The Approaches to Studying Inventory

Probably the most widely used questionnaire on student learning in higher education has been the Approaches to Studying Inventory (ASI). This was devised by Entwistle and his colleagues at the University of Lancaster, which is a campus-based institution in the UK. As in the case of the SPQ, the ASI evolved from other instruments over a number of years and, in due course, it gave rise to a number of different variants that have been used by other researchers around the world. Although Entwistle himself has now abandoned the original ASI in favour of a new instrument, a substantial body of research evidence has been obtained with different versions of the original ASI. In this chapter, I will describe the development of the original version of the ASI and summarize the main findings of research carried out with this instrument, before considering the more specific results of investigations in which it has been administered to students taking courses by distance learning. In Chapter 7, I will discuss the results of investigations carried out with other versions of the ASI.

Development of the ASI

In the 1960s, there was a good deal of interest in both the UK and North America over whether academic attainment in higher education could be predicted by personality characteristics such as introversion–extroversion and neuroticism. Entwistle and Wilson (1970) suggested that any effects of such variables might depend upon students’ working habits or study methods. They devised a questionnaire containing items relating to both study methods and motivation that their colleagues and graduate students had identified as relevant to academic attainment. To try to disguise the purpose of the questionnaire, these were interspersed with other items measuring extroversion and neuroticism, and the resulting inventory was then administered to 72 graduate students at a campus-based university in Scotland, together with a conventional personality test, the Eysenck
Personality Inventory (EPI: Eysenck and Eysenck 1964). It was found that students classified as introverts according to their scores on the EPI reported higher academic motivation and better study methods than those classified as extroverts, and that the former students also tended to have obtained better results in their first degrees, which they had completed the previous year.

On the basis of these results, Entwistle and Entwistle (1970) produced a revised instrument, the Student Attitudes Questionnaire (SAQ), which contained 91 items relating to motivation, study methods, extroversion and neuroticism. This was administered to 257 first year students at two different campus-based institutions of higher education, along with the EPI. Students who were classified as introverts according to their scores on the EPI and those who reported better study methods achieved better results in their end-of-year assessments than those who were classified as extroverts or who reported poorer study methods. Entwistle et al. (1971) extended the SAQ by including two additional scales relating to 'examination technique' and 'lack of distractions', and the revised instrument was used in a survey of 1650 first-year students at 12 campus-based institutions of higher education. On this occasion, academic attainment was predicted by study methods and motivation, but the correlations were fairly modest and these variables were much less important in predicting academic attainment than the students' entrance qualifications.

In a follow-up survey that involved 1087 of these students in their third and final year of study, Entwistle and Wilson (1977: 38–43, 180–3) revised the SAQ once more by including two additional scales that were intended to measure 'syllabus-boundness' and 'syllabus-freedom'. These notions had been introduced by Hudson (1968: 11–14) and Parlett (1970) to describe the extent to which different students seem to prefer direction as opposed to autonomy in their learning. In the event, the students' final degree results were predicted by motivation and study methods but not by syllabus-boundness or syllabus-freedom. Once again, the correlations were fairly modest, and the best predictors of academic attainment were the students' qualifications on entry to their courses and especially their performance at the end of their first year of study (Entwistle and Wilson 1977: 211).

Each of these versions of the SAQ consisted of a series of statements with which respondents were asked either to agree or to disagree as descriptions of themselves. Entwistle and Wilson (1977: 41) reported that a simple choice of two responses had been adopted partly in order to simplify the scoring procedure and partly to follow the method of responding used in the EPI. However, they added that some students had indicated that they would have preferred to use a broader range of responses, such as a five-point scale, and this was subsequently adopted in the case of the ASI. Another feature of the SAQ is that responses were scored in terms of whether they were in accordance with the meaning of the relevant scale. However, the relevant response was 'agree' for some items and 'disagree' for others. This provided some protection against the possibility that respondents had a bias
consistently to agree or to disagree with all of the items. (In fact, this feature was not retained in the case of the ASI: all of the items reflect the meaning of the corresponding scales and so the ASI is vulnerable to the operation of response biases.)

In these early investigations, 'motivation' was simply interpreted as a unidimensional construct that was tantamount to a drive for academic achievement. At the time, this merely represented current practice in educational research both in the UK and North America. However, students may have different motivations for participating in higher education, as was seen in Chapter 4. Entwistle et al. (1974) compared the scores obtained by 60 final-year students at a campus-based university on the revised version of the SAQ with the accounts that were given by the same students in semistructured interviews designed to investigate motivational factors. They concluded, on the basis of their own findings and a review of the previous literature, that it was important to differentiate between intrinsic motivation (or an interest in the subject matter), extrinsic motivation (or an interest in the rewards or qualifications that could be gained) and achievement motivation (or an interest in the maintenance of self-esteem as opposed to the fear of failure). Accordingly, these constructs were incorporated into the ASI as separate subscales.

Equally, the study methods scale of the SAQ was also interpreted as a unidimensional construct concerned just with whether students were organized or disorganized in their studying and with whether their general attitudes towards studying were positive or negative. The research carried out by Marton and his colleagues (see Chapter 2) showed these considerations to be inadequate as a means of characterizing differences among students in higher education. Consequently, the ASI included new subscales that were devised to represent the deep and surface approaches described by Marton (1975) and the strategic approach that was described by Ramsden (1979). These were supplemented by two other subscales concerned with certain cognitive processes that were presumed to be associated with a deep approach to learning: a propensity for interrelating ideas and making use of evidence. More fundamentally, the distinction between deep, surface and strategic approaches to learning was subsumed within a broader framework that involved a 'meaning orientation', a 'reproducing orientation' and an 'achieving orientation'.

Finally, these three domains were supplemented by a fourth that represented particular styles and pathologies of learning described by Pask, who had used an interview-based approach to investigate the strategies adopted in artificial learning tasks that demanded understanding of a particular domain. Pask and Scott (1972) claimed that two general categories of strategy were employed in such tasks, a 'serialist' approach and a 'holist' approach:

Serialists learn, remember and recapitulate a body of information in terms of string-like cognitive structures where items are related by
simple data links: formally, by 'low order relations'... Holists, on the other hand, learning, remember and recapitulate as a whole: formally, in terms of 'high order relations'.

