In Chapter 6, I noted the rather doubtful status of certain of the subscales in the original version of the ASI, particularly those associated with an achieving orientation and the 'styles and pathologies' scale. It is also rather a long instrument to complete, which is an important practical consideration for at least two reasons. First, there might well be restrictions on the time and opportunities available for completing questionnaires, especially if they are to be given to campus-based students in a classroom setting before or after their normal academic activities. Second, if the task of completing the questionnaires proves too onerous, it might well lead to poor response rates, especially when they are administered by postal surveys to either campus-based or distance-learning students and when their completion and safe return depends upon the students' compliance and cooperation.

For these reasons, it was thought useful to develop a shortened form of the ASI that focused on the more reliable orientations to studying. One strategy for doing this was to choose fewer items to define the main constructs that the ASI was intended to measure; this led to the 30-item and 18-item versions of the ASI. Another strategy was to select the more robust scales and subscales, which led to the 32-item version of the ASI. Finally, a wholesale revision of the entire ASI was undertaken, resulting in the Revised Approaches to Studying Inventory (RASI). In this chapter, I shall describe the original derivation and subsequent application of each of these four instruments. In practice, they have proved more popular in research in campus-based education, probably because they tend to be used in formal teaching situations where there are competing pressures on staff and students in formally timetabled teaching activities. In contrast, distance-learning students are well used to dealing promptly with materials received from their institutions through the post, and as a result their response rates even to long questionnaire surveys can be very high indeed.
The 30-item version of the ASI

Entwistle (1981: 57–60, 100–3, 273–4) described a variant of the ASI in which 30 items drawn from the original instrument defined seven different subscales:

- achieving orientation (6 items)
- reproducing orientation (6 items)
- comprehension learning (3 items)
- meaning orientation (6 items)
- operation learning (3 items)
- improvidence (3 items)
- globetrotting (3 items).

As in the original ASI, respondents are asked to indicate their agreement or disagreement with each item on a five-point scale between ‘definitely agree’, scoring 4, and ‘definitely disagree’, scoring 0. The responses to the relevant items are simply summed to obtain a score on each subscale. ‘Achieving orientation’, ‘reproducing orientation’ and ‘meaning orientation’ are used as major scales in their own right. However, other measures can be determined as follows:

- comprehension learning + globetrotting = comprehension learning style
- operation learning + improvidence = operation learning style
- meaning orientation + comprehension learning + operation learning = versatile approach
- reproducing orientation + improvidence + globetrotting = pathological symptoms
- achieving orientation + versatile approach + (48 – pathological symptoms) = predictor of overall academic success.

Entwistle (1981: 274) presented some ‘provisional norms’ for this version of the ASI for arts, science and social science students. However, it would appear that these had been obtained by examining the mean responses to the relevant items in the main study reported by Ramsden and Entwistle (1981), which had of course involved the 64-item version of the ASI. In other words, the norms had been arrived at by calculating average scores as if the participants in that study had merely completed the 30 items in the shortened inventory. Their self-ratings of academic progress were found to be directly related to their scores on achieving orientation, meaning orientation and versatile approach and to be inversely related to their scores on reproducing orientation and learning pathologies. Finally, their self-ratings of academic progress were also shown to be moderately correlated with the predictor of overall academic success.

In Chapter 6, I questioned the validity of self-reports of academic progress and argued that it could not be inferred from findings such as these that academic success was the result of students adopting more desirable
approaches to studying. There is, however, a more fundamental problem in Entwistle's (1981) uncritical assumption that data obtained with the 64-item version of the ASI could used to construct norms (albeit 'provisional' ones) for the 30-item version. In deciding how to interpret items in questionnaires like the ASI, participants will make use of the immediate context: in other words, the content of neighbouring items. If the context is changed, then their responses may well be different (see Strack and Schwarz 1992). In this case, some of the context (namely, the other 34 items) has actually been removed. It should not, therefore, be assumed that students would respond to the 30-item version of the ASI in the way they respond to the relevant items when they are embedded within the 64-item version of the ASI.

