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A comparison between the time-management skills and academic performance of mature and traditional-entry university students

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Abstract. Time-management skills are acknowledged to be important but there has been little actual research on this topic with students. In this study we examined the scores obtained from 293 first-year students of psychology on a British version of an American time-management scale. The students were divided into three age groups: *traditional-entry students* – aged less than 21 years (N = 172); *borderline mature students* – aged 21–25 years (N = 50) and *older mature students* – aged more than 25 years (N = 71). Our analyses indicated (i) that women students in general reported significantly greater time-management skills than did men students, and (ii) that our older mature students reported significantly better time-management skills than did the other two groups. Academic performance, however, was only modestly predicted by age and scores on one component of the time-management scale.

Introduction

For the last five years or so we have been following the progress of mature students at Keele University, and we have also been working to develop a scale that measures students' time-management skills. In this paper we seek to draw together these two strands of our research.

In the United Kingdom most 'traditional-entry' students start university straight from secondary school, aged 19, but a number of other students start later on in life. In the U.K. students over the age of 21 are called 'mature' students. (In Australia those over 25 are called 'mature-age' students, in the U.S.A. those over the age of 22 are called 'non-traditional' or 'adult' students, and in Canada such students are called 'mature students'.) In this paper we use the British and Canadian nomenclature.

Recent changes in educational policy in the U.K. have led to an increasing number of mature and part-time students entering higher and further education. Gallagher, Richards and Locke (1993) reported that the number of mature students entering high education in Britain increased by 77% during the period 1980–1990 (from 134,000 to 237,000) – and these figures did not include Open University students. Bloomfield (1993) reported similar increases in the number of part-time mature students in the UK., and Jones (1992) estimated that there were more than 30,000 students then currently on

introductory 'Access' courses. One consequence of this development has been an increasing concern about how well such mature students fare compared with traditional-entry ones.

A number of studies have examined and reflected on the academic performance of mature students in British higher education. (See, for example, Bourner and Hamed 1987; Clennell 1984; Connolly 1985; Hartley and Lapping 1992; Hopper and Osborn 1975; Lucas and Ward 1985; Marshall and Nicholson 1991; Molloy and Carroll 1992; Nisbet and Welsh 1972; Richardson 1994a, 1994b, 1995; Smithers and Griffin 1986; Walker 1975; Woodley 1984, 1991; and Yates and Davies 1987.) However, in the light of the recent changes outlined above, many of these studies are rather dated. In a more recent study of our own (Hartley, Trueman and Lapping 1993) we compared the academic performance of 324 mature students – matched in terms of sex and subjects studied – with those of 324 younger – or traditional entry students. In our study we were unable to find any significant differences between the distributions of the final degree results for our two groups. Indeed, our results were typical in many ways of the results reported in the studies listed above. In these studies, it appears that:

- older students usually perform as well as, or sometimes better than younger ones (Hartley and Lapping 1992; Hopper and Osborn 1985; Lucas and Ward 1985; Marshall and Nicholson 1991; Richardson 1995; Smithers and Griffin 1986; Walker 1975; and Woodley 1984);

- the results are sometimes affected by the nature of the discipline with many students, mature or otherwise, doing better in the Arts and Social Sciences than in the Sciences (Hartley et al. 1993; Walker 1975; Woodley 1984);

- there are sometimes sex differences in the results, but these are not wholly consistent: sometimes mature women do better than mature men (Lucas and Ward 1985; Woodley 1984) but this is not always the case; and

- there is some suggestion that older mature students do not do as well as younger ones (Nisbet and Welsh 1972) but the evidence for this is weak.

Other, international studies, support these findings (see Hore 1992). The results of these studies, then, taken together, reject the common stereotype held in the U.K. and elsewhere (see Richardson 1994a) that mature students perform less well academically than do traditional-entry ones.

Most of the studies listed above, but not all of them, have concentrated on measuring academic performance and they have not, therefore, looked closely at other issues related to student learning. However, newer studies are now beginning to appear that examine the wider experience of being a mature student in the U.K.. (See, for example: Arksey, Marchant and Simmill 1994; Britton and Baxter 1994; Cox and Pascall 1994; Gallagher et al. 1993; King

1993; Maynard and Pearsall 1994; Roberts 1994; Skinner, Howes and Scott 1994; Slotnick, Pelton, Fuller and Tabor 1993; Thacker and Novak 1991; Wakeford 1994; and Woodley 1994.)

