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# ***OnTrack* to university: understanding mechanisms of student retention in an Australian pre-university enabling program**

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*University-based enabling programs have become an important pathway to university for non-traditional students. There is increasing interest in understanding the mechanisms that facilitate retention and success of enabling pathway students, with the aim of developing effective strategies for maximising opportunities for university access and participation. The current study focuses on an Australian enabling program that has achieved and sustained high retention rates, with three-quarters of its 2115 students that enrolled during the last seven years (2008 – 2014) retained until the end of the program. Further, 90 per cent of retained students were successful in receiving an offer to university; and 94 per cent of students that received an offer subsequently enrolled in an undergraduate course. Multivariate regression analysis revealed that demographic and prior educational factors explained little about student retention in the program. The main reasons cited for withdrawal were medical or emotional issues, and family problems or responsibilities. Overall, this data suggests that*

*both pre-program conduct and in-program practices may enhance student retention outcomes. Specifically, practices that support the development of strong peer and tutor-student relationships, and that foster community connections, are thought to provide a significant and positive influence on student retention in enabling programs.*

***Keywords:*** *enabling programs, retention, attrition, success, non-traditional students*

## Introduction

In an environment characterised by deregulation and widening participation agendas, university-based enabling programs have become an important pathway to university for non-traditional students. There is increasing interest from Higher Education (HE) institutions and funding bodies, in understanding the mechanisms which facilitate retention and success of students engaged in enabling programs; a common aim being the development of strategies for maximising opportunities for university access and participation.

The aim of the current study was to report on student retention for a large cohort of students engaged in a pre-university enabling program over an extended period of time (2008 – 2014), and to investigate factors (demographic and other) which have influenced retention in the program.

### *Context*

Pre-university enabling programs, otherwise referred to as "bridging courses, university preparation courses, foundation courses and pathway courses" (Hodges et al., 2013) have become an increasingly popular pathway to university, particularly for non-traditional students. Many of these programs are funded by the Australian Government as a part of its 'widening participation' agenda that aims to increase enrolment of individuals from low socioeconomic status (SES) backgrounds and other under-represented groups for equity, economic and social justice reasons (Bradley, Noonan, Nugent, & Scales, 2008).

Enabling programs have been shown to attract a high proportion of non-traditional students, and many of these students have successfully

progressed to Bachelor degree level (Andrewartha & Harvey, 2014; Lomax-Smith, Watson, & Webster, 2011). Therefore, enabling pathways play an important role in social inclusion by boosting university participation for non-traditional students and providing a second chance to those whose "circumstances may have masked the extent of their academic capability" (Willis & Joschko, 2012:23). Currently available data suggests that following commencement of a first year undergraduate course, outcomes of enabling pathway students are comparable to those who enter university via traditional means (Bennett et al., 2013; Bourke, Cantwell, & Archer, 1998; Cantwell, Archer, & Bourke, 2001; Chesters & Watson, 2014; Cooper, Ellis, & Sawyer, 2000; Willis & Joschko, 2012). Moreover, the benefits of enabling programs may be more "profound" and "multi-layered" than previously anticipated: not only do enabling pathway students acquire academic skills, confidence and a sense of belonging, but they also bring to their degrees leadership qualities and intercultural understanding, "benefiting other students and the university, as well as potentially influencing their families, friends and communities" (Crawford, 2014:15).

In light of such findings, there is increasing interest in the nature and causes of student attrition in Australian enabling programs, and in devising appropriate interventions that will enhance completion rates and thereby resultant university enrolments. The Australian Government Office for Learning and Teaching (OLT) recently funded a multi-centre study examining outcomes in enabling programs delivered by five Australian HE institutions (Hodges et al., 2013). This study, consistent with other major studies (Bedford, 2009; Bennett et al., 2013; Cooper et al., 2000; Muldoon, 2011), reported that retention rates in enabling programs vary, but are frequently in the order of 50 per cent and thus lower than described for undergraduate students. Furthermore, the processes that result in student attrition in enabling programs are likely different, more complex and not as well understood as undergraduate models of attrition (Bennett et al., 2013; Hodges et al., 2013). Therefore, it is "not possible simply to transfer learning concerning student retention from undergraduate to enabling programs" (Hodges et al., 2013:5). Additionally, some attrition from enabling programs is considered a desirable outcome because "the enabling program is playing the role of a filter" (Hodges et al., 2013:5), for example, by allowing people to experience university and to leave

having either achieved or altered their goals and without accruing a financial burden.

Understanding retention and attrition rates in enabling programs is complicated by the diversity of enabling program models used across and within different Australian institutions. Differences exist in modes of delivery, entry requirements and course length (Hodges et al., 2013). It is currently unclear how specific differences in the practices and/or means of delivery have influenced student outcomes. Consequently, the Review of the Demand Driven Funding System recently expressed some concerns about potential variation in enabling program quality (Kemp & Norton, 2014), and the Higher Education Base Funding Review suggested that the effectiveness of pathway enabling courses should be assessed (Lomax-Smith et al., 2011).

In contribution to this wider discussion, the current study uniquely employs a large dataset collected over an extended timeframe and a robust empirical methodology to better understand the mechanisms that have influenced student retention in one Australian enabling program. The featured enabling program models a combination of pre-program and in-program practices that have delivered high and sustained retention and progression-to-university rates over many years; thereby representing a successful, appropriate and cost-effective pathway to university for non-traditional students.

### *OnTrack pre-university enabling program*

The *OnTrack* program, which commenced in 2008, operates on all of Murdoch University's domestic campuses, including one metropolitan and two regional campuses in Western Australia. It is a non-fee paying enabling program that is primarily supported by Commonwealth government funding and aims to provide a pathway for student groups that have not traditionally accessed university, to do so. In accordance with equity principles, *OnTrack* aims to enrol applicants from low SES backgrounds, those that have a disability or medical condition and those that have experienced reduced or no opportunity to access HE as a result of their personal or social circumstances. The program is offered bi-annually as a full-time, internal and semester-long (14 week) study option only.

