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Autonomy-related psychological characteristics of students in higher education.

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To Mum and Dad

Summary: Autonomy-related characteristics of students in higher education.

Autonomy in learning has long been recognised as an important outcome of higher education. However, not only is learner autonomy not directly measurable but there appears to be no consensus, within the psychological literature, about its definition. This study proposed that, from a number of theoretical perspectives, certain psychological characteristics underpin learner autonomy in students. Of interest were the nature of and changes in these characteristics during the first two years of study at university. Students from across the university were measured on self-perceptions, motivation, locus of control and approaches to study. Data was collected at first year registration and at six-monthly intervals across the next two years. Analysis of the data compared the autonomy-related variables across time, age and sex.

From the results it appeared that most of the variables were relatively stable over time, that sex differences were not generally apparent and that age differences were less widespread than orginally hypothesised. Factor analysis of the locus of control data raised some interesting issues about students' definitions of ability which are discussed. Some of the findings within motivation suggest that external regulation may be an important feature of an autonomous learner's reasons for studying, contrary to theory. When divided by level of self worth high self worth students scored significantly higher on autonomy-related variables than did those with low self worth which, given the nature of the classification of the groups, was surprising. A similar division using deep approach scores was less convincing but nevertheless in line with the hypotheses. Correlational analyses revealed significant, moderate associations between autonomy-related variables as predicted and factor analysis confirmed relationships between variables as hypothesised. Regression and other analyses however, indicated that there was no strong link between 'high' autonomy characteristics and degree classification.

The findings are discussed in relation to the proposals concerning autonomy and it is concluded that, whilst most undergraduates report encouraging patterns of autonomy-related psychological characteristics, the complexity of the concept of autonomy in learning demands much more research. The positive implications of the findings in this study are discussed in relation to the current threats to autonomy within the higher education context.

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Preface

The thesis structure

The first two chapters provide reviews of the literature relevant to a psychological perspective on autonomy as background to the empirical work. The third chapter discusses some of the wider contextual issues that are proposed to affect learner autonomy through more distal means. This chapter also provides the context for the study that affected its design. Chapter four details the instruments that were used in the study whilst chapters five and six report the descriptive, empirical work. Subsequent chapters explore relationships between the variables measured, seeking to support the thesis as set out in chapters one and two. A final chapter endeavours to provide an holistic perspective on the findings of the study in relation to autonomy in learning and discusses some of the implications of the research for enhanced learning at a higher level.

.....and a warning

Whilst the data has been gathered and analysed conscientiously and with integrity, the results are nevertheless subject to my interpretation and limited by my skill The reader of this thesis is therefore urged to bear in mind the following words of Bronowski in his book 'The Ascent of Man' (1976):

There is no absolute knowledge. And those who claim it, whether they are scientists or dogmatists, open the door to tragedy. All information is imperfect. We have to treat it with humility. That is the human condition. Science is a very human form of knowledge. We are always at the brink of the known, we always feel forward for what is to be hoped. Every judgement stands on the edge of error and is personal. Science is a tribute to what we know although we are fallible. In the end the words were said by Oliver Cromwell: "I beseech you, in the bowels of Christ, think it possible you may be mistaken." ' (pp. 353 & 374).

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And then there is my best friend John without whom this research would have had no beginning, middle or end. John, your faith in me appears to have been unswerving. You have always provided me with the secure base from which I could explore and take risks and the encouragement to keep going once I had stepped out. During the last eighteen months you have also unselfishly created the space for me to write. There are simply no words that can adequately express my gratitude for your personal and professional strength and expertise over many years.

1 Aspects of Autonomy

In this chapter literature concerning autonomy, motivation, perceptions of competence, perceived locus of control and approaches to study is reviewed. Theories and empirical evidence are discussed to provide a background to the various sections of the thesis which follow.

1.1 Introduction

In recent times, in western cultures, the autonomy of individuals has become increasingly valued in parallel with an emphasis on 'the self'. Higher education is expected to facilitate the development of autonomy-related behaviour (see for instance, Stephenson & Laycock, 1993) and recent discussions about the outcomes of higher education across Europe have highlighted the important link between the autonomy-related characteristics of graduates and the perceived needs of employers and ecocnomic growth. It is argued (see for instance, Biatecki & Domanski, 1995; CBI, 1994; Fuente, 1995; Teichler & Kehm, 1995) that the difficulties of forecasting employment needs demands a more flexible workforce which must be committed to life-long learning, self-education, development of work-related competences and with a predisposition to seek challenges and change. Higher education has to provide its students with opportunities to develop in ways other than simply the acquisition of a narrow expertise if these employment needs are to be met. Teichler and Kehm (1995) also argue that there is an interactive effect between the modern graduate and the work-related tasks that they undertake in that:

> *'..higher education differs from other pre-career education in its critical and innovative function. Graduates should not merely be prepared to take over given tasks and to apply rules, but also to reconsider and to reshape the tasks themselves. They might have to acquire skills and learn rules but they also have to be capable and motivated to question established professional practices and*

to cope with undetermined work tasks. They not only have to be prepared for current tasks, but they also have to anticipate and to press for innovations.' (p.119).

To function in this way requires a degree of autonomy with an informed objectivity which enables the individual to have the confidence to stand back and effectively reconstruct the situation which is being faced. Although the relationship between higher education and employment is important within the autonomy context, and was undoubtedly the stimulus for funding of this research by the (then) Employment Department, the educational implications of autonomy in learning are of undeniable importance for well-being in a wider context, of which employment is only a part. The focus on the acquisition of learning skills within a personal development framework is one of the central tenets of lifelong learning and the need to be able, and willing, to apply these learning skills to a variety of life events is particularly salient in the modern world.

Some of the research into learner autonomy is discussed within this thesis which reports a longitudinal study of psychological characteristics of undergraduate students hypothesised to relate to autonomy in learning.

1.2 Autonomy

The drive for autonomy is recognised as an essential element of human development which is strikingly demonstrated by the 'terrible' two year old and by adolescents and, in a less dramatic sense, by adults. Deci, Vallerand, Pelletier & Ryan (1991) state that:

'....autonomy refers to being self-initiating and self-regulating of one's own actions' (p.327)

describing it as a basic human need which we seek to satisfy along with competence and relatedness. It involves elements of personal control (Doyal & Gough, 1991) and intention to act in a way which meets personal needs, but our

ability to behave autonomously is affected by other variables such as self-efficacy (Bandura, 1989b), skill (McCombs & Marzano, 1990), locus of causality (Ryan & Connell, 1989), locus of control (Rotter, 1966), sense of self (Deci & Ryan, 1985a, 1991; Koestner, Bernieri & Zuckerman, 1992; McCombs & Marzano, 1990) and volition (Corno, 1993). Autonomy is not an anarchic state in which the individual acts egocentrically and independently of others and of his or her surroundings. Rather it is effected by a sense of self that provides a framework of beliefs, attitudes and values to guide behaviour and a perception of personal control over actions that are congruent with the self. Deci and Ryan (1991) argue that it is not appropriate to equate autonomy with independence, suggesting that:

> *'One **can** be autonomously interdependent, thus being willingly dependent on others and authentically providing care for others. In addition one can be nonautonomous in one's independence, by breaking relational ties to prove one's self worth or appease some other controlling forces.' (p. 273).*

Autonomy can be expressed in a number of ways, just as the self-construct is individualised. For some people the choice will be to behave in ways that are other-centred whilst for others personal achievement is the main focus.

Autonomy involves the very human characteristic of being able to apply cognitive skills to understand the world and the self, to predict events and to recognise event-contingencies, to understand relationships in time and space, to make decisions based on a moral code and to be able to reconstruct in abstract form for problem solving. Minimally, according to Doyal and Gough (1991) autonomy is:

> *'to have the ability to make informed choices about what should be done and how to go about it. This entails being able to formulate aims, and beliefs about how to achieve them, along with the ability to evaluate the success of these beliefs in the light of empirical evidence. Aims and beliefs – 'our own' reasons – are what connect us logically with 'our own' actions....In these minimal terms*

autonomy is tantamount to agency. It is a precondition for regarding oneself – or being regarded by anyone else – as being able to do, and to be held responsible for doing, anything.' (p.53).

The authors also note that this description does not differentiate slave masters from their slaves as long as slaves are given sufficient orders and allowed to use their own judgements about the successful completion of tasks. In a similar way students in higher education who are following a tightly prescribed programme of study with little opportunity to make choices might feel that their potential for autonomy is constricted although they have made an active choice to join the institution with its rules, regulations and demands.