And, relatedly, there are beginning to be more specific reports on the study habits of mature students. Richardson (1994b), for example, reviewed 10 investigations that provided data on the study habits of mature students, and he reported his own studies in this respect in his 1995 paper. In this latter paper Richardson compared the responses of 38 mature first-year social science students with those of 60 younger first-year students on a shortened form of Entwistle's *Approaches to Studying Inventory.* The results indicated that the mature students had *better* study habits than the younger students in that they engaged in more 'deep' and less 'surface' learning than did the younger students. Four years later, in their final examinations, the mature students (N now = 22) performed slightly better, but not significantly so, than did the younger students (N now = 44). This finding – that the mature students had *better* study habits than the younger ones – was in line with the findings reported in the earlier investigations that Richardson (1994b) reviewed.

It is in this context that we now turn to students' time-management skills. Time-management is a critical skill for all students, particularly part-time ones. Indeed, a commonly-held view is that part-time and mature students have more problems to cope with than do traditional students and that, as a consequence, they have greater problems with time-management skills (e.g., see Blaxter and Tight 1994; Taylor and Burgess 1995; Wheeler and Birtle 1993). However, despite the fact that nearly all of the study manuals that we have consulted recommend that students – of all ages – develop time-management skills (see Box 1), there is actually very little research on the topic of students' skills in this respect.

Time-management skills are, however, sometimes measured as one component in an overall battery of measures. Thus, for example, Weinstein, Palmer and Schulte's (1987) 77-item *Learning and Study Skills Inventory* contains 8 items on time-management, Entwistle's (1992) 60-item *Approaches to Studying Inventory* contains four items on time-management and four items on study organisation, and Topman *et al.*'s (1992) 30-item *Study Management and Academic Results Test* contains four items on time-management. However, (to our knowledge) there are few full-length scales that solely measure the time-management skills of students. Indeed, the only two scales that we are aware of are those published in America by Britton and Tesser (1991) and by Macan *et al.* (1990). (See also Macan 1994). These latter authors point to this widespread neglect of measures of time-management skills in students. They maintain that time-management is a skill that can be taught to students and, indeed, their studies show modest correlations (of the order of .25)

Box 1

Some typical comments about time-management.

'By far the most common difficulty in study is simple failure to get down to regular concentrated work.' (Maddox 1963)

'The two ways that students mismanage time are by wasting it and by trying to do too much.' (Locke 1975)

'In our experience those students who work to a study time-table never fail to attain the standard expected of them by examiners – it is not a demanding one. The attainment of a good standard depends upon programmed progress sustained throughout the term from beginning to end. Examination success becomes a by-product of controlled study.' (Cassie and Constantine 1977)

'The secret of survival and success at college can be very largely defined in terms of how well you organise your time.' (Meredeen 1988)

'It takes time and trouble to get yourself organised for learning. But, in the long run, muddling along takes even more – and the results won't be as satisfying.' (Rowntree 1988)

'Effective studying often requires quite a *lot* of time and in fairly good-sized *chunks.*' (Northedge 1990)

'Well-developed time-management is a key to successful studying, and is central to avoiding all sorts of problems.' (Race 1992)

'For many students, time-management is the 'make or break' skill to be mastered during the freshman year.' (Hettich 1992)

'In schoolwork, it is essential to have a plan of action. If you budget your day and then adhere to this program, you can eliminate half the effort and worry from your work. A plan that is steadily followed soon becomes the easy and natural routine of the day.' (Kornhauser 1993)

'I must have seen the time sheets of thousands of students so I know quite a bit about how students spend their time and the effectiveness of students working out their time-management habits. It was the single most important skill I could teach them in the programme. If they started to manage their time and feel more in control of their lives their marks went up and they seemed to get more out of their experience at university.' (Experienced Canadian counsellor, 1994).

between scores on their questionnaires and subsequent academic performance (without any specific training on the topic being offered).

