

EFFECTS OF ACADEMIC DEPARTMENTS ON STUDENTS' APPROACHES TO STUDYING

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SUMMARY. 2208 students from 66 academic departments in six contrasting disciplines from British universities and polytechnics completed an 'approaches to studying' inventory and a course perceptions questionnaire. Factor analyses of these instruments confirmed the factor structures previously reported. Approaches to studying can be described in terms of three main factors—orientations towards personal meaning, reproducing, and achieving. In the present analysis the final factor split into two: achieving orientation and a factor labelled 'disorganised and dilatory' which showed a close relationship with self-rating of academic progress. The course perceptions questionnaire produced two main factors. One described formal teaching methods, vocational relevance, and clear goals and standards, and the other represented a favourable departmental evaluation with the highest loadings on good teaching and openness to students. Subsequent analyses examined links between students' perceptions of their main academic departments and their reported approaches to studying. Departments with highest mean scores on meaning orientation were perceived as having good teaching and allowing freedom in learning. Departments with the highest mean scores on reproducing orientation were seen to have a heavy workload and a lack of freedom in learning. The implications of these statistical findings are discussed in relation to continuing analyses of interview data which clarify the ways in which the organisation of teaching and courses may affect students' approaches to learning.

INTRODUCTION

A SYMPOSIUM of articles on 'learning processes and strategies' ran in the *British Journal of Educational Psychology* between February 1976 and November 1978. These articles described a series of constructs related to the learning processes of students which attempted to explain characteristically different approaches to, and styles of, studying.

Marton and Säljö (1976a) distinguished between *deep* and *surface* approaches to reading an academic article. Essentially the deep approach involved an active attempt by the student to understand the author's meaning, to explain the evidence in relation to the conclusion, and to relate the ideas contained in the article to the student's previous knowledge and experience. The surface approach, in contrast, was characterised by a tendency to memorise discrete facts or ideas, to be anxiously aware of the need to reproduce information at a later time, and to view a particular task in isolation both from the academic subject as a whole and from real life.

Svensson (1977) argued that a deep approach to studying was functionally related to both conscientious and effective study methods and to examination performance, while Marton and Säljö (1976b) warned that questions which encourage the regurgitation of factual answers are likely to shift a student towards a surface approach. Fransson (1977) was able to demonstrate that the approach to learning depended on perceived relevance and anxiety: interest in the subject matter of the article encouraged a deep approach, while a stressful learning situation produced more surface learning.

In Marton's research the instructions to the students were ambiguous in terms of the type of learning required: the students had to decide for themselves whether understanding was necessary. Pask (1976a, 1976b), however, demanded evidence of

understanding in most of his learning experiments. Yet here again students used different strategies. Some students (*holists*) relied heavily on analogies, illustrations and anecdotes in building up a general understanding of a topic. Other students (*serialists*) concentrated on step-by-step learning and on the detailed arguments and evidence presented. In normal academic environments extreme styles of learning are apparently associated with characteristic pathologies. Operation learners (who consistently adopt serialist strategies) fail to build up a general picture of what is to be learned and ignore important analogies or inter-relationships between ideas (*improvidence*), while comprehension learners (consistent holists) have a tendency to jump to unsubstantiated conclusions and to make implausible links between ideas (*globe-trotting*).

A subsequent symposium in *Higher Education* (July, 1979) highlighted the important effect of the context of learning on both the approach (Ramsden, 1979) and the strategy (Laurillard, 1979) adopted. Students were not consistent. Their approach varied to some extent from department to department and from task to task, and students also varied their strategies across different types of task. On the other hand, two studies (Entwistle *et al.*, 1979; Biggs, 1978, 1979) showed that inventories could be used to distinguish between characteristic orientations to studying in ways which implied a certain consistency of approach. It is necessary, therefore, to accommodate both consistency *and* variability in any scheme which seeks to describe the ways in which students approach learning tasks (Entwistle, 1979).

From the work of Ramsden (1979) and Laurillard (1979), it is now clear that variability in approach or style is partly a function of differences between individual academic tasks. But there was also evidence in Ramsden's study that students respond to the context of learning defined by the teaching and assessment methods of academic departments. Some departments and some lecturers seemed to facilitate a deep approach, while others used methods of teaching, or made course work demands, which forced students into surface approaches. In interviews, students clearly perceived lecturers as affecting their approaches to studying. These observations were in contrast to previous unsuccessful attempts (see, for example, Dubin and Taveggia, 1969) to find relationships between different methods of teaching and student learning. It thus seemed important to seek additional evidence about which particular aspects of departmental organisation appear to influence the ways students study.