*OnTrack* does not have strict academic pre-requisites for entry: an applicant need only demonstrate English proficiency either through secondary school results (school leavers) or a combination of work/life experience (mature aged applicants). In this way, a lack of previous academic achievement does not preclude an applicant from entering the program, particularly where there is evidence that other factors have negatively impacted their educational journey. Also noteworthy, the process of enrolment first requires compulsory attendance at a small-group information session where potential applicants visit the campus, personally meet and connect with *OnTrack* staff, and are explicitly informed of the expectations, commitment and time requirements of the program. Applicants therefore make informed decisions about whether or not to apply, and commencing students likely have reasonably realistic expectations about what *OnTrack* study will entail. Additionally, applicants gain some familiarity with the campus and staff.

*OnTrack* utilises a multi-disciplinary, fully integrated curriculum that fosters foundational academic literacies (e.g. essay writing, referencing etc.) and transitional skills (e.g. time management), as well as acculturation into the university environment. *OnTrack* is not offered as discrete units of study; instead students are allocated to a single tutorial group with the same tutor and peer group for the full duration of the program. Furthermore, tutors are employed on a fractioned fixed term basis, rather than on a casual basis, and are therefore available to provide additional support to their students between classes. Additionally, students identified as being from a Non-English Speaking Background (NESB) or native English speakers requiring assistance with their academic reading and writing skills are offered an additional day of dedicated classes each week.

Student withdrawal from the *OnTrack* course is recorded and reported by program staff. Every student absence (even for one day) is followed up with email communication as part of standard tutor operational procedures. Extended absence of more than a week is followed up by the unit coordinator by phone and/or email. Students that never attend or stop attending are therefore withdrawn within this timeframe, unless it is possible to assist the student to engage or re-engage. Although these procedures are labour intensive, they have frequently prompted engagement or re-engagement, and most importantly facilitate a

supportive culture where communication is strongly emphasised and encouraged.

### *Research Questions*

The specific research questions that guided this study were:

1. What are the student retention and success rates in the *OnTrack* program? What proportion of students progressed to undergraduate course enrolment at Murdoch University?
2. Which specific factors predict or influence student retention in the *OnTrack* program?

## Methodology

### *Demographic information*

Where information was available, demographic characteristics (according to definitions described in Appendix Table A1) were evaluated and reported for students that were enrolled in the *OnTrack* program over the period 2008 to 2014 ($n$ = 2115). A chi-square analysis was used to test for differences in demographic characteristics of regional versus metropolitan student cohorts.

### *Analysis of retention, success and progression rates*

De-identified data was used to evaluate the following outcomes for students that enrolled in *OnTrack* over the period 2008 to 2014: (1) student retention rate, defined as the proportion of students that remained enrolled until the end of the program; (2) student success rate, defined as the proportion of students that were retained and met the academic (overall grade ≥50%) and attendance (unexplained non-attendance ≤20%) requirements of the *OnTrack* program, and were therefore successful in receiving an offer to university; and (3) rate of student progression to undergraduate course enrolment at the university. Calculations were based on all student enrolments ("raw" rate) or the number of students still enrolled at the Higher Education Contribution Scheme (HECS) census date occurring at the end of Week Four of the program ("official" rate). The frequency of attrition (number of withdrawing students) by week in the program, and before and after changes to *OnTrack* enrolment procedures was also explored.

### *Analysis of influences on student retention in OnTrack*

Demographic factors and other variables of interest were investigated as potential predictors of student retention in the *OnTrack* program. The independent variables studied were those for which information was available from university departmental databases and/or the university's student records. Other student data, such as psychological data, were not collected and therefore not considered here. For this part of the study, retention to the end of the program was used as the dependent (response) variable in the analysis.

Firstly, single associations between *student retention* and each independent variable of interest were explored via a chi-square analysis. However, multivariate analysis was deemed necessary as some independent variables of interest were correlated (Appendix Table A2). Single association variables with a conservative p-value of less than 0.20 were further investigated in the multivariate regression model. Multi-collinearity between independent variables was assessed and any issues addressed prior to progressing further. Plausible interactions were also investigated as part of the model.

The final multivariate regression model included the following predictor variables: gender, age group, NESB, Aboriginal or Torres Strait Islander (ATSI), Humanitarian Entrant Background (HEB), low SES and prior education level. As the dependent variable (retention) was dichotomous, a logistic regression analysis method was employed. For this analysis, categorical data were dummy coded into exhaustive and mutually exclusive variables, each with a designated reference group for comparison. As it is recommended that multivariate logistic regression models employ an $n$ value of at least 10-15 per independent variable included in the model (Johnson & Wichern, 2007; Tabachnick & Fidell, 2007), the sample size for modelling was more than sufficient.

### *Analysis of withdrawal reasons*

Students who never attended or that ceased attendance were contacted by program staff regarding the reason for non-attendance and to discuss re-engagement or withdrawal from the program. Where withdrawal was the outcome and the student was both contactable and willing to disclose, the primary reason for discontinuation was formally

recorded on individual student exit forms. Student exit forms were then thematically analysed and recorded reasons (where provided) broadly classified into the following exhaustive categories: (1) financial issues, (2) medical/emotional problems, (3) family issues or responsibilities, (4) inadequate skills, (5) lack of interest/engagement, (6) alternative opportunity or (7) the student deciding that university is not for them. Student exit forms have only been in use since 2011, therefore this analysis was limited to students who withdrew from the program between 2011-2014 and whose exit forms could be located in archives ($n$ = 267); of these, the withdrawal reason was both communicated and recorded for 68% of the sample (n = 181).