Clearly the environment in which we operate and the society within which we develop will affect our behaviour. As Doyal and Gough (1991) point out:

'...individuals discover who they are through learning what they can and cannot do. Individual action is social to the extent that it must be learned from and reinforced by others. Actors are socialised into following rules – expressions of collectively-held and enforced aims and beliefs....Such rules constitute the parameters of our sense of self and of others ... Thus the autonomy necessary for successful action is not compromised by the necessity to follow rules- quite the opposite' (p.77)

If we have actively chosen to become part of a particular group or organisation (rather than it being an accident of birth) then we also accept the control over our behaviour that is required within that context. Doyal and Gough use the example of a chess player who accepts the rules of the game but who has many opportunities to demonstrate autonomy in the way that he or she chooses to play the game within the framework of rules. The nineteenth century philosophers, Kant and Hegel argue that we demonstrate our autonomy by choosing to live by a moral code that is personally determined (Kant) or decreed by the State (Hegel, in Cooper, 1996). Students in higher education have chosen to be at university and

accept the responsibilities and demands of the learning environment without apparent detriment to their autonomy perceptions.

Autonomy can be experienced even in environments such as prisons which are inherently controlling as the following excerpt from Nelson Mandela's account of his experiences on Robbins Island indicates:

> *'For us, such struggles - for sunglasses, long trousers, study privileges, equalized food - were corollaries to the struggle we waged outside prison. The campaign to improve conditions in prison was part of the apartheid struggle. It was, in that sense, all the same; we fought injustice wherever we found it, no matter how large or how small, and we fought injustice to preserve our own humanity.' (p.482).*

Brehm, (1966 in DeCharms,1968, p. 336) links the loss (or perceived loss) of behavioural freedom with a motivationally aroused state that leads to activity to counteract the reduction of choice. He labels this state 'psychological reactance'. Seligman (1975 in Weiner, 1992), however, describes a state of learned helplessness in which, over a long period of time, individuals have learned to expect that they cannot control their destinies. DeCharms (1968) would describe these people as perceiving themselves as 'pawns' in that they do not feel that they are agents of their own actions but are constantly at the mercy of others who make decisions for them. DeCharms is, however, describing an acute state in which we all find ourselves at times whilst Seligman's subsequent studies investigated a more chronic state or perceived helplessness that is often linked (though not necessarily) to depression.

For the purposes of this research, autonomy is investigated within the context of the higher education learning environment. It is a somewhat ephemeral, multidimensional and complex concept for which no adequate measurement instrument is as yet available. The concept adopted by this thesis goes beyond what Deci and Ryan (1985a) describe within Self-Determination

Theory in that it proposes that autonomy in learning involves more than an intrinsic motivational orientation with its self-initiation and self-regulation of actions. Autonomy in learning cannot simply be measured by using motivation to study as an indicator but must also involve consideration of the students' perceptions of the control that they have over the outcomes of their learning activities. Whilst an intrinsic motivational orientation is clearly important for autonomy, the opportunity for students, whose long term goal is to achieve a degree, to *be* purely intrinsically motivated is limited by prescribed programmes of study, assignments and deadlines. The value framework of the self, determining individuals' goals and the extent to which these goals are pursued, is a central, pivotal element of autonomy and can be partly inferred from the motivational orientation reported by individuals.

Two other variables are proposed to interact with motivation to determine autonomous behaviour. A self-assessment of competence - a perception that personal resources are or are not adequate to deal with the demands of degree work - affects whether or not students feel that they are in a position to achieve what they set out to do within higher education. These self-assessments are related to perceptions of control Similarly perceptions of whether the success or failure outcomes of study are under personal control, controlled by others or by circumstances, will affect learner autonomy and achievement.

Deci et al. (1991) acknowledge the relationship between competence, control over outcomes and autonomy but emphasise their view that greater importance should be attached to the motivational aspects of self-initiated and self-regulated behaviour in autonomy. Bandura's focus on self-efficacy as providing the explanation for much of human achievement behaviour, although strongly supported in the research literature (e.g. see Bandura, 1997), has not always adequately differentiated self-efficacy from other theoretical constructs such as expectancy-valence and competence motivation (Pajares, 1996). Aspects of control clearly provide links between motivation and competence assessments in achievement settings. According to Heckausen and Schultz (1995) a basic human drive is to achieve primary control - i.e. to be able to have an effect on our environment. When we lose primary control, secondary control processes allow

us to protect self esteem and adjust our strategies in order to regain or maintain primary control. The strategies described by Heckhausen and Schultz are closely related to those such as discounting and self-serving discussed by Harter (1986) in relation to self-worth and perceptions of competence and have considerable overlaps with the research on motivated behaviour.

This thesis proposes that motivation, competence self assessments and perceptions of control are inextricably linked in providing the necessary psychological context in which autonomous learning can occur but that none is, in itself, sufficient to provide the basis for an assumption of autonomy in learning. Consequently this investigation is concerned with three major psychological elements of autonomy - motivation, locus of control and perceived competence - in a higher education learning context and has considered these in relation to students' approaches to study.

1.3 Motivation

Motivation concerns the intention behind, initiation and regulation of behaviour, providing direction and energy to that behaviour. There are numerous theories concerning motivation which could provide a useful theoretical basis for the study of autonomy (see, for instance, a review of motivational theories by Weiner, 1992). From the beginning of modern psychology, researchers have been fascinated by the reasons for acting that underpin individual differences in behaviour (James, 1892). For the purposes of this research into autonomy the most relevant theory of motivation was considered to be that of Self-Determination (Deci & Ryan, 1985a) which distinguishes between those activities which are engaged in for intrinsic and extrinsic reasons. Self Determination Theory is particularly concerned with the extent to which activities are considered important to the individual ie. internalised and:

> *'engaged in wholly volitionally'* (Deci, Vallerand, Pelletier & Ryan, 1991; p.326).

At the highly-internalised end of the internalisation continuum is *intrinsic motivation* to act. Intrinsically-motivated behaviour is self-initiated, congruent with the individual's sense of self (aspirations, values and beliefs), self-satisfying and self-regulated (Deci & Ryan, 1985b). Actions which are intrinsically-motivated are engaged in for their own sake and not for any instrumental reasons and it may be that this very pure form of intrinsic motivation is quite rare in most people's everyday activity.

Extrinsic motivation is that which stimulates action for instrumental reasons, where the action is perceived as having some purpose other than that which is purely self-satisfying. The reason for acting is thus perceived as being, to a greater or lesser extent, 'external' to the constructed self. Extrinsic motivation is described by Deci et al. (1991) as a continuum from that which is entirely externally-generated (and not congruent with self-needs or desires) to that which is internalised by the individual as personally-valued although initiated and regulated external y The internalisation continuum from intrinsic motivation, through the components of extrinsic motivation (integrated regulation, identified regulation, introjected regulation and external regulation) describes a shift from total self-determination to an externally-determined regulatory functioning in which individuals do not perceive themselves to be the agents of their actions.

Integrated regulation relates to reasons for acting that are strongly internalised in that action is congruent with, and supportive of, the perceived self but where there is also an instrumental reason for acting to achieve a personally-valued goal. For instance, students whose behaviour is regulated at this level will be motivated to complete an assignment that is of interest to them but which is not self-initiated in that it is a requirement of the degree. He or she will, however, apply more time and effort to the task than is required as it is perceived as personally relevant, interesting and valued. *Identified regulation*, a stage further away from integrated regulation, describes a motivational orientation in which the outcome of the activity is valued because of its contribution to personally-relevant goals and thus for its longer-term implications. The assignment in this case is important to the individual because it will contribute to the eventual degree

classification and effort will be applied to make sure that it receives a good grade. The assignment is, in itself, not as personally valued as in integrated regulation however. In *introjected regulation* the motive for activity is stimulated by negative affect such as fear of failure and feelings of guilt, by a need to gain respect from or to please others or to gain a reward. Compliance with the extrinsic regulation but not acceptance of it is a feature of this type of motivation and it is not considered to be a self-determined form of motivation (Deci et al., 1991). Students who experience this kind of motivation will write an assignment to pass a module but will not attach any inherent value to the learning and will not perceive that they have a choice in the activity.

An *external regulation*, at the far end of the internalisation continuum from intrinsic motivation describes reasons for acting that are totally extrinsic to the individual Externally- regulated students do not value their learning and are only engaged in it because they perceive that they have to fulfill external requirements or gain instrumental goals. Degree study might be considered to be externally regulated if it is only engaged in to gain a desired job in the future and not for any direct interest or relevance to the individual. In this case the learning activities are not congruent with the sense of self and its framework of values, attitudes and beliefs An *amotivational state* is also described by Deci et al. (1991). Students who are amotivated are simply not interested in taking part in study at all, often question why they at university and are quite likely to leave early in the programme unless they become motivated to study, either extrinsically or intrinsically.