(Pask and Scott 1972: 218)

In academic learning, however, Pask (1976) claimed that the requirement for understanding was relaxed. In this case,

some students are disposed to act 'like holists' (comprehension learners) and others 'like serialists' (operation learners), with more or less success. There are also students able to act in either way, depending upon the subject matter, and if they excel in both pursuits, we refer to those students as versatile. It is these distinctions which can, more appropriately be referred to as learning style.

(Pask 1976: 133)

Pask went on to suggest that comprehension learners were able to acquire an overall picture of the subject matter by using global 'description building operations', whereas operation learners acquired rules, methods and details by using specific 'procedure building operations'. However, comprehension learners were disposed to the learning pathology of 'globetrotting' in their use of inappropriate speculations or analogies, and operation learners were disposed to the converse pathology of 'improvidence' in their failure to exploit valid analogies and general principles. For Pask, truly effective learning resulted from a versatile approach that integrated description building and procedure building operations in an appropriate manner (see also Pask 1988). The ASI incorporated the 'learning styles' of comprehension learning and operation learning and the corresponding 'pathologies of learning' of globetrotting and improvidence.

The ASI

The ASI itself went through a process of development during the latter half of the 1970s (see Entwistle et al. 1979; Entwistle and Ramsden 1983: chapter 4) and was presented in its final form by Ramsden and Entwistle (1981). In this form, it contains 64 items in 16 subscales, the latter being grouped under four general headings (see Box 6.1). The 64 items themselves were published as an appendix to the book by Entwistle and Ramsden (1983: 228–33). In each case, respondents are asked to indicate the extent of their agreement or disagreement with a statement along a five-point scale between 'definitely agree', scoring 4, and 'definitely disagree', scoring 0. (The middle category on this scale, scoring 2, was 'only to be used if the item doesn't apply to you or if you really find it impossible to give a definite answer'.) The responses given to the relevant items are summed to obtain a score on each subscale and the scores on the relevant subscales are then summed again to obtain a score on each scale.
### Box 6.1 Subscales contained in the 64-item Approaches to Studying Inventory

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Meaning orientation</strong></td>
<td></td>
</tr>
<tr>
<td>Deep approach</td>
<td>Active questioning in learning</td>
</tr>
<tr>
<td>Interrelating ideas</td>
<td>Relating to other parts of the course</td>
</tr>
<tr>
<td>Use of evidence</td>
<td>Relating evidence to conclusions</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>Interest in learning for learning’s sake</td>
</tr>
<tr>
<td><strong>Reproducing orientation</strong></td>
<td></td>
</tr>
<tr>
<td>Surface approach</td>
<td>Preoccupation with memorisation</td>
</tr>
<tr>
<td>Syllabus-boundness</td>
<td>Relying on staff to define learning tasks</td>
</tr>
<tr>
<td>Fear of failure</td>
<td>Pessimism and anxiety about academic outcomes</td>
</tr>
<tr>
<td>Extrinsic motivation</td>
<td>Interest in courses for the qualifications they offer</td>
</tr>
<tr>
<td><strong>Achieving orientation</strong></td>
<td></td>
</tr>
<tr>
<td>Strategic approach</td>
<td>Awareness of implications of academic demands made by staff</td>
</tr>
<tr>
<td>Disorganised study methods</td>
<td>Unable to work regularly and effectively*</td>
</tr>
<tr>
<td>Negative attitudes to studying achievement</td>
<td>Lack of interest and application*</td>
</tr>
<tr>
<td>Achievement motivation</td>
<td>Competitive and confident</td>
</tr>
<tr>
<td><strong>Styles and pathologies</strong></td>
<td></td>
</tr>
<tr>
<td>Comprehension learning</td>
<td>Readiness to map out subject area and think divergently</td>
</tr>
<tr>
<td>Globetrotting</td>
<td>Overready to jump to conclusions</td>
</tr>
<tr>
<td>Operation learning</td>
<td>Emphasis on facts and logical analysis</td>
</tr>
<tr>
<td>Improvidence</td>
<td>Overcautious reliance on details</td>
</tr>
</tbody>
</table>

*Source: Ramsden and Entwistle 1981: 371

* These subscales are meant to be scored in reverse

Factor analyses conducted on the subscale scores obtained by campus-based students on earlier versions of the ASI identified three major constructs that seemed to integrate the cognitive and motivational aspects of learning rather in the way that Biggs (1979) had described (Entwistle et al. 1979; Entwistle and Ramsden 1983: 38–41):
• deep approach + comprehension learning + intrinsic motivation
• surface approach + operation learning + extrinsic motivation
• organized study methods + achievement motivation.

As mentioned above, Entwistle et al. (1979) described these three constructs as ‘orientations to studying’ and Ramsden and Entwistle (1981) specifically labelled them ‘meaning orientation’, ‘reproducing orientation’ and ‘achieving orientation’, respectively.

Ramsden and Entwistle (1981) arranged for the administration of the final version of the ASI to 2208 (predominantly second-year) campus-based students at 54 institutions of higher education in the UK. A factor analysis was carried out upon their scores on the 16 subscales, together with their own reports of their school examination results and their own ratings of their academic performance in higher education. This produced four factors. The first two could be identified with meaning orientation and reproducing orientation. However, the other two factors showed a less clear relationship with the dimensions of ‘achieving orientation’ and ‘styles and pathologies’, as these constructs had been defined. Instead, they appeared to be associated with an achieving orientation that was defined merely by a strategic approach to studying, combined with both extrinsic and achievement motivation, and a ‘non-academic orientation’ that reflected a disorganized and dilatory approach to studying (see also Entwistle and Ramsden 1983: 48–9).

In this research, the term ‘orientation’ was being used to encompass major aspects of studying that might be correlated with academic attainment (Entwistle and Ramsden 1983: 51–5) and to reflect a student’s intention or focus in studying (Entwistle et al. 1979). In particular, Entwistle and Ramsden (1983: 195–6) pointed out that at the heart of the distinction between a meaning orientation and a reproducing orientation was a contrast between an ‘internal’ focus on the content of the learning materials and on the knowledge, experience and interests of the learner, and an ‘external’ focus on the learning task and on the demands of assessment. This is a rather different notion of a learning orientation from that put forward by Taylor (1983) and discussed in Chapter 4. In fact, Entwistle and Ramsden themselves noted that deep and surface approaches to learning could be regarded simply as a special case of the intrinsic and extrinsic aspects of the goals or orientations to studying that had been described by Taylor et al. (1981c).