### *Statistical analysis and ethics approval*

Analyses were conducted using the statistical package SPSS, version 21. Associations were considered statistically significant if p-values were less than 0.05. Permission to undertake this study was granted by the Murdoch University Human Research Ethics Committee (Approval No. 2014/112).

## Results

### *Demographic information*

Demographic characteristics for all students that enrolled in *OnTrack* between 2008 and 2014 are shown in Table 1.

***Table 1:*** *Demographic characteristics of OnTrack students enrolled at Murdoch University over the period 2008-2014*

| Demographic characteristics | | Metropolitan students[1] | Regional students[1] | Chi-square test for metropolitan versus regional differences | | | |
|---|---|---|---|---|---|---|---|
| | | | | $\chi^2$ *statistic* | *df* | *N* | *p-value*[2] |
| Gender | Female | 714 (52%) | 541 (74%) | 102.162 | 1 | 2112 | **<0.001** |
| | Male | 670 (48%) | 187 (26%) | | | | |
| | Total *N* | 1384 | 728 | | | | |
| Age | ≤19 years | 852 (62%) | 335 (46%) | 66.866 | 4 | 2113 | **<0.001** |
| | 20-29 years | 364 (26%) | 224 (31%) | | | | |
| | 30-39 years | 79 (6%) | 82 (11%) | | | | |
| | 40-49 years | 55 (4%) | 68 (9%) | | | | |
| | ≥50 years | 35 (2.5%) | 19 (3%) | | | | |
| | Total *N* | 1385 | 728 | | | | |
| ATSI | | 24 (2%) | 11 (2%) | 0.140 | 1 | 2110 | 0.708 |
| | Total *N* | 1384 | 726 | | | | |
| NESB | | 254 (18%) | 25 (4%) | 88.410 | 1 | 2087 | **<0.001** |
| | Total *N* | 1383 | 704 | | | | |
| Low SES | | 245 (18%) | 409 (56%) | 329.649 | 1 | 2110 | **<0.001** |
| | Total *N* | 1382 | 728 | | | | |
| HEB | | 30 (2%) | 3 (0.4%) | 9.568 | 1 | 2114 | **0.001** |
| | Total *N* | 1385 | 729 | | | | |
| FIF | | 429 (41%) | 259 (55%) | 28.132 | 1 | 1519 | **<0.001** |
| | Total *N* | 1052 | 467 | | | | |
| Rural or remote | | 59 (4%) | 31 (4%) | 0.000 | 1 | 2113 | 0.991 |
| | Total *N* | 1384 | 729 | | | | |
| Disability or medical condition | | 160 (19%) | 77 (18%) | 0.182 | 1 | 1277 | 0.669 |
| | Total *N* | 847 | 430 | | | | |
| Receiving Equity Service support | | 87 (6%) | 45 (6%) | 0.010 | 1 | 2114 | 0.922 |
| | Total *N* | 1385 | 729 | | | | |
| Time since last studied | <2 years | 374 (67%) | 150 (53%) | 22.125 | 3 | 843 | **<0.001** |
| | 2-5 years | 117 (21%) | 69 (24%) | | | | |
| | 6-10 years | 29 (5%) | 30 (11%) | | | | |
| | >10 years | 38 (7%) | 36 (13%) | | | | |
| | Total *N* | 558 | 285 | | | | |
| Highest level of past educational attainment | ≤Year 10 | 155 (13%) | 117 (19%) | 45.124 | 4 | 1845 | **<0.001** |
| | Year 11 | 179 (15%) | 89 (14%) | | | | |
| | Year 12 | 738 (60%) | 302 (49%) | | | | |
| | TAFE | 125 (10%) | 103 (17%) | | | | |
| | Other post-secondary | 34 (3%) | 3 (0.5%) | | | | |
| | Total *N* | 1231 | 614 | | | | |

[1] Counts and column percentages are shown. Total N indicates the sample size for which data was available.
[2] Boldface highlights two-sided p-values significant at the 5% level.

The *OnTrack* student cohort was characterised by a high proportion from low SES backgrounds (654/2110 or 31% overall), and that self-identified as first in their family (FIF) to study at university (688/1519 or 45% overall). These categories were not mutually exclusive; more than 50% of low SES students were also FIF (246/454). The proportions of low SES and FIF students were significantly higher for regional versus metropolitan cohorts (Table 1).

More females than males enrolled in *OnTrack* (1255/2112 or 59%), with this effect significantly ($p<0.001$) more pronounced at the regional campuses (74% female) compared to the metropolitan campus (52% female; see Table 1). Furthermore, students were observed to come from a wide range of age groups, with 44% (926/2113) of students aged 20 years or above upon commencing *OnTrack*. Notably, students that enrolled at the regional campuses were more likely to be of an older demographic than those enrolled at the metropolitan campus: for example, 23% (169/728) of regional students were aged 30 years or older compared to only 12% (169/1385) of metropolitan students. Regional students were also less likely to have studied recently (Table 1).

The *OnTrack* student cohort was also characterised by a wide range of variation in prior educational attainment. Notably, regional students were less likely to have completed Year 12 study, and more likely to have achieved up to Year 10 only or a TAFE certificate. Meanwhile, the metropolitan campus enrolled more NESB and HEB students. Close to one-fifth of all *OnTrack* students declared a disability and/or medical condition during application (Table 1).

