

Research Article

Cite this article: Hearn S, Benton M, Funnell S, Marmolejo-Ramos F (2021). Investigation of the factors contributing to Indigenous students' retention and attrition rates at the University of Adelaide. *The Australian Journal of Indigenous Education* 50, 20–28. <https://doi.org/10.1017/jie.2019.5>

Received: 2 September 2018
Revised: 5 December 2018
Accepted: 4 February 2019
First published online: 30 April 2019

Key words:

Higher education; Indigenous education; retention

Author for correspondence:

Madeleine Benton, E-mail: madeleine.benton@adelaide.edu.au

Investigation of the factors contributing to Indigenous students' retention and attrition rates at the University of Adelaide

Shane Hearn¹, Madeleine Benton¹, Sarah Funnell¹
and Fernando Marmolejo-Ramos²

¹Wirltu Yarlur, The University of Adelaide, North Terrace, Adelaide, South Australia 5005, Australia and ²School of Psychology, The University of Adelaide, North Terrace, Adelaide, South Australia 5005, Australia

Abstract

Aboriginal and Torres Strait Islander peoples remain significantly under-represented in higher education systems. There are significant disparities in university completion rates for Aboriginal and Torres Strait Islander students compared with their non-Indigenous counterparts. The poor-retention and high-attrition rates among Aboriginal and Torres Strait Islander students come at significant financial and personal cost for the individual, families, community, universities and governments. Existing evidence in relation to attrition has identified complex and multifaceted reasons including ill health, family and community responsibilities, financial difficulties, lack of social support, academic disadvantage and issues surrounding personal well-being. The current study aimed to add to evidence of the academic, financial, social support and well-being factors affecting Aboriginal and Torres Strait Islander student's decision to continue or withdraw from their university studies. Contrary to expectation, students' decision to withdraw was not related to academic and social factors. It was found that students between 22 and 25 years old strongly agreed they were likely to withdraw from studies. There was a significant association between withdrawal and type of enrolment. This study provided important insights into the factors that contribute to a students' decision to withdraw from their university studies, with implications for future educational interventions.

Introduction

Australia's Aboriginal and Torres Strait Islander peoples comprise 3% of the total population (Australian Institute of Health and Welfare [AIHW], 2015). Aboriginal and Torres Strait Islander peoples continue to be subjected to significant disadvantage relative to other Australians across a broad range of social and health indicators (Steering Committee for the Review of Government Service Provision (SCRGSP, 2011)). Education is considered one of the most crucial strategies in addressing this disadvantage and further closing the gap (Pechenkina *et al.*, 2011).

The role of education in improving health, economic and educational outcomes for Aboriginal and Torres Strait Islander peoples is well recognised. The Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People (2011) identified Indigenous students as 'significantly underrepresented in the higher education system, contributing to the high levels of social and economic disadvantage they often experience' (Behrendt *et al.*, 2012, p. ix). Further, it is acknowledged that improving higher educational outcomes among Aboriginal and Torres Strait Islander peoples will lay the foundation for future graduates to take up leadership and professional roles.

A number of key statistics relating to Aboriginal and Torres Strait Islander students' enrolment into, retention during, and completion of, university courses have been outlined across the literature (Wilks and Wilson, 2015). Despite substantial progress in recent times, Aboriginal and Torres Strait Islander peoples' participation in higher education systems remains significantly below the population parity rate. Overall, Aboriginal and Torres Strait Islander peoples make up less than 1% of higher education students and are one of the most underrepresented minority groups on Australian campuses (Pechenkina *et al.*, 2011). The Bradley Review of Australian Higher Education (2008) identified Aboriginal and Torres Strait Islander peoples as one of the three most disadvantaged groups in Australian higher education, together with students from regional and remote areas and those from low socio-economic backgrounds (Bradley *et al.*, 2008). However, it is common for Aboriginal and Torres Strait Islander students to share more than one of these characteristics.

While the number of commencing Aboriginal and Torres Strait Islander students has remained relatively stable over the last decade, the attainment and completion rates have

© The Author(s) 2019. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

fluctuated (Pechenkina *et al.*, 2011). There are significant disparities in university completion rates for Aboriginal and Torres Strait Islander students compared with their non-Indigenous counterparts. A national study found that only 47% of Aboriginal and Torres Strait Islander students had completed their degree after 9 years compared with 74% of all domestic students (Australian Council for Education Research, 2016). More specifically, at the University of Adelaide, the retention rates of Aboriginal and Torres Strait Islander students are much lower than overall domestic retention rates (57% compared with 85%) (The University of Adelaide, 2013). Previous research has identified that such differences persist due to a myriad of reasons including challenges relating to health, family and community responsibilities, finances, social support, academic preparedness and issues surrounding personal well-being (Barney, 2016).

Although Aboriginal and Torres Strait Islander students' commencements have increased, it is evident that admissions and enrolments are only one part of the broader issue. This enhances the statement by Engstrom and Tinto (2008) that 'access without effective support is not opportunity'. Providing a quality student experience and ensuring adequate support can positively influence Aboriginal and Torres Strait Islander students' success, retention and completions in higher education. Thus, it is critical to not only widen access to university for Aboriginal and Torres Strait Islander students but to enhance it with appropriate support strategies ensuring that students have the best chance of success.

Implications of attrition rates

The poor-retention and high-attrition rates among Aboriginal and Torres Strait Islander students come at significant financial and personal costs; for the individual, their families, communities, universities' and government. Moreover, they include opportunity costs resulting from failure to provide successful pathways for capable Aboriginal and Torres Strait Islander students (Department of Education, Employment and Workplace Relations, 2011).