It should be possible, at least in theory, to describe departmental context in terms of the educational objectives espoused by staff, and the teaching methods, syllabuses, and past examination papers. However, it proves difficult to make equivalent comparisons between departments using such criteria. An alternative approach is to capitalise on the fact that it is not so much how staff *say* they operate that is important, but how the students *perceive* the courses and the teaching. In an earlier part of this study, interviews with students led to the development of a questionnaire of course perceptions (Ramsden, 1979). Factor analysis of the items, supported by conceptual analyses of the interview data, suggested that students described departments in terms of eight partially overlapping dimensions. One group of sub-scales distinguished between faculties: these were formal teaching methods, clear goals and standards, and vocational relevance. These characteristics were most commonly found in science and technology departments. The second group of sub-scales distinguished between the most and the least favourably evaluated departments: good teaching, freedom in learning, openness to students, heavy workload and, to a lesser extent, good social climate. Thus some important aspects of departmental learning context can be described in terms of the sub-scales of this questionnaire.

An SSRC research programme at Lancaster has been trying to develop the ideas of Marton and Pask in relation to earlier work in Lancaster and Aberdeen on students'

motivation and study methods (Entwistle and Wilson, 1977). An inventory of approaches to studying was developed (Entwistle *et al.*, 1979) which, from an initial 15 sub-scales, produced three main study orientations: (personal) meaning orientation (deep approach + comprehension learning); reproducing orientation (surface approach + operation learning); and achieving orientation (organised study methods + achievement motivation). These three second-order factors were closely similar to those obtained independently by Biggs (1978, 1979) with Australian students.

The present study brings together results from revised versions of the 'approaches to studying' inventory and the course perceptions questionnaire to explore the extent to which approaches to studying can be explained in terms of students' perceptions of their courses.

METHOD

Method of measurement

The questionnaire administered to students consisted of three parts. The first section asked for background information about school examination results and honours specialism(s), and also contained a self-rating question in which students were asked to assess their own academic progress to date (How well do you think you are doing so far on this subject/course, compared with other students?). A similar approach to self-assessment of mathematical aptitude proved successful in an earlier study (Entwistle and Wilson, 1977), with a correlation between self-rating and objective test score of +0.65.

The second section of the questionnaire contained a shortened and refined version of the 'approaches to studying' inventory with the 16 sub-scales shown in Figure 1. Evidence of satisfactory reliability for the earlier scales has already been reported (Entwistle *et al.*, 1979).

The third section contained the eight sub-scales of students' perceptions of their honours department courses; these are also shown in Figure 1.

Sample

A letter describing the purpose of the investigation was sent to 171 departments in 54 universities and polytechnics in England, Wales, Scotland and Northern Ireland. Ninety-five departments agreed in principle to co-operate, and an adequate proportion of completed questionnaires for analysis was eventually obtained from 66 of them.

The target population was second-year undergraduates (third-year in Scotland) taking honours degrees in departments of English, History, Economics, Psychology, Physics or Engineering. The six disciplines were chosen to provide a range of specialisms; five of them had been used previously in the interview study (Ramsden, 1979).

The response rate from students was estimated to be 73 per cent. (Returns from departments showed the class size, but it was not always possible to be sure exactly how many of the class had received the questionnaire.) Students were asked to give their names (to allow degree results to be obtained subsequently), but they returned the questionnaires to the investigators in sealed envelopes, with a guarantee that departmental staff would not see their responses.

Table 1 shows a breakdown of the sample by discipline.

RESULTS

The analyses were designed to investigate the following questions:

- (1) What differences in approaches to studying and course perceptions exist between departments of the same discipline and between disciplines?
- (2) Do the second-order factor structures of both sets of scales reappear in this larger, national sample?

FIGURE 1
SUB-SCALES CONTAINED IN THE QUESTIONNAIRE

Sub-scale	Meaning
APPROACHES TO STUDYING	
<i>Meaning Orientation</i>	
Deep Approach	Active questioning in learning
Inter-relating Ideas	Relating to other parts of the course
Use of Evidence	Relating evidence to conclusions
Intrinsic Motivation	Interest in learning for learning's sake
<i>Reproducing Orientation</i>	
Surface Approach	Preoccupation with memorisation
Syllabus-boundness	Relying on staff to define learning tasks
Fear of Failure	Pessimism and anxiety about academic outcomes
Extrinsic Motivation	Interest in courses for the qualifications they offer
<i>Achieving Orientation</i>	
Strategic Approach	Awareness of implications of academic demands made by staff
Disorganised Study Methods	Unable to work regularly and effectively
Negative Attitudes to Studying	Lack of interest and application
Achievement Motivation	Competitive and confident
<i>Styles and Pathologies</i>	
Comprehension Learning	Readiness to map out subject area and think divergently
Globetrotting	Over-ready to jump to conclusions
Operation Learning	Emphasis on facts and logical analysis
Improvvidence	Over-cautious reliance on details
PERCEPTIONS OF COURSES	
Formal Teaching Methods	Lectures and classes more important than individual study
Clear Goals and Standards	Assessment standards and ends of studying clearly defined
Workload	Heavy pressures to fulfil task requirements
Vocational Relevance	Perceived relevance of course to careers
Good Teaching	Well-prepared, helpful, committed teachers
Freedom in Learning	Discretion of students to choose and organise own work
Openness to Students	Friendly staff attitudes and preparedness to adapt to students' needs
Good Social Climate	Quality of academic and social relationships between students