Deci and Ryan link notions of autonomy with motivation at the intrinsic end of the intrinsic-extrinsic continuum. Ryan and Stiller (1991) however, argue that extrinsic motivation is not always the antithesis of autonomy in that, with different degrees of internalisation of extrinsic motivation (e.g. Ryan & Connell, 1989), integrated and identified regulatory motvation can enable autonomy to be exercised. The extent to which individuals' reasons for behaving are internalised, owned and valued determines the extent to which those individuals are able to behave autonomously

There is a wealth of research that provides evidence for the link between positive achievement behaviour and an internalised motivational orientation (see for instance Blais, Vallerand, Gagnon, Brière, & Pelletier, 1990; Meece, Blumenfeld & Hoyle, 1988; Ryan, 1995; Vallerand, 1997). Vallerand argues that the cognitive and affective consequences of motivational orientation should be considered as important as are the behavioural consequences, although there are clearly interactions between all three 'consequence' categories. The direction of the effect might not always be in the same direction for each category however. For instance, when external regulation (fear of punishment) requires us to wear seat belts in cars, behaviourally we might comply (i.e. positively), cognitively accept the rationale behind the legal requirement (a positive consequence) but react with negative affect in that we feel uncomfortable and are also anxious that in particular kinds of accidents our safety might be detrimentally-affected.

Vallerand (1997) proposes a hierarchical model of motivation in which three operational levels can be identified. In Vallerand's model individuals, at a global level, have a predisposition to be intrinsically motivated, extrinsically motivated or amotivated. This predisposition is carried down to the contextual level in which Vallerand identifies three different contexts - education, interpersonal relations and leisure. Although the predisposition of individuals affects the likelihood that a particular orientation will be adopted at this second level, motivation within each of the contexts may differ from each other. The third level is that at which the effect of motivation on behaviour is most easliy measured and is labelled by Vallerand as the situational level When faced with a particular task within a context, motivational orientation to that task can be different from general orientation to the context and from other tasks in the context. For instance a student might be intrinsically motivated to study but might be extrinsically motivated to write a particular essay in which there is no personal interest whilst motivated at the intrinsic end of the continuum to complete a project for the degree.

1.4 Perceived Competence

Perceptions of competence are known to have a powerful effect

on achievement behaviours such as persistence, seeking challenges, curiosity, application of effort and selection of activities (e.g. Harter, 1990). Expectations for successful outcome of activities and levels of anxiety are also affected by self perceptions (Harter, 1985; Bandura, 1989, 1997). Several levels of self-evaluation have been described in the literature. Harter (1985, 1990) describes global self worth (self esteem) as a general, overall assessment of personal value. In her multidimensional model of the evaluative self, global self worth is a construct of perceptions of competence in separate domains. Individuals differentiate between domains in which they perceive themselves to be more or less competent and these competence assessments may affect global self worth positively or negatively. In a domain on which individuals place importance, in which they aspire to be competent, a low perception of competence will depress global self worth whilst a high perception of competence will increase self worth (Harter, 1986). Based on James' (1892) notion of discrepancies between aspirations and achievements, Harter proposed that a discrepancy score can be calculated that reflects differences between the value that an individual places on a domain and his or her perception of competence to achieve in the domain. The individual's profile of domain-related discrepancies can be used to predict an overall sense of self worth and its associated behaviours.

Byrne (1996) cautions however, that discrepancy scores are likely to be statistically unreliable for several reasons. The first is that when two measures are correlated, as is anticipated with competence and importance scores, the reliability, being typically inversely related to the correlation between the two measures, is low. Secondly, because the discrepancy score is calculated arithmetically from two independently-measured scores it is difficult to identify the source or validity of the variance of the discrepancy score. Additionally using the discrepancy score as interval data is questionable as it is constructed by subtracting one interval score from another and not measured directly. Marsh (1994 and Marsh & Hattie, 1996) argues that there is no empirical evidence to support the interaction between between perceptions of domain-specific importance and competence and self-esteem. Whilst evidence for the relationship may be equivocal, intuitively the value-expectancy relationship that is well-

established theoretically and empirically in other areas of human functioning (see for instance, Colquitt & Simmering, 1998; Hollenbeck & Klein, 1987; Mathieu, Tannenbaum & Salas, 1992; Vroom, 1964; Weiner, 1992) would seem to be applicable in this area also.

Harter's extensive work in the area has identified age-related differences in the number and type of domains in which we assess our competence. From childhood to adolescence there is an increased number of domains in which perceptions of competence can be described (see Harter 1990 for details). As college students, individuals take on many more roles and are able to evaluate themselves in as many as twelve discrete areas as well as in global self worth (Neemann & Harter, 1986). Adults who are not studying can, according to Messer and Harter (1986), evaluate their competence in eleven domains as well as global self worth. From early in childhood sources of information about competence come from significant others, from the outcomes of achievement attempts and from internal assessments of the discrepancies between personal goals or expectations and achievements. Perceptions of competence affect future achievement attempts as, according to Nicholls (1984), humans desire to demonstrate competence and avoid demonstrating incompetence and will thus tend to choose activities in which they feel they have some competence.

Bandura (1997) uses the term self-efficacy to describe personal assessments of capability that might be applied at three levels of generality:

> *"...for performance under a specific set of conditions..... for a class of performances within the same activity domain under a class of conditions sharing common properties. And finally the most general and global level measures belief in personal efficacy without specifying the activities or the conditions under which they must be performed." (p.49).*

Bandura's two highest levels appear to be congruent with Harter's global self-worth and domain specific assessments although Harter has no task level of

perceived competence. Bandura (1997) criticises the predictive utility of Harter's inventories which he describes as 'semi-omnibus' measures. He argues that it is only at the specific task level that self-efficacy judgements can be used to predict behaviour. When global efficacy beliefs are related to performance it appears that it is the more specific context-related beliefs that create the effect (Pajeres & Johnson, 1994). Despite the development of perceptions of competence and self-efficacy as two traditionally distinct areas of study, the structure, the effects on behaviour and the social-cognitive learning theory basis for both are sufficiently similar to indicate that differentiating between the two is not a worthwhile activity.

1.5 Locus of control

Locus of control is concerned with the individual's perception of the extent to which he or she has control over the outcome of an event. Rotter (1966) identified two orientations - an internal locus of control and an external locus of control. With an internal locus of control students expect to be able to affect their successes or failures in study. These expectations are said to be positively reinforcing in that they determine future applications of effort in similar events in order to maintain success or achieve it following a failure. Those with an external locus of control in academic work do not anticipate being able to control future outcomes Success or failure in this case is attributed to powerful others, chance or circumstances beyond the control of the student. From an autonomy perspective, therefore, perceiving that you can be an agent in your own future achievements is an important reinforcer of future achievement behaviour.

There is, however, considerable conceptual and operational confusion within the locus of control research literature (see, for instance, Millar & Irving, 1995; Palenzuela, 1984; Weiner, 1992). Locus of control and locus of causality are often used synonymously (e.g. Weiner, 1992) or not clearly differentiated and the bipolar or orthogonal relationship between externality and internality is still questioned. Deci and Ryan (1985b) state clearly that locus of control and locus of causality are different constructs, with locus of control concerned with:

'....whether outcomes are believed to be contingent upon behavior. Locus of causality, on the other hand, refers to the perceived source of initiation and regulation of behavior.' (p.113).

They acknowledge the reinforcing nature of locus of control in its effect on the initiation and regulation of behaviour but do not view this as more important than many other factors such as competence and personal aspirations.

Locus of control as a variable affecting people's perceptions of the control that they have over the consequences of their actions appears to be relatively stable over long periods of time (Gatz & Karel, 1993) although the evidence is somewhat equivocal. College-aged adults were found to be higher on externality than middle-aged and older adults (Lachman, 1985; Siegler & Gatz, 1985, both in Gatz & Karel, 1993) although other studies have found decreases in internality with age (e.g. Cicircelli, 1980) and others no change with age (Reker, Peacock & Wong, 1987). Lachman (1986) demonstrated that locus of control can vary across domains, making comparisons between different studies difficult. Although there have been few longitudinal studies on locus of control there are indications that it is a fairly stable characteristic. For instance, Siegler and Gatz (1985 in Gatz & Karel, 1993) found that, over a six-year period, 46-69 year olds' locus of control remained fairly stable although there was a trend towards a decrease in internality across time. The study reported by Gatz and Karel (1993) followed a number of generations in families across twenty years and concluded that locus of control changes little within individuals, that internality increases from adolescence to middle-age, that history-related effects are found within cohorts and that sex differences may explain some of the anomalies found in previous studies.

It is proposed in this thesis that individuals' perceptions of whether or not outcomes of an event are contingent upon their behaviour will serve as positive or negative reinforcers in similar, future situations and thus will affect individuals' abilities to behave autonomously. However, as Weiner (1992) suggests, accurately predicting individual interpretations of control and subsequent reactions to similar events is difficult, given the complexity of the construct.

Bandura (1997) dismisses the value of locus of control as a predictor of future behaviour, arguing that studies into the construct have produced very equivocal, confusing results.