It seems that this version of the ASI was intended simply as an expository device in a textbook on educational psychology, rather than as a serious research instrument. Nevertheless, Entwistle and Ramsden (1983: 53-5) referred to a 'pilot study' in which it had been modified for use with sixth form (that is, upper secondary school) students. Data were presented from a small number of students and these suggested that high scores on reproducing orientation and improvidence were associated with good academic performance in science students but poor academic performance in arts students. In a much more extensive study, Watkins (1984; Watkins et al. 1986) gave the 30-item version of the ASI to 445 secondary school children in the Philippines; a second set of responses was obtained from 425 of these children at a follow-up session 6 months later. Even when variations in their IQs had been taken into account, the children's overall academic grades were positively correlated with their scores on meaning orientation and operation learning but negatively correlated with their scores on reproducing orientation and globetrotting.

For each of the two sessions, Watkins et al. found that factor analyses carried out on the scores on the seven subscales identified two factors: one measured the subscales that Entwistle (1981) had associated with academic success (meaning orientation, comprehension learning, achieving orientation and operation learning) and the other measured the subscales that Entwistle had associated with academic failure (globetrotting, reproducing orientation and improvidence). However, the internal consistency of the subscale scores was rather low, which Watkins (1984) ascribed to the brevity of the individual scales. Ford (1985) obtained responses to this version of the ASI from 25 postgraduate students at a campus-based university in the UK. He found no significant association between their relative bias towards comprehension learning or operation learning according to the ASI and their relative degree of competence in holist or serialist learning on artificial learning tasks of the sort devised by Pask (1976). This casts doubt on whether the latter constructs are actually being measured by the 30-item version of the ASI.

Coles (1985) used the 30-item version of the ASI to compare students who were taking courses at medical schools with a traditional curriculum
and a problem-based curriculum. The students in question had very similar scores on the ASI when they began their courses. During their first year, the students who were taking the traditional curriculum showed an increase in reproducing orientation but a decrease in meaning orientation and versatile approach. However, the students who were taking the problem-based curriculum showed a decrease in reproducing orientation, with no change in their scores on any of the other scales. As a result, by the end of the first year, the students taking the problem-based curriculum showed higher scores on meaning orientation and versatility and lower scores on reproducing orientation than the students who had taken the traditional curriculum. As in the study by Newble and Clarke (1986, 1987) mentioned in Chapter 6, the problem-based curriculum seemed to have induced more desirable approaches to studying. Chessell (1986) and Mårtenson (1986) employed the same instrument to monitor approaches to studying in medical students taking traditional curricula in Scotland and Sweden, respectively.

In a study mentioned in Chapter 5, Wilson et al. (1996) gave the 30-item version of the ASI, together with Biggs’s (1985, 1987) SPQ, to two cohorts of students in the first year of a psychology programme at a campus-based university in Australia. There were modest correlations in both cohorts between the achieving orientation subscale in the ASI and the achieving approach scale in the SPQ, between the meaning orientation subscale in the ASI and the deep approach scale in the SPQ, and between the reproducing orientation subscale in the ASI and the surface approach scale in the SPQ. This suggested that there was a moderate degree of correspondence between the two instruments. However, the second cohort also produced statistically significant, negative correlations between the meaning orientation subscale of the ASI and the surface approach scale of the SPQ and between the reproducing orientation subscale of the ASI and the deep approach scale of the SPQ. Wilson et al. took this to mean that there were theoretical differences between the two instruments. Even so, no such discrepancies were found in the first cohort, and so the problematic effects may not be reliable. Consistent with the results that they had obtained with the SPQ, Wilson et al. found no sign of any gender difference in the scores obtained on the ASI in either of the two cohorts.

Fogarty and Taylor (1997) carried out a postal survey of 503 students using the 30-item version of the ASI. The students were taking a mathematics unit by distance learning as part of a preparatory skills course to qualify them for admission to an Australian university. As in the previous research by Watkins (1984; Watkins et al. 1986), the internal consistency of the seven subscales was rather low. There was some evidence for two factors corresponding to Entwistle’s measures of versatile approach and pathological symptoms, although the level of fit to this theoretical model was not satisfactory. Nevertheless, when the students’ scores on the seven subscales were combined into two scales corresponding to these factors, their level of internal consistency was much higher. Moreover, although the students’ grades in the mathematics unit showed no sign of any relationship with
their scores on the first factor, they did show a highly significant negative relationship with their scores on the second factor.