Entwistle and Ramsden (1983: 44–7) examined the relationships between their students’ scores on the 16 subscales of the ASI and their ratings of their own academic progress. The latter ratings were most highly (though negatively) correlated with their scores on disorganized study methods and negative attitudes to studying. Moreover, they were positively correlated with their scores on all the subscales grouped under meaning orientation and negatively correlated with their scores on all the subscales grouped under reproducing orientation. Ramsden and Entwistle (1981) went on to
compare two specific groups of students who said that they were doing either 'very well' or 'badly' in their courses. The subscales that discriminated the most clearly between these two groups were disorganized study methods, negative attitudes to studying and strategic approach. However, in Chapter 5, I questioned the validity of self-reports because they might be biased by students' implicit theories of personal change. In Ramsden and Entwistle's investigation, those students who adopted a meaning orientation might simply have felt that they were doing well in their courses, regardless of their actual academic performance; alternatively, those students who really were doing well in their courses might have rated their approaches to studying in the ASI in accordance with their implicit theories of how a 'good student' would respond.

Watkins (1982) administered the ASI by means of a postal survey to campus-based students in their first year of study at an Australian university and obtained responses from 540 students. He found that the older students obtained lower scores than the younger students on extrinsic motivation and negative attitudes to studying; that women produced higher scores than men on fear of failure, comprehension learning and improvidence; and that there were differences on five of the subscales between arts, economics and science students. Watkins and Hattie (1985) repeated the survey with the same sample of students 2 years later and obtained responses from 244 of the original 540 students. In this study, women produced higher scores than men on fear of failure and interrelating ideas, there were again differences between arts, economics and science students on five of the subscales, but there was no significant effect of age.

Nevertheless, this last study is of interest mainly because Watkins and Hattie were able to look back at the scores obtained by these 244 students in their initial survey. They found that their scores on the ASI were systematically different from the scores obtained by those students who had subsequently withdrawn from their studies, and also from the scores obtained by those students who had not withdrawn but who simply did not respond to the follow-up survey. There is evidence that students who respond to surveys are different from non-respondents in terms of their academic attainment and many other variables (Astin 1970; Nielsen et al. 1978). Watkins and Hattie's results show that students who respond to surveys also differ from non-respondents in terms of their approaches to studying. Consequently, any survey of approaches to studying that fails to achieve a 100 per cent response rate will be vulnerable to sampling bias.

Newble and Clarke (1986, 1987) used the ASI to compare Australian campus-based students in two different medical schools: one had a traditional curriculum (that is, one in which preclinical training was followed by clinical training), and the other had an innovative curriculum that was based on the use of problem-based learning. In both cases, responses to the ASI were obtained from students in their first year, their third year or their final year (in other words, Year 6 in the traditional school and Year 5 in the innovative school). The students at the innovative school obtained higher
scores on meaning orientation and lower scores on reproducing orientation than the students at the traditional school. These comparisons were statistically significant in every case, except that the final-year scores on meaning orientation were not significantly different. This demonstrates once again that approaches to studying depend on the context of learning.

In Chapter 5, I mentioned a study by Miller et al. (1990), which compared men and women who were taking a general psychology course at a campus-based university in the US. In this study, the researchers also compared the scores obtained by men and women on the ASI. There were statistically significant gender differences on 12 of the 16 subscales. Men produced higher scores than women on deep approach, use of evidence, extrinsic motivation, negative attitudes to studying, achievement motivation and comprehension learning. Women produced higher scores than men on interrelating ideas, intrinsic motivation, surface approach, fear of failure, strategic approach and improvidence. Miller et al. did not report any analysis on the scores across the four general study orientations but the pattern of results on the constituent subscales makes it unlikely that there would have been gender differences at this level. Miller et al. remarked that the significant differences they had found were small and had often achieved statistical significance just because of the very large size of their sample (over 1100 students).

Severiens and ten Dam (1994) reviewed a number of research studies that had compared the scores obtained by men and women on the ASI and used the statistical technique known as ‘meta-analysis’ to integrate quantitative estimates of the gender difference on each of the 16 subscales. There were only three subscales where the gender difference over all the studies was statistically significant (in other words, significantly different from zero): men produced higher scores than women on achievement motivation and on extrinsic motivation; in contrast, women produced higher scores than men on fear of failure. There was a tendency for women to produce higher scores than men on intrinsic motivation, but this gender difference was not statistically significant. The general implication of all these results is that any gender differences are on the motivational aspects of studying rather than the cognitive or intellectual aspects of studying.

Severiens and ten Dam also included tests of the homogeneity of gender differences across the different studies included in their meta-analysis. These examine whether the gender differences obtained in different studies are homogeneous (that is, they are estimates of the same effect) or whether they are heterogeneous (that is, they are estimates of different effects). They found that for 12 out of the 16 subscales the different estimates of the gender difference were significantly heterogeneous. In other words, the gender differences obtained on these subscales varied from one study to another, even though they had all used the same instrument. This suggests that any gender differences on the ASI depend upon exactly how, when and where it is administered. In fact, a general phenomenon in the study of human cognition is that the existence and magnitude of gender differences
depend upon the exact testing and scoring procedures that are used. This suggests that they reflect contextualized interactions between researchers and participants rather than fundamental differences between men and women (see Crawford and Chaffin 1997).

However, a fundamental problem with the kind of analysis conducted by Severiens and ten Dam is that, in investigating whether men and women are different in their approaches to studying, it assumes that men and women are commensurable in their approaches to studying: that is, that it makes sense to compare them on the same dimensions. Two investigations with campus-based students in South Africa (Meyer et al. 1994) and the UK (Meyer 1995) have found evidence for subtle but statistically significant differences between the results of factor analyses carried out separately on the responses given by men and women to the ASI. It is of interest that the courses being taken by the students in both of these investigations were, broadly speaking, scientific in nature, as interview-based research has indicated that these are more likely to challenge the personal identity and confidence of female students than courses in the arts (Thomas 1988, 1990). Nevertheless, the main point is that, if 'meaning orientation' and 'reproducing orientation' have different meanings for male and female students, then it does not really make sense to compare them on these dimensions.