Although many study-skills courses include sessions on time-management, the only study known to the authors that describes the training of students in time-management skills and assesses the results is that of Weinstein, Stone and Hanson (unpublished) that is reported by Zimmerman, Greenberg and Weinstein (1994). Unfortunately the data presented are not very detailed and the overall results of the study cannot be related to training in time-management skills alone as the students concerned completed a learning-to-learn training course that contained many other modules.

In this paper we report on the use of a British version of Britton and Tesser's Time-Management Scale with a sample of traditional-entry and mature psychology students at the University of Keele. We wanted to see whether or not mature students had better time-management skills than traditional ones (in line with Richardson's conclusions) and we wanted to see if we could find a clear relationship between time-management skills and academic performance in this context (in line with Britton and Tesser's conclusions).

Method

Materials

In the present study we used a 14-item Likert-type Time-Management scale that we developed from the original 18-item scale by Britton and Tesser (1991) in the United States (see Appendix). Our previous research had established that this scale comprised two subscales: a 5-item *Daily Planning* subscale and a 9-item *Confidence in Long-Term Planning* subscale (Trueman and Hartley 1995).

Participants

All the first-year students of psychology at Keele over a period of three years took part in this investigation. Overall there were 293 students, 216 women and 77 men. For the purposes of the present study we divided these respondents into three age groups: *Young Students* (<21 years old), *Borderline Mature Students* (21–25 years old), and *Older Mature Students* (>25 years old). Table 1 shows the sex and age distribution of the sample.

Table 1. Sex and age distribution of the sample.

	Young students <21yrs	Borderline mature students 21–25 yrs	Older mature students >25 yrs
Men			
Mean age	19.1	22.4	31.5
s.d.	0.7	1.4	5.7
N	33	23	21
Women			
Mean age	19.0	22.4	35.0
s.d.	0.8	1.5	6.3
N	139	27	50
Total			
Mean age	19.0	22.4	34.0
s.d.	0.7	1.4	6.0
N	172	50	71

Procedure

The students in each cohort were given the Time-Management scale to complete in January after having studied psychology for one semester. Data were also collected on the sex and age of each student. Later, at the end of the academic year, information was collected on three measures of academic performance: i) the mean percentage score on course-work completed over the year; ii) the mean percentage score on two/three examinations taken over the year; and iii) the mean percentage score overall – which was calculated by taking the average of the course-work and the examination scores for each student.

Results

Psychometric qualities of the time-management scale

Principle component analyses were carried out with the data obtained from the different sub-groups of the sample. We examined the structure of responses to the scale for the Younger students (N = 172), for the Borderline Mature students (N = 50), for the Older Mature students (N = 71), and for the Mature students as a whole (N = 121). Scree tests indicated that a two-component solution was to be found consistently for the four analyses. The component

Table 2. Alpha reliabilities for the Time-Management scales.

	Young students <21 yrs	Borderline mature students 21–25 yrs	Older mature students >25 yrs	All mature students >21 yrs	Total sample
Daily Plan	.77	.77	.79	.82	.85
Confidence	.85	.86	.79	.84	.71
Overall	.67	.72	.71	.75	.79

Table 3. Mean scores on the Time-Management scales.

		Young students	Borderline mature students	Older mature students	Total sample
Daily	Men	12.0	10.9	13.1	11.9
Planning	Women	14.8	13.9	16.2	15.0
	Total	14.3	12.5	15.3	14.2
Confidence	Men	24.4	24.9	29.2	25.9
Long-Term	Women	26.2	25.2	29.1	26.8
Planning	Total	25.9	25.1	29.2	26.5
Total	Men	36.4	35.8	42.2	37.8
Time-	Women	41.0	39.1	45.4	41.8
Management	Total	40.1	37.6	44.5	40.7

loadings corresponded closely to those that were found previously (Trueman and Hartley 1995) and confirmed the placement of the individual items on the Daily Planning and the Confidence in Long Term-Planning subscales.

Table 2 shows the internal reliability coefficients for the Daily Planning subscale, the Confidence in Long-Term Planning subscale, and the Time-Management scale overall, for the various age groups of students. As can be seen, the subscales and scales are internally consistent with all the samples of respondents. Such findings indicate that there is strong evidence to support the construct validity and the internal reliability of the 14-item Time-Management scale and its subscales with the present respondents.