TABLE 1
BREAKDOWN OF SAMPLE BY DISCIPLINE AND SUBJECT AREA

Discipline	Number of departments	Number of students
English	9	282
History	7	209
Arts	16	491
Economics	12	450
Psychology	14	402
Social Science	26	852
Physics	11	357
Engineering	13	508
Science	24	865

- (3) Does the factor structure for the combined sets of scales suggest links between approaches to studying and course perceptions?
- (4) Are these factors general, appearing consistently in different subject areas?
- (5) Are the 'approaches to studying' scales effective in predicting self-rated academic progress?
- (6) Are differences in students' orientations to studying associated with any particular course perceptions sub-scales?

Sub-scale means

Table 2 shows the mean of the 66 departmental mean scores on each of the sub-scales. It is clear that, although there are marked differences between the disciplines, there remain wide variations between departments within the same discipline. These variations are shown by ranges, rather than standard deviations, in view of the small number of departments in each discipline.

Factor structure of 'approaches to studying' inventory

The SPSS program (Nie *et al.*, 1975) was used to carry out principal factor analyses initially. An iterative procedure was used to provide communality estimates, while the number of factors extracted was determined by eigenvalues (> 1.0). Oblique rotation to Thurstone's criteria for simple structure provided the final factor structure loadings reported. Loadings > 0.25 were taken as salient.

Table 3 presents the factor structure formed from an analysis of the approaches to studying sub-scale totals for all 2208 students (weighting factors were used to compensate for the different numbers of students in each of the six disciplines). School examination performance (sum of the best three A-level or best five Scottish Highers grades) and self-rating of academic record in higher education were added to the correlational matrix. Four factors had eigenvalues greater than one and they accounted for 51 per cent of the variance.

The first two factors are almost identical to those previously described as meaning orientation and reproducing orientation. The previous third factor of achieving orientation is divided into two. Factor III has its highest loading on disorganised study methods and negative attitudes to studying, a factor which had emerged from an earlier inventory of motivation and study methods (Entwistle, 1975). This factor represents disorganised and dilatory approaches to studying. Factor IV is closer to the previous 'achieving orientation' with high loadings on strategic approach and both extrinsic and achievement motivations. There is also an apparent readiness to adopt either deep or surface approaches, which is consistent with a previous finding (Entwistle *et al.*, 1979) that students with an achieving orientation will seek high grades, using meaningful or rote learning, whichever seems to produce the best results.

Factor III (Disorganised and Dilatory) shows the highest (negative) loading on self-rating of academic progress. As expected, meaning orientation is positively related to achievement, while the reproducing orientation shows a negative relationship. Surprisingly, the achieving orientation itself shows only a slight association with the self-rating of academic progress. However, all these relationships will have to be checked subsequently, once a more satisfactory criterion of achievement (degree class) is available.

Given the rather weak average relationships between A-level grades and university performance, it is not surprising to find only small factor loadings on school examination results. The raw correlations between admissions grades and academic progress show remarkable similarity to those found between A-level grades and degree results in several previous studies. The correlation is highest ($r = 0.24$) in science and lowest (0.10) in social sciences. This pattern of relationship helps to substantiate the use of self-ratings of progress at this stage of the investigation.

