students, students from all other fields reported lower confidence levels in their Career Identity and Commitment. In the area of Career Exploration and Awareness, students in Natural and Physical Science and Creative Arts reported less confidence than students in the reference group. Finally, students in Natural and Physical Science, Architecture and Building, Education and Creative Arts reported lower Occupational Mobility confidence than students in Management and Commerce.

Given the relatively muted effects of RRR location on students' self-report across the five employability competencies, focus shifted to the operation of the explanatory factors in RRR contexts compared with that in metropolitan areas. This corresponds to an analysis of the data in relation to our second research question: Are there differences between RRR and metropolitan students in the perceptions of employability and career orientation?

Table 3: ***Results from the OLS Model of Perceived Employability Competency Scores***

	Self-esteem	*Academic self-efficacy*	*Career identity and commitment*	*Career exploration and awareness*	*Occupational mobility*
Female	-0.035**	0.051*	-0.049***	0.096**	-0.130**
	(-2.232)	(1.935)	(-2.674)	(2.204)	(-2.561)
Age	0.007***	0.014***	-0.006***	0.016***	0.031***
	(6.216)	(6.320)	(-3.907)	(4.711)	(7.290)
On-campus	-0.031	-0.042	-0.018	-0.119	-0.021
	(-1.070)	(-0.809)	(-0.560)	(-1.466)	(-0.211)
Govt. School	-0.066***	-0.063**	-0.004	-0.154***	-0.140***
	(-4.213)	(-2.484)	(-0.212)	(-3.574)	(-2.756)
Low SES	-0.005	-0.037	0.008	0.035	0.043
	(-0.277)	(-1.157)	(0.375)	(0.685)	(0.693)
NESB	-0.012	-0.017	0.180***	0.031	0.091
	(-0.545)	(-0.445)	(6.786)	(0.510)	(1.262)
RRR	0.030	0.007	0.010	-0.009	0.119*
	(1.546)	(0.209)	(0.450)	(-0.175)	(1.900)
Disability	-0.186***	-0.038	-0.022	-0.078	-0.291*
	(-4.048)	(-0.482)	(-0.467)	(-0.566)	(-1.757)
First in Family	-0.003	-0.068**	0.014	-0.024	-0.020
	(-0.170)	(-2.312)	(0.712)	(-0.509)	(-0.349)
Field of Study (the reference group is Management and Commerce)					
NPS	-0.128***	0.072	-0.111**	-0.347***	-0.234*
	(-3.190)	(1.092)	(-2.424)	(-2.893)	(-1.714)
IT	-0.107**	-0.139*	-0.225***	-0.134	-0.168
	(-2.313)	(-1.920)	(-4.339)	(-1.108)	(-1.174)
ERT	-0.070	0.172	-0.272**	0.391*	0.066
	(-0.576)	(1.324)	(-2.100)	(1.842)	(0.188)
Arch/building	-0.025	-0.074	-0.111***	0.020	-0.182*
	(-0.698)	(-1.241)	(-2.694)	(0.217)	(-1.667)
AERS	0.043	0.172	-0.149*	-0.119	0.164
	(0.600)	(1.496)	(-1.771)	(-0.693)	(0.782)
Health	-0.010	0.115***	-0.045*	0.192***	-0.045
	(-0.508)	(3.379)	(-1.952)	(3.516)	(-0.699)
Education	-0.055**	-0.027	-0.162***	0.086	-0.163*
	(-2.016)	(-0.558)	(-5.619)	(1.063)	(-1.739)
Society/Culture	-0.007	0.049	-0.098***	0.133*	0.013
	(-0.243)	(1.066)	(-3.080)	(1.743)	(0.140)
Creative Arts	-0.193***	-0.151**	-0.229***	-0.269**	-0.483***
	(-4.859)	(-2.386)	(-4.799)	(-2.452)	(-3.684)
Constant	2.153***	5.108***	3.416***	6.657***	5.915***
	(46.101)	(59.538)	(59.834)	(50.512)	(36.995)
Observations	4,916	4,916	4,916	4,916	4,916
R-squared	0.029	0.027	0.036	0.029	0.025
R-squared Adj.	0.0256	0.0232	0.0325	0.0255	0.0211

Note: ***, ** and * rejects the null hypothesis that parameter is equal to zero at the 1%, 5% and 10% level of significance. NPS: Natural and Physical Sciences, IT: Information Technology; ERT: Engineering and Related Technologies; Arch. & building: Architecture and Building; AERS: Agriculture, Environment and Related Studies.