The original proposed bipolar relationship between internal and external locii (Rotter, 1966) has been superseded by a model that identifies three dimensions: A control dimension (controllable versus uncontrollable), a locus dimension (internal versus external); and a stability dimension (stable versus unstable) (Weiner, 1991, 1992). For instance, if failure in an exam is attributed to ability and effort there is clearly an internal locus in that both effort and ability are 'within' the student and not a function of the environment. A concept of ability as being fixed (stable) or as being incremental (unstable) (Dweck & Leggett, 1988), however, could affect the student's subsequent attempts to succeed in exams. If ability is changeable then it is worth applying effort (internal, unstable, controllable) to future exam preparation. A concept of ability as being fixed and therefore beyond the student's control might suggest to the student that he or she should more strategically apply effort to work over which there is some expectancy of outcome control

A perception of internality and controllability appears to be important for positive achievement behaviour and essential for autonomy. The relationship between the stable/unstable dimension and autonomous behaviour is less easy to categorise as the interaction between stabililty and the other two dimensions is likely to produce differing responses. An internal, unstable and controllable cause of exam failure (such as difficulty in staying focused when revising), for instance, provides the individual with more opportunity to deal with future attempts than does an internal, unstable and uncontrollable (e.g. a headache) ascription. The example of the headache is, of course, also subject to interpretation as the student might feel that the chances of having a headache in the next exam is remote and therefore sufficiently unstable for it not to be of concern.

With its focus on personal perceptions of agency in the determination of the outcomes of achievement attempts, locus of control is an important

factor in the consideration of autonomy. Hyman, Stanley and Burrows (1991) propose that, rather than being a generalised, global psychological trait, locus of control should be viewed as multi dimensional and context specific. Within the different domains of individuals' lives the locus of control, as an expectancy of behaviour-outcome effect, may vary. In academic work students may perceive their success to be less contingent upon behaviour than in a social or work situation and it is therefore necessary to measure domain-specific perceptions.

1.6 Approaches to study

Theories concerning the different approaches that students have to their studies have developed over two decades and have emerged from a number of researchers, countries and continents. Perry (1970 in Entwistle & Ramsden,1983) interviewed American students several times during their studies and identified a consistent, unfolding concept of knowledge. Students arrived with a perception that facts are known and distributed by authority figures and their purpose was to acquire these facts. They then moved through a number of processes - the recognition that authority figures are sometimes wrong but that so also are they themselves to a point that accepts that everyone has a right to his or her opinion and then to a commitment to a personally-held view of the world that provides a framework for further learning.

Saljö (1979 in Entwistle & Ramsden, 1983), working in Gothenburg, Sweden, focused on students' approaches to the reading of a research article. He interviewed students with a variety of educational backgrounds and found that those who had experience of learning at a higher level were more likely to look for meaning, rather than just memorising the content, in the article than were those who had a less sophisticated approach. Marton, also at Gothenburg, led a research group that used a phenomenographic approach to explore qualitative aspects of learning over a number of years. Marton and colleagues identified two approaches - a deep or meaning orientation and a surface or reproducing orientation. Entwistle, Ramsden and associates began work in 1976 on a research project to develop, amongst other things, a measurement tool

for approaches to study, using this previous work as a starting point. Their book, published in 1983, chronicles the process by which the present inventory - the Approaches to Study Inventory (ASI) was constructed.

Ramsden, (1979) added another dimension - strategic - to the existing two, and interviews with students identified approaches that appeared to be related to personality types. Factor analysis clustered items such as organisation, relevance or value, syllabus-boundness, fear of failure, competitiveness and others into three main factors - deep, surface and strategic orientations. Biggs (1976) had at this stage developed the Study Behaviour Questionnaire in Australia with a very similar factor structure. He described his factors as utilising, internalising and achieving, each of which contained elements of motivation and cognition.

The original ASI questionnaire eventually contained three main factors, each with subscales, plus some other items which did not load substantially onto these three factors but which were found to be consistently present in students' descriptions of their study approaches (see Table 1-1). Further work with the inventory led to confirmation of the content but led to a re-organisation and re-naming of the sections (see Table 1-2).

Following its use by many researchers the inventory was revised and shortened whilst still retaining its validity. Additional scales to support the strategic approach and a section on academic self-confidence were added (Tait, Speth & Entwistle, 1995). The Revised Approaches to Study Inventory (RASI) maintained the Meaning Orientation, Surface Orientation and Achieving Orientation with 'Lack of Direction', 'Academic Self-Confidence' and 'Metacognitive Awareness of Studying' as additional sections that related to affective, cognitive and motivational elements.

Factor	Subscales
Deep approach	Relating ideas
	Use of evidence
	Intrinsic motivation
Surface approach	Syllabus-boundness
	Fear of failure
	Extrinsic motivation
Strategic approach	Disorganised study methods
	Negative attitudes to study
	Achievement motivation
Comprehension learning	
Globe-trotting (lack of focus)	
Operation learning (emphasis on facts)	
Improvidence (over-cautious reliance on detail)	

Table 1-1: Pilot version of the ASI (see Entwistle & Ramsden,1983)

Factors and subscales	Meaning
Meaning orientation	
Deep approach	Active questioning in learning
Relating ideas	Making connections between parts of the course
Use of evidence	Using evidence to come to conclusions
Intrinsic motivation	Interest in learning for its own sake
Reproducing orientation	
Surface approach	Preoccupation with memorising
Syllabus-boundness	Reliance on staff to define learning tasks
Fear of failure	Pessimism and anxiety about academic outcomes
Extrinsic motivation	Motivation to study for rewards or qualifiifcations
Achieving orientation	
Strategic approach	Selecting most effective strategy to achieve success
Disorganised study methods	Inability to work regularly and effectively
Negative attitudes to study	Lack of interest and application
Achievement motivation	Desire to demonstrate competence, be the best
Styles and Pathologies	
Comprehension learning	Readiness to map out subject area and think
Globetrotting	Over-ready to jump to conclusions
Operation learning	Emphasis on facts and logical analysis
Improvidence	Over-cautious reliance on detail

Table 1-2: Final research version of the ASI (Entwistle & Ramsden, 1983)

Factor	Sub-scale
Deep Approach (10 items)	Looking for meaning
	Active interest/critical stance
	Relating and organising ideas
	Using evidence and logic
Surface Approach (10 items)	Relying on memorising
	Difficulty in making sense
	Unrelatedness
	Concern about coping
Strategic Approach (10 items)	Determination to excel
	Effort in studying
	Organised studying
	Time management
Lack of Direction (4 items)	
Academic Self-Confidence (4 items)	
Metacognitive Awareness of Studying (6 items)	

Table 1-3: Revision of RASI version 1995a (44 item): Entwistle & Tait, 1994.

1.6.1 Features of the three approaches

When applying a surface approach to studying, learners intend to memorise the material so that it can be reproduced without elaboration. Rote learning strategies are a feature of this approach which does not generally demonstrate any depth of understanding. Students scoring high on this approach are also recording anxiety about a lack of understanding of relationships betweeen areas of study and their abilities to cope adequately with study demands. A deep approach is adopted by those who want to understand the topic and develop for themselves a meaningful concept of the material. Reading more widely, questioning and reconstructing are strategies employed in this mode of learning. An achieving or strategic approach uses elements of both the other approaches. Students assess

the importance (personal or extrinsic) of the assignment or activity and strategically apply effort and learning resources for maximum achievement. Students using this approach will be aware of what academic staff are expecting from an assignment and will adjust their work accordingly. They intend to use their time and resources appropriately for achievement. Although students may be predisposed to adopt one of these approaches rather than another it appears that all students may be able to apply any of them as appropriate although a deep approach may be more difficult to use for those who have not previously acquired the more sophisticated deep learning skills.

1.6.2. Environmental influences

The context in which studying takes place will encourage the use of a particular approach (Kember & Gow, 1994; Solomonides & Swannell, 1995). If the students know that, for a unit of study, the assessment of their progress will be through an examination in which reproduction of the facts as given to them is all that is required, then they are likely to adopt a surface approach to pass the examination. On the other hand, given the time and the appropriate learning environment, many university students, who have made an active choice to study, will want to adopt a deep approach to their learning. This desire may not be entirely achieveable, given the time constraints and frequent deadlines of a degree programme and a strategic approach may sometimes be the substitute. Using this approach a pragmatic compromise between desire and the demands of the degree programme will identify crucial elements of the work and help students to apply learning skills to their advantage. A mismatch between the students' personal learning approaches and the requirements of the programme of study (e.g. where the programme requires a deep approach but the student has a surface approach to learning), will cause dissonance and possibly anxiety (see for instance Falchikov & Thomson, 1996 for a discussion).

1.7 Conclusion

There is clearly no widely-held definition of autonomy as each theoretical

perspective of the psychology of autonomy provides a different focus on which a model of the autonomous person is centred. Whilst this chapter has provided information about five different psychological or cognitive factors that each contribute to our understanding of the complexity of autonomy, it is acknowledged that the absence of other perspectives (sociological, philosophical, economic, political) will limit the extent to which autonomy can be clearly defined. However, as the purpose of this thesis is to explore some of the psychological elements related to autonomy in university learning the next chapter will focus on the relationships between those elements identified as being of importance - perceptions of competence and esteem, motivation, perceptions of control and approaches to studying.

2 Psychological aspects of autonomous learning

In this chapter the evidence for the relationships between the various psychological variables measured in the research (perceived competence and self-esteem, motivation for study, perceived locus of control and approach to study) and their proposed relevance to autonomy-related learning and behaviour are discussed.