TABLE 2
MEANS OF SUB-SCALES AND RANGES OF DEPARTMENTAL MEAN SCORES BY DISCIPLINE

Sub-scale	English		History		Psychology		Economics		Physics		Engineering	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range
<i>Approaches to studying</i>												
Deep Approach	11.2	10.2-12.7	11.3	10.4-12.0	10.8	9.9-12.4	10.2	8.5-12.1	10.1	8.5-11.9	10.4	8.4-12.0
Inter-relating Ideas	10.5	8.6-11.5	10.1	9.6-11.2	10.9	10.1-12.0	10.1	8.9-11.8	9.3	8.2-10.9	9.6	8.2-11.8
Use of Evidence	9.4	9.1-9.6	9.5	8.9-10.6	9.6	8.5-11.0	9.4	8.7-10.4	9.8	8.6-10.3	9.9	9.0-11.0
Intrinsic Motivation	9.5	8.1-10.3	8.5	7.3-9.6	9.3	7.3-10.5	7.0	4.9-9.6	8.8	7.9-9.9	7.3	5.3-10.1
Surface Approach	12.9	11.0-14.7	12.4	11.2-14.0	12.8	11.7-14.1	13.8	12.8-15.0	13.2	10.9-14.7	13.2	10.8-16.1
Syllabus-boundness	7.0	5.4-8.1	7.6	6.4-8.7	7.7	6.4-8.6	8.8	7.5-9.5	8.6	7.6-9.9	9.2	8.5-10.1
Fear of Failure	5.8	4.5-6.9	5.7	5.0-6.4	5.9	4.8-7.0	6.0	4.6-7.5	5.5	4.9-6.2	6.2	5.0-7.4
Extrinsic Motivation	2.8	1.5-5.1	3.3	2.0-4.4	4.5	2.8-5.6	7.9	5.1-9.4	5.7	4.0-8.6	8.0	6.5-10.0
Strategic Approach	9.8	8.3-10.6	9.8	8.9-11.1	10.2	8.8-11.2	10.3	9.5-10.8	10.6	9.2-11.5	10.5	8.5-11.5
Disorganised Study												
Methods	9.2	7.8-11.4	8.2	7.1-10.6	9.9	8.7-13.0	9.4	8.1-11.0	9.6	8.1-10.9	9.8	8.0-11.7
Negative Attitudes to Studying	4.5	4.4-6.3	5.9	5.0-6.4	5.3	4.2-8.6	5.6	4.3-6.7	5.8	4.6-6.9	5.4	4.5-6.9
Achievement Motivation	9.0	8.0-10.0	9.0	8.0-10.0	8.8	7.3-9.9	10.0	9.2-11.0	9.8	8.5-11.5	10.7	9.4-11.4
Comprehension Learning	11.0	10.0-11.7	8.7	7.8-10.0	9.0	7.9-10.1	7.7	6.2-9.2	8.2	6.3-9.9	8.0	6.4-10.3
Globetrotting	7.8	6.8-8.9	7.2	6.3-8.5	8.2	7.4-9.3	7.8	6.9-8.5	7.4	6.3-8.2	7.5	6.6-8.6
Operation Learning	8.6	7.5-9.4	9.8	8.5-10.7	9.2	8.2-10.2	10.8	10.1-12.0	10.1	9.2-11.8	11.1	9.7-12.8
Improvvidence	6.8	4.4-8.4	7.1	6.3-8.0	7.4	6.2-8.7	8.4	7.6-9.0	7.4	4.9-8.4	7.8	6.7-9.3
<i>Perceptions of Courses</i>												
Formal Teaching Methods	3.3	2.5-5.3	2.7	2.1-3.6	6.7	3.8-9.1	6.7	5.5-7.8	12.0	9.6-13.5	12.1	10.0-16.2
Clear Goals and Standards	6.7	3.6-9.5	8.0	6.2-10.2	8.6	5.6-11.9	11.0	8.4-12.7	11.4	10.0-13.3	12.2	11.5-13.8
Workload	10.0	5.6-12.3	11.2	7.5-14.8	9.0	5.3-12.6	9.0	5.6-13.5	9.9	8.4-12.1	12.9	5.5-14.3
Vocational Relevance	3.9	3.1-4.7	4.8	3.5-5.6	6.5	4.7-8.4	8.2	6.2-9.0	8.9	5.3-12.6	13.4	9.0-15.1
Good Teaching	11.4	8.1-13.8	11.8	9.8-14.0	11.8	9.2-14.0	11.8	8.0-14.1	11.8	10.7-12.8	11.4	9.1-13.2
Freedom in Learning	11.7	7.4-15.8	11.2	5.0-13.2	9.7	7.9-12.6	10.4	7.4-12.6	8.2	6.3-11.3	8.1	5.8-11.7
Openness to Students	8.5	5.9-13.5	7.7	4.2-9.8	9.9	7.4-12.8	8.7	6.2-11.8	9.2	6.4-12.1	8.6	6.7-11.1
Good Social Climate	9.0	6.9-13.6	9.2	6.9-10.3	11.5	10.2-13.5	9.9	7.8-12.0	11.2	9.0-12.7	11.0	8.3-13.9

TABLE 3
FACTOR ANALYSIS OF APPROACHES TO STUDYING SCALES FOR TOTAL SAMPLE
(N = 2208)

Variables	Factors (51 % variance explained)			
	I	II	III	IV
<i>Academic Performance</i>				
School	(-02)	(-13)	(-15)	(-07)
Higher Education	31	-26	-39	(19)
<i>Approaches to Studying</i>				
Deep Approach	70			(22)
Inter-relating Ideas	65			
Use of Evidence	54			(23)
Intrinsic Motivation	72		-25	
Surface Approach		57	36	30
Syllabus-boundness	-41	58		(24)
Fear of Failure		50	34	
Extrinsic Motivation	-25	38		53
Strategic Approach	29			48
Disorganised Study Methods	-25		50	
Negative Attitudes to Studying	-39		52	
Achievement Motivation	(24)			45
Comprehension Learning	55	(-24)	30	
Globetrotting			52	
Operation Learning		62		44
Improvvidence		68	(24)	26
Eigenvalues	3.74	2.55	1.86	1.07
Percentage Extracted Variance	21	14	10	6

FACTOR PATTERN CORRELATIONS

	1	2	3
F1			
F2	-17		
F3	-14	27	
F4	16	35	-13

Decimal points and loadings less than 0.25 omitted.

