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Article

The Traditional to Contemporary Spectrum of Models of Higher Education for Admission and Course Delivery

David Kember [1], David Hicks [2], Doris YP Leung [3,*] and Michael Prosser [4]

[1] Faculty of Education, University of Tasmania, Australia; david.kember@utas.edu.au
[2] Faculty of Education, University of Tasmania, Australia; david.hicks@utas.edu.au
[3] School of Nursing, The Hong Kong Polytechnic University, Hong Kong
[4] Centre for Studies in HIgher Education, University of Melbourne, Australia; mike.prosser@unimelb.edu.au
* Correspondence: doris.yp.leung@polyu.edu.hk; Tel.: +852-2766-6423

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Abstract: The admission of the more diverse student body in higher education has been facilitated by greater flexibility in teaching and learning mode of study and by permitting part-time study. This study aims to compare a hypothesised model on a set of presage variables relating to admission and mode of study; intermediate variables of age and year of study and measures of outcomes including GPA and attrition between a traditional university (N = 17,025) and a contemporary university (N = 8,911) using data from student records using structural equation modeling. Following testing and modification, the model for the traditional university (R-CFI = 0.959, SRMR = 0.035 and R-RMSEA = 0.059) was simpler than that for the contemporary university (R-CFI = 0.932, SRMR= 0.055, and R-RMSEA = 0.055). As universities have shifted across the spectrum from the traditional to contemporary models, the increased complexity has permitted the entry of a much wider range of students to higher education, but it is also led to increases in attrition.

Keywords: Models of higher education, Structural equation modelling, Attrition, Mass higher education, Path model

1. Introduction

In higher education, a spectrum from traditional to contemporary enrolment and course delivery models are possible. The traditional end of spectrum of approaches to enrolment and course delivery is represented by older elite higher-ranking universities. Teaching is largely on-campus, with students having term addresses in the proximity of the university campuses. The bulk of recruitment is on the basis of secondary school performance, with students commonly starting university shortly after finishing secondary school. Universities which have moved towards the contemporary end of the spectrum of approaches to enrolment and course delivery have adopted, to some degree, the principles of open learning (Kember 1995; Lewis & Spencer 1986; Thorpe & Grugeon 1987) pioneered by the Open University in the UK (Brennan 2004), which was envisaged as a means of introducing greater equity into higher education. Opening access to a more diverse student body implies having admission categories other than those based on secondary school results. It requires online learning or distance education to cater for students who are unable to study on-campus. Catering for those with employment or carer responsibilities, implies the need for some flexibility over when study takes place, through the availability of part-time learning and a degree of asynchronous study. The position on the spectrum adopted by a university is dependent on their mission location and context. Universities adapt their polices and practices with respect to admission and course delivery depending on the type of students they wish to attract. Offering courses by online learning is a major factor in shifting toward the contemporary end of the spectrum, as it facilitates the enrolment of those unable or unwilling to attend classes on-campus. Movement towards the contemporary end of the spectrum can be considered in terms of the literature on the open learning movement. The comparison is instructive as open learning was envisaged as a path towards achieving equity goals. The formation of the Open University in the UK is central to the birth of the open learning movement. The former prime minister, Sir Harold Wilson (Dorey 2015), envisaged the Open University as providing an opening into higher education for those who had been unable to gain entry to what was, at the time, an elite system of higher education. In the parlance of the time, it was seen as an opportunity for the working classes, which nowadays might be referred to as boosting participation of low SES students.

There is no succinct, universally agreed definition of open learning. The closest approximation to a definition consists of a listing of aspects of openness against which courses or programs can be assessed. The version which seems to be quoted or cited most often is by Lewis and Spencer (1986). They proposed that courses be assessed on a spectrum from closed to open for each of

a number of facets including: open entry, study anywhere, start any time, tutors on demand, attendance at any time, flexible sequence, negotiated objectives and content, negotiated learning method, and negotiated assessment. The list or definition has been criticized (Kember & Murphy 1990; Rumble 1989) for including too many elements of openness, which were often not present in courses labelled as open learning. The listed elements of openness appear to be aspirational rather than realistic. The design of the Open University incorporated three key elements of openness, which were radically different to that of conventional universities at the time, which were central to its mission: open entry; modes of teaching and learning which permitted study off-campus at locations which suited the student; and, asynchronous modes of study which permitted a degree of flexibility over when study took place. Though, it should be noted that there were restrictions on timeframes for study in the form of deadlines for assignments and some other activities. It is particularly notable that the Open University is a distance education provider. It is significant that universities at the contemporary end of the spectrum have a substantial proportion of students studying online, which is a form of distance education. Models of higher education at the contemporary end of the spectrum are consistent with the elements of openness introduced by the Open University. In a similar way, Australian universities which have adopted a model near the contemporary end of the spectrum have been able to admit a more diverse body of students.