To examine this question, we split the sample into metropolitan (4,118 students) and RRR (798 students) sub-samples. The model was re-estimated for each of the five competencies using these sub-samples (see Tables 4A and 4B).

Generally, the results in Tables 4A and 4B show that the explanatory factors largely operated in similar ways in metropolitan and regional sub-samples, but there were fewer statistically significant estimates. An interesting case is the effect of *Age*, with uniform direction of effect and statistical significance as an explanatory variable throughout the modelling in both sub-samples.

Gender effects were more prominent among students from metropolitan areas, observed as statistically significant across four of the five competencies (*Academic Self-efficacy* being the exception). A gender effect was only observed for RRR students in relation to *Occupational Mobility*, where the measured effect was more pronounced among students in this sample (-0.274 versus -0.104 for metropolitan students).

Similar patterns are observed elsewhere, with the effect of school type (*Govt. school)* being more pronounced for metropolitan students than RRR students. However, for *Career Exploration and Awareness*, students who entered university from a government high school reported lower confidence than those from non-government school backgrounds, irrespective of their geographic location.

Differences between the sub-samples in this regard manifested themselves in relation to field of study, with metropolitan students in *Natural and Physical Sciences* and *Creative Arts* reporting lower confidence in *Career Exploration and Awareness* and those taking courses in *Health* and *Society and Culture* self-reporting higher levels of the same. Among RRR students, those studying *Engineering and Related Technologies* and *Health* reported more confidence in their *Career Exploration and Awareness*.

Table 4A: ***Results from the OLS Model of Perceived Employability Scores, metropolitan and RRR student sub-samples***

	Self-efficacy		Academic self-efficacy		Career identity and commitment	
Demographic	Metro	RRR	Metro	RRR	Metro	RRR
Female	-0.038**	-0.013	0.043	0.114	-0.060***	0.005
	(-2.246)	(-0.287)	(1.524)	(1.520)	(-3.040)	(0.098)
Age	0.006***	0.012***	0.013***	0.021***	-0.005***	-0.008*
	(5.136)	(4.097)	(5.394)	(3.646)	(-3.399)	(-1.945)
On-campus	-0.031	0.000	-0.073	0.099	-0.037	0.011
	(-0.945)	(0.004)	(-1.225)	(0.874)	(-0.994)	(0.159)
Govt. School	-0.074***	-0.044	-0.073***	-0.025	-0.012	0.044
	(-4.313)	(-1.129)	(-2.622)	(-0.376)	(-0.643)	(0.988)
Low SES	-0.002	-0.014	-0.032	-0.045	0.018	-0.004
	(-0.102)	(-0.355)	(-0.863)	(-0.686)	(0.689)	(-0.085)
NESB	-0.014	0.019	-0.022	0.064	0.178***	0.207*
	(-0.615)	(0.252)	(-0.545)	(0.491)	(6.508)	(1.912)
Disability	-0.213***	-0.020	-0.030	-0.091	-0.011	-0.109
	(-4.273)	(-0.182)	(-0.346)	(-0.488)	(-0.202)	(-1.018)
First in Family	-0.011	0.031	-0.087***	0.031	0.014	0.007
	(-0.573)	(0.780)	(-2.673)	(0.453)	(0.659)	(0.152)
Field of Study						
NPS	-0.135***	-0.085	0.071	0.058	-0.139***	0.070
	(-3.073)	(-0.921)	(0.985)	(0.407)	(-2.780)	(0.671)
IT	-0.108**	-0.118	-0.145*	-0.127	-0.232***	-0.198
	(-2.145)	(-1.095)	(-1.854)	(-0.680)	(-4.120)	(-1.568)
ERT	-0.014	-0.702	0.186	0.111	-0.217*	-0.987*
	(-0.166)	(-0.657)	(1.360)	(0.281)	(-1.752)	(-1.833)
Arch./Building	-0.018	-0.086	-0.070	-0.130	-0.136***	0.024
	(-0.461)	(-0.917)	(-1.106)	(-0.715)	(-3.074)	(0.214)
AERS	0.004	0.221	0.139	0.290	-0.090	-0.438***
	(0.047)	(1.419)	(1.065)	(1.366)	(-0.949)	(-3.365)
Health	-0.022	0.064	0.117***	0.100	-0.055**	0.012
	(-1.043)	(1.251)	(3.214)	(1.061)	(-2.213)	(0.199)
Education	-0.046	-0.084	-0.046	0.020	-0.171***	-0.115*
	(-1.493)	(-1.386)	(-0.837)	(0.183)	(-5.229)	(-1.876)
Society/Culture	-0.002	-0.029	0.072	-0.073	-0.091**	-0.130*
	(-0.069)	(-0.422)	(1.449)	(-0.586)	(-2.564)	(-1.753)
Creative Arts	-0.185***	-0.233**	-0.101	-0.355***	-0.264***	-0.076
	(-4.313)	(-2.357)	(-1.410)	(-2.720)	(-4.983)	(-0.704)
Constant	2.180***	2.004***	5.169***	4.779***	3.440***	3.365***
	(42.253)	(17.626)	(54.703)	(22.364)	(54.819)	(23.542)
Observations	4,118	798	4,118	798	4,118	798
R-squared	0.029	0.052	0.026	0.046	0.037	0.060
R-squared adj.	0.0250	0.0312	0.0219	0.0250	0.0327	0.0391