Factor I	Meaning Orientation.
Factor II	Reproducing Orientation.
Factor III	Disorganised and Dilatory.
Factor IV	Achieving Orientation.

Factor structure of course perceptions questionnaire

Table 4 indicates the groupings of the course perceptions scales. Factor I contains the sub-scales of vocational relevance, formal methods, and clear goals and standards, while the second factor describes favourable evaluation, with the highest loadings on good teaching, openness to students and freedom in learning. Good social climate shows moderate loadings on both factors, while heavy workload appears in neither of them. These groupings are similar to those obtained in previous analyses, except that the first factor previously also contained negative loadings on formal teaching and heavy workload. The large sample in the current analysis, however, makes this the definitive grouping of scales.

TABLE 4
FACTOR ANALYSIS OF COURSE PERCEPTIONS SCALES FOR TOTAL SAMPLE
(N = 2208)

Variables	Factors (56% variance explained)	
	I	II
Formal Teaching Methods	71	
Clear Goals and Standards	57	30
Workload		(-24)
Vocational Relevance	72	
Good Teaching		76
Freedom in Learning		57
Openness to Students		76
Good Social Climate	32	42
Eigenvalues	1.90	2.53
Percentage Extracted Variance	24	32

Correlation between factors is 0.05. Decimal points and loadings less than 0.25 omitted.

Factor I Formal Vocational Teaching.

Factor II Positive Evaluation of Teaching and Courses.

Approaches to studying and course perceptions

When the two sets of sub-scales are brought together, the factor analyses tend to retain the separate identities of the two parts of the questionnaire. Table 5 shows that there are four factors relating to approaches to studying, three of which are recognisable as the main orientations. Factors V and VI are the two course perceptions groupings. Although there is not a great deal of overlap between approaches and perceptions, what does occur makes good sense. The reproducing orientation is clearly associated with a heavy workload, the achieving (strategic) orientation goes with perceived clear goals and standards, while the positive evaluation factor (good teaching and freedom in learning) shows positive loadings on intrinsic motivation and use of evidence.

Factor V links vocational relevance with extrinsic motivation. As this factor might be thought to be largely a description of subject area differences, the six factors are also shown separately by area of study.

Area of study differences in factor structure

The factor structures for the approaches to studying scales and the course perceptions scales are not shown separately by area of study since there is no difference in the patterns of loadings. Table 6 shows that the patterns are also similar for the combined analyses. Even Factor V (Formal teaching and vocational relevance) is recognisable in each faculty. The only marked exception is the more weakly defined, and largely uninterpretable, Factor IV.

Meaning orientation (Factor I) retains its emphasis on syllabus-freedom and its stylistic component of comprehension learning across subject areas, although this component is much weaker among arts students. This general approach to studying is related to good teaching, freedom in learning, clear goals and standards, and less reliance on formal methods of instruction (implying, perhaps, greater use of discussion methods). There is, however, a suggestion here of an area of study difference. Freedom and non-formal methods are related to meaning orientation more strongly in the sciences and social sciences, while good teaching and clear goals and standards show higher loadings in the arts departments. Meaning orientation shows a positive

TABLE 5
FACTOR ANALYSIS OF APPROACHES TO STUDYING AND COURSE PERCEPTIONS SCALES FOR TOTAL SAMPLE
(N = 2208)

Variables	Factors (54% variance explained)					
	I	II	III	IV	V	VI
<i>Academic Performance</i>						
School Higher Education	26	(-20)	-45	29		
<i>Approaches to Studying</i>						
Deep Approach	71		-29			(22)
Inter-relating Ideas	67					(21)
Use of Evidence	52		-29	31		28
Intrinsic Motivation	64		-27	-34		39
Surface Approach		61		-30		
Syllabus-boundness	-38	53			26	
Fear of Failure		58	26			
Extrinsic Motivation		37		-51	47	
Strategic Approach	27		-37	-26		
Disorganised Study Methods			54			
Negative Attitudes to Studying	-28		52			-32
Achievement Motivation			-32			
Comprehension Learning	60					
Globetrotting			44			
Operation Learning		56	-29	-30		
Improvidence		65		-33		
<i>Course Perceptions</i>						
Formal Teaching Methods					75	
Clear Goals and Standards			-25		53	38
Workload		45				(-23)
Vocational Relevance					73	
Good Teaching						77
Freedom in Learning					-28	50
Openness to Students						79
Good Social Climate					25	47
Eigenvalues	4.33	2.28	1.46	1.09	3.22	1.74
Percentage Extracted Variance	17	9	6	4	12	7

FACTOR PATTERN CORRELATIONS

	1	2	3	4	5
F1					
F2	-03				
F3	-18	09			
F4	04	-29	-06		
F5	-07	20	-16	-13	
F6	28	-15	-23	-15	07

Decimal points and loadings less than 0.25 omitted.