2.1 Introduction

According to a number of theorists autonomous behaviour is only possible when individuals perceive that they are able to act as agents in achieving personally-intended outcomes (e.g. Bandura, 1989a; Deci & Ryan, 1991; deCharms, 1968; Doyal & Gough, 1991; Schunk, 1989; Zimmerman, 1989). These theorists, however, emphasise the primacy of different psychological attributes in determining perceptions of autonomy. This chapter focuses on the issues that arise from a number of different viewpoints and aims to indicate how motivation, perceptions of competence and self esteem, perceptions of control and approaches to study can be considered to be related to each other and the notion of autonomy. It is argued that, together, they can provide a more multidimensional, holistic concept of autonomy in learning than is achieved by simply focusing on one perspective.

2.2 Self

It is proposed here that underlying the capacity to be autonomous is a sense of self that defines acceptable behaviour in relation to a personalised framework of attitudes, beliefs, values and aspirations. The importance of the self features in the writings of all those who discuss autonomy. The desire to exercise control over one's environment is a central tenet of the constructed self (see, for instance, Appley, 1991; Bandura, 1989b; DeCharms, 1968; Deci & Ryan, 1991; Doyal & Gough, 1991; Heckhausen & Schultz, 1993; Rotter, 1966; Weiner, 1992). The self-schema (e.g.

Markus & Nurius, 1987) is partly molded developmentally by culture and society (Doyal & Gough, 1991) but also by non-normative experiences and our cognitive appraisal of these. Where behaviour and self-concepts (and in this term I include understanding, aspirations and evaluations) are congruent, Deci and Ryan (1991) describe individuals as being organismically integrated. This integration, according to Deci and Ryan, is a state which humans seek and it leads to harmony within and between people. The focus for Deci and Ryan is an inherent motivational energy that, from early childhood, is applied to challenge seeking and mastery behaviours, the successful conclusions of which, throughout life, result in a coherent, elaborate self. Appley (1991) also argues for the importance of a balance which he labels equilibration, differentiating it from the more simplistic notion of homeostasis (e.g. Overmire, 1974 in Appley, 1991, p.22). Equilibration embraces a wider concept of the self construct in that it acknowledges the dynamic, multidimensional nature of humans who engage in what Bandura (1989b) describes as discrepancy production (i e the creation of disturbances) as well as discrepancy reduction (the effort applied to maintain equilibrium). Through the setting-up of personal challenges, based on a self-evaluation of efficacy for the task and thus expectancy for success, Bandura argues that self-efficacy plays a crucial role in the selection and execution of achievement-related experiences that contribute to the self-construct, and assessment of success in these events. Deci and Ryan (1991) also observe that:

> *'The natural tendency toward synthesis does not, however, mean that people suppress and rationalize dissonant aspects of themselves in order to achieve consistency and quiescence; rather it means that they engage – even seek – inconsistencies and treat them as nutrients to growth so long as the inconsistencies do not constitute challenges that are too far beyond what is optimal for their capacities.' (p.274).*

Similar cyclical processes of perturbation and equilibrium feature in a number of developmental and learning theories (e.g. Gesell's Maturational Theory, Piaget's Genetic Epistemology Theory; Thelen's application of Dynamic Systems Theory to development). Disturbances in the individual often precede a learning or

developmental change. Whilst Deci and Ryan emphasise the centrality of motivation in their discussion of the constructed self, Bandura's focus is on the primacy of self-efficacy. Appley's approach to some extent integrates both motivation and self efficacy, arguing that stability of self-concept is central to psychological homeostasis and that:

> *'...the notion of self as superordinate, integrating equilibratory fulcrum' (Appley, 1991, p.30)*

provides a common focus for a number of psychological perspectives.

2.3 Motivation and competence

Using evidence from a variety of sources Appley (1991) discusses the motivational processes related to the protection and enhancement of the self-concept. His discussion complements that of others who propose that individuals are motivated to participate in activities that allow them to demonstrate competence (and thus enhance self esteem) and avoid situations in which they would appear incompetent (thus protecting self esteem) (see, for instance, Nicholls, 1984). Competence as a motivator is widely accepted within the psychological literature (Carver & Scheier, 1981, Deci & Ryan, 1991 ; Harter, 1978; Nicholls, 1984 White, 1959) and linked to the protection and enhancement of self esteem through the selection of tasks (Baltes, 1987; Heckhausen & Schultz, 1993, 1995; Wood & Bandura, 1989), effective goal setting (Bandura & Jourden, 1991; Earley & Lituchy, 1991) and achievement behaviours such as persistence and effort (Berry & West, 1993; Multon, Brown & Lent, 1991; Stock & Cervone, 1990). White (1959) states that:

> *'I shall argue that it is necessary to make competence a motivational concept; there is competence motivation as well as competence in its more familiar sense of achieved capacity.* (Competence motivated behavior is*) directed, selective and persistent and it is continued not because it serves primary drives, which indeed it cannot serve until it is almost perfected, but because it satisfies an intrinsic need to deal with*

the environment' (pp.317-318).

According to deCharms (1968) White is not suggesting that competence is the only motivating factor for behaviour but that it is important in the development of humans, differentiating them from passive organisms that respond more mechanistically to stimulii. Competence assessments emphasise the dynamic, cognitive and affective aspects of humans who strive for self esteem.

Expectancy-value motivational theory (Atkinson, 1957; McClelland, 1985; Rotter, 1982) explicitly links competence and motivation. Individuals will be motivated to take part in tasks which they value and in which they anticipate a successful outcome. This expectation of success is based on an assessment of their competence in relation to the perceived demands of the task. A student who is faced with an assignment will assess his or her ability to complete it to a satisfactory standard Clearly the difficulty of the task is perceived as greater by those who feel unsure about their capability to produce a satisfactory product, although the definition of 'satisfactory' will relate to personal aspirations as well as to externally-defined criteria. A student who aspires to gain a first class mark, having previously not achieved this level, might consider the assignment to be more difficult than a student who aims for a second class mark, knowing that that is possible. Additionally the student's motivation to attain the desired grade will be affected by the importance or value that he or she assigns to the outcome. According to Atkinson the motivation (that determines the direction, strength and persistence of behaviour) to achieve the desired grade in the assignment will be determined by expectancy of success and salience of the outcome.

Deci and Ryan (1991) discussed the effect of competence assessments on motivation.

> *'We reasoned that feeling competent with respect to an activity – in other words being reliably able to achieve desired outcomes and to experience effectance in action – is necessary for intentional or*

motivated behavior.' (p.268).

Thus contexts enabling competence enhancement that provide information which promotes high perceptions of competence are more likely to be motivating than are those that suggest to the individual that they are unlikely to succeed. However, although intrinsic motivation (or a motivational orientation at the highly internalised end of Deci and Ryan's Self-determination continuum) has been demonstrated as being linked to autonomous behaviour, it cannot be assumed that a high perception of competence is an inevitable complementary characteristic. For instance, a student may have a high perception of competence in academic work but may be far more intrinsically motivated towards the other opportunities (e.g. social or sporting) offered at the university. Motivation for study might be, in this case, at the externally-regulated end of the continuum. Similarly an individual might be highly intrinsically motivated to engage in an activity (e.g. fly-fishing or cookery) without necessarily having a high perception of competence.

The research into motivational goal orientations (Ames & Archer, 1988; Duda & Nicholls, 1992, Dweck & Leggett, 1988), provides some explanation for the lack of a consistent relationship between perceptions of competence and an intrinsic motivation. People with a task or learning orientation assess their success (and thus their competence) on the basis of their perceived ability to achieve self-referenced goals (e.g the achievement of a personal best in athletics or gaining a higher mark than in a previous attempt). Those with an ego or performance orientation use comparisons with others as sources of competence information, setting goals in which they strive to demonstrate their superiority over others. Task-motivated people increase their perceptions of competence if they improve on previous attempts whereas ego-oriented people can only feel competent if they demonstrate externally-referenced ability – a much more fragile source of competence information. Studies have indicated that continued participation – and a more internalised motivational orientation – is more likely to be demonstrated where an individual is highly task oriented to an activity (see, for instance, Ryan, 1982), regardless of perceptions of

competence. Failure to achieve a desired goal for individuals in this situation is viewed as a temporary occurrence and not as a competence threat that is likely to decrease intrinsically-oriented motivation (Dweck, 1991). An ego orientation, however, is not necessarily linked to motivation at the externally-regulated end of the intrinsic-extrinsic continuum. The individual might place a high value on the activity and thus it is internalised and congruent with the self-schema. However, with an ego-oriented motivation, a normatively high perception of competence (i.e. expectancy for success relative to others) is necessary if individuals are to persist at the activity (Dweck, 1991).