Disparities in participation, retention and support of Aboriginal and Torres Strait Islander students within higher education are well documented. However, Trudgett (2009) acknowledged that the disparity between Indigenous and non-Indigenous students participating in higher education programmes has progressively broadened; and thus it is imperative to examine what is impeding Aboriginal and Torres Strait Islander students from pursuing and completing university degrees in Australia.

The attrition of Aboriginal and Torres Strait Islander students can occur for a variety of complex and multifaceted reasons. It has been recognised that educational disadvantage experienced by Aboriginal and Torres Strait Islander students' begins well before students' access university (Anderson and Potok, 2011). Insufficient levels of academic preparedness in addition to low-educational aspirations are identified as indicative of low achievement at university (Parente *et al.*, 2003).

Previous research has also reported that financial hardship (Centre for Studies in Higher Education [CSHE], 2008), health problems (Paradies, 2006), family and community responsibilities, and a lack of social support (Barney, 2016), are the main barriers faced by Aboriginal and Torres Strait Islander students in the higher education system (Augoustinos *et al.*, 2005; Paradies, 2006; Wyatt and Cooke, 2008). Moreover, previous research has reported that Aboriginal and Torres Strait Islander students may experience difficulties and disorientation settling into the

unfamiliar environment of higher education (Rochecouste *et al.*, 2017). This is particularly true for students re-locating from rural and remote communities who report difficulties being physically separated from family and community support networks (Sonn *et al.*, 2000).

Research relating to Aboriginal and Torres Strait Islander students experience of higher education is relatively limited and highly fragmented (Day and Nolde, 2009). Moreover, the reasons for student withdrawal are complex and often interrelated (Sharrock and Lockyer, 2008). Aboriginal and Torres Strait Islander students are reported to be older than the majority of non-Indigenous students and have thus accumulated more financial and familial responsibilities (James *et al.*, 2008). Similar results were yielded by Delvin (2009) who reported that many Aboriginal and Torres Strait Islander students are older and thus have more responsibilities and dependents than their non-Indigenous counterparts. These mature age students often need to manage practical day-to-day matters on the family and community front, which can be overwhelming and lead to withdrawal of university.

Rochecouste *et al.* (2017) conducted a study of Australian Aboriginal higher education student experience and reported that Aboriginal and Torres Strait Islander students have specific responsibilities and obligations that impact on their success. For example, many Aboriginal and Torres Strait Islander students' have caring responsibilities for extended family members which provides an additional burden in terms of finances and time, thus contributing to non-completion. Furthermore, the study reported that attention to university studies, over and above family commitments, can also cause resentment towards the student at home (Rochecouste *et al.*, 2017). These described intersections of responsibilities serve to repeatedly distract the student from the demands of university study.

Research indicates that across Australian universities, a lack of cultural safety exists for individuals of different cultural backgrounds, and this is particularly true for Aboriginal and Torres Strait Islander students (Rochecouste *et al.*, 2014). More specifically it has been noted that some students encounter explicit racism and discrimination on university campuses impacting on their experience (Sonn *et al.*, 2000). Additionally, it has been reported that Aboriginal and Torres Strait Islander students are concerned about the implicit cultural insensitivities pervasive in academia (Sonn *et al.*, 2000). Cultural values have been recognised to play a significant role in students' experience at university as differences are reflected in teaching styles and course content (Nolan *et al.*, 2009). In addition to these interrelated cultural and identity factors, Aboriginal and Torres Strait Islander students are also challenged by issues associated with the language and literacy demands of academia. All of which can be overwhelming and further compounded by low rates of high school completion (Rochecouste *et al.*, 2017). Research further indicates that repeated experiences of racism can result in an inability to identify with the university and can result in withdrawal from their studies (Rochecouste, *et al.*, 2014).

Overall, barriers faced and experienced by Aboriginal and Torres Strait Islander students in higher education have remained relatively unchanged over the past 10 years (Pechenkina and Anderson, 2011). These barriers centre around financial pressures, health issues, racism and prejudice towards Aboriginal and Torres Strait Islander peoples, low levels of academic readiness, coupled with the high academic demands of study and insufficient academic support. Literature pertaining

to Aboriginal and Torres Strait Islander students' experience of higher education is growing, however, continues to remain highly fragmented (Barney, 2016). Only in recent years has there been an increase in research specifically related to the experience of Aboriginal and Torres Strait Islander.

The current study

Universities across Australia have implemented a variety of strategies to encourage improvement of enrolment and retention of students. In order to continue improving Aboriginal and Torres Strait Islander peoples' participation in higher education it is imperative the factors that are associated with, and related to ongoing retention and success rates are identified.

The current study aimed to examine the enablers and constraints currently experienced by Aboriginal and Torres Strait Islander students at university. Moreover, the current study was intended to lead to gains in knowledge and insight into the negative barriers that may influence students to leave university and positive supports that would encourage Aboriginal and Torres Strait Islander students to remain at university. By providing an in-depth and sophisticated understanding of Aboriginal and Torres Strait Islander students' university experiences, the current study may inform effective educational interventions that are culturally responsive. This is imperative if universities are to play a positive role in improving educational outcomes for this population in the future. With this in mind, the current study had several aims which were used to guide the direction of the research methodology.