The ASI has indeed been used with campus-based students in countries around the world, and many investigators have carried out factor analyses on the students' scores on the 16 subscales. Factor solutions broadly similar to that obtained by Ramsden and Entwistle (1981) have been found in studies conducted in Australia (Watkins 1982, 1983; Watkins and Hattie 1985; Clarke 1986), the United States (Speth and Brown 1988), Venezuela (Entwistle 1988) and Hong Kong (Kember and Gow 1990). In contrast, studies carried out in South Africa (Meyer 1988, 1995; Meyer and Parsons 1989a; Meyer and Dunne 1991), Nepal (Watkins and Regmi 1996) and Spain (Cano-Garcia and Justicia-Justicia 1994) produced solutions with only two interpretable factors. Meyer and Parsons (1989a) compared the factor solutions obtained in some of these studies with the results obtained by Ramsden and Entwistle (1981), and they concluded that there was consistent evidence across different populations for two orientations to studying:

- a meaning orientation indexed by the subscales concerned with deep approach, interrelating ideas, the use of evidence, intrinsic motivation and comprehension learning; and
- a reproducing orientation indexed by the subscales concerned with surface approach, syllabus-boundness, fear of failure, disorganized study methods, negative attitudes to studying, globetrotting and improvidence.

Meyer and Parsons also concluded that there was no evidence at all to support the existence of additional constructs concerned with an achieving orientation or a non-academic orientation, as defined by Ramsden and Entwistle (1981). The failure to demonstrate any achieving orientation is, of course, consistent with the failure to identify a 'strategic' approach in the
interview-based research that was discussed in Chapter 2 and with the failure to identify a separate ‘achieving’ approach in the research on the SPQ that was discussed in Chapter 5.

Moreover, several researchers have carried out factor analyses upon students’ responses to the 64 individual items in the ASI, and their solutions have typically failed to reproduce certain of the subscales. Indeed, Entwistle and Ramsden (1983: 50–2) carried out such an analysis on the data produced by the 2208 students in their main study. They first extracted just five factors to examine broad domains. In this case, the dimensions of ‘meaning orientation’ and ‘reproducing orientation’ were apparent both in the total sample and in each of six different subject groups. However, there was only ambiguous evidence for a non-academic orientation, and none at all for an achieving orientation. Next, they extracted 17 factors in an attempt to reconstruct the 16 original subscales. Unfortunately, this analysis ‘produced few identifiable groupings of items’.

Speth and Brown (1988) administered the ASI along with other questionnaires to 383 campus-based students who were taking a course in educational psychology at a large state university in the US. A factor analysis of their responses to the 64 individual items produced only eight factors. Two of these factors subsumed many of the items measuring meaning orientation (including comprehension learning) and reproducing orientation, respectively. There was little support for the subscales concerned with operation learning, improvidence and globetrotting. Schmeck (1988) carried out a similar study in which 269 students taking different courses at a campus-based university in the US completed the ASI and the Inventory of Learning Processes (ILP; see Chapter 10). A factor analysis of their responses to the 126 items identified only eight factors, and these were based on groups of items that corresponded to the scales in the ILP rather than to the subscales in the ASI (see also Schmeck and Geisler-Brenstein 1989).

On the one hand, the results of these two studies could mean that the ASI does not transfer well to the educational context of the US; there is some evidence for this suggestion from research using a shortened version of the ASI, and this will be discussed in Chapter 7. On the other hand, it could mean that there are inherent weaknesses in some of the ASI’s subscales. Entwistle and Waterston (1988) created a new instrument by combining 30 items from the ASI with 30 items from the ILP and 15 further items intended to reflect additional constructs. They obtained responses from 218 first-year campus-based students in the UK and a factor analysis of their responses to the 75 items yielded ten factors. These appeared to be dominated by concepts and items drawn from the ILP rather than from the ASI, which raises doubts about the integrity of the constituent subscales of the ASI even when they are used in a British setting.

Finally, in an investigation to be discussed in more detail in a moment (see p. 97), Meyer and Parsons (1989a,b) obtained responses to the ASI from 1194 English-speaking students across 12 disciplinary areas at a campus-based institution of higher education in South Africa. A factor
analysis produced just nine factors. Even though this meant that in some
cases items defining two or more subscales loaded on the same factor,
Meyer and Parsons considered that their factor solution confirmed the
integrity of the majority of the subscales in the ASI. However, three sub-
scales (globetrotting, intrinsic motivation and strategic approach) were barely
apparent and were subsumed within other constructs and one subscale
(syllabus-boundness) was not represented in the factor solution at all.
Meyer and Parsons (1989b) obtained very similar data from 590 Afrikaans-
speaking students at the same institution and from 290 students at another
campus-based institution in South Africa. In short, the integrity of the ASI
subscaleres associated with an achieving orientation and with the 'styles and
pathologies' scale is open to question.

Approaches to studying and perceptions of
the learning environment

One of the main purposes of Entwistle and Ramsden's research was to
correlate approaches to studying with students' perceptions of their aca-
demic environment. For this purpose, Ramsden (1979, 1981) had developed
a separate inventory, the Course Perceptions Questionnaire (CPQ), in which
students assessed eight different aspects of their academic environment
(Box 6.2). The CPQ had been distributed to the 2208 campus-based stu-
dents who participated in Ramsden and Entwistle's (1981) main study. A
factor analysis of their responses to the eight scales of the CPQ produced
two (largely independent) factors. One factor measured good teaching,
openness to students and freedom in learning; this appeared to represent
a positive evaluation of teaching across all departments. The other mea-
sured vocational relevance, formal teaching methods and clear goals and
standards; this appeared to distinguish between different departments (see
also Entwistle and Ramsden 1983: 121–30). Ramsden and Entwistle then
carried out a single factor analysis that combined the ASI subscales and
the CPQ scales; this yielded six factors. They acknowledged that there
was not a great deal of overlap between the two sets of measures but there
were some relationships of interest (see also Entwistle and Ramsden 1983:
184–9):