2.4 Motivation and control

DeCharms (1968) begins his book with a lengthy discourse about the relationship between motivation and causation. He argues that motivation is more fundamental than causation. As children we learn to be agentic through our motivated behaviour rather than our behaviour being motivated through a desire to achieve and demonstrate personal control. DeCharms states that:

> *'We get our knowledge of causation from our knowledge of motivation. Human beings know without learning, about their own simple motives or reasons for acting, and they soon learn to act in a way to satisfy these motives, and along the way they learn that things are caused because they cause them!.....if we are right about the origin of causation in personal experiences of motivation, then seeking to explicate motivation by analogy to the concept of causation is like trying to 'reduce' an explanation of atoms to a discussion of molecules. The former (motivation) is primary and more fundamental than the latter (causation).' (pp.9-10).*

Deci and Ryan (1991) express the relationship between motivation and causation differently. They view

> *'the desire to experience an internal perceived locus of causality with*

regard to action' (p.243)

as a primary psychological need which, together with a desire for competence and social relationships

> *'provide a comprehensive explanation for a wide range of exploratory and mastery behaviors (which are) the bases of intrinsic or mastery motivation.' (p.242).*

For them the desire to achieve a perceived internal locus of causality creates a motivational orientation to act which is intrinsic i.e. where the action is self-initiated. Clearly intrinsic motivation and an internal locus of causality are highly correlated, with intrinsic motivation inherently indicating that individuals have freely chosen to act and thus perceive themselves to be the cause of their actions.

A different perspective on the relationship between control and motivation is presented by Heckhausen and Schultz (1993, 1995) who argue that humans strive for primary control which

> *' . is directed at the external world and can be characterised as an attempt to change the world so that it fits the needs and desires of the individual.' (1993, p 292).*

This notion can be compared with that of effectance or competence motivation (White, 1959) as previously discussed Primary control thus serves as a motivator and involves active selection of activities that enable the need for control to be met (compare this with Nicholls', 1984 ideas about selecting activities in order to demonstrate competence). However, humans are constantly prone to failure to maintain primary control and need a process which enables them to regain this primary control. They are also faced with a variety of options from which they are required to select in order to optimise the chance of maintaining primary control, self esteem, and affect and the achievement of expected outcomes in achievement oriented activities (Heckhausen & Schultz, 1995).

To deal with the failures that pose a threat to the self construct and to provide strategies for appropriate selection, Heckhausen and Schultz (1993, 1995) propose a secondary control process, the function of which is to enable the individual to regain or maintain primary control. For instance, following failure in an examination a student might invoke an internal, unstable but controllable attribution for failure (e.g. not enough effort had been put into revision or the night out at the pub before the exam caused the failure) rather than one which suggested lack of intelligence. He or she might also, in future, select modules of study where there were no formal examinations thus optimising skills in coursework to gain the desired goal. In this way future motivation is protected through perceptions of agency and, of course, through perceptions of efficacy and competence. The relationship between motivation and competence reappears in this discussion with Heckhausen and Schultz stating that:

> *'Long term primary control potential hinges on the individual's capacities in terms of skill and competencies, as well as with regard to motivational resources (self esteem, hope for success, optimism) which regulate the investment of effort and time' (1993, p.293).*

Baltes (1987) provides many examples of how, particularly with increasing age, humans seek to selectively optimise their opportunities to maintain control and compensate (physically and psychologically) for failures that risk a perceived loss of control. This enables elderly people, who are at particular risk of loss of control as their physical and mental capacities deteriorate, to maintain a high level of perceived control. Studies (e.g. Heckhausen & Schultz, 1995) have indicated that younger adults do not score significantly differently than do elderly people on perceived control despite the apparent decline in actual control with advanced age.

DeCharms' (1968) view that motivation precedes causality perceptions rather than vice versa relates to Rotter's (1966) proposals concerning the functional significance of locus of control. Rotter states that the outcomes of behaviour serve as a reinforcer of that behaviour. The individual's perception of whether or not the

outcome was contingent upon his or her actions or attributes will affect subsequent motivation to repeat the same or similar behaviour.

There are consistent individual differences in the degrees to which people attribute behaviour-outcome contingencies to internal or external influences. Rotter suggests that these individual differences are the result of learning to expect a particular reinforcer in a given context. There are close links here with expectancy-value theories of motivation (see discussion in section 2.3). As Rotter notes:

> *'A generalized attitude, belief or expectancy regarding the nature of the causal relationship between one's own behavior and its consequences might affect a variety of behavioral choices in a broad band of life situations ' (1966, p.2)*

Once a generalised expectancy has been established, motivation (and subsequently behaviour) will be differentially affected, depending on the direction and strength of the expectancy. In Vallerand's (1997) hierarchical model of the different levels of motivation that can be identified (global, contextual and situational) there is a similar notion of the effect of a predispositional motivational orientation on motivation and behaviour at a lower level in the hierarchy. Weiner (1992) distinguishes between expectancy and locus of control in their relationships with motivation. He argues that it is the ability of the ascription rather than the locus which has most effect on the motivational orientation to tasks or events when attributions are important.

According to Deci and Ryan the locus of causality dimension of control is closely linked to the intrinsic – extrinsic motivational continuum described in Self-determination theory (Deci & Ryan, 1985a). If individuals are intrinsically motivated (i.e. they choose to initiate actions that are personally highly valued) then they will experience an internal locus of causality (i.e. they are choosing, without external pressure, to act) whereas an external locus of causality is perceived when the decision to act is externally regulated. Degrees of extrinsic motivation (integrated, identified, introjected and external) relate to different degrees of internal/external

perceptions of causality and thus to gradations of self-determination. For instance a student who is working on a project, although not intrinsically-motivated (i.e. not the initiator of the work which is a requirement of the degree programme) may experience an internal locus of causality if the topic to be studied is self-selected and the study is largely self-determined. Intrinsic motivation has been demonstrated as being undermined when rewards (e g. monetary, scholarships, presentations of cups, shields or certificates, positive feedback) are perceived as being controlling but not undermined when the rewards are perceived as competence-enhancing. The effect is dependent upon both the individual and the context in which the reward is offered (Cameron & Pierce, 1994; Gottfried, Fleming & Gottfried, 1994; Ryan, 1982; Ryan, Mims & Koestner, 1983)

Typically, as in all these issues, simple relationships between variables are difficult to identify (if they exist at all) and it must always be anticipated that there will be a dynamic multivariate effect between a complex individual and his or her complex, changing environment

2.5 Self esteem, competence and control

As will be readily apparent, teasing apart motivation from competence and control perceptions is not easy but this section will endeavour to address specific relationships between self-esteem, perceptions of competence and control. The reader is referred back to discussions about the seminal work of White (1959) who defined being competent as having effective interactions with the environment at a number of different levels. White termed this ability to change the environment, or the self in response to environmental demands, as *effectance,* seeing it as a basic human characteristic. DeCharms (1968) placed competence alongside

> *'achievement and self-actualization...as determinants in the organization of broader sequences of behavior.' (p. 22).*

General measures of perceived control indicate a distinct relationship between

perceptions of competence or efficacy and perceptions of control or agency. Much of the research in this area has been conducted with elderly people who, it is presumed, experience less control over their lives than they did at a younger age. Efforts to maintain control with aging include those described by Baltes (1987) in which self-assessment of competence leads to careful selection of achievable activities in order to optimise existing capabilities and resources for successful outcomes of achievement attempts. In this process elderly or disabled people sometimes seek help from others, apparently becoming more dependent, in order to maintain their autonomy. Baltes (1997) argues that this is not an indication of helplessness but a good use of resources for self-determination. According to Bandura (1997) this is another example of maintaining primary control.

> *'Gaining outcomes through intermediaries involves the exercise of agency just as it does in direct control, but proxy control banks heavily on persuasion or social coercion.' (p. 28).*

Returning to White's (1959) definition of effectance as an ability to deal effectively with the environment, this is an example of how identification of competence and resources can be strategically manipulated to achieve desired outcomes.

Skinner, Wellborn and Connell (1990) proposed a model of perceived control that incorporated competence beliefs. Strategy beliefs, capacity beliefs and control beliefs interact to affect task engagement behaviours and performance on achievement tasks. In their model *strategy beliefs* are those held by individuals about the causes of outcomes (c.f. locus of control), *capacity beliefs* refer to assessments of whether one has the resources to achieve the desired outcomes and *control beliefs* refer to self assessments of capability to achieve desired outcomes regardless of the causal sources of the outcomes. Skinner et al. argue that it is the capacity beliefs (i.e. belief in one's personal resources) that are most influential in determining behaviour. Feelings of effectance include an assessment of our ability to manipulate the environment (including other people) to our advantage and not just a personal

skill evaluation. Other researchers include efficacy beliefs within their frameworks of perceived control (e.g. Lachman, 1983) or provide evidence for a close correlation between the two concepts (Meier, McCarthy & Schmeck, 1984; Bandura & Wood, 1989). In Lachman's (1983) study adults' (aged 60 to 90 years of age) increases in intellectual self-efficacy over two years were predicted by initial levels of internal locus of control. Similarly, Bandura and Wood found that subjects who perceived their environment to be controllable increased their self-efficacy judgements over time more than did those who perceived the environment to be less controllable.