Comparisons between students in the three age groups on the time-management scales

Table 3 shows the mean scores obtained by each of the three age groups on the two subscales, and overall. A series of two-way (age x sex) unrelated analyses

of variance were carried out with the Daily Planning scores, the Confidence in Long-Term Planning scores and the total Time-Management scores.

Daily Planning
There was a significant difference between the mean Daily Planning scores of respondents in the three age groups (F = 5.23, df = 2, 287, p < .006). Tukey tests indicated that the Borderline Mature students had a significantly lower mean Daily Planning score (12.5) than did both the Younger students (14.3, p < .05) and the Older Mature students (15.3, p < .01). There was no significant difference between the mean Daily Planning scores of the Younger students and the Older Mature students.

There was also a significant difference between the mean Daily Planning scores of the men and women students (F = 29.3, df = 1, 287, p < .001). The women students reported a significantly greater mean use of daily planning activities (15.0) than did the men (11.9), but there was no significant interaction between the sex and age groups on the Daily Planning scores (F = 0.04, df = 2, 287).

Confidence in long-term planning
There was a significant difference between the mean Confidence in Long-Term Planning scores of respondents in the three age groups (F = 15.1, df = 2, 287, p < .001). Tukey tests indicated that the Older Mature students reported a significantly greater mean use of Confidence in Long-Term Planning activities (29.2) than did the Borderline Mature students (25.1, p < .01) and the Younger students (25.9, p < .01), who did not differ significantly from each other.

There was no significant sex difference in the Confidence in Long-Term Planning scores (F = 2.12, df = 1, 287, ns) and there was no significant interaction between the sex and age groups (F = 0.86, df = 2, 287, ns).

Total time-management
There was a significant difference between the mean total Time-Management scores of the three age groups (F = 14.9, df = 2, 287, p < .001). Tukey tests indicated that Older Mature students had significantly higher mean total Time-Management scores (44.5) than did both the Younger students (40.1, p < .01) and the Borderline Mature students (37.6, p < .01), who did not differ significantly from each other.

There was a significant sex difference in the mean total Time-Management scores (F = 16.6, df = 1, 287, p < .001). The women respondents reported using time-management skills to a greater extent (41.8) than did the men (37.8), but there was no significant interaction between the sex and age groups on the total Time-Management scores (F = 0.27, df = 2, 287, ns).

Table 4. The scores obtained by the traditional-entry and the mature students on the three measures of academic performance.

	Young students	Borderline mature	Older mature
Course-work			
x̄	58.3	56.5	58.7
s.d.	6.0	8.4	8.6
N*	166	48	61
Examinations			
x̄	55.2	52.3	52.4
s.d.	7.4	9.9	7.6
N*	166	48	61
Overall			
x̄	56.7	54.4	55.6
s.d.	5.6	7.9	7.0
N*	166	48	61

*These participants were those for whom we had a complete set of data for all three measures of academic performance.

Summary

In summary, the results of these analyses indicated that there were significant differences between the mean Time-Management scores of the three age groups. In particular, the Older Mature students reported making the greatest use of time-management strategies and the Borderline Mature students reported making the least use of them. The women students reported making greater use of time-management strategies than did the men students, but this difference was only significant for the Daily Planning scores and, consequently, for the total Time-Management scores. There were no significant interactions between the sex and age groups on any of the time-management scales.

Age and academic performance

We examined the relationships between age and academic performance in a number of different ways. In this paper, however, we shall only report one of the main analyses here. In this particular case we compared the mean scores of the three groups of students on the three measures of academic performance – namely, the course-work marks, the examination scores, and the combination

Table 5. Pearson correlations between age, time-management scores and measures of academic performance for the total sample.

	Daily Plan	Confid Plan	Total Time-Man	Course-work	Exams	Total academic
Age	.08	.25***	.21***	.08	−.15**	−.05
Daily Plan		.33***	.78***	.03	.04	.04
Confid Plan			.84***	.15**	.19***	.21***
Total Time-Management				.12*	.15**	.16**
Course-work					.43***	.83***
Exams						.87***

* P < .05, ** P < .01, *** P < .001

of these two sets of measures. The results are shown in Table 4. There were no significant differences between these means.