The 18-item version of the ASI

Gibbs et al. (1988) described an even shorter version of the ASI consisting of just the 18 items in the three subscales of Entwistle’s (1981) inventory that measured different orientations to studying: meaning, reproducing and achieving. Gibbs et al. themselves specifically commended this instrument for lecturers to use in evaluating their own teaching. In the UK, it was subsequently used to assess innovative forms of course design and delivery in the national programme, mentioned in Chapter 2, which aimed at improving the quality of student learning in institutions whose courses were validated by the Council for National Academic Awards. The report on this programme published by Gibbs (1992) contains accounts of ten case studies, together with evaluative data obtained from students taking the relevant course units using the 18-item version of the ASI as well as structured interviews and open-ended questionnaires.

One of the case studies in this programme concerned a unit on oceanography that was being taken by both undergraduate students and postgraduate students. In their responses to the ASI, both groups obtained high scores on meaning orientation, but the postgraduate students showed much higher scores than the undergraduate students on reproducing orientation. This result was attributed to a heavier curriculum and the pressure of examinations on the diploma course. This raises the question whether these factors are endemic to taught postgraduate courses or whether the findings were idiosyncratic to the particular unit that was being assessed in this case study. I therefore compared undergraduate and postgraduate students taking four different course units in my own department using the 18-item version of the ASI (Richardson 1998). The results did not replicate the pattern obtained in the case study; if anything, the postgraduate students tended to obtain slightly higher scores on meaning orientation and slightly lower scores on reproducing orientation than the undergraduate students. In other words, postgraduate students appear to be just as capable as undergraduate students of adopting appropriate orientations to studying, and there is no support for the idea that postgraduate students on taught courses are more likely to adopt a reproducing orientation to studying than undergraduate students on the same courses.

Previously, I had obtained responses to the 18-item version of the ASI from a large number of other students at my own (campus-based) university (Richardson 1992, 1993). Two successive cohorts of students had been asked to complete this version of the ASI at two sessions 1 week apart. In this situation, the test–retest reliability of the three scales proved to be satisfactory and their internal consistency was rather better than in the study by
Watkins (1984), who had used the 30-item version of the ASI. Moreover, there was no sign of a gender difference on any of the three scales (Richardson 1993). However, the results of a factor analysis carried out on the students’ responses to the 18 items implied that the three scales were tapping relatively specific aspects of studying rather than more global orientations.

Newstead (1992) carried out a similar study at another campus-based university in the UK. He found that the three scales in the 18-item version of the ASI had moderate levels of internal consistency, and also that there was a weak but statistically significant correlation between the students’ scores on meaning orientation and their performance in their end-of-year examinations. Newstead, too, carried out a factor analysis of his students’ responses to the individual items and this led him to recommend this version of the ASI as a ‘quick and easy’ method of assessing the quality of student learning. However, his detailed results did not actually confirm the intended structure of this instrument. Subsequently, colleagues working with campus-based students in the South Pacific obtained further evidence to support my negative evaluation of the 18-item version of the ASI (Richardson et al. 1995).

The 32-item version of the ASI

An alternative solution to the problem of the questionable status of some of the subscales in the 64-item version of the ASI is to focus on the items or the subscales that define the constructs of meaning orientation and reproducing orientation. In order to evaluate the effectiveness of a course on learning skills aimed at first-year students at a campus-based university in Australia, Ramsden et al. (1986, 1987) constructed an inventory that consisted mainly of items from the meaning orientation and reproducing orientation scales of the ASI and yielded measures of both deep and surface approaches to learning. Students showed a slight decrease in their scores on deep approach during the year, whether or not they had actually attended the learning skills course. The students who had attended the course also showed a modest increase in their scores on surface approach. Thus, the course did not induce more desirable approaches to studying (and it also did not improve the students’ academic performance). Nevertheless, the instrument used in this study was not wholly satisfactory because other investigators consistently failed to reproduce the intended structure of these two scales in terms of the constituent subscales or the constituent items. For instance, ‘extrinsic motivation’ – one of the subscales taken to define a reproducing orientation – fails to load on the same factor as the other subscales that supposedly define this orientation to studying (Harper and Kember 1989; Meyer and Parsons 1989a; see also Chapter 6).