- Aim 1: To explore the academic, financial, social support, well-being and sense of belonging factors affecting Indigenous students' decision to continue or withdraw from their University studies.
- Aim 2: To explore if Indigenous students' age, gender, rurality and caring responsibilities influence their decision to withdraw from their University studies.
- Aim 3: To explore if the employment of Indigenous students' affects their decision to withdraw from their University studies.
- Aim 4: To explore if the school/faculty that Indigenous students' are enrolled in is related to their decision to withdraw from their University studies

Method

Eligibility criteria included being aged 18 years or more, able to communicate in English, identifying as Aboriginal and/or Torres Strait Islander, and being enrolled in, and participating in a degree at the University of Adelaide. Ethical approval was granted by the Human Research Ethics Committee at the University of Adelaide (Ethics Approval Number: H-2017-112).

Materials

The self-report questionnaire comprised of 73 questions to measure factors likely to contribute to a students' decision to withdraw such as academic, social support, well-being, financial, sense of belonging, university support and future improvements. Sociodemographic data were also collected. All questions were designed specifically for the current study.

Procedure

The current study was conducted between July 2017 and September 2017 at the University of Adelaide in South Australia. Participants were recruited from an enrolment database managed by Wirltu Yarlur, the Aboriginal Education Unit at the University of Adelaide. Wirltu Yarlur is responsible for recruiting and providing support services to Aboriginal and Torres Strait Islander students at the University of Adelaide.

Participants were initially contacted via email and then provided with a link to the questionnaire. A reminder email was later sent followed by SMS messages when contact numbers were provided. A questionnaire was considered the most appropriate method of collecting data as it is non-invasive, easy and convenient to complete, and not overly time consuming.

The information sheet included in the email sent to students provided detailed information pertaining to the purpose of the study, the procedure, the risks and benefits associated with participation, confidentiality and anonymity of responses, details about independent persons who could be contacted to raise concerns or complaints, their capacity to withdraw from the study at any time, and details about where to access help in the case an individual felt distressed.

The questionnaire was estimated to take around 10 minutes to complete. The questionnaire was completed at any location of the participants' choice (i.e. at university or at home).

The questionnaire was sent to 255 students. Of the 255 students who were invited to participate, 86 responded—of whom 69 completed the survey fully, and 17 completed it partially. The completion rate was 33.7%. (Thus the results need to be treated as applicable to students who share the same or similar characteristics to those who participated in this study.) Table 1 reports the sociodemographic characteristics of the participants.

Statistical analyses

The factors of interest (i.e. academic factors, social support factors, etc.) for each of the five levels of withdrawal likelihood (Aim 1) and their independent association with the dependent variables of interest (Aims 2, 3 and 4) were analysed. These analyses were performed on responses whose status was 'complete'; i.e. 69 out of the total 86 cases.

A statistical graphics approach was used to explore the data and extract patterns. Specifically, mosaic plots were used to visualise potential associations (see Hartigan and Kleiner, 1984). In this graphical method the area of the tiles is proportional to the number of observations within that category and empty cells (i.e. zero responses) are represented by small circles with vertical lines through them. A lack of association between variables is evidenced when the tiles across categories all have the same areas; an index of association occurs otherwise. Percentages were used as the main index of estimation (see Knapp, 2010).

The graphical results were complemented with chi square tests (χ^2) with simulated *p*-values (based on 2000 replicates). The significance threshold was set at 0.05. Standardised residuals (*sr*) were computed to assess the significance of the results observed in specific cells. Significant cells were those in which $-1.96 \geq sr \geq 1.96$.

Results

In general terms, participants responded in the following way to the question 'I'm extremely likely to withdraw from my studies':

Table 1. Sociodemographic characteristics of students ($n = 69$)

Characteristics	<i>n</i>	%
Gender		
Female	43	62.31
Male	26	37.68
Sum	69	~100
Age		
18–19	7	10.14
20–21	11	15.94
22–25	18	26.08
26–30	12	17.39
31–35	9	13.04
36–40	6	8.69
41–50	1	1.44
50<	5	7.24
Sum	69	~100
Faculty		
Faculty of Engineering, Computer and Mathematical Sciences	4	5.79
Faculty of Health and Medical Sciences	21	30.43
Faculty of Arts	22	31.88
Faculty of Professions (including Schools of Business, Law, Architecture, and Economics)	16	23.18
Faculty of Sciences	6	8.69
Sum	69	~100
Enrolment		
Full-time	46	66.66
Part-time	16	23.18
Other	7	10.14
Sum	69	~100

59.42% strongly disagree, 20.28% disagree, 11.59% neither agree nor disagree, 5.79% agree and 2.89% strongly agree. That is, almost 60% of students strongly disagree with the idea that they are extremely likely to withdraw from their studies. Figure 1 displays such pattern.

The five levels of withdrawal likelihood were analysed such as students responding with 'strongly disagree' and 'disagree' were merged under the label of low withdrawal likelihood whereas students who responded with 'agree' and 'strongly agree' were clustered under the label high withdrawal likelihood. The associations between the factors academic, social, etc. with each of these two sub-data sets were then analysed.

Each of the five factors (i.e. academic, social, etc.) were derived from various questions to which participants responded using the five agreement categories 'strongly disagree' to 'strongly agree'. Thus, the number of participants were spread across five categories for each question. To obtain an average number of students for each category in each of the five factors, the median number of students responding per category across the questions in each factor was estimated and rounded to the nearest integer.

The statistical tests showed no significant association between participants with low and high likelihood of withdrawing and the degree of withdrawal likelihood (low likelihood participants: $\chi^2(16, N = 277) = 10, p = 0.87$; high likelihood participants: $\chi^2(16, N = 27) = 12.95, p = 0.76$). Anecdotally, although no cell met the *sr* benchmarks, there were some cases worth mentioning. In the case of participants with low and high likelihood of withdrawal there was a trend towards 'disagreeing' with the idea that academic factors are influential in withdrawing ($sr_{low\ likelihood} = 1.51$ and $sr_{high\ likelihood} = 1.46$). Furthermore, most participants in the high likelihood of withdrawal group strongly disagreed with the idea that withdrawal is due to lack of social support ($sr = 1.46$). In relation to financial support, participants in this group also seemed to take a neutral stance as to whether this factor is decisive in their withdrawal ($sr = 1.46$) (figure 2).