- Perceptions of a heavy workload were associated with high scores on
  the subscales that defined a reproducing orientation (surface approach,
syllabus-boundness, fear of failure and extrinsic motivation).
- Perceptions of clear goals and standards were associated with high scores
  on the subscales that defined an achieving orientation (strategic approach,
disorganized study methods, negative attitudes to studying and achieve-
ment motivation, where the second and third are scored in reverse).
- High scores on intrinsic motivation and the use of evidence were associ-
  ated with high scores on the scales that defined a positive evaluation of
### Box 6.2 Subscales contained in the Course Perceptions Questionnaire

<table>
<thead>
<tr>
<th>Scale</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal teaching methods</td>
<td>Lectures and classes more important than individual study</td>
</tr>
<tr>
<td>Clear goals and standards</td>
<td>Assessment standards and ends of studying clearly defined</td>
</tr>
<tr>
<td>Workload</td>
<td>Heavy pressures to fulfil task requirements</td>
</tr>
<tr>
<td>Vocational relevance</td>
<td>Perceived relevance of course to careers</td>
</tr>
<tr>
<td>Good teaching</td>
<td>Well-prepared, helpful, committed teachers</td>
</tr>
<tr>
<td>Freedom in learning</td>
<td>Discretion of students to choose and organize own work</td>
</tr>
<tr>
<td>Openness to students</td>
<td>Friendly staff attitudes and preparedness to adapt to students’ needs</td>
</tr>
<tr>
<td>Good social climate</td>
<td>Quality of academic and social relationships between students</td>
</tr>
</tbody>
</table>

*Source: Ramsden and Entwistle 1981: 371*

teaching (that is, good teaching, openness to students and freedom in learning).

Parsons (1988; Meyer and Parsons 1989a) tried to replicate Ramsden and Entwistle’s study by giving the ASI and the CPQ to 1194 English-speaking students at a campus-based institution in South Africa. Despite the different cultural context, Parsons found that perceptions of a heavy workload were associated with high scores on the subscales defining a reproducing orientation and that a positive evaluation of teaching was associated with positive attitudes to studying. He also administered the ASI and the CPQ to 590 Afrikaans-speaking students from the same institution. Once again, perceptions of a heavy workload were associated with high scores on reproducing orientation, and perceptions of formal teaching methods were associated with high scores on syllabus-boundness and with low scores on globetrotting and interrelating ideas.

Nevertheless, Parsons’ results confirmed the general impression from Ramsden and Entwistle’s study that there are few associations between the two major orientations to studying and scores on scales of the CPQ, and that even those associations that do attain statistical significance are relatively weak and unlikely to be of much practical importance. Ramsden and Entwistle (1981) obtained clearer results when they aggregated the students’ scores in each of the 66 departments involved in their study. They found that the students’ average score on meanig orientation was significantly
correlated with high scores on good teaching and freedom in learning, whereas the average score on reproducing orientation was significantly correlated with a lack of freedom in learning and a heavy workload (see also Entwistle and Ramsden 1983: 187–8). However, the failure to find any stronger association between the two instruments might, of course, be due to inherent weaknesses in the CPQ, which measures only global aspects of the academic setting.

Meyer (1988) devised a far more detailed questionnaire, the Awareness of Context Inventory, which covered 91 more specific aspects of the academic environment. Respondents were asked to rate their level of awareness of each item in their learning experience and, to avoid confusing the participants, Meyer asked for similar ratings of the items in the ASI. He gave both questionnaires to two successive cohorts of accounting students at a campus-based university in South Africa and found a large number of associations between their overall scores on meaning orientation, reproducing orientation and achieving orientation and their ratings of specific items in the Awareness of Context Inventory. Indeed, he was able to classify the items as representing deep, surface or strategic perceptions of the context. However, while students with high scores on reproducing orientation appeared to respond mainly to items reflecting a surface perception, students with high scores on meaning orientation appeared to have ‘a rich, holistic perception of learning context that embraces deep, strategic and surface perceptions’ (Meyer 1988: 81).

On the basis of these findings, Meyer and Muller (1990a, b) devised six scales measuring ‘deep’ and ‘surface’ perceptions of the learning context and combined them with the workload scale from the CPQ to yield a new questionnaire, the Qualitative Context Inventory (QCI). All the items were to be rated using the five-point scale from the ASI and scores on the scales were obtained in the normal manner by summing the responses to the individual items. Data obtained using the QCI could be subjected to a factor analysis to explore the relationships among the subscales. Nevertheless, factor analysis is based on aggregate data generated by large groups of individuals, and it is possible that the features of a group do not adequately capture the range of features exhibited by its constituent members. Instead, Meyer and Muller advocated the use of multi-dimensional unfolding analysis because it allowed them to make comparisons between the patterns of scores obtained by different students. This procedure interprets a score on a scale as a measure of the proximity or affinity of the person to the relevant construct and is used to represent both subscales and students as specific locations within a multi-dimensional space.

Using the scores on the ASI obtained by students at a campus-based university in South Africa, Meyer and Muller (1990a) found that multi-dimensional unfolding analysis produced a coherent representation in which the subscales defining a meaning orientation were both tightly clustered and clearly differentiated from the remaining subscales. They then considered the scores that had been obtained on the ASI and the QCI by
students at the University of Namibia, a campus-based institution that was at the time still under the jurisdiction of South Africa. In this case, the subscales defining a meaning orientation were closely associated with those relating to deep perceptions of the learning context, a phenomenon that Meyer and Muller (1990a: 148) called the ‘contextual orchestration’ of approaches to studying. Meyer and Muller (1990b) went on to find similar results in educationally disadvantaged (mainly Black) students taking a foundation course in engineering at a third campus-based university in South Africa. Meyer and Watson (1991) also obtained similar findings in students who were following a course in occupational therapy at the same institution, except that in this case their study orchestrations evolved over the 4 years of the degree and took subtly different forms in different areas of the curriculum.

