

# Academic performance during student transition to university studies

James R. Dalziel & Mary Peat  
Faculty of Science  
University of Sydney

*Transition to university involves adapting to a new academic and social environment. Recent research on this process indicates that many students experience at least some difficulties during this transition, but that this may be alleviated by various institutional measures designed to assist students with the transition, e.g. the fostering of peer study groups. In 1997, the Faculty of Science at the University of Sydney offered a "Transition Workshop" to incoming first year science students. A followup survey indicated that students who attended this workshop were significantly better adjusted on a range of measures, compared to equivalent peers not attending the workshop. The present study reports further details concerning the transition process of this cohort, particularly regarding academic performance. A linear regression model, accounting for 43% of overall variance, indicated that higher weighted average marks for first semester were predicted by higher levels of secondary school performance (TER), attendance at the workshop, age and gender. The relationship between academic performance and a number of scales from the original survey is presented. Discussion of the benefits of the transition workshop is reviewed in the light of the general context of university study and academic performance.*

## Introduction

The early experiences of university students have a profound impact on their approach to academic study and social life at the tertiary level (Tinto, 1989) and this has been thrown into sharp focus in Australia by a benchmark study of Australian students (McInnis, James & McNaught, 1995). For many students, the first year of university is one of transition, in which a variety of academic and social challenges are encountered. Depending on whether the outcomes of these challenges are positive or negative, students may experience successful adjustment to university life, or disappointment, failure and/or discontinuation of studies. As Tinto (1995) has found, the first year appears to be the most important year in overall degree progression, as 75% of the students who do not complete their degrees attribute the reasons for this to problems experienced in the first year of study.

One of the ways to assist students during this period of transition is to foster small peer study groups, which students can use to encourage one another in their learning, and use as a social support network. Research has shown that peer groups appear to "buffer" the stress of the transition process (Cohen & Hoberman, 1983; Tinto, 1989) and aid students in successful adjustment to their new environment. While it may be relatively easy to foster peer study groups in small degree programs with rigid timetables, they are more difficult to create within large generalist faculties which have extremely varied subject choice and timetabling. As students in generalist faculties often report, "It's hard in the first few weeks of university, as you meet someone in a lecture and get to know them, but then you can't find them again next time among the 500 other students at the lecture!" The size of generalist faculties may often act against a smooth transition, as the large student numbers actually increase feelings of isolation, and timetabling of so many students and subjects often means that students have few classes shared in common with others they meet.

Supporting student transition in large faculties is difficult enough without the financial constraints placed on higher education at the end of the twentieth century. Decreasing resources, increasing student numbers and increasing staff workloads mean that it is even harder than in the past for academics to support students during the process of transition. Programs designed to assist students need to be innovative in design and cost effective, while at the same time providing students

with genuine assistance during their first year. A program designed to meet these aims is the “Transition Workshop” at the University of Sydney.

### **The “Transition Workshop”**

Following a successful pilot workshop in 1996, which was reported previously (Peat & Jelks, 1996), the Faculty of Science at the University of Sydney has been running a one day pre-university workshop for all new Bachelor of Science students. During the enrolment process, students are invited to attend the Workshop by returning a letter indicating interest in the workshop and areas of study/career aspirations. Prior to the day of the workshop (held on a weekend just prior to the commencement of studies), students returning the letter are grouped according to areas of interest and subject choices, and their timetables are manipulated so that groups of 10-20 students are created who will share at least two small group teaching classes per week together (approximately six hours/week), in addition to lectures. On the day of the workshop, students arrive and are given a showbag containing various information material and a student orientation manual (prepared by past first year students). They are then grouped together in lecture rooms according to broad areas of study (approximately 60-100 students per large group) for a morning session. Within these groups, a number of pre-allocated peer groups with shared timetabling of classes will already have been created.

The morning sessions are run by a coordinator of first year studies in the area related to students’ subject choices and career aspirations, and the sessions involve a welcome, advice on how to adjust to university life, talks from past first year students, and the formation of peer study groups. The main activity of these sessions is the creation of peer groups, when students move from their initial seats to form peer groups where they can talk with others in their timetabled group (10-20 students). Students are encouraged to get to know each other and are told of the benefits of peer groups during the transition period, as well as being informed of the fact that they will be sharing classes together during their first semester. Blank “business cards” are provided to all students to allow them to swap names and contact details with others in their groups, so as to help foster an ongoing peer network. Students are encouraged to continue meeting with each other during the semester, particularly beyond the confines of the classes they share.