Because of time constraints in their own research, Trigwell and Prosser (1991a, b) reduced the ASI to just three subscales: the four items in the
deep approach scale, the four items in the interrelating ideas scale and four of the six items in the surface approach scale. They gave this shortened questionnaire to different groups of students taking a campus-based nursing course in Australia. In each of the groups, the scores on deep approach were correlated with the scores on interrelating ideas, but both were essentially independent of the scores on surface approach. In other words, as in the case of the Study Process Questionnaire, individual students might score high or low on both deep approach and surface approach (see Chapter 5). Trigwell and Prosser noted the practical implication of this finding, that interventions aimed at improving the quality of student learning should be concerned specifically with encouraging a deep approach and not necessarily with discouraging a surface approach. Moreover, in each of the groups, the scores on deep approach and interrelating ideas were positively correlated with the students’ level of understanding of the syllabus, assessed using a taxonomy devised by Biggs and Collis (1982). However, Trigwell and Prosser’s use of this very short instrument was dictated by expediency, and it may provide only a very superficial glimpse of students’ approaches to learning.

In fact, Entwistle and Ramsden (1983: 51–3) carried out factor analyses on the data from their main study involving 2208 campus-based students, both on the entire sample and, separately, on the students taking each of six different academic disciplines (English, history, economics, psychology, physics and engineering). These factor analyses consistently identified a meaning orientation factor measured by deep approach, comprehension learning, interrelating ideas and use of evidence. They equally consistently identified a reproducing orientation factor measured by surface approach, improvidence, fear of failure and syllabus-boundness. It should be noted that this factor structure does not represent the intended composition of the two orientations to studying in the 64-item version of the ASI (see Box 6.1, p. 90). I therefore proposed that it was more appropriate instead to shorten the ASI by focusing upon these eight subscales, because they had been empirically identified with meaning orientation and reproducing orientation across the six different academic disciplines studied by Entwistle and Ramsden. This generates an inventory that contains 32 items and has the following structure:

Meaning orientation
Deep approach (4 items)
Comprehension learning (4 items)
Interrelating ideas (4 items)
Use of evidence (4 items)

Reproducing orientation
Surface approach (6 items)
Improvidence (4 items)
Fear of failure (3 items)
Syllabus-boundness (3 items)

The items in question can be found in an appendix to my published report (Richardson 1990). I administered this shortened instrument to two successive cohorts of campus-based students at two sessions 2 weeks apart. I was able to show that both the eight subscales and the two main orientations to
studying could be reproduced by a factor analysis of their responses. In addition, this version of the ASI was found to have levels of internal consistency and test-retest reliability that were both satisfactory and superior to those of the 30-item version of the ASI. Subsequent analyses of the same dataset showed that there was no gender difference on either orientation to studying (Richardson 1993), but that the older students obtained both higher scores on meaning orientation and lower scores on reproducing orientation than the younger students (Richardson 1995b). Moreover, despite the fact that the students had completed the ASI during the first few weeks of the first year of a 4-year degree course, there was a significant positive correlation between their scores on the use of evidence and the probability that they completed the course nearly 4 years later. There was also a significant negative correlation between the scores on syllabus-boundness and the standard of degree obtained by students who completed the course.

In Chapter 6, I mentioned a review paper by Severiens and ten Dam (1994) that suggested that any gender differences in scores on the 64-item version of the ASI were more likely to arise on the motivational aspects of studying than the cognitive aspects of studying. The 32-item version of the ASI includes only one of the original motivational subscales (fear of failure), and so the fact that I found no gender differences on the 32-item version of the ASI is entirely consistent with Severiens and ten Dam’s suggestion. However, their review found considerable heterogeneity from one study to another, which suggests that gender differences in both directions can arise in particular contexts. I also mentioned in Chapter 6 the findings of interview-based research concerning the gendered nature of the arts and sciences in higher education. Thomas (1988, 1990) found that men taking arts degrees had little difficulty maintaining their status, partly because of their dominant position in society and partly because of the encouragement of individualism within their chosen disciplines. In contrast, the experiences of women taking science degrees proved to be highly problematic, not simply because they were in a numerical minority but more because of the unconvivial culture of their chosen disciplines and academic departments.