### *Retention, success and progression to undergraduate study*

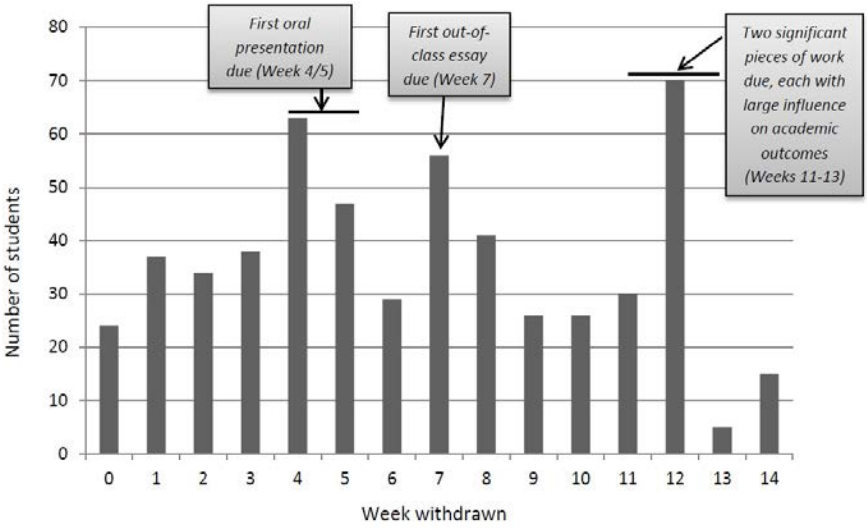
Enrolments in the *OnTrack* program have increased annually, with a cumulative total of 2115 enrolments during the investigation period (Table 2). The number of students still enrolled at the HECS census date is also indicated, as this is the date in which the university officially confirms a student's enrolment and the student's place is funded (therefore giving an indication of the real financial cost associated with attrition).

***Table 2:*** *OnTrack student retention rate figures for the period 2008-2014*

| Year | Number of students that enrolled in *OnTrack* | Number of students still enrolled at HECS census date | Number of students retained until end of program | Raw retention rate (%) | Official retention rate (%) |
|---|---|---|---|---|---|
| 2008 | 76 | 49 | 45 | 59 | 91 |
| 2009 | 187 | 171 | 100 | 53 | 58 |
| 2010 | 214 | 194 | 133 | 62 | 69 |
| 2011 | 321 | 285 | 225 | 70 | 79 |
| 2012 | 354 | 333 | 301 | 85 | 90 |
| 2013 | 436 | 392 | 334 | 77 | 85 |
| 2014 | 527 | 502 | 435 | 83 | 87 |
| Cumulative total | 2115 | 1926 | 1573 | **74** | **82** |

Throughout the investigation period, 74% of all students that enrolled in *OnTrack* and 82% of all students 'officially' enrolled (i.e. enrolled at census date) were retained until program completion (Table 2). Weekly student attrition from the program was also studied in order to determine whether there were any peak withdrawal times during the semester (Figure 1).

***Figure 1:*** *OnTrack student attrition by week of the program for the period 2008-2014 (n=542)*



Attrition was found to be highest in Weeks 4-5, 7 and 12. The boxed information in Figure 1 shows details of the assessment tasks that were due during these periods.

Table 3 indicates rates of success and progression-to-university for *OnTrack* students over the investigation period.

***Table 3:*** *OnTrack student success and progression-to-university rates for the period of 2008-2014*

| Year | Number of successful completers | Raw success rate (%) | Official success rate (%) | Number of successful completers taking up university offer | Raw progression to university rate (%) | Official progression to university rate (%) |
|---|---|---|---|---|---|---|
| 2008 | 45 | 59 | 92 | 39 | 51 | 80 |
| 2009 | 96 | 51 | 56 | 90 | 48 | 53 |
| 2010 | 133 | 62 | 69 | 127 | 59 | 65 |
| 2011 | 196 | 61 | 69 | 187 | 58 | 66 |
| 2012 | 272 | 77 | 82 | 255 | 72 | 77 |
| 2013 | 294 | 67 | 75 | 271 | 62 | 69 |
| 2014 | 376 | 71 | 75 | 353 | 67 | 70 |
| Cumulative total | 1412 | **67** | **73** | 1322 | **63** | **69** |

Ninety percent (1412/1573) of all retained students successfully completed the program (met academic and attendance requirements) and therefore received an offer to university. 94% (1322/1412) of students that received an offer went on to enrol in an undergraduate course at the university. Of all students that enrolled in the *OnTrack* program, 67% completed the program successfully and 63% went on to enrol in an undergraduate degree. Notably, 69% of 'official' (funded) enrolments in *OnTrack* translated into undergraduate enrolments at the university (Table 3).

Changes in *OnTrack* enrolment procedures over the period of this study were also explored for the possible impact on student retention. Previous to Semester 2, 2013, successful applicants were allocated a place and automatically enrolled prior to the start of the semester. In the lead up to Semester 2, 2013, new enrolment procedures were introduced in response to increasing unmet demand for *OnTrack* places. The changes meant that successful applicants were no longer automatically

allocated a place, but instead required to formally accept their offer within a set timeframe shortly before the start of the program. Offers not accepted were re-allocated via a second round of offers to other eligible applicants. Chi-square analysis indicated that this change has facilitated a significantly reduced attrition rate during the first four weeks of the *OnTrack* program and also after the HECS census date (Table 4).

***Table 4:*** *OnTrack student retention before and after changes to OnTrack enrolment procedures*

| | | Enrolment procedures* | |
|---|---|---|---|
| | | **Before changes** | **After changes** |
| **Retention outcome** | Not retained beyond HECS census date | 157 (11.4%) | 32 (4.4%) |
| | Retained beyond HECS census date, but withdrawn before end of program | 252 (18.3%) | 99 (13.5%) |
| | Retained until end of program | 968 (70.3%) | 603 (82.2%) |
| **Total** | | 1377 | 734 |

* Pearson Chi-square test statistic = 42.23, df = 2, $p<0.001$

### *Finding predictors of student retention*

To predict student retention in the *OnTrack* program, single associations between independent variables of interest and the response variable (retention) were investigated (Table 5).