In the afternoon (following a lunch provided for students by the Faculty), a formal welcome is given to students and parents of students in the University’s Great Hall (parents had been invited via a separate letter included with a letter of confirmation which was posted to the student prior to the workshop). Following this, students left in peer groups for tours of the campus, while parents remained for an afternoon session on the transition process with advice to parents on how they could assist their sons and daughters, and ending with a panel question and answer session. Evaluations of the student workshop and the parent’s program indicated enthusiastic responses in both cases, with many positive comments and praise offered to the staff and Faculty for the provision of the workshop (Peat, 1997). Following the 1997 workshop, a followup study was initiated to survey students at the end of first semester regarding their academic and social adjustment.

### **The 1997 Transition Workshop Followup Study**

To examine potential benefits of the workshop, and to explore issues related to transition more generally, a survey of students was conducted in the final weeks of the first semester (for a detailed discussion of this research, see Dalziel & Peat, 1998). Three groups of students were surveyed: (1) Students from the Faculty of Science who registered for and attended the workshop; (2) Students from the Faculty of Science who did not register for and did not attend the workshop; (3) Students from faculties other than Science who did not have any transition workshop programs available to them.

A survey was developed to explore issues related to the transition at both a qualitative and quantitative level. Of relevance to the current paper was the inclusion of a number of scales on academic and social adjustment, including the First Year Experience Questionnaire (FYEQ - McInnes, James, & McNaught, 1995), the Interpersonal Support Evaluations List (ISEL - Cohen and Hoberman, 1983) and the Approaches to Study Questionnaire (ASQ) as presented by Gibbs (1992). In addition, a number of questions and measures were included to act as control variables - such as a questions about learning preferences (alone versus with others), Tertiary Entrance Rank (TER - an overall measure of secondary school performance) and the extroversion subscale of the EPQR-A (Francis, Brown, & Philipchalk, 1992). Finally, permission was sought from students to examine their academic performance, and to compare this with their survey responses.

The results of the comparison of workshop attenders with other students indicated that attenders scored higher on a range of measures indicating better adjustment to university life, such as “Academic Application” and “Sense of Identity” (FYEQ) and a “deep” or “meaning” approach to learning (ASQ). The pattern across these measures indicated generally better adjustment on a wide range of variables for the transition workshop attenders, compared to the other two groups of students. However, no significant differences were found between attenders and others on the control variables of learning preference, TER or extroversion (for further details concerning this data, see Dalziel & Peat, 1998).

To date, none of the academic performance data for this group of students has been reported. This data is of interest for a number of reasons. First, it allows the opportunity to examine any possible positive contribution of the workshop towards academic performance. Second, it provides an opportunity to examine general factors related to better/worse performance among first year Bachelor of Science students. Third, it presents the possibility of examining the correlations between academic performance and the various scales used to measure academic and social adjustment. Given the importance of the “First Year on Campus” study of McInnes, James and McNaught (1995) - particularly their development of the FYEQ, the current research provides a valuable opportunity to explore the correlates of the elements of this scale. The following section describes the research methods and results of this analysis in detail.

### **Academic Performance during Transition to University**

An examination of academic performance was only attempted for groups 1 and 2 (ie, Bachelor of Science students), as the bulk of these students’ marks come from the limited number of first year science courses available within the BSc degree. As group 3 students did many different courses to group 1 and 2 (due to being from a variety of different degree programs outside of Science with a much wider choice of subjects), their performance would not be based on similar subjects to groups 1 and 2. Hence, members of group 3 were not used for the current analysis.

The total number of students in groups 1 and 2 was 209, but with 31 students not providing permission to examine their marks, the remaining number of students was 188. Of these, 13 did not have TER scores, and hence were excluded from the regression equation described below. Finally, there were anomalies with a small number of students’ marks, generally due to incomplete or missing results on the university database. For this reason, a further 6 students were removed, bringing the final sample size for prediction of academic performance to 169.

Academic performance was assessed using the “Weighted Average Mark” (WAM) recorded on the university database for each student at the end of first semester. At this stage of these students’ degrees, their WAM is just the average of the individual course marks for first semester (most students took 4 courses during semester 1). As the University of Sydney has relatively strict guidelines about the comparability of marks between subjects (according to Academic Board policies, in first year approximately 3% of students who pass a course may obtain a High Distinction, approximately 14% of students who pass a course may obtain a Distinction or above, and approximately 42% of students who obtain a pass in a course may obtain a Credit or above) there was reason to have some confidence that, despite some differences in subject choices among students, the marks given within these subjects would be comparable with others, and hence the WAM would not be substantially skewed by any one high or low marking subject.