Following the success of the Open University in the UK, several countries set up national open universities closely following the UK model. Australia chose not to follow this path. There is the Open Universities Australia, but this is a consortium of providers and not in itself a university. Australia, therefore, has no university specifically founded for, and dedicated to, open learning principles. The open learning literature has, therefore, perhaps not been as widely cited and influential in Australia as elsewhere. It nevertheless provides a valid underpinning framework for the traditional to contemporary spectrum. Rather than founding a national open university, Australia devolved responsibility for catering for students who needed open learning provision to the existing universities. The extent to which universities have catered to those who need open learning is a function of how far they have shifted across the spectrum from the traditional end of enrolment and course delivery to the contemporary one. The degree to which Australian universities have moved towards the contemporary end of the spectrum can be envisaged in terms of the degree to which they have adopted the three key elements of openness.

Online learning and distance education provides flexibility over where study takes place, which is needed by those unable to study on-campus. This includes those with conflicting employment commitments, those with carer and family responsibilities and those who reside far from a campus and are unwilling or unable to relocate. There are also students who prefer the flexibility of online learning, even though they live close to a campus. Those with commitments to employment and carer and family responsibilities also commonly need degrees of flexibility over when study takes place. Online learning provides flexibility in this respect in that it is a largely asynchronous form of learning. The other way of introducing flexibility over when study takes place is through offering part-time study. Flexibility over when and where study takes place makes it possible for a wider range of potential students to feel confident that they will be able to manage to study. They might, therefore, be persuaded to apply for admission. Degrees of openness in entry then come into play, which includes admission categories other than secondary school performance. It should be noted that the traditional to contemporary spectrum focuses on admission and mode of course delivery. In respects other than these, the labels traditional and contemporary may not be applicable to the operation of a particular university.

To quantitatively illustrate the concept of a spectrum from a traditional model of higher education to a contemporary one, values for pertinent demographic variables in the quantitative model were extracted from the student record systems for undergraduate students. The point of this exercise is to give an idea of the nature and extent of the change in transitioning from traditional to contemporary models. Table 1 presents seven demographic characteristics of undergraduate students from four universities in Austrailia, with categories defined in such a way that a higher percentage indicates a greater departure from the traditional model. The traditional model is for University T; a research-intensive university in the Group of Eight. Undergraduate teaching for this university follows closely to the traditional model described at the opening of the article. On the other end of the spectrim is University C; which is classified as a regional university in an area with historically low tertiary participation rates. University C has adapted admission policies to boost tertiary participation and modified modes of study to cater for the needs of the more diverse intake. In addition to universities T and C, two other universities were included in this exercise. University F teaches all its undergraduate students on-campus. It differs from University T by being outside the Group of Eight and having a more diverse intake. University M is a metropolitan university with a mission to recruit a diverse intake. Overall, Table 1 illustrates very well the concept of the spectrum from traditional to contemporary models. For each variable University C has the highest percentage, indicating that it has taken the greatest steps towards the contemporary model. It has taken great strides towards widening access and moving towards more flexible modes of study. University T has departed little from the traditional model. It has the lowest percentage value for each variable. Universities F and M occupy intermediate positions.

Table 1. Demographic characteristics of four universities in Australia to illustrate the spectrum of models in higher education.