This raises the question of whether women are disadvantaged by the coeducational nature of higher education. Hayes and I addressed this by obtaining responses to the 32-item version of the ASI from students at three Oxbridge colleges (Hayes and Richardson 1995). The first was a single-sex college at which all of the students and members of academic staff were female. The second had been a women's college but, at the time of our study, admitted both men and women, in roughly equal numbers, to be taught by both male and female tutors. The third college had been a men's college but at the time of our study admitted both men and women, in a proportion of 2:1, to be taught by an almost entirely male academic staff. We found that the scores obtained by male students on the ASI were similar in the last two colleges, except that those taking science courses produced much higher scores on syllabus-boundness in the third college (the more
'male' environment) than in the second college (the more 'female' environment). This suggests that in a predominantly male environment men rely more on staff to define their learning tasks. However, the female students obtained higher scores on meaning orientation if they were taking arts courses in the first college (in a 'female' environment) or science courses in the third college (in a 'male' environment). We came to the conclusion that female students adopted more desirable approaches to studying when the gendered nature of their academic discipline accorded with the gendered quality of their learning environment.

More recently, colleagues and I used the 32-item version of the ASI to evaluate the impact of a multimedia variant of the Personalized System of Instruction (or 'Keller Plan') in the context of a mathematics course (Hambleton et al. 1998). We noted the evidence that students will adopt different approaches to studying in different contexts in response to the perceived demands of the learning situation (see Chapter 2). Most of this evidence comes from structured interviews with students taking different courses, except for the investigation by Eley (1992) mentioned in Chapter 5, which involved the SPQ. In all these studies, any differences in the approaches to studying adopted in different learning situations were essentially fortuitous because no attempt had been made to manipulate the courses that were being taken. This left it unclear whether desirable changes in approaches to studying could be brought about by the use of specific interventions. The Personalized System of Instruction (PSI) is a kind of programmed instruction that employs a highly structured, student-centred approach to course design and it might, therefore, be expected to bring about a shift towards a meaning orientation to studying.

We asked mathematics and computer science students to complete the 32-item version of the ASI on two separate occasions about two different courses. One course had been constructed in accordance with the features of PSI and was additionally supported by an interactive hypertext software package with video feedback on the students' solutions to problem-based coursework. The other course was delivered in a conventional manner by means of two lectures and a group tutorial each week. Overall, the scores on meaning orientation were significantly higher for the PSI-based course than for the conventionally delivered course. This effect was mainly apparent in the subscales concerned with comprehension learning and the use of evidence. There was no difference in the scores on reproducing orientation between the two courses. These results show that desirable changes in approaches to studying can be brought about by specific interventions. However, the effect was small and was statistically significant only in the computer science students and not in the mathematics students. Paradoxically, then, the intervention had failed to induce the desired changes in those students who were intended to be its chief beneficiaries.

In Chapter 6, I pointed out that the constituent structure of the original, 64-item ASI had been confirmed in factor analyses carried out on data obtained in many different countries around the world. However, these
analyses were based on students' subscale scores and hence they took for
granted the empirical integrity of the subscales themselves. Indeed, the
findings of the investigation by Speth and Brown (1988) suggested that the
underlying structure of the ASI might not transfer well to the US. I had an
opportunity to obtain data with the 32-item ASI from students at a campus-
based university in that country (Richardson 1995a). The results of a factor
analysis carried out on their responses to the 32 items indicated the presen-
tce of eight factors. Several of these factors were broadly analogous to
some of the original subscales, and a higher-order factor analysis demon-
strated that they could be subsumed within two overarching dimensions
that could be recognized as a meaning orientation and a reproducing or-
ientation. However, the exact composition of the first-order factors differed
considerably from that which had originally been specified by Ramsden and
Entwistle (1981), and I concluded that these two orientations to studying
were interpreted in a manner that was distinctive to the cultural context.

Together with colleagues at another campus-based university in the US, I
found very similar results in a study of deaf and hearing students who were
taking the same courses (Richardson et al. 2000). In this case, the 32-item
version of the ASI had the following structure:

**Meaning orientation**
- Comprehension learning
- Critical approach
- Seeking internal structure
- Strategic memorization

**Reproducing orientation**
- Academic anxiety
- Needing external structure
- Relating ideas (scored in reverse)
- Time pressure

There were statistically significant differences between deaf students and
hearing students on four of these subscales. On the one hand, the deaf
students showed more anxiety about their academic work and found it
more difficult than the hearing students to relate ideas on different topics;
the latter effect was more marked in deaf students who preferred to com-
municate by sign language. On the other hand, the deaf students were
more likely than the hearing students to adopt a critical approach and to
analyse the internal structure of topics they were studying.