There are two important methodological problems that arise in studies such as that presented here: (1) Use of a non-random sample, and (2) Intercorrelations between variables. First, by attempting to predict student marks based, in part, on attendance at a pre-university workshop, the students who choose to attend this workshop are not a random sample of the first year science population - rather, they may self-select for the workshop for a variety of reasons which may affect academic performance apart from any beneficial effects of the workshop itself. In the context of the current study, there is no easy way to address this problem, however, it was possible to use control variables to examine whether any significant differences existed between workshop attenders and those who did not attend. As reported previously (Dalziel & Peat, 1998), there was no difference between attenders and non-attenders (Group 1 versus Group 2) on the variables of extroversion, TER or learning preferences (alone versus with others). A variety of other variables were examined for possible differences between these groups prior to model building. It was found that none of these variables was significantly different between the two groups (the variables examined included: age, gender, having a job, time required for job, living circumstances, region/country of origin, number of subjects attempted in semester 1, and type of school).

The second main problem is that while several of the measures used to assess student adjustment to university life (FYEQ, ISEL and ASQ) may affect academic performance, many of these measures are intercorrelated, and hence present the problem of multi-collinearity within regression equations. Further, it is unlikely that these variables are unrelated to the beneficial effects of the Transition Workshop (in the case of Group 1 students), as the workshop may have helped to foster peer support networks and encouraged students to apply themselves to their academic work from the beginning of the year (which would subsequently affect scale scores when surveyed at the end of first semester). For this reason, the effect of the workshop cannot be easily disentangled from the various subscales presented. For this reason it was decided not to include attitude and adjustment measures within the regression equation, but rather just to include demographic measures, the TER and attendance at the workshop in the attempt at model building. However, to illustrate the relationships between these variables, several correlation matrices are presented to allow for an examination of the relationship between scales and WAM, as well as the interrelationships between the scales.

Several variables were trialled as predictors in a linear regression equation for WAMs, but only four variables were found to make a significant and reliable contribution. The regression equation developed for the prediction of Weighted Average Marks for first semester Bachelor of Science students at the University of Sydney was:

$$\text{WAM} = 0.65 \times \text{TER} + 3.3 \times \text{Workshop} + 3.7 \times \text{Gender} - 1.5 \times \text{Age} + 35 \text{ (constant)}$$

(where workshop non-attenders are scored 1 and workshop attenders are scored 2, and where females are scored 1 and males are scored 2).

This equation accounts for approximately 43% of the overall variance ( $F(4,165) = 31.5, p < .0001$ ). All four variables made significant contributions to the model (TER:  $t = 9.9, p < .0001$ ; Workshop:  $t = 2.1, p < .05$ ; Gender:  $t = 2.4, p < .05$ ; Age:  $t = -2.1, p < .05$ ; the constant was significantly greater than zero,  $t = 2.2, p < .05$ ). The equation indicates that higher WAMs are associated with higher TERs, attendance (versus non-attendance) at the Workshop, males (versus females) and younger students (versus older students). However, it should be noted that TER explains the overwhelming majority of variance in this equation, with Workshops, Age and Gender making relatively smaller contributions.

Correlation matrices for age, TER and WAM are presented for the FYEQ (Table 1) and for the ISEL and ASQ (Table 2). Appendix 1 contains the correlation matrix for interrelationships between the three scales.

**Correlation Matrix (FYEQ)**

	2	3	4	5	6	7	8	9	10
1. Academic Orient	0.61	0.42	0.54	0.49	0.79	-0.38	0.23	0.07	0.11
2. Sense of Identity		0.38	0.30	0.39	0.71	-0.29	-0.01	-0.02	-0.02
3. Sense of Purpose			0.42	0.15	0.38	-0.18	0.21	0.06	0.09
4. Academic Applic				0.33	0.45	-0.29	0.28	0.06	0.20
5. Teaching					0.50	-0.33	0.00	0.07	0.09
6. Course						-0.29	0.13	0.02	0.06
7. Workload							-0.13	-0.03	-0.06
8. Age								-0.27	-0.10
9. TER									0.62
10. WAM									

**Table 1: Correlation matrix between FYEQ, age, TER and WAM**

**Correlation Matrix  
(ISEL & ASQ)**

	2	3	4	5	6	7	8	9	10
1. Tangible	0.61	0.65	0.42	0.04	-0.09	0.06	-0.22	0.06	0.05
2. Belonging		0.56	0.37	0.04	-0.03	0.06	-0.20	0.02	0.01
3. Appraisal			0.31	0.11	-0.11	0.16	-0.23	0.05	0.06
4. Self Esteem				0.27	-0.09	0.34	-0.02	0.14	0.28
5. Achieving					-0.08	0.47	0.08	0.09	0.16
6. Reproducing						-0.29	-0.12	-0.09	-0.12
7. Meaning							0.11	0.17	0.25
8. Age								-0.27	-0.10
9. TER									0.62
10.WAM									

**Table 2: Correlation matrix between ISEL, ASQ, age, TER and WAM**

**Discussion**

The findings of this study indicate that academic performance at university for the current group of Bachelor of Science first year students can be predicted on the basis of TER, Workshop attendance, gender and age, and that this prediction is relatively good by social science standards (the model accounts for 43% of overall variance). Of these predictors, TER is the most important contributor, indicating that performance at school is a relatively good predictor of performance at university. This is not to say that exceptions to this finding do not occur - there will still be many examples of student who perform poorly at school but well at university, and vice versa. However, when a broad approach to this issue is taken, the trend between school and university performance is clear.