Characteristics	University T	University F	University M	University C
1. Not studying on-campus	0%	0%	9.4%	71.3%
2. Admitted on basis other than secondary results	12.8%	29.9%	56.4%	71.0%
3. Living on Outer Regional, Remote and Very Remote areas	2.5%	2.6%	6.2%	39.7%
4. Low SES	6.4%	14.6%	14.5%	23.6%
5. Studying less than 70% load	19.4%	18.5%	14.0%	52.0%
6. Age greater than 24	3.9%	18.1%	23.6%	44.4%
7. Attrition	1.9%	10.2%	19.3%	28.5%

Mode of study is the variable which shows the greatest disparity between the contemporary and traditional models. As the data were taken from the student record databases, mode of study is recorded as a dichotomous variable: either on-campus or online. The databases do not reflect any degree of blended learning in courses. Using this definition of mode of study, Universities T and F have stuck to the traditional approach and teach all undergraduate students on-campus. University C has 71.3% of its students not studying face to face. Of these 58.9% study online and 12.5% by mixed mode; some units are taken online and some face-to-face. University C has a higher proportion of 71.0% of students admitted on a basis other than secondary school results. The other three universities also have appreciable proportions of students not admitted on secondary school results, with the proportion declining across the spectrum towards the traditional model.

The remoteness category allocated to students was derived from their term address. Universities F, M and T are in Major City or Inner Regional areas; so have low proportions of students in the three more remote categories. University C, by contrast, is classified as a regional university and is in an area characterised by a relatively low population density and a dispersed population. An appreciable proportion of students are, therefore, in the three more remote categories. The high proportion of University C students not studying face to face indicates that those in more remote locations largely choose to study from home, rather than relocating to the proximity of the campus for face-to-face study. University T admits the lowest percentage of low SES students. Universities F and M have an approximately equal percentage. University C has the highest proportion. This confirms the validity of the construct of the spectrum model, in terms of showing how the model of higher education needs to be changed to diversify the intakes to admit those in disadvantaged groups. The greater the shift from a traditional model to the more contemporary one, the more diverse the student body will become and the greater the proportion of low SES students. University C had by far the greatest proportion of part-time students. This is, to a large extent, a consequence of student characteristics or study mode. 44.4% of University C students were greater than 24 years old. This is a reflection of both admitting more mature students and of students taking longer to complete their degrees because of reduced loads. Universities F and M both have significant proportions of mature students. University T, by contrast, has just 3.9% of undergraduate students over 24 years old. It still continues to recruit most of its students directly from secondary school.

Rates of attrition reflect the degree to which universities have adopted to a contemporary model. The more open the door, the more it becomes a revolving door. The more access has been widened and the greater the degree of adaptation to the mode of teaching and learning, the higher the level of attrition.

The hypothesised model of contemporary higher education reflects the transitions in moving across the spectrum to form a three-phase model. The first presage phase involves variables pertinent to entry. These are variables relating to student characteristics and to study mode options. The second intermediate phase contains variables which come into play as study proceeds. The final phase consists of outcome variables. The model starts with a set of presage variables relating to the characteristics of the more diverse intake and the alternative modes of study which are now available. Firstly, variables pertinent to entry characteristics are considered. An important rationale for the expanded intake has been social equity, it is, therefore, necessary to include SES. Entry qualifications and basis of admission are clearly of relevance, given the major expansion of the intake. Remoteness is predominantly a student characteristic, but is also related to study mode, as many study off campus.

Proportion of full-time load is the first variable related to mode of study. Many students now study by modes other than face-to-face teaching, such as online or blended learning; so mode of study is the other presage variable.

Arguments could be made for both remoteness and proportion of full-time load being relevant to both student characteristics and mode of study. There are also cross influences. For example, proportion of full-time load will be influenced by many student characteristics. These relationships and cross influences for the presage variables are shown in the model as intercorrelations.

There are then two intermediate variables. The age range of students has widened, so age or maturity is a relevant variable. Age or maturity has been shown to compensate, in some cases, for relatively poor entrance scores by enhanced motivation and more mature students are more likely to display a deep approach to study, which is consistent with academic achievement (Jelfs & Richardson 2013; Ke & Xie 2009; Richardson 1994; Richardson 2013; Richardson & King 1998). Year of study will also be included in the model as attrition is more common early in the degree, which is why the first year experience has been seen as so important (James, Krause & Jennings 2010).

The model then needs measures of outcomes. As a significant proportion of students drop out, an outcome measure has to be of dropout. It also seems worthwhile including GPA, as a measure of both academic achievement and failure to complete courses. The third outcome variable is the proportion of subjects successfully completed.