Research evidence indicates that a strong link exists between perceptions of control and perceptions of competence in elderly residents of nursing homes (Rodin, 1986), recovery following surgery (Carroll, 1995; Ruiz, 1992, both in Bandura, 1997), coping with age-related physical impairments (Zautra, Reich & Newsom, 1995) and depression in the elderly (Davis-Berman, 1989). There is an intuitive relationship between competence and control which is not specifically age-related. In order to have a choice of activity and thus a perception of control or agency, individuals must perceive themselves to be sufficiently competent to deal with situations they are facing. This perception of competence might be general (e.g. I know that in this kind of context I am usually capable of achieving) or more specific (e.g. I have successfully tackled this kind of problem before) but either will tend to lead to approach rather than avoidance behaviour. Nicholls (1984) stated that we choose to engage in activities that enable us to demonstrate competence and thus, if we perceive ourselves to be lacking in competence our choice of activities is limited. Whilst a number of researchers (Harter, 1986; Carver & Scheier 1981; Nicholls,1984) view self-serving mechanisms such as selection of achievable activities and the raising or lowering of the value of activities as primarily protecting self-esteem, Heckhausen and Schultz (1993, 1995) describe them as secondary control processes the function of which is to maintain or regain primary control. It appears that these proposals are not mutually exclusive. Whilst the processes described are the same the interpretation of their primary function differs somewhat between researchers.

To some extent expectancy-value theories of motivation provide an important link between competence assessments and perceptions of control and help us to understand how self esteem is enhanced in successfully completed achievement tasks. In expectancy value theories (e.g. Atkinson, 1957) motivation is affected by expectations about the outcome of a task which in turn is predicted by the perception of the individual that he or she has the capability to satisfactorily complete the task. According to Kirsch (1985 in Pajeres, 1996) having sufficient competence to complete the task is not enough to predict a successful outcome. Environmental influences, outside the control of the individual, may affect the outcome. For instance a squash player may perceive herself to be have the competence to win a particular, important match and will enter the game feeling that the outcome is under control. The opponent may, however, play far better than was expected and although the player plays well the match is lost. To protect self esteem and perceptions of competence the player may attribute failure to win externally to factors outside her control. Alternatively she might congratulate herself for playing well and reduce the importance of the game so that the loss is less damaging overall. There is evidence of these responses to outcomes in the sporting literature, often linked to investigations of a task or ego motivational goal orientation (see section 2-3). More satisfaction can be gained by players who play well but lose than players who play badly and win although the salience of the game outcome is a factor here. Feather (1967) gave people tasks that required skill or luck for completion. Those who were most satisfied were those who achieved a difficult task that required skill whilst the least satisfied were those who failed at an easy skill task. With the luck tasks, in which individuals had little control over the outcome, less satisfaction was felt in achievement and less disappointment for failure than in the skill condition. The affective response to outcome thus depended on the extent to which success or failure reflected the individual's ability to control that success or failure.

According to Bandura (1997) self-efficacy and locus of control are two entirely different concepts.

'Beliefs about whether one can produce certain actions (perceived self-

efficacy) cannot, by any stretch of the imagination, be considered the same as beliefs about whether actions affect outcomes (locus of control).' (p.20).

He argues that self-efficacy is a reliable predictor of achievement behaviour whereas locus of control is at best weakly predictive of the same behaviours. Combining the two measures, however, is likely to improve the predictive power as it provides information about people's capability beliefs and expectations that their competence (or lack of it) will (or will not) affect the outcome of the action. High efficacy and an internal locus of control will predict positive achievement behaviours (Bandura, 1997) although these relationships require further investigation, particularly concerning their interactive nature (Berry & West, 1993). The proposal by Weisz and Stipek (1982) that perceived control in a specific context stems from perceptions in two related but distinctive perceptions – those of competence and locus of control – is intuitively appealing. In assessing personal competence individuals may anticipate that they have the required resources to achieve the desired outcome in a task but, in order to feel in control, must also hold an internal locus of control that suggests to them that the outcome is contingent upon their efforts.

2.6 Study approach, motivation, competence and perceived control

Following the discussions in the previous sections there are clearly theoretical links betweeen motivation, competence and locus of control that are supported empirically at various levels and in a number of different contexts. As this thesis is concerned specifically with students in higher education of interest is the nature of the relationship between the psychological characteristics associated with autonomy and learning at university. Whilst students' approaches to study do not measure behaviour they provide an indication of students' intentions relating to their learning.

Throughout the development of the Approaches to Studying Inventory (see section 1.6) the motivation-approach relationships are explicit and integral to the structure of the inventory. A deep approach is characterised by an intrinsic

motivational orientation, a surface approach by an extrinisic motivational orientation and a strategic approach by achievement or competence motivation (Entwistle & Ramsden, 1983; Entwistle & Tait, 1994). Whilst this is not surprising, given the close relationship between intention and motivation the use of the broad 'intrinsic' and 'extrinsic' motivation labels does not allow for the more finely-tuned reasons for studying to be explored. For instance an identified regulatory orientation (extrinsic motivation) is a strongly- internalised motivation that is more likely to be related to a deep approach than to a surface approach (see Table 1-2). The final version of the inventory (Table 1-3) has, to a large extent, removed the explicit links with motivation although the features of the deep approach in particular are closely associated with an intrinsic motivation to study.

Empirical studies that provide evidence for the associations between motivation and approaches to study generally focus on competence-motivation rather than on the intrinsic-extrinsic motivation continuum. Purdie and Hattie (1995) used motivation training techniques with secondary school students and compared changes in motivation with changes in approaches to study (surface, deep and achieving) Although the measure for study approaches was that of Biggs (1987) - the Learning Process Questionnaire (LPQ) - there is considerable congruence between that and the RASI (Entwistle & Tait, 1994). Purdie and Hattie found that there were differential effects of this training on students who were high or low achievers. The high achievers in the experimental group scored significantly higher at post-test than did a control group on deep approach and achieving approach and significantly lower on a surface approach. The medium to low achievers, however, scored significantly lower on the achieving approach. Purdie and Hattie associate these differences with differences in the self-perceptions of competence that are critical for expectations of achievement.

A study that investigated the relationships between approaches to learning and motivational goal orientations (see section 2.3) in Chinese schoolchildren found that a deep approach was associated with a learning goal and that a surface approach was

associated with a performance goal (Kong & Hau, 1995). Children who scored high on either goal orientation also scored high on achievement approach. As motivational goal orientation is based on an assessment of competence that is criterion or normatively referenced, the relationships between motivation, competence and approach to study are explicit in this research.

Less information is available about the associations between control and students' approach to their learning although the theoretical links, through competence and motivation, have been argued in earlier sections. Rossouw and Parsons (1995) used factor analysis to compare students' approaches to study with their newly constructed Academic Locus of Control Scale. They found that a deep approach was positively associated with some of the items indicating internal control for success and failure and that a surface approach tended to associate with the external dimension (luck, context, powerful others, ability for failure and unknown factors) As their research was exploring a new, untested instrument the authors are cautious about the interpretation of their results but in general their findings are congruent with the notion that a deep approach is related to internal control factors and that a surface approach loads more heavily on external control factors.

2.7 Autonomy

The concept of autonomy distinguishes humans from lower order animals. Philosophers such as Kant and Hegel discuss autonomy in relation to notions of freedom and free will. For Doyal and Gough (1991) it is inextricably linked to a sense of self with a moral framework that develops from, and is responsive to, societal and cultural influences. Maslow's hierarchy of needs identifies self-actualisation as the peak of human attainment that is only possible when lower-order needs have been met.

From a psychological perspective theorists and researchers use terms such as self-regulation (Butler & Winne, 1995; Carver & Scheier, 1985; Koestner, Bernieri & Zuckerman, 1992; Zimmerman, 1989, 1990) and self-determination (Deci & Ryan,

1985a; Deci, Vallerand, Pelletier & Ryan, 1991) to describe autonomy-related behaviours and attributes. Whilst the underlying concepts appear to be the same, self-regulation is often used rather loosely to refer to behaviours that are *managed* by individuals but not necessarily initiated or valued by them (see for instance Butler & Winne, 1995). According to Butler and Winne, in self-regulated learning the kinds of behaviours observed include self-assessment, self-monitoring, goal setting and the strategic selection of cost-effective activities. Koestner et al. suggest that self-regulatory style stems from a sense of self that provides a framework of autonomy-related attitudes, beliefs and values. They provide evidence that there is a consistency between attitudes, beliefs and behaviours when people are highly autonomy-oriented. Carver and Scheier (1985) also use self-regulation in relation to the central tenet of 'self' that underpins autonomy. They state that:

> *'Self-regulation with regard to the system-concept of self means attempting to be who you think you should be....by trying to live up to the principles that are specified by your image of who you should be.' (p 241).*

Deci and Ryan's definition of self-determined behaviour describes it as being freely chosen by the individual and congruent with the sense of self so that the activity is personally-valued and internally controlled. From this perspective the close relationship between autonomy, self-determination and locus of causality is explained by Ryan and Powelson (1991) who state:

> *'The term autonomy refers to "self-rule" i.e., regulating one's own behavior and experience and governing the initiation and direction of action. In autonomous action, one experiences the self to be an agent, the "locus of causality" of one's behavior (Ryan & Connell, 1989). We use the term 'self determination' (Deci & Ryan, 1985, 1987) interchangeably with the concept of autonomy because it conveys the idea that autonomy entails being an origin (deCharms, 1968) with regard to action and toward transforming external regulations into self-regulation where possible...'. (p.52).*

In this definition there is an emphasis on a motivational orientation that is at the highly-internalised end of Deci and Ryan's (1985a) continuum and on the causality related desire to be able to have an effect on one's environment (cf. White's 1959 'effectance'). The intrinsic motivational element of autonomy is also emphasised by Deci et al. (1991) who state that:

> *'When a behavior is self-determined, the regulatory process is choice but when it is controlled the regulatory process is compliance (or in some cases defiance). ...autonomy refers to being self-initiating and self-regulating of one's own actions.' (p.327).*

According to Deci et al. development and learning are greatest when the achievement context meets the individual's needs for competence, relatedness and autonomy.