***Table 5:*** *Relationship between student retention in the OnTrack program and student demographic or prior educational factors*[1]

| Demographic and prior educational factors[2] | | Retention | | Chi-square analysis | | | |
|---|---|---|---|---|---|---|---|
| | | No | Yes | $\chi^2$ statistic | df | *N* | P-value |
| **Gender** | Male | 246 (29%) | 612 (71%) | 7.138 | 1 | 2113 | **0.008** |
| | Female | 295 (24%) | 960 (76%) | | | | |
| **Age group** | ≤19 years | 252 (21%) | 934 (79%) | 33.063 | 4 | 2113 | **<0.001** |
| | 20-29 years | 183 (31%) | 406 (69%) | | | | |
| | 30-39 years | 43 (27%) | 118 (73%) | | | | |
| | 40-49 years | 38 (31%) | 85 (69%) | | | | |
| | ≥50 years | 24 (44%) | 30 (56%) | | | | |
| **ATSI** | No | 525 (25%) | 1551 (75%) | 7.534 | 1 | 2111 | **0.006** |
| | Yes | 16 (46%) | 19 (54%) | | | | |
| **NESB** | No | 427 (24%) | 1382 (76%) | 10.525 | 1 | 2088 | **0.001** |
| | Yes | 91 (33%) | 188 (67%) | | | | |
| **Low SES** | No | 360 (25%) | 1097 (75%) | 2.086 | 1 | 2111 | **0.149** |
| | Yes | 181 (28%) | 473 (72%) | | | | |
| **HEB** | No | 540 (26%) | 1542 (74%) | 6.733 | 1 | 2115 | **0.009** |
| | Yes | 2 (6%) | 31 (94%) | | | | |
| FIF | No | 235 (28%) | 597 (72%) | 0.425 | 1 | 1520 | 0.514 |
| | Yes | 184 (27%) | 504 (73%) | | | | |
| Rural or remote | No | 523 (26%) | 1501 (74%) | 1.011 | 1 | 2114 | 0.315 |
| | Yes | 19 (21%) | 71 (79%) | | | | |
| Disability or medical condition | No | 197 (19%) | 844 (81%) | 0.381 | 1 | 1278 | 0.537 |
| | Yes | 49 (21%) | 188 (79%) | | | | |
| Equity Service support | No | 514 (26%) | 1469 (74%) | 1.439 | 1 | 2115 | 0.230 |
| | Yes | 28 (21%) | 104 (79%) | | | | |
| Campus of enrolment | Metropolitan | 365 (26%) | 1020 (74%) | 1.078 | 1 | 2114 | 0.299 |
| | Regional | 177 (24%) | 552 (76%) | | | | |
| **Time since last studied** | <2 years | 79 (15%) | 445 (85%) | 8.767 | 3 | 844 | **0.033** |
| | 2-5 years | 44 (24%) | 143 (76%) | | | | |
| | 6-10 years | 14 (24%) | 45 (76%) | | | | |
| | >10 years | 11 (15%) | 63 (85%) | | | | |
| **Highest level of prior educational attainment** | Did not complete Secondary School | 177 (33%) | 363 (67%) | 60.528 | 3 | 1846 | **<0.001** |
| | Completed Secondary School | 175 (17%) | 866 (83%) | | | | |
| | TAFE certificate or Diploma | 54 (24%) | 174 (76%) | | | | |
| | Other post-secondary education | 16 (43%) | 21 (57%) | | | | |

[1] Counts, row percentages and two-sided p-values from chi-square analyses are shown.
[2] Variables that met conservative single association criteria ($p < 0.20$) for inclusion in the multivariate logistic regression model are highlighted in boldface.

Female gender, HEB and having completed Secondary School or TAFE study was associated with a significantly enhanced retention rate. NESB, ATSI, increasing time since last studied and increasing age was associated with reduced retention rates. Variables not associated with student retention included: FIF, low SES, rural/remote postcode, disability or medical condition, Equity Services support and campus of enrolment (Table 5).

Importantly, a number of independent variables were found to correlate with each other, highlighting the need to investigate covariates in a multivariate model (Appendix Table A2). A particularly high association between *age* and *time since last studied* was observed, indicating a problematic degree of collinearity and redundancy between these variables. As highlighted elsewhere (Johnson & Wichern, 2007; Tabachnick & Fidell, 2007), variables that are too strongly correlated (i.e. correlation coefficient above 0.7) should not be studied together in multivariate regression analysis due to unstable modelling; instead only one of the related predictors can be included. In this instance, *age* was chosen for inclusion due to the larger and more robust dataset it provided for analysis (there is a significant portion of missing data on *time since last studied*). No other multicollinearity issues were detected. An interaction between prior education and age was considered plausible, however was not significant and therefore not considered further.

***Table 6:*** *Multivariate Logistic Regression Model analysing the influence of demographic and other factors on student retention in the OnTrack program*

| Independent variable[1] | | Odds ratio | (95% CI) | P-value[3] |
|---|---|---|---|---|
| ATSI | No[2] | 1.000 | | |
| | Yes | 0.617 | (0.219 –1.738) | 0.360 |
| Highest level of prior education | Did not complete Secondary Schooling[2] | 1.000 | | |
| | Completed Secondary Schooling | 2.362 | (1.815 – 3.072) | **<0.001** |
| | Completed TAFE study | 1.703 | (1.173 – 2.473) | **0.005** |
| | Completed other post-secondary education | 0.891 | (0.349 - 2.271) | 0.809 |
| Gender | Male[2] | 1.000 | | |
| | Female | 1.359 | (1.073 – 1.721) | **0.011** |
| NESB | No[2] | 1.000 | | |
| | Yes | 0.485 | (0.352 – 0.668) | **<0.001** |
| HEB | No[2] | 1.000 | | |
| | Yes | 6.491 | (1.482 – 28.433) | **0.013** |
| Low SES | No[2] | 1.000 | | |
| | Yes | 0.923 | (0.719 – 1.185) | 0.529 |
| Age group | ≤19 years[2] | 1.000 | | |
| | 20-29 years | 0.694 | (0.532 – 0.905) | **0.007** |
| | 30-39 years | 0.761 | (0.487 – 1.188) | 0.230 |
| | 40-49 years | 0.746 | (0.459 – 1.214) | 0.238 |
| | ≥50 years | 0.502 | (0.237 – 1.061) | 0.071 |