Cultural contexts can obviously vary geographically, from country to coun-
try, but they can also differ from one institution to another. Colleagues and
I had an opportunity to obtain data with the 32-item ASI from students
taking 'Access' courses at several colleges of further education (Hayes et al.
1997). These courses are intended for older students who are returning to
formal education but who lack the normal entrance qualifications that are
required by most institutions of higher education in the UK. They are
similar to the foundation courses studied by Meyer et al. (1990b, 1992) in
South Africa (see Chapter 6) and to the 'preparatory' programmes organ-
ized by some Australian universities, but they embody values and goals that
are educationally and socially radical and different from those of most
mainstream programmes in higher education (see Brennan 1989). The
results of a factor analysis carried out on the responses given by 241 participants once again indicated the presence of eight factors, but there was an extremely poor fit to the original structure of the ASI. The first-order factors could in turn be subsumed within three higher-order factors that were described as meaning orientation, dependent orientation and mature orientation. The second of these was essentially independent of the other two and could be construed as a form of reproducing orientation; the first and third were correlated with each other and could be loosely construed as different aspects of meaning orientation. However, the important point was that these orientations were distinctive to the context of Access courses and qualitatively different from those that tend to be exhibited by conventional university students.

Provost and Bond (1997) administered the 32-item version of the ASI to 187 students who were starting the second year of an undergraduate course in psychology at a campus-based university in Australia. They did not report the results of any factor analyses, but the internal consistencies of the students' scores on the eight subscales were generally low and, in most cases, poorer than the values that I had obtained in my original study in the UK (Richardson 1990). The internal consistencies of the students' scores on the two overall scales (meaning orientation and reproducing orientation) were more acceptable, although the scores showed few significant relationships with students' performance in different academic assessments. Provost and Bond suggested that the ASI was insufficiently grounded in actual studying behaviour and that it was vulnerable to a social desirability bias: that is, students' responses to the items in the ASI reflect their perceptions of desirable approaches to studying rather than their actual studying practices. However, a different possibility is that the detailed constituent structure of the 32-item version of the ASI (and also, by implication, of other versions) simply does not transfer very well, even to the superficially similar cultural context of Australian higher education.

Woodley and I employed the 32-item version of the ASI to compare distance-learning students with and without hearing loss at the Open University in the UK (Richardson and Woodley 1999). In this study, 382 students with varying degrees of self-reported hearing loss were compared with 190 students who were taking the same courses and had no declared form of disablement. The results of a factor analysis of the students' subscale scores produced two factors: one measured deep approach, interrelating ideas, use of evidence and comprehension learning; the other measured surface approach, syllabus-boundness, improvidence and fear of failure. This confirms the intended structure of this version of the ASI when it is used with a distance-learning population. These two factors were essentially independent of one another, which implies that individual students might score high or low on both meaning orientation and reproducing orientation. I discussed the implications of this result earlier in connection with the short version of the ASI that was devised by Trigwell and Prosser (1991a; see also Chapter 5).
Woodley and I found no difference between the two groups of students in terms of their scores on meaning orientation. This demonstrates that students with a hearing loss are just as capable as other students of engaging with the underlying meaning of learning materials. Nevertheless, there was a slight tendency for the students with a hearing loss to obtain higher scores than the students with no hearing loss on reproducing orientation, and this was associated in particular with increased scores on fear of failure. Informal comments appended to the questionnaire by many of the students with a hearing loss indicated that the latter finding could be attributed to negative experiences in tutorials and in other encounters with members of academic staff. We therefore concluded that academic staff needed to be appropriately trained to ensure that they encouraged a positive self-concept in students with a hearing loss.

The Revised Approaches to Studying Inventory

In 1992, a Revised Approaches to Studying Inventory (RASI) was devised by Entwistle and his colleagues. This contained 60 items in 15 subscales measuring five main constructs: deep approach, surface approach, strategic approach, apathetic approach and academic aptitude. It was then reduced to an inventory containing 38 items in 14 subscales that measured five major dimensions (see Tait and Entwistle 1996). The subscales are listed in Box 7.1 and the individual items can be found in an appendix to an article by Waugh and Addison (1998). In each case, respondents are instructed 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 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. As in the case of the ASI, all the items reflect the meaning of the corresponding subscales and so the RASI, too, is vulnerable to a response bias either to agree or to disagree with all of the items.