In general terms it was found that 62.31% of students were females (gender), 43.41% were between 22 and 30 years old (age), 82.60% were from urban areas (rurality), 42.02% declared having no responsibility (caring responsibility), 47.82% entered via the UPP (pathway entry) and 66.63% were full-time students (type of enrolment).

Most of the associations between each factor and the withdrawal likelihood were not statistically significant: gender and withdrawal likelihood, $\chi^2(4, N = 69) = 1.75, p = 0.80$; age and withdrawal likelihood, $\chi^2(28, N = 69) = 21.96, p = 0.78$; rurality and withdrawal likelihood, $\chi^2(4, N = 69) = 4.29, p = 0.38$; caring responsibility and withdrawal likelihood, $\chi^2(20, N = 69) = 22.03, p = 0.34$; employment and withdrawal likelihood ($\chi^2(4, N = 69) = 3.09, p = 0.62$), and pathway entry and withdrawal likelihood, $\chi^2(16, N = 69) = 11.52, p = 0.79$. The only significant association occurred between the type of enrolment and withdrawal likelihood; $\chi^2(8, N = 69) = 16.87, p = 0.03$.

There was a general pattern in that most students (59.42%) strongly disagreed with the idea that they are extremely likely to withdraw from their studies (see figure 3). Some specific cases are worth noting. In the association between the age group and the withdrawal likelihood, it was found that students between 22 and 25 years old strongly agreed that they were likely to withdraw from studies ($sr = 2.04$). In the association between caring responsibility and likelihood of withdrawal, it was found that participants responsible for their parents were neutral as to their likelihood of withdrawal ($sr = 2.59$) and participants responsible for their parents, children, and extended family agreed they were likely to withdraw ($sr = 2.59$). The significant association between the type of enrolment and withdrawal likelihood was driven by the fact that students who were not enrolled as part-time or full-time students but had other form of enrolment (e.g. deferred, graduated and taking time off for health reasons) were neutral as to withdrawing ($sr = 2.42$).

Overall, it was found that 36.23% of students left either full or part time employment to commence university. Additionally, it was found that 52.17% of students were currently employed while studying at the university. In terms of employment hours per week undertaken alongside study, it was found that 5.71% of students were not undertaking any work, 14.28% of students worked 1–6 h per week, 22.85% of students worked 12–18 h per week, 14.28% of students worked 18–24 h per week, 17.14% of students worked 6–12 h per week and 25.71% of students were more than 24 h per week. The association between current employment and withdrawal likelihood was not significant ($\chi^2(4, N = 69) = 3.09, p = 0.62$).

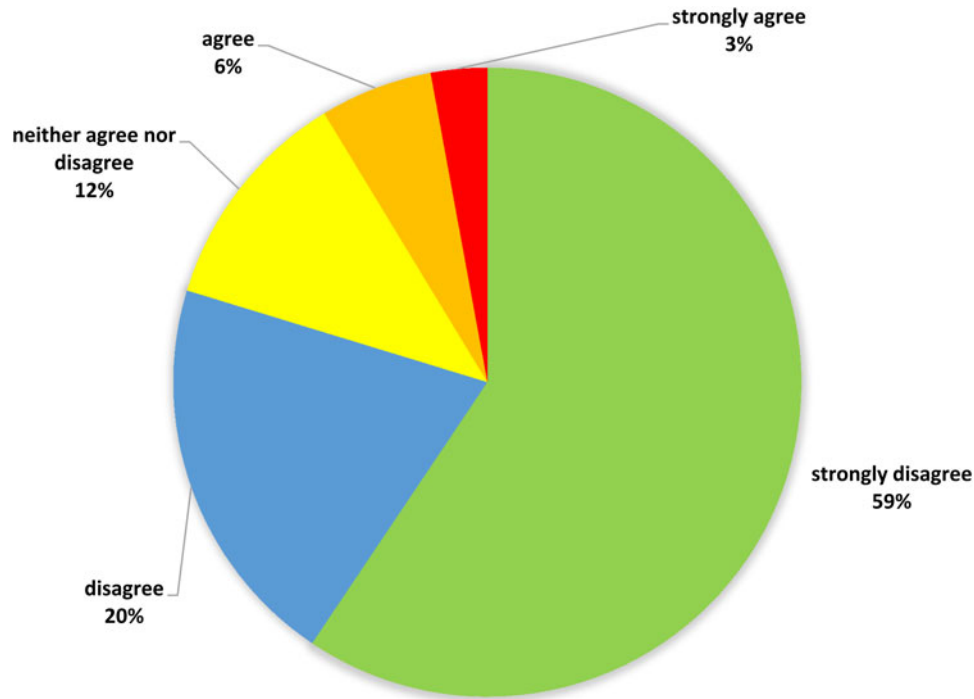


Fig. 1. Likelihood of withdrawing from studies (Q: I'm extremely likely to withdraw from my studies).