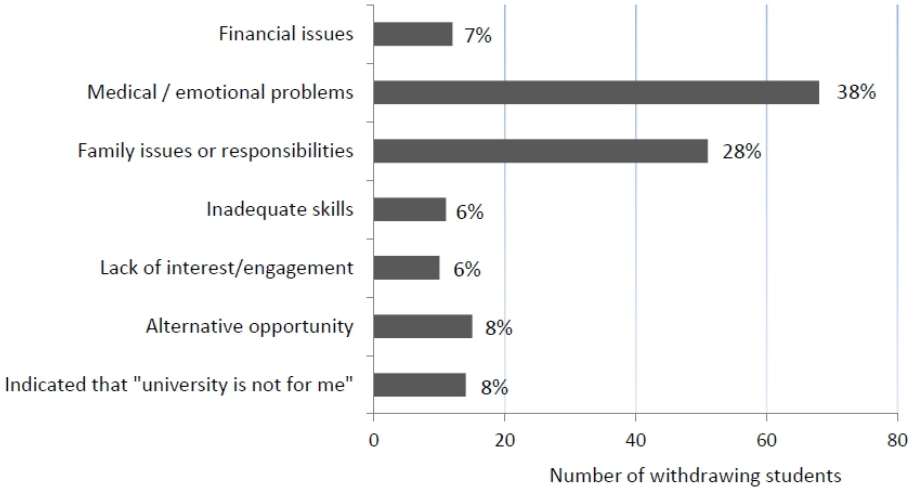
[1] Model Chi-square = 100.040, *df* = 12, p<0.001; Nagelkerke R-squared = 0.082; *N*=1817 included in the analysis.
[2] Reference group
[3] P-values significant at the 5% level are highlighted in boldface.

After controlling for covariates by performing multivariate logistic regression, prior education, gender, age, NESB and HEB were found to be significantly related to retention (Table 6). The model suggests that students who completed Secondary School or TAFE had significantly higher odds of being retained than those that did not complete Secondary School. Females had slightly greater odds than males of being retained. Students aged 20-29 years old were found to have significantly lower odds of retention compared to those aged 19 years or less. NESB students were less likely to be retained than non-NESB students; but HEB students had more than six times greater odds of being retained. ATSI or low SES status was not found to predict retention after controlling for covariates. Importantly, the model's effect size, Nagelkerke R-squared was 0.082; indicating that only 8.2% of the variance in the dependent variable (retention) was explained by this model. Therefore, despite some of these variables reaching significance, demographic and prior educational factors collectively explained very little about student retention in the program.

### *Reasons for early exit from the program*

The primary reasons for discontinuation cited by withdrawing students were broadly classified into the exhaustive categories shown in Figure 2.

***Figure 2:*** *Reasons for exiting the OnTrack program prematurely, as analysed by frequency and percentage, where reasons were known and recorded over the period 2011 - 2014 (n=181)*



For students whose reasons for leaving were communicated and recorded, the most common barriers to persistence were found to be *medical or emotional problems*, and *family issues and/or responsibilities* (Figure 2).

## Discussion

In the current study, the retention of students in the *OnTrack* program was assessed and potential predictors of retention investigated. The main findings of this study were that, firstly, student retention in the program was high, with 74% of all enrolled students being retained until the end of the program, and 69% of all funded enrolments translating into undergraduate degree enrolment at the university. This suggests that *OnTrack* is a cost-effective, successful and appropriate pathway to university for non-traditional students. Secondly, student demographic and prior educational factors collectively explained little about the observed variance in student retention, and personal circumstances like health or family issues were most commonly cited as reasons for exiting the program early.

The high retention rate in *OnTrack*, in comparison to that reported for other Australian enabling programs, may be partially explained by differences in mode of delivery. For example, in enabling programs delivered online, the raw retention rate has been reported at as low as 25% (Hodges et al., 2013; Whannell & Whannell, 2013); and for programs offered in both internal and external modes, the retention of external students is consistently lower than that of internal students (Hodges et al., 2013). Furthermore, it has already been highlighted elsewhere that "attrition rates within part-time enabling programmes are higher when compared to full-time study modes" (Bennett et al., 2013) and indeed programs delivered in part-time mode record retention rates at below 50% (Bennett et al., 2013; Muldoon, 2011). Programs delivered in both full-time and internal modes on the other hand, such as Open Foundation Intensive or Newstep at the University of Newcastle, report retention rates above 50% (Hodges et al., 2013). This is in line with our data which shows that three-quarters of all enrolling *OnTrack* students were retained. Therefore, the mode of delivery may influence retention rates. Notably, the Higher Education Participation and Partnerships Programme (HEPPP) recently

commissioned a project to be completed in 2015 that will review and report on enabling program practices and/or means of delivery that have resulted in the most effective outcomes for disadvantaged students (HEPPP, 2014). Whilst some modes of delivery may be seen to be more effective than others, the importance of continuing to offer flexible study options should not be underestimated if we are to strive towards the goal of widening access opportunities for all, including those who do not have the means to study full-time and on-campus. Instead, identification and implementation of 'enablers' of retention, including for programs that use flexible delivery, is likely to yield more desirable outcomes.