As I have said, multi-dimensional unfolding analysis can be employed to represent both subscales and students as locations within the same multidimensional space. Meyer and Muller (1990a) found that most students were clustered together within the core of the representations they had derived, whereas other students were scattered around the periphery. They argued that the latter students might be regarded as being at risk of academic failure because they did not share their peers’ perceptions of the learning context. Meyer et al. (1990a) then compared successful and unsuccessful students in their first year of a degree in electrical engineering at a campus-based university in South Africa. Those who went on to pass their end-of-year assessment replicated the pattern of results just described: a well-defined study orchestration of their subscale scores on the ASI and the QCI combining a meaning orientation with deep perceptions of the learning context. However, the students who went on to fail their end-of-year assessment failed to show any coherent pattern at all. Meyer et al. inferred that in the latter students there had been a total disintegration of the normal study orchestration based around a meaning orientation.

Meyer et al. (1990b) investigated this issue in the next cohort of students to take the foundation course in engineering studied by Meyer and Muller (1990b). In this study, the students had been asked to complete the ASI and the QCI on two separate occasions during the course. The cohort as a whole once again produced a study orchestration that combined a meaning orientation with deep perceptions of the learning context. Those students who showed a high degree of fit to the ideal theoretical model tended to be highly consistent in their study orchestrations and typically passed the foundation course. However, those students who showed a poor fit to the theoretical model were less consistent and, in some cases, showed deterioration in their study orchestrations. The latter students seemed to be particularly vulnerable to failing their end-of-year assessments. Meyer et al. (1992) obtained similar findings when educationally disadvantaged students taking foundation courses in engineering at three different universities in South Africa were instructed to complete the ASI and the QCI retrospectively with regard to their experiences at high school and then to complete the ASI and the QCI to describe their current experience on two occasions during
the course itself. Once again, they identified a group whose initial subscale scores were coherently 'orchestrated' and who typically were academically successful, and a second group whose scores showed no coherent orchestration and who were vulnerable to academic failure.

A useful overview of all these studies and their practical implications was provided by Meyer (1991). The findings showed that, at least in the case of academically successful students, there is a consistent relationship between approaches to studying in higher education and perceptions of the academic environment. This conclusion is consistent with the inference that was drawn from interview-based research in Chapter 2, that approaches to studying depend on the content, context and perceived demands of the learning task. In this instance, however, the data are correlational in nature and so, strictly speaking, say nothing about the direction of any causal relationship between approaches to studying and perceptions of the academic environment. It is possible that students' perceptions of their learning context affect their approaches to studying. However, it is equally possible that students' approaches to studying influence their perceptions of their learning context, or else that other factors (such as students' conceptions of learning and teaching) affect both their approaches to studying and their perceptions of the learning context.

Entwistle and Tait (1990) constructed a shortened version of the ASI that simply measured four study orientations, a short version of the CPQ that contained merely ten items, a set of questions about study habits and 16 items concerning preferences for contrasting aspects of the academic environment. They gave these various instruments to 123 electrical engineering students and 148 psychology students at a campus-based university in the UK and carried out factor analyses on their scale scores and their responses to the other individual items. Within both groups, those students with high scores on meaning orientation preferred environments that were likely to promote understanding, whereas students with high scores on reproducing orientation preferred environments that were likely to promote rote learning. Entwistle and Tait argued that students with different orientations would tend to define effective teaching in ways that reflected those orientations and would evaluate their academic environments accordingly.

Entwistle et al. (1991) obtained end-of-year examination results for the electrical engineering students in this study and carried out separate factor analyses on the data from the 80 students who subsequently passed the examination and on the data from the 43 students who had failed. The analysis for the successful students showed the same, broadly coherent pattern of findings as the analysis for the entire sample of students: in particular, a meaning orientation was linked to features that would facilitate understanding, whereas a reproducing orientation was linked to features that would encourage memorization. However, the factor analysis for the unsuccessful students produced only 'bizarre and uninterpretable combinations of loadings' (Entwistle et al. 1991: 252). The application of multi-dimensional unfolding analysis to the two sets of data also led to the
conclusion that poor academic performance was associated with a disintegration or a fragmentation of the normal patterns of studying.

Research in distance education

In Chapters 2, 3 and 4, I described the research carried out by the Study Methods Group at the Open University in the UK. Morgan et al. (1980) had noted the development of the 64-item version of the ASI at the University of Lancaster and modified it for use with students who were taking courses by distance learning with the Open University. They obtained responses from a total of 357 students who were attending two residential schools as part of the Technology Foundation Course and the Social Science Foundation Course, respectively. They carried out a factor analysis of the students’ scores on the 16 subscales and this produced four factors with a pattern of loadings relatively similar to that which had been obtained by Ramsden and Entwistle (1981) in the case of campus-based students. In particular, the two main factors could be readily interpreted as a meaning orientation and a reproducing orientation, and the only substantive difference was that extrinsic motivation did not seem to contribute to the latter construct in the case of Open University students. Morgan et al. inferred that the background research on approaches to learning in campus-based students that had been used in developing the ASI was equally valid for describing student learning with the Open University.

Morgan et al. then compared their students’ scores on the 16 subscales of the ASI with those that had been obtained in campus-based students by Ramsden and Entwistle (1981). There were statistically significant differences on ten of the 16 subscales, and some of the differences were still significant even when the subscale scores of Open University students were compared with those of campus-based students who had been taking courses in similar academic subjects. In particular, the Open University students obtained much higher scores on intrinsic motivation than campus-based students taking psychology or engineering. Nevertheless, these differences were confounded with other differences between the two groups of students in terms of several characteristics that might (in principle, at least) have influenced their approaches to studying:

- First, most of the campus-based students included in Ramsden and Entwistle’s study would have entered higher education immediately after the successful completion of their advanced secondary education. In contrast, Open University students often lack any recent experience of formal education or intensive studying.
- Second, all of the campus-based students included in Ramsden and Entwistle’s study were in either their second or third year of study in higher education. However, foundation courses at the Open University are intended for people who are returning to formal education. Many of
the students seen by Morgan et al. would accordingly have been in their first year of study.

- Third, and perhaps most notably, the vast majority of the campus-based students included in Ramsden and Entwistle’s study would have been young adults around the ages of 18–22. In contrast, as was mentioned in Chapters 3 and 4, the majority of Open University students are older than this. In fact, similar differences have been obtained in comparisons between older and younger students on campus-based courses: in general, older students are both more likely to adopt a meaning orientation and less likely to adopt a reproducing orientation than younger students (see Richardson 1994b for a review).