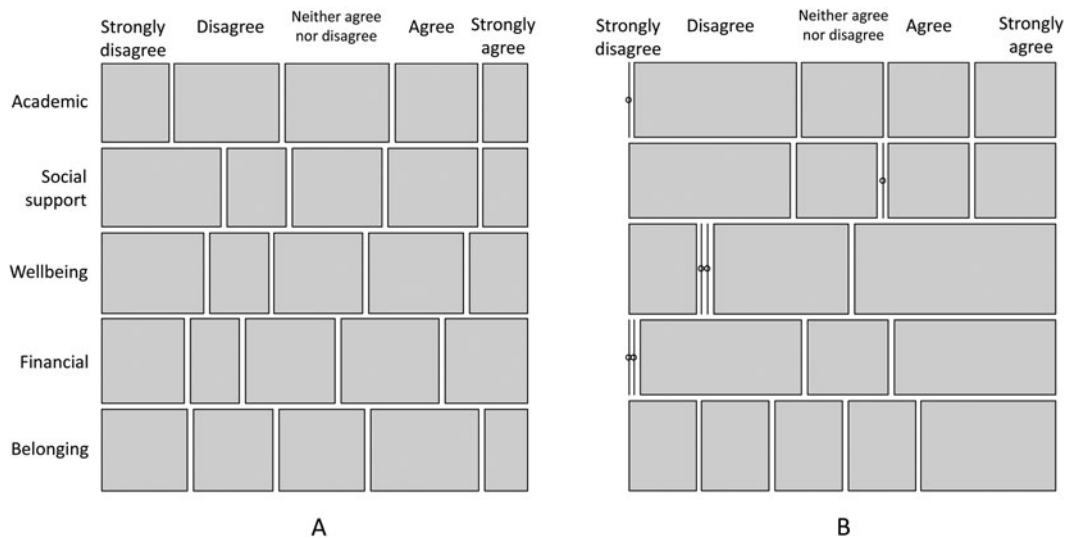


Fig. 2. Mosaic plots representing the (non-significant) association between academic, social, well-being, belonging and financial factors (y axis) with withdrawal likelihood (x axis). Mosaic plot A = association between academic, social, well-being, belonging and financial factors and withdrawal likelihood for participants with low likelihood of withdrawing from studies. Mosaic plot B = association between academic, social, well-being, belonging and financial factors and withdrawal likelihood for participants with high likelihood of withdrawing from studies.

The association between faculty and withdrawal likelihood was not significant; $\chi^2(16, N = 69) = 15.02, p = 0.55$. However, there was a pattern such that, regardless of the faculty, most students responded strongly disagree with the idea that they are extremely likely to withdraw from their studies. Most students were from the Faculty of Arts (31.88%) and Health and Medical Sciences (30.43%). There was a trend for the participants from the Faculty of Arts to strongly agree in that they were extremely likely to withdraw from their studies ($sr = 1.70$) (figure 4).

Discussion

Education is considered the cornerstone for addressing Aboriginal and Torres Strait Islander peoples disadvantage in Australia (Hunter and Schwab, 2003). The higher education sector has a vital role to play in improving the health, education and economic outcomes for Aboriginal and Torres Strait Islander peoples.

There is growing literature on Aboriginal and Torres Strait Islander students' participation in higher education (e.g.,

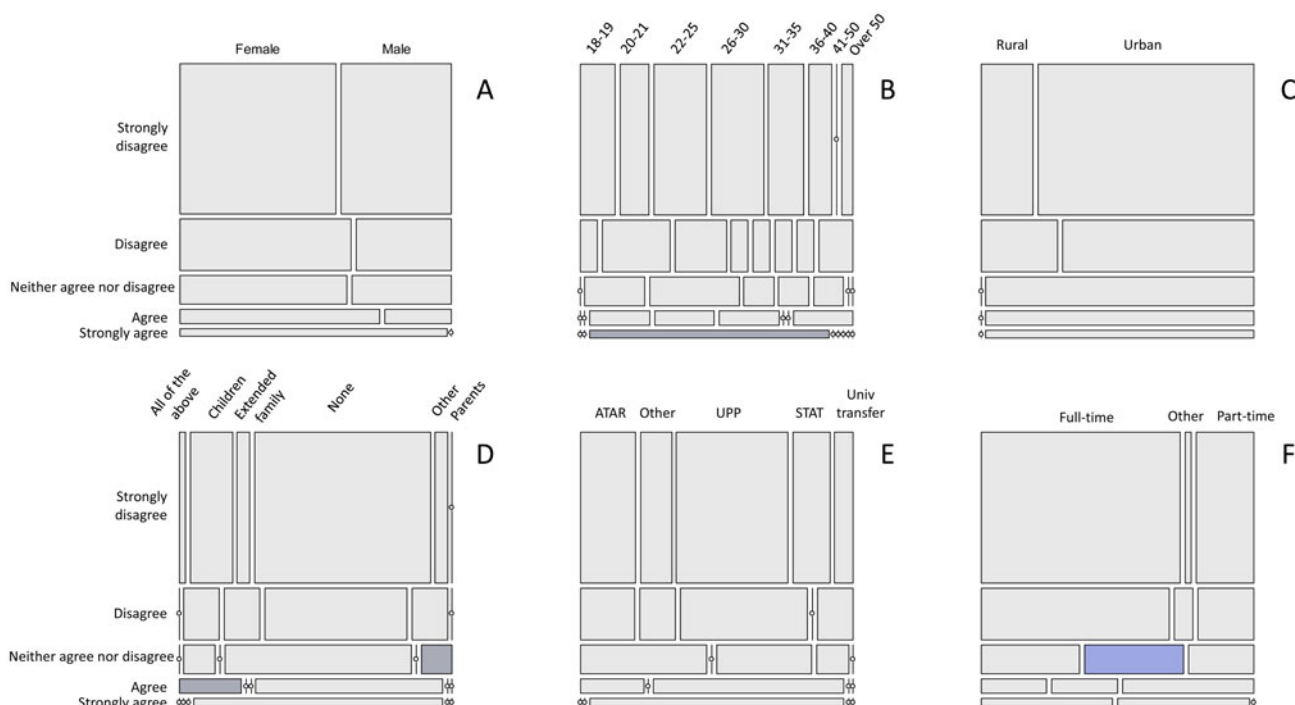


Fig. 3. Mosaic plots representing the association between gender (A), age (B), rurality (C), caring responsibility (D), pathway entry (E) and type of enrolment (F) with withdrawal likelihood. ATAR, Australian Tertiary Admissions Ranking; UPP, University Preparatory Program; STAT, Special Tertiary Admissions Test; Univ transfer, university transfer; Other.