TABLE 6
COMPARISONS OF FACTORS OBTAINED IN ANALYSES OF SEPARATE SUBJECT AREAS

Variables	Factor I			Factor II			Factor III			Factor IV			Factor V			Factor VI		
	Sci	Soc	S Arts	Sci	Soc	S Arts	Sci	Soc	S Arts	Sci	Soc	S* Arts*	Sci	Soc	S Arts	Sci	Soc	S Arts
<i>Academic Performance</i>																		
School Higher Education	(18)	28	34	(-10)	(-09)	-42	-55	-23		39	34	61	(23)			-42		
<i>Approaches to Studying</i>																		
Deep Approach	69	73	74				-30					38					(23)	(22)
Inter-relating Ideas	69	71	56														(21)	(22)
Use of Evidence	58	58	58				-27	(-20)									31	(22)
Intrinsic Motivation	63	71	50			-25	-27			32	31		-32				42	38
Surface Approach				50	62	64			26	-46		31						
Syllabus-boundness	-34	-38	-34	37	50	63							26					
Fear of Failure				53	55	60	27	(22)	29									
Extrinsic Motivation				38	32	32			-41			34	38	65	44			
Strategic Approach	30	31	25				-49					55						
Disorganised Study Methods	(-16)	-25	(-24)				54	46	45		-40	(-24)						
Negative Attitudes to Studying	-25	-40	-31			31	44	47	42	-32	-35	-25				-33	-30	-33
Achievement Motivation	32	(20)	(24)	32	25		-28				27	47						
Comprehension Learning	65	51	34				36	51										
Globetrotting				53	61	57	42	59	51									
Operation Learning				67	68	64	-26	-28	-34	-33				30				
Improvidence																		
<i>Course Perceptions</i>																		
Formal Teaching Methods	-30	(-24)	(04)				-27	(-20)										
Clear Goals and Standards	(07)	(15)	28	46	31	43										39	39	41
Workload				25												26	31	37
Vocational Relevance																35	(-24)	(-23)
																48	56	41
																30	27	(13)
Good Teaching	(18)	(17)	31													28	(21)	78
Freedom in Learning	35	(23)	(14)													-26	47	55
Openness to Students																	74	81
Good Social Climate			27														49	46
																		55
Eigenvalues	4.48	4.50	1.96	3.03	2.81	3.11	1.73	1.78	1.78	1.14	1.15	1.03	1.24	1.30	1.39	2.06	2.15	4.38
Percentage Variance	17.2	17.3	7.5	11.7	10.8	12.0	6.7	6.8	6.9	4.4	4.4	4.0	4.8	5.0	5.3	7.9	8.3	16.9

*Factor IV splits into two factors in these analyses.

Decimal points and loadings less than 0.25 omitted.

TABLE 7
FACTOR PATTERN CORRELATIONS FOR
SEPARATE SUBJECT AREAS IN TABLE 6

<i>Science</i>					
	1	2	3	4	5
F1					
F2	12				
F3	18	06			
F4	02	30	18		
F5	12	19	07	10	
F6	29	07	28	04	00
<i>Social Science</i>					
	1	2	3	4	5
F1					
F2	05				
F3	09	06			
F4	16	11	18		
F5	04	22	09	04	
F6	35	08	16	05	21
<i>Arts</i>					
	1	2	3	4	5
F1					
F2	15				
F3	07	13			
F4	36	12	17		
F5	05	06	03	09	
F6	32	18	15	10	22

relationship with self-rating on academic progress in all three subject areas, although the highest loading is found in arts.

Reproducing orientation (Factor II) is consistently defined in all three faculties with only small variations in the factor loadings. It is related to a heavy workload and to poor performance (mainly in the arts). The disorganised and dilatory approach is particularly associated with the pathology of globetrotting, and shows a negative relationship with academic progress in science. It would seem that arts students relying on reproductive learning and disorganised scientists rate themselves less highly on academic progress—a finding which certainly makes sense intuitively. It is also noticeable that Factor VI (positive evaluation of courses) is linked to positive attitudes in all three areas of study.

Prediction of academic progress

A useful way of determining which scales predict academic progress most effectively is discriminant function analysis. Extreme groups were formed in terms of students who said they were doing 'very well' in their courses ($N = 58$) and those who said they were performing 'badly' ($N = 43$). Table 8 shows the coefficients which define the discriminant function. The defining variables are essentially organised study methods, positive attitudes to studying, a strategic approach, and (to a lesser extent) high scores on achievement motivation and deep approach, combined with low scores on surface approach and globetrotting. This function placed students correctly in their group in 90 per cent of instances. Of course, this level of prediction is likely to be an overestimate, due to the circularity involved in using self-ratings of both progress and approaches to studying. Nevertheless, it seems probable that the inventory will also be found to have high predictive validity in terms of subsequent degree results.