Note. ***, ** and * rejects the null hypothesis that parameter is equal to zero at the 1%, 5% and 10% level of significance. NPS: Natural and Physical Sciences, IT: Information Technology; ERT: Engineering and Related Technologies; Arch./Building: Architecture and Building; AERS: Agriculture, Environment and Related Studies.

Table 4B: ***Results from the OLS Model of Perceived Employability Scores, metropolitan and RRR student sub-samples***

	Career exploration/awareness		Occupational mobility	
Demographic	Metro	RRR	Metro	RRR
Female	0.115**	0.006	-0.104*	-0.274**
	(2.454)	(0.053)	(-1.880)	(-2.103)
Age	0.015***	0.020***	0.029***	0.039***
	(4.117)	(2.610)	(6.223)	(4.531)
On-campus	-0.169*	0.046	-0.020	0.019
	(-1.783)	(0.294)	(-0.172)	(0.094)
Govt. School	-0.140***	-0.252**	-0.154***	-0.144
	(-2.992)	(-2.191)	(-2.780)	(-1.124)
Low SES	0.053	-0.007	0.113	-0.146
	(0.898)	(-0.068)	(1.552)	(-1.162)
NESB	0.010	0.254	0.060	0.323*
	(0.163)	(1.548)	(0.782)	(1.716)
Disability	-0.113	0.138	-0.378**	0.204
	(-0.733)	(0.490)	(-2.069)	(0.581)
First in Family	-0.063	0.158	-0.062	0.173
	(-1.214)	(1.491)	(-0.994)	(1.392)
Field of Study				
NPS	-0.395***	-0.059	-0.248	-0.191
	(-2.994)	(-0.241)	(-1.642)	(-0.731)
IT	-0.158	0.008	-0.165	-0.221
	(-1.222)	(0.027)	(-1.104)	(-0.456)
ERT	0.363	0.784***	0.290	-2.513
	(1.592)	(3.394)	(1.160)	(-0.893)
Arch. & Building	0.054	-0.234	-0.183	-0.238
	(0.534)	(-0.961)	(-1.556)	(-0.787)
AERS	-0.225	0.331	0.053	0.547
	(-1.198)	(0.876)	(0.230)	(1.213)
Health	0.183***	0.259*	-0.060	0.055
	(3.101)	(1.767)	(-0.870)	(0.324)
Education	0.066	0.150	-0.187*	-0.103
	(0.720)	(0.829)	(-1.744)	(-0.526)
Society & Culture	0.184**	-0.133	0.066	-0.257
	(2.309)	(-0.606)	(0.669)	(-1.121)
Creative Arts	-0.252**	-0.358	-0.436***	-0.704***
	(-1.999)	(-1.593)	(-2.886)	(-2.713)
Constant	6.710***	6.458***	5.942***	5.901***
	(45.230)	(22.844)	(33.187)	(17.000)
Observations	4,118	798	4,118	798
R-squared	0.030	0.042	0.023	0.058
R-squared Adj.	0.0265	0.0214	0.0189	0.0374