Morgan, 2001; Anderson *et al.*, 2008; Barney, 2016). The current study has drawn on and extends this research by focusing on the experiences of Aboriginal and Torres Strait Islander students at the University of Adelaide. For many Aboriginal and Torres Strait Islander students, successful higher education is a pathway to achieving personal and professional aspirations. However, the participation and retention of Aboriginal and Torres Strait Islander students in universities remain consistently low. It is evident that numerous factors impact on Aboriginal and Torres Strait Islander students’ decisions to apply to study at university, continue or withdraw from study, and also on their capacity to successfully complete and graduate (Carter *et al.*, 2018).

The overarching aim of the current study was to assess current students’ self-reported predictions of the likelihood that they would withdraw from their studies, and to examine the factors that students identified as influencing their decision. Overall, the study found that fewer than 10% of the respondents in the study agreed or agreed strongly that they would be likely to withdraw from their studies, while a further 12% of respondents were undecided. In other words, 78% of respondents disagreed or disagreed strongly that they would withdraw from their studies. The impact of a students’ age, gender, rurality, caring responsibilities, mode of entry and study type were examined in terms of students’ decisions to withdraw from university. In the association between the age group and the withdrawal likelihood, it was found that students between 22 and 25 years old strongly agreed they were likely to withdraw from their studies (figure 3). As illustrated in figure 3, the associations between rurality, entry pathway, type of enrolment and respondents predicted likelihood of withdrawing from their studies were also not significant. However, the study found that there was a positive association between caring responsibility and likelihood of withdrawal—respondents who

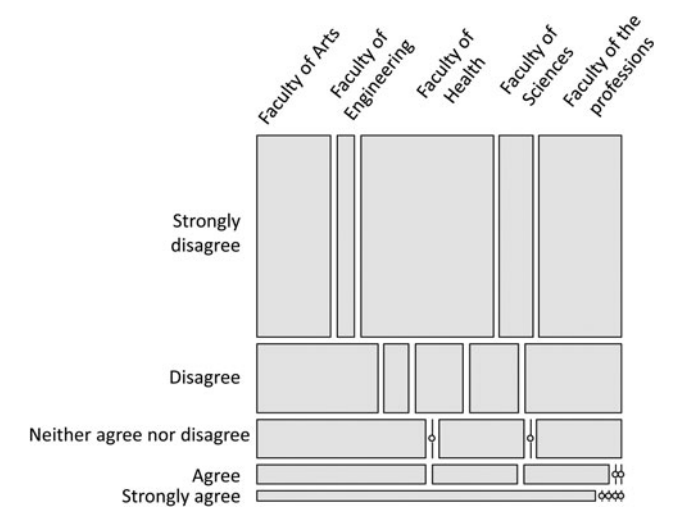


Fig. 4. Mosaic plot representing the association between faculty and withdrawal likelihood.

were responsible for their parents, children and extended family agreed that they were likely to withdraw. The current findings are in line with a study conducted by Rochecouste *et al.* (2017) who reported that Aboriginal and Torres Strait Islander students have certain obligations in relation to family that impact on their success at university.

The impact of students’ employment in relation to likelihood of withdrawing was examined. It was found that 52.17% of students were currently employed while studying at the university and 25.71% of students were undertaking more than 24 h of work per week. The current study found that the association

between current employment and withdrawal likelihood was not significant. Overall, there has been limited research examining the impact of employment on student attrition in higher education, thus a further enquiry should be conducted.

The current study examined the decision to withdraw from university as related to faculty. Overall, it was found that participants from the Faculty of Arts strongly agree that they were extremely likely to withdraw from their studies. The majority of research into student attrition in general considers the university as a whole, with analysis of faculty attrition often neglected (Adams *et al.*, 2010). However, a study conducted by Mestan (2016) acknowledged high-attrition rates in the Faculty of Arts and reasons for this including issues related to career direction and purpose, subject range as well as teaching quality. However, to the best of our knowledge there has not been faculty specific research conducted with Aboriginal and Torres Strait Islander students'.

Previous studies had identified a range of factors that had influenced the likelihood of students withdrawing from their studies including academic and social support, well-being, sense of belonging and financial support. The influence of these factors on respondents' prediction of the likelihood of their withdrawing from their studies was examined. The respondents who predicted there was a low likelihood of their withdrawing from their studies did not report being affected by any of these factors. However, respondents who predicted that there was a high likelihood that they would withdraw from their studies also disagreed that academic and social support would be significant in their decision. Their potential withdrawal seemed to be linked to wellbeing and, to some extent, financial concerns. These findings are in line with Malen and Maidment (2003) who discussed how a lack of physical, social and emotional well-being are now considered significant barriers for Aboriginal and Torres Strait Islander students. Additionally, the linkage between withdrawal and financial issues observed in the current study are comparable with Pechenkina and Anderson (2011) who noted that financial hardship remains a pervasive barrier to Aboriginal and Torres Strait Islander students' educational success. Consequently, future research is required to assess such factors further and whether they do impede on the successful completion of their studies by Aboriginal and Torres Strait Islander students enrolled in higher education.