The variables in the hypothesized model are listed below (Fig. 1). They are arranged in three phases; presage, intermediate and outcomes. There are five presage variables (SES, Basis of admission, Remoteness, Proportion of full-time load, Mode of study), two intermediate variables (Age, and Year of study) and three outcome variables (GPA, Drop-out, and Proportion of subjects successfully completed). The model shown in Fig. 1 is that for University C, as this will be the more complex or complete model. The presage variables are all shown as inter-correlated in the hypothesised model, as it is likely that these variables influence each other. For example, students living remotely are likely to study online, rather than relocate to study face-to-face.

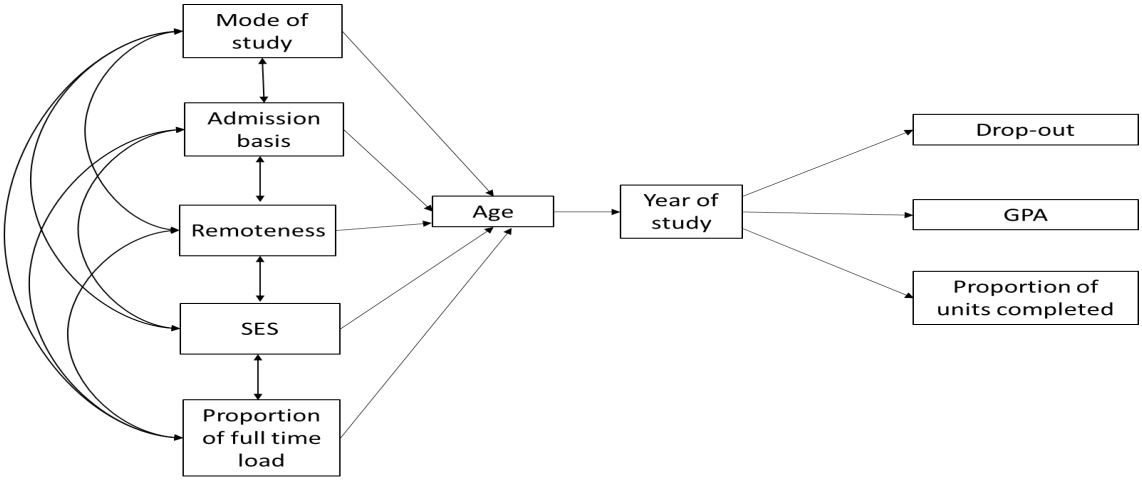

Fig. 1. The hypothesised model for contemporary higher education.

2. Materials and Methods

2.1. Study Variables

This section describes the meaning of the variables in the model and how they were coded. As Australian universities are required to report standard statistics, with just one exception, there is commonality between variables and how they were measured for the two universities.

Mode of study was based upon the proportion of units a student had enrolled in, which were classified as online or on campus. In the University C student record system, study mode is a dichotomous classification of online or on-campus. Units classified in either category could have some degree or type of blended learning. Study mode was coded as online if more than 75% units were taken online and on-campus if more than 75% of units were taken on-campus. The remainder were coded as mixed. Coding was; 1= on-campus, 2 = mixed, 3 = online. The coding, therefore, reflects a progression in the degree of direct instructor-student contact from most to least. In view of the empirical evidence of the impact of instructor-student contact on integration and attrition, it, therefore, seemed reasonable to treat mode of study as a continuous variable.

Basis of admission category was used as a measure of entry qualifications. This variable was preferred to tertiary entrance scores. Many of the low SES and other students admitted following the lifting of the admission cap, were admitted on a basis other than tertiary entrance score. If tertiary entrance scores were used as a measure of admission qualifications, many low SES, and other students admitted following the lifting of the admission cap, would have been excluded from the study. Basis of admission category was based upon an ordering of admission categories from completion of secondary education, and the attainment of a tertiary entrance score, to less formal qualifications. The admission categories are used by admissions officers in a hierarchical manner.

Highest in the hierarchy are the highest ranked formal qualifications; lowest are informal experience-based qualifications. In view of this hierarchical coding, it was reasonable to treat the variable as continuous.

The remoteness index is a measure of the remoteness of students' term address. It is based on an analysis of postcodes using the Accessibility/Remoteness Index of Australia (ARIA), which is the official Australian measure of remoteness. The ARIA index is a five-point scale ranging from Major City to Very Remote. In this case we included interstate enrolments as Very Remote.