Finally, Morgan et al. employed the 64 items in the ASI as the basis for an interview schedule with a small number of Open University students in an attempt to check the instrument’s face validity. They found that their interviewees could readily make sense of these questions in the context of their own experience of distance learning. In particular, a meaning orientation and a reproducing orientation could be easily identified as global accounts of approaches to studying in the interview responses that had been given by different students. This confirmed that the distinction between a meaning orientation and a reproducing orientation was as valid for Open University students as it was for campus-based students. Morgan et al. seem to have found no evidence for a separate achieving orientation in either their factor analysis of subscale scores or their interview data. On the one hand, this is not surprising, as students who take courses by distance learning have little opportunity to indulge in the kind of ‘cue seeking’ behaviour that was described by Miller and Parlett (1974) and provided the basis for Ramsden’s (1979) notion of a ‘strategic’ approach. On the other hand, it might also be recalled from Chapter 2 that there has been little subsequent support for such an approach, even in campus-based students.

The Open University is, of course, a ‘single-mode’ institution, as this was defined in Chapter 1. Consequently, Morgan et al. were not able to make any direct comparisons between the pattern of scale scores produced by distance-learning students and those from any comparison group of campus-based students who were taking exactly the same courses. This problem was addressed by Harper and Kember (1986) in a study involving 348 internal (that is, campus-based) students and 431 external (that is, distance-learning) students taking courses in four academic disciplines with two colleges of advanced education in Australia. They adapted the 64-item version of the ASI for use in this specific context and carried out separate factor analyses on the subscale scores obtained by the external students and by the total sample. Although Harper and Kember did not carry out any formal statistical comparison of the factor solutions, they were remarkably similar at a purely descriptive level. Harper and Kember inferred that the ASI was valid for use with distance-learning students as well as with campus-based students and that the approaches to studying that were shown by
distance-learning students were not qualitatively different from those that were shown by campus-based students (see also Kember and Harper 1987a).

Harper and Kember (1989) went on to provide a comparative review of their own findings and those obtained by other researchers with regard to the factor structure of the 64-item version of the ASI. They concluded that there was consistent evidence in both campus-based and distance-learning students for two major factors underlying the ASI:

(a) a ‘deep orientation’ factor that was indexed by deep approach, interrelating ideas, the use of evidence, intrinsic motivation and comprehension learning

(b) a ‘surface orientation’ factor that was indexed by surface approach, syllabus-boundness, fear of failure, disorganized study methods, negative attitudes to studying, globetrotting and improvidence.

This concurs with the conclusions of Meyer and Parsons (1989a) that were mentioned earlier in this chapter. In addition, some studies (but not all) had produced evidence for two other factors:

(c) a ‘narrow orientation’ factor indexed by the subscales concerned with operation learning and strategic approach

(d) a ‘goal orientation’ factor indexed by the subscales concerned with extrinsic motivation and achievement motivation.

Harper and Kember acknowledged that the two latter factors were much less consistent than the first two factors across different investigations. In fact, they are not evident at all in some of the research with campus-based students in South Africa (Meyer 1988; Meyer and Dunne 1991).

Harper and Kember (1986) presented means and standard deviations for their internal students and their external students on each of the 16 subscales of the 64-item version of the ASI. They did not themselves report the results of any statistical tests carried out on these data. However, it is fairly straightforward to show that the external students obtained significantly higher scores than the internal students on the subscales concerned with deep approach, interrelating ideas, the use of evidence, intrinsic motivation and operation learning and significantly lower scores than the internal students on the subscales relating to surface approach, negative attitudes to studying and globetrotting. Even so, Harper and Kember did not themselves come to any such conclusions, apparently because they would have confounded effects of the mode of study with differences in the students’ age, gender and academic disciplines.

Instead, Harper and Kember carried out analyses of covariance that statistically controlled for possible effects of the last three variables. They also identified a different problem that arises when one carries out large numbers of independent statistical tests: the increased probability of making Type I errors (or obtaining spuriously significant results in statistical decision making). To guard against this, they argued that it was more appropriate to use the stringent criterion of statistical significance of 0.5 per cent than
the normal threshold criterion of 5 per cent. Using this more stringent criterion, Harper and Kember found no overall difference between the internal students and the external students on any of the subscales when possible differences in their age, discipline and gender had been taken into account. This indicates that there were no intrinsic differences between the approaches to studying of distance-learning and campus-based students when possible effects of these background variables had been statistically controlled.

Wong (1992) conducted a very similar study that involved 89 internal students and 112 external teleconferencing students at a Canadian university. Separate factor analyses of the scores on the 16 subscales of the ASI obtained by the external students and by the total sample yielded factor solutions that were relatively similar both to each other and to the modal structure described by Harper and Kember (1989). Simple comparisons between the two groups generated significant differences on seven of the 16 subscales: the external students obtained significantly higher scores than the internal students on the subscales concerned with deep approach, interrelating ideas, intrinsic motivation and comprehension learning and significantly lower scores than the internal students on surface approach, fear of failure and achievement motivation. Wong ascribed these differences to the fact that the external students were generally older than the internal students. However, in analyses of covariance that took into account any effects of age and gender and that used the more stringent criterion of statistical significance of 0.5 per cent, three of the differences between the two groups remained significant: the external students obtained higher scores than the internal students on deep approach, interrelating ideas and intrinsic motivation.

Unfortunately, even with these precautions, at least two confounded variables in this study might have given rise to spurious differences between the two groups of students. First, Wong had originally surveyed students taking selected courses in business studies, but the study was extended to include all teleconferencing students at the institution in question. Thus, internal students in the field of business studies were compared with external students from all academic disciplines. It has been shown that subscale scores on the 64-item version of the ASI vary systematically across different disciplines (see, for instance, Entwistle and Ramsden 1983: 181–4; Harper and Kember 1986), and so this is a potential source of bias in this study. Second, the overall response rate was much higher in the case of the internal students (74 per cent) than in the case of the external students (19 per cent). As I mentioned earlier in this chapter, students who respond to surveys differ in some respects from those who do not (Astin 1970; Nielsen et al. 1978) and in particular in their subscale scores on the ASI (Watkins and Hattie 1985). It follows that the differences in the subscale scores produced by the internal students and the external students in Wong's study might simply have been due to sampling bias.