Limitations

Overall, results from this study should be interpreted in the context of several limitations, primarily related to methodology. The overall response rate was smaller than anticipated, leading to limitations with the analysis of the aims and generalisability to the Aboriginal and Torres Strait Islander student population. However, it is noted that availability of data in relation higher education participation of Aboriginal and Torres Strait Islander students' remains a persistent challenge (Drew *et al.*, 2016).

Cross-sectional design

A further limitation of this study is the cross-sectional nature, meaning that interpretation of results is limited to associations between variables at a single time point. Further, it is difficult to infer causation between the outcome variable and its predictors. Thus, future research could adopt a longitudinal design to examine long-term decisions and outcomes in this population.

Piloting and psychometric testing of the measure

The current study relied on a newly developed instrument to ascertain enablers and constraints currently experienced by Aboriginal and Torres Strait Islander students' at university. This measure, developed specifically for the current study has not been used in any other studies. The measure included factors that were outlined in previous research that was identified as responsible for attrition/progression of Aboriginal and Torres Strait Islander students at university (Morgan, 2001). In the current context, this measure was piloted with Aboriginal and Torres Strait Islander students' and staff and received positive feedback. However, the examination and psychometric testing of the questionnaire should be undertaken. This requires the questionnaire to be administered in different settings to obtain a larger and broader sample. The data gathered may then be used to conduct confirmatory factor analysis to further evaluate the reliability of the questionnaire. Also, advanced results could have been obtained if a semantic VAS-type Likert scale had been used (e.g. in a paper-based implementation, a 10 cm line anchored 'very unlikely' and 'very likely' could have been used to answer questions posited in the survey).

Implications


There has been general agreement that support for Aboriginal and Torres Strait Islander students is essential for their success, to this end accurate information that supports their needs must be disseminated more effectively both early on and throughout students university studies. Moreover, the support provided should consider the whole of student life. The results obtained from this research offer insights into the factors contributing to Aboriginal and Torres Strait Islander students' decisions to continue or withdraw from university. Furthermore, findings of the current study may inform support offered to Aboriginal and Torres Strait Islander students with the information used to assist in the prevention and potential interventions in an attempt to improve the likelihood of continuing and succeeding in higher education. To the authors knowledge few studies similar to this have been undertaken whereby data have been collected in a quantitative manner, with majority of research collecting qualitative data.

As a result of the current study and ongoing research conducted at Wirrlu Yarlur, a newly developed Student Success Strategy has been implemented with the aim to raise retention and completion outcomes for Aboriginal and Torres Strait Islander students at the University of Adelaide. The Student Success Strategy aims to ensure targeted and individualised, high quality support for students by adopting a clear and supportive whole-of-university framework taking into consideration the current findings and ongoing student centred research conducted at Wirrlu Yarlur.

Conclusion

This research has provided evidence about the perspectives of Indigenous students and what factors may influence their decision to withdraw from their university studies. Furthermore, this research provides a greater understanding of Aboriginal and Torres Strait Islander students' experience in higher education. The current findings add to the growing body of Indigenous specific literature exploring the reasons for students

early departure from university and will assist in informing university retention strategies taking into consideration the social, cultural and educational diversity of students. Overall, identifying and implementing mechanisms that improve the retention of Aboriginal and Torres Strait Islander students will enhance the student experience and lead to a decrease in attrition rates and a corresponding increase in completions. These findings have relevance to closing the gap between Indigenous and non-Indigenous students' attrition rates and will further inform Indigenous higher education policy and practice.