The mechanism for high student retention in full-time, internally-based programs like *OnTrack* may be the enhanced opportunity for the development of learning communities. The formation of learning communities and a sense of belonging or connectedness is strongly associated with improved retention of first-year university students (Kift, Nelson, & Clarke, 2010; Krause, 2005; Tinto, 1997). For low SES and mature age students, these relationships appear to be particularly important (Devlin, Kift, Nelson, Smith, & McKay, 2012; Willans & Seary, 2011). Tinto (2003:1) asserted that "learning communities, in their most basic form, begin with a kind of co-registration or block scheduling that enables students to take courses together, rather than apart". The practice of delivering *OnTrack* not only in full-time, internal mode but also as a complete, fully integrated, multi-disciplinary course, rather than a series of units, means that students work with the same tutor and peers at the same pace for the entire program. The block-scheduling arrangements in *OnTrack* increase student interaction, engagement and support, and thus likely create an environment that is conducive to the development of learning communities. Consistent with this, enabling pathway students identified "encouragement from other students" and "camaraderie" as important influences on their decision to continue (Ellis, Cooper, & Sawyer, 2001:95). Cocks and Stokes (2013:27-28) also emphasised that a supportive culture is crucial in enabling programs so that students build networks and social relationships that "reduce feelings of vulnerability" and "motivate and maintain the development of learner identities". Thus, the formation of learning communities may play a significant role in supporting student retention in enabling programs, and if so, institutions should look for ways to foster academic and social connectedness, regardless of the mode of delivery. This idea

is starting to be explored as a retention strategy for external students in other Australian enabling programs (Lambrinidis, 2014; Whannell & Whannell, 2013).

Refinement of enrolment procedures and pre-program conduct may also have contributed to observed retention rates in the *OnTrack* program. For example, the introduction of a procedure that allowed for a second round of offers to be distributed has facilitated a drop in student attrition. The reduction in attrition throughout the course of the semester and not just in the first few weeks of the program suggests that refinement of these procedures not only prevented unnecessary uptake of places by those that no longer had the intention to attend, but also appears to facilitate better overall selection of suitable applicants. Additionally, the use of information sessions to explicitly inform prospective students of the time requirements and level of commitment needed likely also contributed to retention figures, by ensuring that students entered the program with more realistic expectations. Consistent with this, "inadequate pre-enrolment information" was cited as an important reason for early exit by approximately 14% and 33% of non-persisting students in enabling programs at The University of Newcastle and University of New England, respectively (Hodges et al., 2013). Moreover, personal interaction with staff and other potential applicants at these small group information sessions may also help prospective students to initiate relationships and connections, and develop some familiarity with the campus before commencing the program.

Another major finding of this study was that most of the attrition observed in the *OnTrack* program could not be explained by student demographic or prior educational factors. Firstly, low SES, FIF, having a disability/medical condition, studying at a regional campus, and living rurally/remotely were *not* related to retention. This suggests that students in government-targeted equity groups generally achieved retention outcomes commensurate with their non-targeted peers, as per previous findings (Hodges et al., 2013; Whannell, 2013a, 2013b). Secondly, although some of the other demographic and prior educational factors were associated with retention, multivariate regression modelling suggests that these collectively explained only 8% of the observed retention rate – that is, most of the attrition from

the *OnTrack* program remains unexplained by this model. Hodges et al. (2013:5) similarly concluded that "demographic factors do not have a significant impact on the likelihood of persistence of students in these programs". A significant limitation of our model was the lack of additional student information that may have better explained retention, such as a student's hours of paid employment, number of absences, reasons for enrolling in the program and academic performance at first assessment, all of which were related to student retention in other enabling programs (Hodges et al., 2013; Whannell, 2013b). Future studies should incorporate these factors, as well as other student psychological factors, as potential predictors of retention.

Finally, the main reasons for student attrition reported in *OnTrack* were personal circumstances relating to medical/emotional problems, or family issues and responsibilities. This is consistent with the findings of others and suggests that some attrition may be beyond the control of the institution (Bedford, 2009; Hodges et al., 2013; Whannell, Whannell, & Bedford, 2013). Hodges et al. (2013) and Muldoon and Wijeyewardene (2013) also reported that having insufficient time available for study is another major reason for discontinuation. Although we have not specifically looked at this issue here, it is likely that the changes in personal circumstances that trigger withdrawal do so by placing competing and unmanageable demands on time available for study. This may also explain, at least in part, why peak withdrawal times correlate with certain assessment tasks and yet, personal circumstances are mainly cited as the reasons for discontinuation. Notably, there is an assessment item due almost every week of the program, however some assessment pieces may be perceived as more stressful or difficult, causing students simultaneously experiencing adverse personal events to feel overwhelmed by competing time pressures and stress. Therefore, emotional distress may have been the reported reason for discontinuation, but may in fact be a secondary response to other factors (e.g. difficulty managing time). Despite this, experience in our program and in others indicates that a substantial number of withdrawn students return later to try again "often being successful on the second or even third try" (Bennett et al., 2013:153). In other cases, attrition may be a desirable outcome, as highlighted previously (Cooper et al., 2000; Hodges et al., 2013). For example, "where withdrawal signals an informed, adult decision that university is not for them, this should

be viewed as a form of success because the equity objective has been served" (Klinger & Murray, 2011:143). Cooper et al. (2000:4) also suggest that "employment is often a direct result of the new skills and confidence participants have gained from their period of bridging study". In *OnTrack*, 16% of withdrawals were attributed to the student taking up an alternative opportunity or discovering that university was not for them and therefore may be a positive attrition statistic. Additionally, the filtering of students unlikely to go on to succeed or engage at university, such as those that do not possess adequate skills or engagement/interest, may in many instances also be a positive outcome for both the student and the institution, particularly when a positive exit process is facilitated.