Nevertheless, Kember and Harper (1987b) found some interesting differences between internal and external students with regard to the prognostic
value of their subscale scores on the 64-item ASI in terms of which students would pass or fail their courses. For both internal and external students, passing was associated with low scores on surface approach and high scores on fear of failure. For the internal students, passing was also associated with high scores on globetrotting and low scores on disorganized study methods. However, for the external students it was linked with high scores on syllabus-boundness and low scores on negative attitudes to studying. Kember and Harper carried out a corresponding analysis to predict which of the students who passed their courses would receive a credit or better. For the internal students, better attainment was associated with low scores on globetrotting, fear of failure and syllabus-boundness, and with high scores on achievement orientation. For the external students, better attainment was linked with low scores on negative attitudes to studying, disorganized study methods and strategic approach, and with high scores on syllabus-boundness. The different patterns of results produced by internal and external students suggest that the implications of adopting particular approaches to studying are somewhat different in campus-based courses and in distance-learning courses.

Working with colleagues at the Open University in the UK, I was able to examine the responses to a postal survey of ‘post-foundation’ students, defined as those who had already achieved one-third of the credits needed for a bachelor’s degree (Richardson et al. 1999). We carried out a factor analysis on the scores obtained by 2288 such students on the 16 subscales. This produced four factors that were similar to those obtained by Morgan et al. (1980) in the case of students taking foundation courses with the Open University and similar to the modal factor solution described by Harper and Kember (1989). We then compared the mean subscale scores with those obtained by Morgan et al. in students taking foundation courses. Even using the stringent criterion of statistical significance of 0.5 per cent, the post-foundation students were found to have significantly lower scores on the subscales concerned with surface approach, syllabus-boundness, fear of failure, disorganized study methods, negative attitudes to studying, globetrotting and improvidence. In Chapter 5, I mentioned research findings that implied that campus-based students were less likely to employ a deep approach as they proceeded through a programme of study in higher education (see Gow and Kember 1990). However, the results of this study indicate that Open University students, at least, do not show a progressive shift from a meaning orientation to a reproducing orientation over the course of their degrees.

We noted that our participants were working at broadly the same academic level as the students described by Ramsden and Entwistle (1981) and we therefore compared the subscale scores obtained in these two groups of students. Even using the same stringent criterion of statistical significance, the two groups were significantly different on all except one of the 16 subscales in the ASI. The distance-learning students produced significantly higher scores than the campus-based students on all four aspects of meaning orientation and also on strategic approach and operation learning. The
campus-based students produced significantly higher scores than the distance-learning students on all four aspects of reproducing orientation, on the other three aspects of achieving orientation and on three of the four learning styles and pathologies. We concluded that distance-learning students were more likely than campus-based students to exhibit approaches to studying that were more desirable in the sense of being more appropriate to the avowed aims of higher education. However, in the light of the findings obtained by Harper and Kember (1986), we suggested that these apparent effects of mode of study on students' approaches to learning could be attributed to the confounded effects of age.

Finally, we examined the relationships between our participants' scores on the four factors that we had identified and their demographic characteristics and academic outcomes. There were few gender differences in approaches to learning, although women obtained higher scores on reproducing orientation than men. (Even so, they also obtained better grades on their courses than men.) Older students obtained significantly higher scores on meaning orientation but lower scores on extrinsic motivation than younger students, consistent with the findings from research carried out in campus-based institutions that older students adopt more desirable approaches to studying (Richardson 1994b). There were also significant differences among different academic disciplines and a significant effect of the students' level of prior education: those students with a higher level of prior education obtained lower scores on reproducing orientation.

When the effects of these variables were taken into account, the probability that students would complete their courses was unrelated to their approaches to studying. This is of interest in so far as completion rates are an issue of concern in distance education, and it has been assumed that approaches to studying are an important factor here (for instance, Kember 1995; see also Chapter 8). (It should, however, be recognized that the outcome being measured in this study was that of the students' completion or non-completion of a single course unit rather than their withdrawal from higher education altogether.) Nevertheless, even when the possible effects of gender, age, academic discipline and level of prior education had been taken into account, the probability that students would pass their courses (given that they had completed them) was negatively related to their scores on reproducing orientation and was positively related to their scores on operation learning; in addition, the final grades in those students who passed their courses were negatively related to their scores on reproducing orientation. We concluded that discouraging the latter orientation should have major benefits for students' academic performance.

Concluding summary

- The ASI has been used in a large number of studies concerned with campus-based education, and has been shown to be sensitive to differences
between individual students in their age, year of study and academic
discipline. Gender differences may be more likely to arise on the subscales
concerned with motivational aspects of studying but, in practice, these
differences are inconsistent in direction, small in magnitude and often
not statistically significant.

- Students' scores on the ASI have also been shown to be sensitive to con-
textual factors, such as the nature of the curriculum (traditional versus
innovative) and the students' perceptions of their courses or departments.
This supports the idea that approaches to studying depend upon the con-
tent, context and perceived demands of the learning task.

- The findings of research studies carried out with campus-based stu-
dents in Australia, Hong Kong, Nepal, South Africa, Spain, the UK and
Venezuela all indicate that the ASI measures a meaning orientation and
a reproducing orientation to studying, but other constructs are much less
consistent across different studies. The findings of research carried out
with campus-based students in South Africa, the UK and the US have also
cast doubt upon the integrity of some of the subscales, especially those
concerned with an achieving orientation and with styles and pathologies
of learning. Finally, research studies in South Africa and the UK have
shown that the constituent structure of the ASI is fragmented in students
who fail or who are vulnerable to academic failure.

- The factor structure of the ASI has been reproduced in research involv-
ing distance-learning students in Australia, Canada and the UK. There is
consistent evidence from these studies that distance-learning students
tend to obtain higher scores than campus-based students on the subscales
associated with a meaning orientation and to obtain lower scores than
campus-based students on the subscales associated with a reproducing
orientation. However, these effects can be ascribed to confounded differ-
ences in the students' ages. There may be genuine differences between
campus-based and distance-learning students in the extent to which the
subscales of the ASI predict their subsequent academic attainment.