Socio-economic status (SES) is a measure of wealth and social status. In Australia it is calculated for defined areas, using sets of weighted measures from census data. The measure of socio-economic status used in this study was the Australian Index of Education and Occupation (IEO), which is the measure of SES which takes most account of educational status and achievement indicators. The IEO measure was that for the student's home address, rather than the term address. Coding was in terms of the three categories of low, medium and high, which appears to have become the standard way of reporting SES in Australian higher education.

The two intervening variables are age and year of study. Values for these were taken directly from the student record database. Years of study is the number of years since enrolment.

The grade point average (GPA) is based upon the student's average grade point in their units of study, weighted by the credit weighting of each unit of study. GPA scores range from 0 to 7. A student who dropped out from, or failed, every unit would receive a GPA of 0. A student with a high distinction grade in every unit would have a GPA of 7. GPA can, therefore, be interpreted as a measure of academic success, as well as an indicator of dropout. University T uses weighted average mean (WAM). This was treated as a comparable measure to GPA.

The Dropout variable is based upon whether the students dropped out during the year of the analysis, so were not included in the subsequent year's enrolment file. The other two categories were for continuing students or those who had completed their studies. The three categories, therefore, constitute a continuous variable.

Proportion of units completed is effectively a measure of a student's progress through the degree in which they are currently enrolled. To control for differences in the number of units required to successfully complete a given degree both within and between institutions, this was calculated as the ratio between the total credit points required to successfully complete the degree within which the student was enrolled and the number of credit points the student had achieved towards this at the point in time that the sample was taken.

2.2. Sample

The databases used for the study were the universities' student record systems. Some variables, such as GPA, were taken directly from the databases. Others took the entry in the database and re-coded to give a numerical variable suited to the SEM analysis. Remoteness and SES used postcodes and addresses in the student record databases to determine appropriate values for the variables from databases of SES and remoteness. The samples were of undergraduate students. Those in short courses, like professional honours, were excluded as they would have completed a prior undergraduate course. They would not, therefore, experience the issues faced by new entrants. International students were excluded, as the study was of issues for Australian students.

The sample from University T for this study was undergraduate students enrolled in seven bachelor degree programs, including Bachelor of Arts, Bachelor of Biomedicine, Bachelor of Commerce, Bachelor of Fine Arts Specialisations, Bachelor of Fine Arts Music Specialisations, Bachelor of Oral Health Study Areas, and Bachelor of Science. The degrees with high enrolments were the Bachelor of Arts, Bachelor of Biomedicine, Bachelor of Commerce and Bachelor of Science. After deletion of incomplete records, the total sample used in the analysis for University T was 17,025. On the other hand, the sample from University C for the study was undergraduate students enrolled in courses in four bachelor degree programs including arts, business, education, health sciences and science. These disciplines are ones which have a good mix of students studying on-campus and online, including those remote from any of the campuses. The total sample for the study was N = 8911, after those with incomplete records were deleted.

2.3. Statistical Analysis

This study used structural equation modeling (SEM), a statistical technique which can be used to examine complex patterns of interactions between many variables in real-life phenomena. The goal of SEM is to determine the extent to which a theoretical model is supported by the sample data collected to test a set of hypotheses (Schumacker & Lomax 1996). An attractive feature of SEM is its use of diagrammatic representations to present the models that are being tested. This makes it possible to communicate findings to non- specialists, in forms which are readily comprehensible. The hypothesised path models were tested to assess the goodness of fit of the hypothesized model. Path analyses were performed by the EQS 6.0 package (Bentler 2006) or with Stata (StataCorp 2017), using the maximum likelihood estimation with a robust procedure to adjust for the non-multivariate normality of

the data (Satorra & Bentler 1994).