TABLE 8
DISCRIMINANT FUNCTION ANALYSIS TO PREDICT ACADEMIC
PERFORMANCE AT UNIVERSITY FROM APPROACHES TO
STUDYING SCALES (N = 2208)

Variables	Coefficients and Order of Extraction	
Deep Approach	0.22	(5)
Inter-relating Ideas	-0.10	(11)
Use of Evidence	0.17	(9)
Intrinsic Motivation	-0.13	(13)
Surface Approach	-0.21	(4)
Syllabus-boundness	-0.11	(12)
Fear of Failure	(not entered)	(—)
Extrinsic Motivation	-0.18	(10)
Strategic Approach	0.42	(3)
Disorganised Study Methods	-0.76	(1)
Negative Attitudes to Studying	-0.46	(2)
Achievement Motivation	0.25	(6)
Comprehension Learning	(not entered)	(—)
Globetrotting	-0.29	(8)
Operation Learning	-0.24	(7)
Improvvidence	0.06	(14)
% correct assignment to groups	90%	
χ^2 ($P <$)	65.0	(<0.001)

Note : Groups defined by self-rating of performance as 'very well' (N = 58) and 'badly' (N=43)

The course perceptions scales were also used, separately, to predict self-rating of academic progress. The discriminant function was defined mainly by good teaching and a light workload; it assigned students to groups with 72 per cent accuracy ($P < 0.001$).

Prediction of study orientations from course perceptions

Extreme groups of *departments* were also formed in order to see whether typical orientations could be explained by students' perceptions of their courses. Groups were formed by selecting the two highest and two lowest departmental mean scores in each discipline, so that each group consisted of twelve departments. One set of contrasting departments was selected by choosing the highest and lowest scoring departments on the composite variable 'meaning orientation' (deep approach+relating ideas+use of evidence+intrinsic motivation). The other set was formed with the variable 'reproducing orientation' (surface approach+syllabus-boundness+fear of failure+improvvidence; the extrinsic motivation scores were not included as this scale did not have its highest loading on the reproducing orientation in the factor analyses).

Extreme departments in terms of meaning orientation were predicted best by good teaching and freedom in learning. In fact, using just these two variables, 71 per cent of departments were placed in the correct group ($P < 0.05$). Reproducing orientation was predicted with 75 per cent accuracy using all eight scales. This discriminant

function was defined mainly by heavy workload, vocational relevance, and a lack of freedom in learning.

Finally, a series of analyses of variance and covariance have been carried out to examine the effects of different types of departmental context on approaches to studying. It was hypothesised that departments which were evaluated positively by their students would have higher meaning orientation scores than departments which were evaluated negatively. Departments which were evaluated negatively would have higher reproducing orientation scores than those which were evaluated positively.

After removing the variance in the two main orientations attributable to disciplines it was found that a composite evaluation variable of good teaching plus freedom in learning was significantly associated with meaning orientation ($F = 11.04$, $df\ 1, 59$, $P < 0.01$). Another composite evaluation variable of freedom in learning plus light workload was related strongly and negatively to reproducing orientation ($F = 11.97$, $df\ 1, 59$, $P < 0.001$). There were no significant interaction effects between disciplines and these composite evaluation variables; this indicates that the effect of the evaluation variables is similar in all the disciplines.

Another issue which was explored using ANOVA was the relationship between positive evaluation of a department, positive attitudes to studying, and organised study methods. All these variables were related to academic progress. It was found that positive evaluation was significantly related to positive attitudes ($F = 5.37$, $df\ 1, 59$, $P < 0.03$) but not to study methods. This result reinforces the factor analysis in which positive evaluation (Factor VI) was associated with positive attitudes, but not with either organised study methods or achievement motivation, in all three subject areas.

DISCUSSION

It is now possible to speak with confidence about two principal orientations towards studying, defined in terms of self-report inventories, which are closely similar to Marton's categorisations of deep and surface approaches to reading an academic article. The repeated analyses of our own inventory, together with the parallel work of Biggs (1978, 1979), clearly indicate the stability and replicability of these two orientations. It is also possible to identify an achieving orientation, and there is probably a separate dimension which describes organised study methods and positive attitudes to studying. This latter dimension has been found here, and previously, to have a relatively strong association with academic progress.

The ultimate goal of this research is, however, to identify ways in which students' approaches to learning may be modified either through appropriate study skills courses, or through the course organisation, assessment and teaching methods of departments. What can be said now about the effects of academic departments on students' approaches to learning and studying?

First, it is clear that at least the self-rating index of academic progress is related strongly to organised study methods, positive attitudes to studying, and to a strategic approach combined with high scores on deep approach and low scores on surface approach scales. It is also related, but less strongly, to what is perceived as good teaching and a light workload. As the analysis is based on two sets of self-ratings of individuals, this 'explanation' of academic progress verges on the tautological. A student who perceives himself as successful is presumably more likely to see the workload as at least reasonable and the teaching as satisfactory. The converse is also true. Lack of progress can more comfortably be attributed to departmental inadequacies than to personal failings.