Beyond the impact of TER, the workshop, age and gender all made smaller but significant contributions to the prediction of WAM. As noted, the methodological questions regarding differences between workshop attenders and non-attenders cannot easily be solved, but the lack of difference between these two groups on other variables, and the significant contribution of workshop attendance to the regression equation suggest in favour of the beneficial effects of the Transition Workshop on student academic performance during adjustment to university life. This finding is an important addition to the growing literature on adjustment to university life, and is in keeping with research conducted elsewhere (Tinto, 1995). Further research into this issue is needed, particularly using additional cohorts (as is currently being conducted with 1998 Bachelor of Science first year students at the University of Sydney) and in different contexts. Students from the present study will be followed for the remainder of their degree program, to examine how later WAMs are related to initial adjustment to university life. Preliminary data analysis of first year marks for the whole year for the current cohort indicate that the variables identified here continue to predict WAM with considerable accuracy.

The reasons for the contribution of age and gender to the model are less obvious. In the case of age, it may be that students straight out of school (and therefore younger than others) are better prepared for academic study, as continuity between secondary and tertiary study may be helpful in aiding the transition process (as opposed to students returning to study after time in the workforce, travel, etc). Anecdotal evidence supports this contention, with some mature-aged students reporting that they find it hard to know what is expected of them at university, and despite considerable enthusiasm for their subjects, their academic performance is not necessarily as high as some might have hoped. It is also possible that older students find it more difficult to establish peer networks in the early stages of university life, and hence may not have the same initial "buffer" against the stress as younger students who find it relatively easy to make friends their own age. However, it is possible that this finding regarding age may dissipate over time as highly motivated older students establish peer groups and "learn the ropes" of what is expected of them, resulting in higher WAMs later in their degree programs.

The finding regarding gender (that males perform better than females) is surprising, and it is not yet clear why this may be the case. It may be related to the discipline area of Science, and differences in socialisation of boys and girls regarding science - although one might have hoped that

this would be less marked or absent in 1997. Further study of other discipline areas, and replications of the current work are needed before this finding can be properly considered.

Regarding correlations with WAM, it is interesting to note that the FYEQ subscale of "Academic Application" is most strongly related to WAM, but that even this relationship is only moderate. Most other correlations are positive but close to zero, which may indicate that the subscales on their own are only faintly related to academic performance. As was found in Dalziel & Peat (1998), the workload subscale tends to show the opposite pattern to the other scales. Similarly the ISEL scales (except for self-esteem) show little relationships with WAM. The different finding regarding self-esteem suggests that this general psychological variable could be worth considering in more detail in the context of transition to university life - and current research on 1998 students is addressing this issue explicitly. The pattern of correlations between the ASQ subscales and WAM is unsurprising, and the moderate positive correlation between the meaning scale and WAM further supports the importance of the literature on approaches to learning within higher education research.

The correlation matrices indicate moderate levels of intercorrelation within the subscales of both the FYEQ and ISEL, as would be expected. Many of the subscales of the FYEQ have moderately strong positive correlations with the achieving and meaning subscales of the ASQ (see Appendix 1), and negative correlations with the reproducing subscale (although the poor reliability observed for this subscale, .40, needs to be taken into account, see Dalziel & Peat, 1998). This is not surprising, given that each measure tests aspects of approaches to learning and student attitudes to study. However, the data presented here on the correlations between these scales is another useful addition to the literature in this area. The relatively lower correlations between the FYEQ and the ISEL may indicate that these measures tap different aspects of the first year experience which are not as closely related (although the higher correlations between FYEQ scales and self-esteem is worthy of further study). Alternatively, this overall lack of relationship may be related to the relatively small differences in ISEL scores between groups observed in the original study (Dalziel & Peat, 1998).

In conclusion, the current study reports valuable new data on the experiences of first year students during their transition to university life, and the effect of this on academic performance. Further research is needed to replicate the findings presented here, and to explore the many relationships observed between attitudes and experiences of transition and academic performance. Finally, the role of a Transition Workshop in assisting students to make a successful transition to university life has gained further support.

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