Goodness of fit of SEM models is based on fit indices. Assessment of goodness of fit of the model to the data was based on three fit indices: (a) robust Comparative Fit Index (R-CFI), (b) standardized root mean squared residuals (SRMR) and (c) robust root mean square error of approximation (R-RMSEA). The level of fit is determined by whether values for fit indices exceed accepted values in the literature. R-CFI shows whether the model has a good fit to the data, and has an accepted threshold values of R-CFI > 0.95 for a good fit to the data and R-CFI > 0.90 for an acceptable fit. SRMR and R-RMSEA are measures of the degree of error in a model. A good fit is, therefore, indicated if values are lower than the threshold. SRMR < 0.08, and R-RMSEA < 0.06 indicate a good fit (Hu & Bentler 1999). SEM has two facilities, called Modification Indices (MI) and Wald tests, which indicate whether the fit of the model could be improved by adding or deleting paths respectively. The baseline models were all tested and then MIs calculated to see whether improvements could be made while Wald tests determined the paths that are statistically non-significant that could be removed from the model. It is good practice to only except modifications to the hypothesised model if they are theoretically plausible.

3. Results

3.1. University T

University T represents the traditional end of the spectrum. The demographic characteristics, reported above, show that it has a traditional model of student intake. As all students are taught on-campus, mode of study did not appear in the hypothesised model. Other than that, the hypothesised model was that in Fig. 1. While all undergraduate students initially enrol as full-time, a number subsequently did not enrol for enough units to meet the full-time load requirement. For modelling purposes, values for proportion of full-time load were extracted from the database so the variable could be included in the model.

The refined model, after the addition of a path between proportion of full-time load and year of study based upon the modification indexes, shows a very good fit to the data. R-CFI = 0.959, SRMR = 0.035 and R-RMSEA = 0.059 (Fig. 2). All paths but one were statistically significant. The one not statistically significant was that between remoteness and age. The good fit of the model shows that it is a statistically significant predictor of outcomes. The proportions of variance of dropout, course weighted average and proportion of units completed were: 0.35, 0.02 and 0.00.

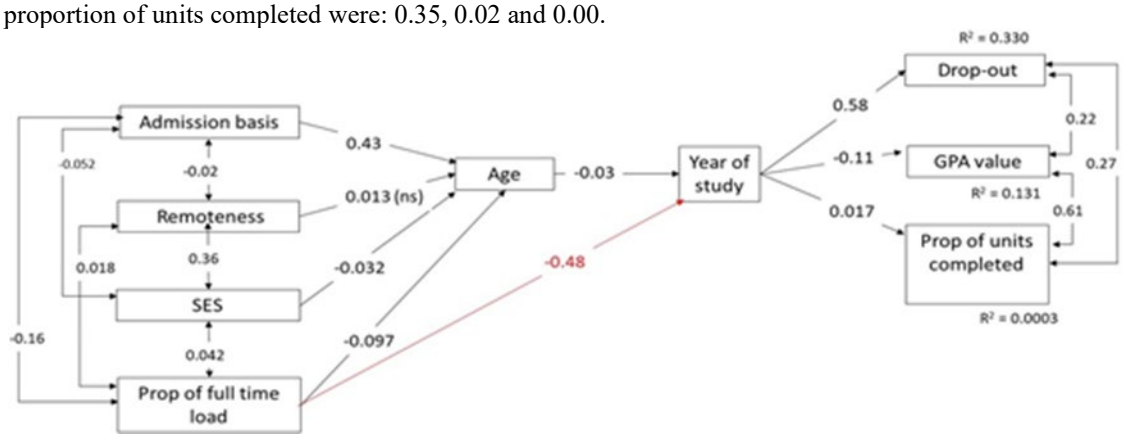

Fig. 2. Standardised solution of the final model for University T.

3.2. University C

Complete records on all the variables in the model were available from 8911 students, and hence were submitted for analysis. The fit indices for the baseline hypothesised model suggest an inadequate fit to the data (R-CFI = 0.887, SRMR = 0.075, and R-RMSEA = 0.092). Based on the multiple MI tests, three paths were added to the model: (1) proportion of full-time load to proportion of units completed. (2) proportion of full-time load to year of study, and (3) proportion of full-time load to dropout. The refined model was then re-estimated. A good fit of the model to the data is supported by R-CFI = 0.932, SRMR = 0.055, and R-RMSEA = 0.055 (Fig. 3). All the paths in the refined model were statistically significant. The proportion of the variation explained by the model for drop-out was 0.116, for proportion of units completed it was 0.012, and for GPA it was 0.001.