## Conclusion and future directions

There is a focus on enhancing student retention in enabling programs in order to further boost their effectiveness as enablers of university access and participation for non-traditional students. In general, retention rates in enabling programs tend to be lower than undergraduate programs, variable and linked to the mode of delivery, with internal and full-time programs demonstrating higher comparative retention rates. Importantly however, "success in enabling education should not be measured solely by numbers" (Bennett et al., 2013) and we should be careful not to discount the role of enabling programs delivered in flexible modes, which support equity and social inclusion agendas by not excluding potential talent that do not have the means to study full-time and on-campus. Therefore, future development in enabling program pathways should focus on retaining flexibility whilst applying the principles that make internal, full-time based versions successful.

The findings from this study and others suggest that personal issues/life events, but not demographic factors are significant barriers to student retention. Anecdotally however, it seems that many *OnTrack* students experience personal challenges during the program, but are retained anyway. Therefore, it may be wise to concentrate future efforts on understanding why some students are retained despite their difficulties, as opposed to continuing to focus on why some students leave. This seems particularly relevant at a time when reasons for attrition appear to be well documented and often outside of the control of the institution.

We predict that opportunity for the development of strong peer and tutor-student relationships and community connections are a significant and positive influence on student retention. Therefore, the purposeful cultivation of learning communities in all enabling program models, including those delivered in flexible modes, may be the key to improving the progression of non-traditional students through the enabling program pathway and into undergraduate university studies.

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## Appendices

### *Table A1: Definitions of student characteristics under study*

| Variables | Definition/description |
|---|---|
| Gender | Male or Female |
| Age | Student age (in years) at the date of commencing study in *OnTrack* |
| Low Socioeconomic Standing (SES) | "Low SES postcode measure is based on the students' postcode of permanent home residence upon commencing enrolment, with the SES value derived from the 2011 SEIFA Education and Occupation Index for postal areas, where postal areas in the bottom 25% of the population aged 15-64 being classified as Low SES" (Australian Government, 2013)[1] |
| First in Family (FIF) | Self-identification as being first in their family to study at university |
| Rural and remote | Residing postcode at application is categorised in accordance with the Australian Statistical Geography Standard (ASGS) Remoteness Areas classification 2011 (ABS, 2013)[1] |
| Non-English Speaking Background (NESB) | "Those who were born overseas and arrived in Australia less than 10 years ago, and who speak a language other than English at home" (Martin, 1994)[1] |
| Humanitarian Entrant Background (HEB) | Students that hold a permanent Humanitarian visa and provide a copy of this to evidence their eligibility to the *OnTrack* program |
| Aboriginal or Torres Strait Islander (ATSI) | Self-identification as being of Indigenous decent |
| Declared a disability or medical condition | Any disability or medical condition that is reported at time of application to the *OnTrack* program, and supported with documentation |
| Equity Service support | Students that registered with Equity services at Murdoch University, and that choose to disclose this |
| Campus of enrolment | *Metropolitan campus:* the largest Murdoch University campus, located in the suburb of Murdoch within the Perth Metropolitan area<br>*Regional campuses:* two campuses located South-West of Perth in the Peel region (Mandurah) and in Rockingham |
| Highest level of past educational attainment | Highest level of prior education attained by the student, as indicated by educational documents/records submitted by the student during application |
| Time since last studied | Time (in years) since the student last studied; calculated as the difference between the commencement date in the *OnTrack* program and the completion date of last formal study (according to educational records) |

[1] Full reference details:

ABS. (2013) Australian Statistical Geography Standard (ASGS) Remoteness Structure. from Australian Bureau of Statistics http://www.abs.gov.au/websitedbs/d3310114.nsf/home/remoteness+structure

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## ***Table A2:*** *Single associations between independent variables*

| Predictor variables | Correlation coefficients[1,2] | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Prior education | Time since last studied | Gender (female) | Age | ATSI | NESB | HEB | Low SES |
| Prior education (did not complete secondary school) | N/A | 0.305*** | 0.061** | 0.095*** | -0.042 | -0.048* | -0.021 | 0.018 |
| Prior education (completed secondary school) | N/A | -0.256*** | -0.074** | -0.233*** | 0.098*** | 0.037 | -0.017 | -0.082*** |
| Prior education (TAFE) | N/A | -0.071* | 0.020 | 0.092*** | -0.033 | -0.041 | 0.018 | 0.078*** |
| Prior education (other post-secondary) | N/A | 0.067 | -0.015 | 0.048* | 0.576*** | 0.054* | 0.070** | 0.004 |
| Time since last studied | | X | 0.099** | 0.768*** | 0.016 | -0.067 | -0.010 | 0.038 |
| Gender (female) | | | X | 0.080*** | 0.002 | -0.124*** | -0.082*** | 0.118*** |
| Age | | | | X | 0.036 | -0.033 | -0.007 | 0.098*** |
| ATSI | | | | | X | -0.050* | -0.016 | 0.058** |
| NESB | | | | | | X | 0.221*** | -0.059** |
| HEB | | | | | | | X | -0.010 |
| Low SES | | | | | | | | X |

[1] Point-biserial correlation coefficients were calculated to assess the relationship between dichotomous and continuous variables; phi correlation coefficients for assessing the relationship of dichotomous with other dichotomous variables; and Spearman rho correlation coefficients for assessing the relationship of continuous with other continuous variables. Continuous variables included *age* and *time since last studied*; all other variables were expressed dichotomously.

[2] Significant associations at the 5% level are shaded in grey. P-values not corrected for multiple comparisons, thus exercise discretion in the interpretation of results. Association data not replicated on the bottom left of the table.

* indicates 2-sided p-value <0.05

** indicates 2-sided p-value <0.01

*** indicates 2-sided p-value <0.001

## About the Authors

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***Gael Gibbs*** is currently the Manager of Access Programs at Murdoch University, and was previously employed as a Lecturer in the Centre for University Teaching and Learning and coordinator of the *OnTrack* program between 2011 and 2014. Gael has a long-standing interest in equity, access and social justice that she has pursued through research and both academic and professional appointments.

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