Age, time-management and academic performance

In order to arrive at the data shown in Table 4 we examined the impact of age and time-management scores on academic performance by analysing the data for different groups of students. An alternative, and possibly more appropriate way of considering the effect of age and time-management scores together when relating them to academic performance, is to treat age as a continuous variable in correlational and regression analyses. We did this in two ways. Firstly, we calculated bi-variate correlations between scores on the Time-Management scale and its subscales, our three measures of academic performance, and the students' actual ages. Secondly, we used stepwise multiple regression to see if scores on the academic performance measures could be predicted from a combination of the Time-Management scores and chronological age.

Correlations

Table 5 shows the correlations that we obtained between student age, time-management scores, and our three measures of academic performance. This table shows that there was no correlation between student age and Daily Planning scores (0.08). However, student age correlated positively with Confidence in Long-Term Planning scores (0.25) and with the total Time-Management scores (0.21). There was no significant correlation between student age and performance in course-work (0.08) but there was a small negative correlation between student age and examination performance (−0.15).

There was, however, no significant correlation between student age and overall academic performance (-0.05).

The Daily Planning scores did not correlate significantly with performance in course-work (0.03), examination scores (0.04) or overall academic performance (0.04). However, the confidence in Long-Term Planning scores did correlate significantly with performance in course-work (0.15), examination scores (0.19) and overall academic performance (0.21). The total Time-Management scores correlated significantly with performance in course-work (0.12), examinations (0.15) and overall academic performance (0.16). However, these correlations were all rather modest.

Stepwise multiple regressions

We also carried out a series of stepwise multiple regressions to examine the relative ability of age and the time-management scores to predict academic performance. We used the Daily Planning scores, Confidence in Long-Term Planning scores, and student age as independent variables to predict outcome on course-work marks, examination performance and overall academic performance.

The results showed that the Daily Planning scores failed to predict significantly outcome on course-work marks, examination scores or total academic performance. However, the Confidence in Long-Term Planning scores did significantly predict the outcome of course-work performance (adjusted $R^2 = .02, P < .01$), examination performance (adjusted $R^2 = .03, P < .002$) and total academic performance (adjusted $R^2 = .04, P < 001$). However, the adjusted R^2 values indicate that only 2 to 4% of the variance on the academic performance measures was predicted from the Confidence in Long-Term Planning scores. Student age significantly predicted examination performance but not course-work performance or overall academic performance.

Examination performance was thus significantly predicted by Confidence in Long-Term Planning scores, which entered first ($R^2 = .036, P < .001$), and by student age (change in $R^2 = .04 P < .001$). Thus, in total, about 7% of the variance in examination scores could be predicted from the two independent variables (adjusted $R^2 = .069$).

Discussion

A number of issues are raised by these results:
- Firstly, the fact that the *Older Mature* students reported significantly better time-management scores than did the other students parallels the findings reported in the introduction that the study habits of mature

students are better than those of traditional entry ones (Richardson 1994a, b 1995).

- Secondly, and of particular interest in this study, was the performance of the *Borderline Mature* students on the Time-Management scale. These students performed no better than the traditional entry ones. This finding suggests that it may be profitable to separate out such students in subsequent analyses of the performance or experience of mature students. If we had pooled all of our mature participants together then, with almost half of them falling into the 'borderline' category, we may have concluded, erroneously, that there were no differences between the results of our mature and the traditional-entry students. It may well be worth examining other studies to see if this factor could possibly account for any of their 'no difference' findings.

- Thirdly, the actual differences between the age groups in terms of time management skills did not seem to translate into differences in subsequent academic performance (see Table 4) and, in line with previous studies, the academic performance of the mature students did not differ from that of the traditional-entry ones. The scores on the Time-Management scale correlated only modestly with academic performance, and the amount of variance in the examination scores that could be predicted from the *two* independent variables – age and time-management score – was very small. The scores on the Confidence in Long-Term Planning scale did correlate rather better with academic performance, but even here, these results were less striking than those obtained by Britton and Tesser (1991) and Macan *et al.* (1990). It is tempting to speculate that students with good time-management skills may spend less time than students with poor ones to achieve the same objectives, and thus have more time for other (possibly non-academic) activities. However, such speculation remains to be tested.