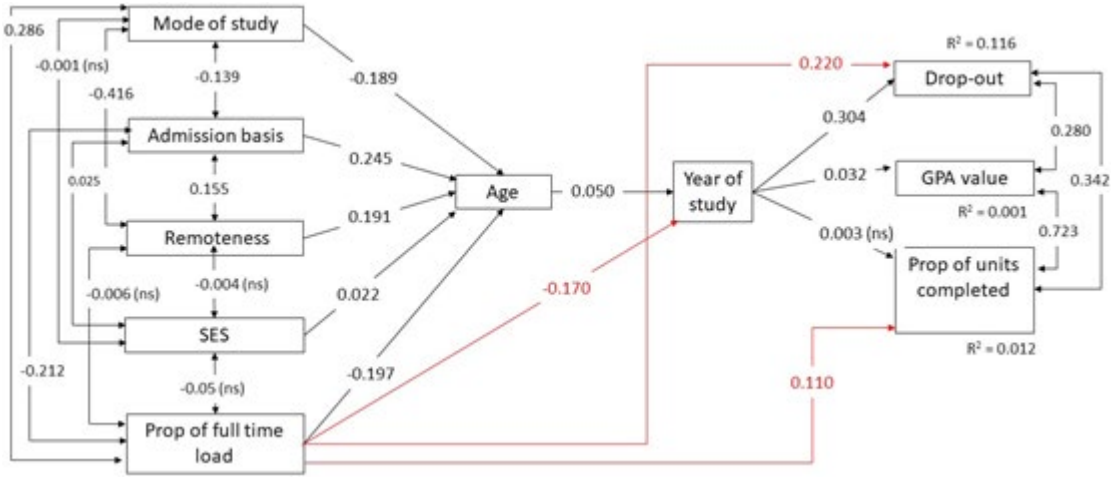

Fig. 3. Standardised solution of the final model for University C.

4. Discussion

The overall model for University T can be contrasted with that for University C. This comparison contrasts the traditional end of the spectrum with the contemporary end. The University T model is a simpler version of the University C one. The most obvious difference between the two is that mode of study does not feature in the University T model. As well is having one very important variable less, the University T model is clearly simpler than the University C one. There are fewer paths and fewer intercorrelations. The traditional model of higher education is simpler than the contemporary model. As higher education has moved away from the traditional model it has become more complex. The complexity may imply that measures of support, which were appropriate and successful for the traditional model, are no longer appropriate.

The hypothesised models predicts well that the variables it includes will affect outcomes, particularly attrition. The change from traditional to contemporary models of higher education has meant that, for each of the variables included, the characteristics in the student body has changed in ways which make attrition more likely. The combined effect through the path model is that attrition rises as the characteristics of the contemporary model are embraced. Another point to be made is that the final models reinforce the validity of hypothesising the phenomenon as a path model. The intermediate variables do play an important role in the process. There are few direct paths from presage variables to outcome variables. Each of the direct paths are in addition to paths via the intermediate variables. It should also be noted that the presage variables are highly intercorrelated. This means that students commonly experience multiple forms of disadvantage, or are forced into study choices because of their personal circumstances.

For University C, the standardised coefficient for the path from mode of study to the first intervening variable, age, is among the highest in the model. The coefficient is negative because the modes were coded as 1 = online, 2 = mixed and 3 = face-to-face; thus reflecting the higher attrition for online learning. Clearly online learning has a major impact on dropout rates. Students studying online are more likely to dropout than face-to-face ones. This is not a single variable effect, though, rather it should be seen as part of a complex model. There are no direct paths between mode of study and outcome variables. There are also inter-correlations with other presage variables. The inter-correlation between presage variables and their paths to age are an indication that mode of study is often a function of personal circumstances, rather than a free choice. Mature students, those with family responsibilities, residents in remote areas, those whose entry to university was delayed by poor results at school and those unable to afford to relocate to a campus commonly have little option but studying online.

The path from basis of admission to age has a stronger standardised coefficient than that for the other presage variables in the models for both Universities T and C. The basis of admission has a small impact on retention, such that those who enrol from secondary education have a small, but statistically significant, higher chance of completion than those not from secondary education. An alternative model has been tested in which the variable basis of admission was replaced by ATAR score in the model for University C (Kember, Leung & Prosser 2021). Students without an ATAR score in the database were excluded from the sample. The ATAR model was a better predictor of GPA than the basis of admission model. Previous academic performance does impact on performance at university. However, the overall model was far better at explaining outcomes than the ATAR score alone.