Note: ***, ** and * rejects the null hypothesis that parameter is equal to zero at the 1%, 5% and 10% level of significance. NPS: Natural and Physical Sciences, IT: Information Technology; ERT: Engineering and Related Technologies; Arch. and Building: Architecture and Building ;AERS: Agriculture, Environment and Related Studies.

Discussion: Interpreting the Quantitative Findings using the Qualitative Data

Previous studies suggest that RRR students might exhibit less perceived employability confidence than their metropolitan peers. However, our statistical analysis demonstrates that this notion is fraught. In this section we discuss the statistical findings and expand upon them by interweaving student responses.

The alignment of institutional and online self-assessment tool data showed no differences between metropolitan and RRR students' perceived employability in terms of the *Self-esteem, Academic Self-efficacy, Career Identity and Commitment,* or *Career Exploration and Awareness*. There was, nonetheless, statistical evidence for differences in students' occupational mobility, where RRR students expressed greater confidence. In part this could be explained by the observation that more RRR students take alternate pathways into higher education and that many more have had to navigate the multiple access challenges noted earlier (Dalley-Trim & Alloway, 2010; Halsey, 2018). Indeed, Craft (2019) finds that both low-SES students and students with low university entry ranks are just as likely to succeed as their peers.

It is possible therefore that RRR students' career-related and general decision coping strategies are more highly developed, hence these students could be less daunted by the idea of finding a career "Plan B". Among the skills RRR students have to acquire is an increased sense of the need to embrace adaptability while maintaining a sense of self, both of which are skills that require greater attention from educators (see for instance: Martin et al., 2013, on adaptability; Devlin & McKay, 2017, on flexibility; and Lake et al., 2018, on student self-efficacy), and which are relevant in metropolitan contexts as well. RRR students experience both the pull of opportunities elsewhere and their sense of obligation to local communities (Webb et al., 2017). The importance of knowing about place is emphasised by Fuqua's (2021) research on how pathways advisors work with RRR students and there has been a long understanding that SES and cultural factors have a stronger influence on higher education participation than physical distance (James, 2000). This is despite discussions about RRR access remaining very physically orientated (Roberts and Guenther, 2021). Thus, locational and social forces combine to affect student outcomes and to shape students' self-perceptions in relation to career aspirations and employability, yet they also invite a response from students and educators.

Some of the statistical findings might be explained by students' sheer determination to go to university despite, in some cases, being the first in their families to do so. Many students described such determination and within these accounts described with frustration the process of accessing higher education, a theme also discussed by Longwell-Grice et al. (2008) and O'Shea (2015). The quote exemplifies Daniels and Brooker's (2014) finding that RRR students often exhibit feelings of being "out of place" or exclusion as well as an understanding that they have to address their disadvantage:

> *I think there needs to be more understanding that kids aren't born with knowledge about the education system. I'm from a family that for generations no one has even finished high school. I've always loved school and knew I wanted to go to university, but I didn't know what majors were, what an undergrad was, what minors were, what double degrees are, I didn't know what the difference between a lecture and tutorial was. I didn't know where to get books from or what books were needed. How to enrol etc. etc. I learnt it all quickly, but it can make you feel lost, stupid and left behind when everyone else seems to be attending university with confidence and you don't even know how to apply. (Female science student from a remote background, studying on campus).*

These type of statements are often reported among those from low SES (Devlin & McKay, 2017) and/or first-in-family (O'Shea, 2020) backgrounds in both RRR and metropolitan contexts.