So can we say *anything* about functional relationships between differing academic 'treatments' and students' approaches to learning? The analyses which were based

on departments, rather than on individuals, provide a firmer basis for interpretation. The explanation ceases to be tautological, and there is a clear indication that departments rated highly on good teaching and freedom in learning have students with higher average scores on meaning orientation. Moreover, a positive evaluation of departments is associated with positive attitudes to studying. As it has already been demonstrated that positive attitudes and a deep approach are linked with academic progress, a chain of causality, and of potential educational influence, begins to be established. It looks as if changes in teaching (good teaching, greater freedom in learning and an avoidance of overloading) are likely to move students away from surface and towards deep approaches to learning, and also to improved attitudes, thus improving the *quality*, at least, of what is learned.

Of course these correlational analyses cannot, in themselves, establish causality, but other evidence can be used as well. Marton and Säljö (1976b) showed how excessively factual questions induced a surface approach to reading, while Fransson (1977) found perceived relevance facilitating the deep approach. These were experimental studies. Moreover, it is also possible within the Lancaster programme to draw on interview data. Students described at length how they tackled individual pieces of work, and how their approaches differed between courses and between lecturers or tutors. The influence, and directionality, of aspects of relevance in academic content and empathetic teaching at the right level is described by many of the students.

A student of English explained how enthusiastic teaching could develop a positive attitude to studying a subject; similarly, a student following an independent studies course described the effect of choice over method and content on his attitudes:

“ If they have enthusiasm, then they really fire their own students with the subject, and the students really pick it up . . . I’m really good at and enjoy (one course) but that’s only because a particular tutor I’ve had has been so enthusiastic that he’s given me an enthusiasm for it and now I really love the subject.” (student 6)

“ If you’re doing independent studies you’re obviously interested in what you’re doing. Therefore you’re in a much more relaxed mental state for approaching work: I am, anyway, and other people I know in the course are.” (student 2)

Another English student, after describing a deep approach to essay-writing in one part of her course, contrasted this with a subject taught in another department which she found less relevant:

“ It’s a bit confusing, (this subject). When it comes to writing essays, because I’m not very interested in it, I tend to rush through the books I’m reading for the essays, so I don’t really understand it when I’ve finished reading. And because there’s such a lot of information I think you can either oversimplify or get into too much detail. I think I tend to oversimplify.” (student 31)

The following two extracts illustrate the effects of teaching on students’ levels of approach. A Physics student, describing a problem he had just attempted, said:

“ I was trying to relate it to the notes I’d got in the lectures, but I don’t think I understood, I didn’t get a grasp of what was physically going on . . . when the courses don’t relate much to each other, I find it very difficult to sort of look round a question . . . We had a good tutor towards the end of last year, and he tried to show the relationship between the courses, how they linked in and were concerned with one main theme . . . it really seemed to fit in beautifully.”

(student 11)

While a Psychology student pointed to

“ the lack of empathy that some of the staff have about the ability levels of the students relative to their subject. The concrete knowledge that (we) have is virtually nil in some of the areas that we’re talked at, at a very high level. So you can’t attach anything that you’ve been told to something that you already know, which of course is a very important point in learning . . . I think it’s the overall problem of the experts coming in and having to give courses in a few weeks on their particular interest, and they have such a wealth of knowledge in that area that they start at too high a level. That’s what I think happens. They’ve gone so far into their own area that they’ve forgotten that we know nothing, essentially, compared with them.” (student 7)

Of course, these illustrations of how tutors and departments affect students’ opportunities to learn and study effectively should not be taken to imply that individual psychological differences are not important. Students begin their courses with pre-existing, and widely differing levels of ability, motivation, and study skills. What has been suggested, however, is that the approaches students adopt are to some extent shaped by the teaching, the assessment, and the course organisation. Departments thus do have responsibility for the efficiency of learning achieved by their students.

What might be done to help students? Study skills courses with a greater emphasis on matching strategies to specific tasks are one possibility. But in this paper the emphasis has been on the effects of good teaching, freedom in learning, and an appropriate workload. The meaning of the first two terms can be seen more clearly by looking at the defining items of these subscales.

Good teaching

Staff here make a real effort to understand difficulties students may be having with their work. (Correlation with scale total: 0.71).

The lecturers in this department always seem ready to give help and advice on approaches to studying. (0.69).

Lecturers in this department seem to be good at pitching their teaching at the right level for us. (0.65).

Freedom in learning

We seem to be given a lot of choice here in the work we have to do. (0.74).

Students have a great deal of choice over how they are going to learn in this department. (0.72).

These items give some idea of how teaching and courses might be improved in order to facilitate learning. They do not, however, allow us to make specific suggestions about changes to the organisation of teaching and learning in the departments. In order to do this, more detailed case studies of individual departments will have to be carried out.

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