Sadler-Smith (1996) obtained responses to the RASI from 245 students on a course in business studies at a campus-based institution in the UK. The internal consistencies of the major dimensions were high, except for the ‘lack of direction’ scale, which was extremely low. A factor analysis carried out on the students’ subscale scores yielded five independent factors that showed a good fit to the intended structure of the RASI. Moreover, academic performance on the course in business studies showed modest positive correlations with the scores on deep approach and strategic approach. The older students obtained higher scores on deep approach but lower scores on surface approach and lack of direction than the younger students. The men obtained higher scores on deep approach and academic self-confidence but lower scores on surface approach than the women. As mentioned earlier with regard to the 32-item ASI, such differences may reflect the specific situation or context in which the course was being taught.
Box 7.1 Subscales contained in the Revised Approaches to Studying Inventory

Deep approach
Looking for meaning (2 items)
Active interest/critical stance (2 items)
Relating and organizing ideas (3 items)
Using evidence and logic (3 items)

Surface approach
Relying on memorizing (2 items)
Difficulty in making sense (2 items)
Unrelatedness (2 items)
Concern about coping (4 items)

Strategic approach
Determination to excel (2 items)
Effort in studying (2 items)
Organized studying (3 items)
Time management (3 items)

Lack of direction (4 items)

Academic self-confidence (4 items)

Source: Tait and Entwistle 1996: 107

Duff (1997) carried out a similar study with business studies students at another campus-based institution in the UK using only the 30 items in the RASI that measured the three main approaches to studying. Once again, the internal consistencies of the main scales were high and a factor analysis conducted on the students' subscale scores yielded three factors that could clearly be identified with the three approaches to studying. The 'deep approach' factor was highly correlated with the 'strategic approach' factor but both were independent of the 'surface approach' factor. Another factor analysis was carried out on the students' responses to the 30 individual items. On the one hand, this too generated three factors that could also be identified with the different approaches to studying; once again, the 'deep approach' factor was highly correlated with the 'strategic approach' factor but both were independent of the 'surface approach' factor. Nevertheless, on the other hand, the factor solution provided no support for the existence of any identifiable subscales within these three factors.

Sadler-Smith and Tsang (1998) administered the RASI to 183 students taking a general degree course in business studies at a campus-based
institution in Hong Kong and compared the results with those obtained from 225 of the British students described by Sadler-Smith (1996). In the Hong Kong sample, the internal consistencies of the lack of direction and academic self-confidence scales were unsatisfactory and so these scales were omitted from further analysis. Factor analyses carried out on the students' subscale scores yielded three factors in both of the samples that could be readily identified with deep approach, surface approach and strategic approach. One interesting anomaly was that the 'relying on memorizing' subscale produced a positive loading on the 'strategic approach' factor in the British sample but a positive loading on the 'deep approach' factor in the Hong Kong sample. This fits with the different notion of the role of the memorization among Chinese students that was discussed in Chapters 2 and 3.

Sadler-Smith and Tsang found that there were relatively few correlations between the students' scores on the subscales of the RASI and their academic performance. For Hong Kong students, scores on organized studying were positively related to their current and cumulative grade point averages, and scores on difficulty in making sense were negatively related to their current grade point averages. For the British students, none of the subscales was significantly related to their marks on the module in which the RASI was administered, but their aggregate marks across 12 modules were positively correlated with their scores on using evidence and logic, relating and organizing ideas, active interest/critical stance and effort in studying, and negatively correlated with their scores on difficulty in making sense. The British students tended to produce higher scores than the Hong Kong students on all of the subscales except unrelatedness and concern about coping. Among the Hong Kong students, older students tended to produce higher scores on deep approach and strategic approach in the case of the men, whereas older students tended to produce lower scores on deep approach and strategic approach in the case of the women. No explanation was offered for these findings, or for the disparity with the findings in British students.