Educators also have a role to play. A significant finding in the quantitative data was the existence of a school effect across the five constructs, with students from government schools expressing lower confidence in all five areas. This accords with previous research which has identified a career thinking and preparation gap within schools in disadvantaged areas (Abbott-Chapman, 2011; O'Shea, 2020), including in RRR locations. The impact of this gap was keenly expressed by several students as seen in the following example:

> *Moving from high school to uni is very demanding and a very different set of skills are needed. Some schools provide this information in the final year of high school and their students are prepared but others are not offered this information. I feel my rural high school barely prepared me at all and I find the [first-year classes] helpful but slightly difficult to understand considering I have no background information or support. (Female nursing student from a remote background, studying on campus).*

Finally, the evidence on field of study effects suggests idiosyncratic influences across both discipline and employability constructs. For instance, students from both *Natural and Physical Sciences* (generally, higher-SES students) and *Education* (generally, lower-SES students) reported lower self-efficacy than the base case (*Management and Commerce*). Here, we agree with Alloway (2004) that disadvantage extends beyond that associated with distance, with RRR areas generally having lower levels of SES than metropolitan areas.

As a consequence, and as Abbot-Chapman (2011) notes, RRR low-SES students "*suffer the twin disadvantages of horizontal and vertical stratification of opportunities, since spatial and social distance reinforce one another*" (p. 61). The need for flexibility in university timetabling and blended-learning to accommodate students' external familial, financial and cultural commitments is critical and our study suggests that an equally critical concern is support relating to learning how to be a university student – an issue emphasised by O'Shea (2020) and one shared by many metropolitan students. We illustrate this issue with a comment from one of our participating students:

> *There are so many different types of students with many different strengths and weaknesses. Trying to accommodate and adapt to such a variety of students is a huge task. As a mother, part-time worker, lack of services (e.g., one day care [centre] in town with an extremely long waitlist; one GP in town that charges for every visit, even for a repeat prescription; slow internet services due to remote location), I find unlike metropolitan residentials, [for] online mature age students, these additional "lack of services" increases the stress load whilst studying. (Female commerce student aged 32, studying online from a remote location).*

Concluding Comments

Our study confounds the idea that RRR students have less sophisticated career development thinking than urban students, or that there are significant differences between RRR and metropolitan students in relation to their self-perception of career orientation and employability. However, it also confirms research indicating that RRR students need relatively greater determination and equal or even greater career awareness than their peers if they are to transition to, through and beyond higher education. Often, such barriers to entry for RRR students are more likely to stem from social isolation affecting many students, albeit compounded by the disadvantage of being physically distant from major centres of education. To this extent, the findings pertaining to RRR students are applicable to metropolitan students as, overall, they share a great deal of commonality in terms of the challenges they encounter.

In terms of policy responses for both groups of students, a key finding is that well developed career aspirations and effective career development interventions in high school may be something of an equaliser when it comes to student self-assessment and perceived

employability, given significant effects we have observed in relation to school type. This is a policy area which could provide innovative solutions to the somewhat splintered approach to widening participation outreach work, student retention planning and programs designed to foster graduate outcomes (see also Donald et al., 2019).

In seeking solutions to some of the pervasive challenges, we note Halsey's (2017) observation that study pathways and careers support is more circumscribed in RRR areas due to the lack of specialist careers educators (see also Murphy, 2018). As this study shows, this observation applies to metropolitan students, again with school background being influential in shaping outcomes across the employability competencies. This ultimately limits students' ability to navigate university information, prerequisites and access (Halsey, 2018). University outreach work such as school visits, mentorship programs or discussions about post-compulsory options are more likely to form the basis of students' aspirations and subject choices than is the case in metropolitan areas (Alloway & Dalley-Trim, 2009) and are therefore a vital source of information for students and their families.

Future extensions of this work include expanding the sample to other institutions in Australia, and beyond, to examine the extent to which these findings differ in other institutional settings and post-secondary systems (including pathways programs, as per Vernon et al., 2018). Placing employability at the centre of student thinking around field of study choice, coupled with a renewed commitment to income and work support for RRR students, should play a valuable role in increasing the rates of participation and graduate performance among these students in the future.

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Note

The self-assessment tool and educational resources are freely available and can be accessed at developingemployability.edu.au (educators) and student.developingemployability.edu.au (students).

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