The path from remoteness to age is non-significant for University T. The lack of impact of remoteness must be because all students study on-campus. There are, therefore, a very small proportion of students with term addresses which are not Major City or Inner Regional. By contrast, for University C, remoteness has moderately strong paths via both intervening variables. Remote students are prone to attrition. There is an inter-correlation between remoteness and mode of study for University C, with a

moderately strong standardised coefficient. The obvious explanation is that those who live in remote areas, away from campuses, find attending classes more difficult; so opt to study online. The interrelationship might also suggest an interpretation of why online learners are more prone to dropout, consistent with Tinto's model (Tinto 1975; Tinto 1987). The social integration component of the model would appear to be the pertinent element for this section of the discussion. For on-campus study, social integration has been characterised in terms of the degree and the quality of student-student and student-teacher contact and interaction. Orientation activities and diverse first-year experiences have been included in campus life to help students feel incorporated into college society. Teachers are encouraged to feature interaction and activities into their courses to encourage the formation of learning communities. However, online students living remotely are normally unable to participate in such activities; so any affiliations to social and learning communities are likely to be weaker.

For University T, SES has a path to age with a small, but statistically significant, standardised coefficient, such that older entrants tend to have a lower SES. It has significant intercorrelations with the other three presage variables. The intercorrelations with basis of admission and percentage full-time load are small, while that to remoteness is moderate. SES has little or no impact on the outcome variables. For University C, SES has the path with the smallest standardised coefficient to the intervening variable age. SES had no significant intercorrelations with other presage variables. The low impact of SES in the model seems to suggest that when low SES students are admitted, their low SES status then has little impact on whether they succeed. Coming from a disadvantaged background need not be an impediment to obtaining a degree. There are two possible explanations for this. The first explanation is that other variables have much greater impact. The second explanation is that the Australian school education system sees social equity and inclusiveness as a high priority (Loughland & Sriprakash 2016; Rizvi & Lingard 2011). As a result, low SES students are prepared for University study just about as well as those in higher SES categories.

Proportion of full-time load has paths to both intermediate variables of moderate sizes for both universities. There is also a direct path to dropout for University C. Proportion of full-time load is intercorrelated with other presage variables. It is also likely to be intercorrelated with other variables not included in the model because they are not commonly in student record databases. Part-time study is often chosen because of employment or carer responsibilities. It is better interpreted as an indicator of personal circumstances, rather than a direct causal effect on outcomes.

5. Conclusions

Higher education has expanded its intake to meet social equity targets and to equip a workforce for a knowledge-based economy. To do this it has: admitted a wider and more diverse student body; and, changed the mode of teaching and learning to cater for the characteristics and needs of this more diverse student body. The degree to which universities have made these adaptations can be conceptualised as a spectrum from a traditional to a contemporary one.

A university's position on the traditional to contemporary spectrum is a major factor in both the proportion of non-ATAR entrants and the proportion of students in low SES and other disadvantaged groups. In the model for the contemporary university there were intercorrelations between admission basis and mode of study, remoteness, SES and proportion of full-time load. This implies that these variables are significant factors in students' decisions to apply.

The degree to which teaching is offered other than by on-campus mode is particularly important. Many students are unable or unwilling to commit to on-campus study, particularly as full-time students. Low SES students may not be able to afford the costs associated with on-campus study. Those not living in close proximity to a campus, particularly in rural and regional areas, might not be able to afford to relocate for on-campus study, or may be unwilling to leave their homes. Mature students often have employment and or carer responsibilities, which preclude on-campus study. Others choose online learning because they prefer the flexibility it offers.

Potential students in these categories are unlikely to apply if on-campus study is the only option, particularly if it has to be full-time. The demographic characteristics Table 1 suggests that offering enrolment in the online mode permits universities to attract a more diverse student body. Students are only likely to apply to a university if they think that the offered mode of study will enable them to also cope with personal, family and employment commitments. The position of a university on the traditional to contemporary spectrum is, therefore, a very significant factor in admissions. Modelling of relevant variables for universities at either end of the spectrum shows that the complexity of the models increases towards the contemporary end of the spectrum. There is evidence that changes to the model come at a price. The more the model is adapted to cater for a wider and more diverse intake, the greater the risk of attrition.

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