- Fourthly, the sex differences found in this study parallel those found in other studies of students' study habits – where women students often do better than men (see, for example: Hartley and Davies 1978; Macan *et al.* 1990; Norton and Hartley 1986; Stricker *et al.* 1993; Warrick and Naglieri 1993). Macan *et al.* (1990) also found that women students had higher scores on their time-management scale but Britton and Tesser did not report on sex differences in their enquiry. Many commentators currently lament that the previous research on study habits failed to take sex differences into account and this omission is now being redressed (see, for example: Meyer 1995; Meyer, Dunne and Richardson 1994; and Severienes and Ten Dam 1994).

- Finally, there are a number of additional imponderables. The British scale did not have the same psychometric properties as did the original Britton and Tesser one (see Trueman and Hartley 1995). The British scale itself was rather short: it could perhaps be lengthened and improved. (Our scale contained 14 items, Britton and Tesser's contained 18 and that of Macan *et al.* contained 46 – but many of these seem more related to occupational than educational psychology.) Furthermore, the results presented in this paper are specific to one group of students studying in one British university. So more research is needed – with different and better scales, and with other research techniques – to see if time-management is indeed an important study skill for mature and traditional-entry students.

We conclude, therefore, with some suggestions for further research in this context. We perhaps need to focus more on educationally specific items in our questionnaires, rather than on the general ones used in the present investigation. (The authors are currently investigating a new questionnaire in this respect.) We perhaps need to look harder at time-management in different contexts. Some courses demand much more frequent assessment than do others. We perhaps need to distinguish – as do Etcheverry, Clifton and Roberts (1993), Risko, Fairbanks and Alvarez (1991) and Zimmerman *et al.* (1994) – between time-management as an organisational or planning activity, and time-management in terms of determining how much time one should spend on a given task. (Josephs and Hahn (1995) suggest that students often drastically underestimate the time it takes to complete academic tasks.) Indeed, another profitable avenue to explore would be to examine actual the time spent by students carrying out certain tasks, rather than to rely on questionnaire responses that well might be prone to social desirability effects. Some research has already been done on these lines (see Kember *et al.* 1995) but not in the context of time-management or mature students.

Whatever we do, we need to explore these issues further in order to gain the evidence that will allow us to qualify the rather dogmatic statements that occur in current study manuals. Currently there is little research to support the opinions given in Box 1. It may well be advantageous to teach students time-management skills – students may recognise their own techniques and learn some new ones, as well as realising how difficult it is to estimate how long it will take to do a piece of work. And if, by teaching time-management skills we can make students more effective learners, then this will be all to the good. But it would also be agreeable to obtain some supporting evidence for the effectiveness of whatever it is that we decide we do.

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Appendix: The time-management scale

Daily planning subscale

1. Do you make a list of the things you have to do each day?
2. Do you plan each day before you start it?
3. Do you make a schedule of the activities you have to do on work days?
4. Do you write a set of goals for yourself each day?
5. Do you spend time each day planning?

Confidence in long-term planning subscale

6. Do you have a clear idea of what you what to accomplish during the next week?
7. Do you set and keep priorities?
8. Do you often find yourself doing things which interfere with your studying simply because you hate to say 'No' to people?

9. Do you believe that there is room for improvement in the way you manage your time?
10. Do you make constructive use of your time?
11. Do you continue to carry out unprofitable routines or activities?
12. Do you have a set of goals for the entire term?
13. Are you still working on a major assignment the night before it is due?
14. Do you regularly review your lecture notes, even when a test is not imminent?

Each item has five response categories: 'Always', 'Frequently', 'Sometimes', 'Infrequently' and 'Never'. These are scored from 1–5 with a high score indicating a positive attempt at managing time. Thus the response 'Always' is scored 5 for all of the items except items 8, 10, 12 and 15, where it is scored 1. The range of possible scores is 14–70 on the Time-Management Scale overall; 5–25 on the Daily Planning subscale; and 9–45 on the Confidence in Long-Term Planning subscale.