Waugh and Addison (1998) administered the RASI to 346 students in their first year of courses in business studies at a campus-based university in Australia. In this study, the middle response category ('only to be used if the item doesn't apply to you or if you really find it impossible to give a definite answer') was omitted from the response scale to ensure that the participants were using an ordered response format. Waugh and Addison then applied the analytic model devised by Rasch (1960) to assess whether the items in the RASI defined a single coherent scale. They concluded that the psychometric properties of the RASI were broadly satisfactory but that there was some scope for improvement in the selection and wording of the constituent items. In a subsequent study, Waugh (1999) obtained similar results when he asked another sample of 369 students from the same institution to respond to the 38 items, first with regard to their attitudes to studying and then again with regard to their actual studying practices.
There is, however, a fundamental problem, in that the method devised by Rasch was originally intended to assess whether a test of ability or intelligence containing a series of different items was measuring a single ability (see, for instance, Wright and Stone 1979). It therefore assesses whether the empirical data can be fitted by a single dimension and, to achieve this, Waugh and Addison had to score items on the surface approach and lack of direction scales in reverse, as if they simply measured the converse of the remaining scales. Nevertheless, the results that were obtained by Sadler-Smith (1996) and by Duff (1997) show that the surface approach scale is actually independent of both the deep approach scale and the strategic approach scale, as one might well have expected from research using the SPQ (see Chapter 5) or short versions of the ASI (Trigwell and Prosser 1991a; Richardson and Woodley 1999). It follows that the use of a uni-dimensional model to capture the structure of the RASI is misleading and inappropriate. (It is interesting, in this regard, that the items Waugh found to be most problematic in both of his studies tended to come from the surface approach scale.) Having said this, the individual scales of the RASI are intended to be uni-dimensional and the reservations expressed by Waugh and Addison with regard to their item composition will need to be addressed in future research.

In short, the RASI does not appear to represent an improvement on earlier versions of the ASI. At the time of writing (September 1999), no research studies have been published in which the RASI was administered to students taking courses by distance learning. It is, however, being used by a number of researchers at the Open University in the UK. For instance, Calder et al. (1995) used an extended version to compare vocational training courses being run by colleges of further education and those being run in-house at various companies. Students on company schemes tended to obtain higher scores on academic self-confidence and lower scores on surface approach than students at colleges of further education, but there were no significant differences between the scores obtained by students taking traditionally designed courses and those obtained by students taking courses designed on open-learning principles (see Chapter 1). A fundamental problem, however, is that the RASI is a substantively different instrument from the ASI and thus it will not be possible to compare findings obtained using the RASI with the established body of research literature obtained using different versions of the ASI.

Concluding summary

- The 30-item version of the ASI consists of seven subscales measuring a versatile approach to learning (associated with success) and pathological symptoms (associated with failure). The three subscales measuring achieving, meaning and reproducing orientations are correlated in an appropriate manner with the achieving, deep and surface scales of the SPQ.
The 18-item version of the ASI consists solely of the subscales measuring different orientations to studying. The 32-item version of the ASI consists of the eight subscales that have been shown to be most consistently related to meaning and reproducing orientation in campus-based students. Finally, the RASI is a relatively new instrument intended to measure the same constructs.

- The 30-item and 32-item versions of the ASI have been shown to be sensitive to the nature of the curriculum (traditional versus innovative), and the 32-item version has been shown to be sensitive to differences between individual students related to their age. Typically, men and women produce similar scores on these instruments, although gender differences can be obtained in particular disciplines and in overtly gendered academic environments. Finally, the 32-item version of the ASI has been used to investigate the impact of hearing loss upon approaches to studying in higher education.

- The factor structures of the 30-item and 32-item versions of the ASI have been reproduced in research studies carried out with distance-learning students. However, there are problems in transferring these instruments to different cultures and different systems of higher education. Evidence from two research studies in the US confirms the existence of two broad orientations underlying the 32-item version of the ASI but indicates that they are interpreted differently in this context. In addition, the factor structure of the 32-item version of the ASI appears to be different when it is administered to 'Access' students in the UK.

- The 30-item and 18-item versions of the ASI are not adequate from a psychometric point of view and cannot be recommended as research instruments, although the 30-item version can be used to generate global measures of a versatile approach and of pathological symptoms. The 32-item version of the ASI appears to possess satisfactory psychometric properties and can be recommended as a useful instrument for both research and practice. In the case of the RASI, the three main scales appear to be psychometrically sound but there is little support for the underlying subscales and doubts have been expressed about the selection of items.