Author ORCID.  Madeleine Benton, 0000-0002-0779-6334

References

- Adams T, Banks M, Davis D and Dickson J (2010) The Hobsons retention project: Context and factor analysis report. Paper presented at the Australian International Education Conference.
- Anderson I and Potok R (2011) Indigenous education: increasing the flow of students from school to university. *The Australian Literary Review* 6, 22.
- Anderson C, Bunda T and Walter M (2008) Indigenous higher education: the role of universities in releasing the potential. 37, 1–8.
- Augoustinos M, Tuffin K and Every D (2005) New racism, meritocracy and individualism: constraining affirmative action in education. *Discourse & Society* 16, 315–340.
- Australian Institute of Health and Welfare (2015) *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2015*. Cat. no. IHW 147. Canberra: AIHW.
- Barney K (2016) Pathways to postgraduate study for Indigenous Australian students: Enhancing the transition to Higher Degrees by Research. National Teaching Fellowship final report. Retrieved from https://altf.org/wp-content/uploads/2016/08/Barney_NTF_Report_2016.pdf.
- Behrendt L, Larkin S, Griew R and Kelly P (2012) Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People: Final Report. Canberra, Australia: Australian Government. Retrieved June 5, 2013.
- Bradley D, Noonan P, Nugent H and Scales B (2008) *Review of Australian Higher Education: Final Report*. Canberra: Department of Education, Employment and Workplace Relations.
- Carter J, Hollinsworth D, Raciti M and Gilbey K (2018) Academic 'place-making': fostering attachment, belonging and identity for Indigenous students in Australian universities. *Teaching in Higher Education* 23, 243–260.
- Day D and Nolde R (2009) Arresting the decline in Australian Indigenous representation at university; student experience as a guide. *Equal Opportunities International* 28, 135–161.
- Delvin M (2009) 'Aboriginal higher education student equity: focusing on what works'. *The Australian Journal of Aboriginal Education* 38, 1–8.
- Drew N, Wilks J, Wilson K and Kennedy G (2016) Standing up to be counted: data quality challenges in Aboriginal and Torres Strait Islander higher education statistics. *Australian Aboriginal Studies* 2, 104–120.
- Engstrom C and Tinto V (2008). Access without support is not opportunity, change: the magazine of higher learning. 40, 46–50.
- Hartigan JA and Kleiner BA (1984) Mosaic of television ratings. *American Statistician* 38, 32–35.
- Hunter BH and Schwab RG (2003) Practical reconciliation and continuing disadvantage in Indigenous education. *The Drawing Board: An Australian Review of Public Affairs* 4, 84–98.
- Indigenous Education Update 5 (2016) Indigenous Education Update: 5(5), Article 1. N Australian Council for Education Research, Available at <http://research.acer.edu.au/indigupd/vol5/iss5/1>
- James R, Anderson A, Bexley E, Devlin M, Garnett R, Marginson S and Maxwell L (2008) Participation and Equity: A Review of the Participation in Higher Education of People from Low Socioeconomic Backgrounds and Indigenous People. Report prepared for Universities Australia: Centre for the Study of Higher Education University of Melbourne. http://dro.deakin.edu.au/view/DU:30006777?print_friendly=true
- Knapp T (2010) Percentages: the most useful statistics ever invented. <http://www.tomswebpage.net>.
- Malen M and Maidment D (2003) Education, Indigenous survival and well-being: emerging ideas and programs. *The Australian Journal of Indigenous Education* 23, 85–100.
- Mestan K (2016) Why students drop out of the bachelor of arts. *Higher Education Research & Development* 35, 983–996.
- Morgan D (2001) Indigenous education: factors affecting students' decisions to continue or withdraw from tertiary studies at flinders university. *International Education Journal* 2, 233–239.
- Nolan M, Frawley J and White N (2009) Canvassing the issues: Indigenous Australians in higher education. In Frawley J, Nolan M and White N (eds), *Indigenous Issues in Australian Universities: Research, Teaching, Support*. Darwin, NT, Australia: Charles Darwin University Press, pp. 1–6.
- Paradies Y (2006) Beyond Black and White: Essentialism, hybridity and Indigeneity. *Journal of Sociology* 42, 355–367.
- Parente A, Craven RG and Munns G (2003) What do Indigenous students say about their aspirations? *Journal of Aboriginal Studies Association* 12, 11–22.
- Pechenkina E and Anderson I (2011) Background paper on Indigenous Australian Higher Education: Trends, Initiatives and Policy Implications, The Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People.
- Pechenkina E, Kowal E and Paradies Y (2011) Indigenous Australian students' participation rates in higher education: exploring the role 59 of universities. *The Australian Journal of Indigenous Education* 40, 59–68.
- Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People (2011) Department of Education, Employment and Workplace Relations. Available at https://docs.education.gov.au/system/files/doc/other/context_paper_0.pdf.
- Rochecouste J, Oliver R and Bennell D (2014) Is there cultural safety in Australian Universities? *International Journal of Higher Education* 3, 153–166.
- Rochecouste J, Oliver R, Bennell D, Anderson R, Cooper I and Forrest S (2017) Teaching Australian Aboriginal higher education students: what should universities do? *Studies in Higher Education* 42, 2079–2098.
- Sharrock P and Lockyer H (2008) One to one and face to face: a community based higher education support strategy retaining Indigenous Australian university students. *The Australian Journal of Indigenous Education*, 37, 28–39.
- Sonn C, Bishop B and Humphries R (2000) Encounters with the dominant culture: voices of Indigenous students in mainstream higher education. *Australian Psychologist* 35, 128–135.
- Steering Committee for the Review of Government Service Provision (SCRGSP) (2011) *Overcoming Indigenous Disadvantage: Key Indicators 2011*. Canberra, Australia: SCRGSPP.
- The University of Adelaide (2013) Tarrkarri Tarrka. Available at <https://www.adelaide.edu.au/indigenous/system/files/media/documents/2019-02/tarrkarri-tarrka.pdf>.
- Trudgett M (2009) Build it and they will Come: building the capacity of Indigenous units in universities to provide better support for Indigenous Australian postgraduate students. *The Australian Journal of Indigenous Education* 38, 9–18.
- Wilks J and Wilson K (2015) Indigenous Australia: a profile of the Aboriginal and Torres Strait Islander higher education student population. *Australian Universities Review* 57, 17–30.
- Wyatt N and Cooke J (2008). On the road to deadly? Paper presented at Monash Transition Round Table, Centre for Australian Indigenous Studies, Monash University, Clayton, Victoria, Australia.
- Shane Hearn is a Noongar man from Western Australia. Professor Hearn is the current Dean of Indigenous Research and Education Strategy at the University of Adelaide. Professor Hearn provides leadership on education and research programmes for Indigenous students and staff, as well as employment of Aboriginal and Torres Strait Islander people at the University.
- Madeleine Benton is a PhD candidate in the School of Psychology at the University of Adelaide. Madeleine also holds a position as a Project Officer at Wirrltu Yarlur Aboriginal Education at the University of Adelaide.

Madeleine is involved in numerous research projects related to the success of Aboriginal and Torres Strait Islander students in higher education.

Sarah Funnell is currently undertaking her Masters of Psychology (Clinical) at the University of Adelaide. Sarah also holds a position as a Project Officer at Wirru Yarlur Aboriginal Education.

Fernando Marmolejo-Ramos is a visiting research fellow at the School of Psychology and casual lecturer at the School of Education, both at the University of Adelaide. He holds a PhD from the University of Adelaide in experimental psychology.