Other authors subsume the social interactions and competence assessments within the notion of autonomy rather than seeing them as separate contributory factors for achievement. For instance, in a useful synthesis of some of the learning theories that support the concept of self-regulated learning, Zimmerman (1989) describes how explanations about behaviours vary depending on the particular focus of the theorist Phenomenologists (e.g. Harter, 1985; McCombs, 1989) explain achievement behaviours as being motivated by a desire to enhance or maintain self-esteem, with effectance within a particular context a major goal (c.f. Heckhausen & Schultz, 1993 and White, 1959). Whilst self esteem is enhanced in ways that are personally relevant and may be very different from one individual to another, significant others are influential for us all in the process of competence and self-concept assessments. This social dimension, emphasised by a number of researchers, affects achievement behaviour through feedback (Butler & Winne, 1995), the structure of the reward system (Deci & Ryan, 1991), competition (Reeve & Deci, 1996), self-perceived competence in social relationships (Harter, 1990), adults' support for children's autonomy in learning (Grolnick & Ryan, 1989; Ryan & Powelson, 1991; Ryan & Stiller, 1991) and self-fulfilling prophecies (Pelletier &

Vallerand, 1989).

For Deci and Ryan (1991) autonomy can be measured directly in relation to the degree of internalisation of the motivation to act with this measure also indicating the extent to which the locus of causality is internal rather than external. In 1985 Deci and Ryan (1985b) argued that an autonomy orientation is not related to an internal locus of control in that behaviours classed as internally controlled might be motivated by factors such as fear or guilt. Students who perceive the outcome of an examination as being contingent upon their study efforts are not necessarily behaving autonomously when they apply effort to revision. They may be responding to anxiety about failing or guilt about not achieving expectations that others have of them. It is difficult, however, to envisage an autonomy-oriented person who does not, generally, perceive him or herself to be able to exert some control over the outcome of actions. Indeed the relationship between perceived control over outcomes and perceptions that one has sufficient competence to achieve the desired outcomes within a context is intuitively sound, although as far as this author is aware, not empirically tested. The assessment of competence at the situational level (self efficacy for a task in Bandura's terms) involves a consideration of the task demands as well as that of personal resources An internal locus of control is more likely to be perceived when self-assessed competence is adequate to meet perceived task demands. Deci and Ryan (1985b) acknowledge that locus of control is one of many factors that affect self-regulatory behaviour but that the relationship between autonomy and locus is not clear-cut Other factors affecting the initiation and self-regulation of behaviour include (according to Deci and Ryan) the need for autonomy, perceptions of competence and personal values and goals.

This thesis proposes that a number of psychological variables will interact to predict an approach to learning that is autonomy related - that of a deep approach to study. Perceptions of competence and self-esteem, motivational orientation and perceived locus of control will all affect students' achievement goals. Locus of causality, closely linked as it is to a highly-internalised motive for learning (Ryan &

Powelson, 1991), was not measured. Recognition of the social factors involved in study within a university context led me to include a measure of perceptions of social acceptance and close friendship. The value that individuals place on competence in the academic and social domains was measured using the perceived importance scale in Neemann and Harter's (1986) inventory. Despite Deci and Ryan's (1985b) reservations about the relationship between locus of control and autonomy it was felt that perceptions of control over the outcome of one's actions denigrates or enhances perceived autonomy and is intuitively related to perceptions of competence. Thus locus of control was included as a measure in the study. All the psychological variables considered important for autonomy in learning were measured across time and in relation to age and sex

Whilst this study is concerned with the dispositional characteristics of students at four points in time during their university experience, these characteristics are being measured within a context that will, inevitably, affect their ontogeny. The extent to which autonomy in learning is encouraged within the environment in which the students are learning is not measured in the study but is clearly of importance in the discussion about student autonomy. The next chapter considers some of the features of the broader higher education context that might affect autonomous learning. Higher education is, of course, itself nested within a societal and cultural context and affected by these. Whilst the wider context is not a focus for this thesis, acknowledgement of some of the issues that eventually impact on the student potential for autonomy that *is* the focus of the thesis might support the discussion.

3 Autonomy: the higher education context and the study

This chapter presents a broad overview of the higher education context and discusses the effect that aspects of the context might have on autonomy in learning. The rationale behind the research and its design within the constraints of a funded project are then explained

3.1 Introduction

In his recent book 'Realizing the University' Barnett (2000) presents a challenge to universities to embrace their role in the dynamically-changing, mutlicomplex world as

> *'..sites for the continual production of revolutionary ideas,* (ensuring) *that graduates are able to live effectively amid radical uncertainty...where all the basic assumptions as to one's self-identity as researcher, scholar and teacher are kept perpetually in the air ' (p.172).* (brackets are mine).

According to Barnett the world is also requiring universities to retain their role as sources of *'enlightenment heritage'* (p.172) but that, given the very fluid nature of knowledge, this role is now considerably diminished. Ecclestone (1999a) declared that learners, including students in university, must learn how to learn, using these skills to acquire information, apply it and abandon it when it becomes obsolete. Barnett (1997) declared that the perception of a university as a place

> *'...where academics had a monopoly over the definitions of knowing and learning, in which they erected systems of knowledge for their own sake but which, in reality, served their purposes very nicely and....froze out other legitimate interests.' (p.34)*

can no longer meet the learning needs of society.

Of course being revolutionary and being able, and willing, to adapt readily and effectively to new situations are characteristics which, in previous chapters, I have linked to autonomy. An autonomy-orientation, with its strong, secure base of self-knowledge and congruency of self with purpose, provides the supportive framework that enables people or institutions to risk stepping out into the unknown. In this sense I apply the notion of autonomy to both individuals and organisations and would suggest to Barnett that the central core of self-identity (for individuals and their organisations) has to remain clearly defined for autonomous functioning to be possible. The peripheral detail of this self-identity will change over time in response to external and internal demands, and the language that we use to express our identity will also be adjusted, but the core will be stable.

I see the strong links between autonomous higher education institutions and autonomous individuals within HEIs as being indisputable. The direction of causality is certainly from the more powerful and rule-governed (the institution) to its members but there is evidence that there is also an upward effect when staff are actively involved in real decision-making and students use the opportunities they are offered to affect their environment (Foner, 1990) The HEI is, of course, nested within a society, a culture and an historical context. Its role in developing autonomous learners is largely determined by these. I shall first explore some of the more salient features of these contexts in relation to autonomy as, like people, institutions have to operate within environments that are more or less autonomy enhancing and constraining.

3.2 Historical, Cultural and Social Contexts

According to Schooler (1990), the assumption that all individuals desire to be able to perceive themselves as competent and in control of their own actions is largely a Western perspective and is not necessarily supported in research concerning the rest of the world. There are clear cultural differences in the ways that individualism is supported but also, according to Schooler, differences that exist between societies within cultures. Where individualism is valued and encouraged, autonomy and self-directedness will occur but autonomous and self-directed behaviour might be applied to supporting the well-being of a group rather than being

individualistic in its outcomes. Schooler also links individualism with egalitarianism, suggesting that such societies are open-minded and not rigidly hierarchical, emphasising either an equality of opportunity or the equality of reward. In cultures that encourage individualism it is anticipated that members of the culture will value opportunities to be in control of their own fate, a situation which requires an adequate level of competence so that they are not too dependent on others. In the extreme environments in which they live, sub-arctic hunting people value and

> *'hold in high esteem an individual whom they feel to be malleable, adjustable and capable of adapting to diverse ecological and social situations' (Savishinsky, 1974, in Schooler, 1990, p. 28).*

Their approach to knowledge is that it is only valid when personally experienced. This, says Schooler, is mirrored to some extent in the multicomplex situations of modern Western society in which there is primacy of the self and internal processes, experiences and control.

Within the Japanese culture 'self' is traditionally only defined in its relationship to society. One cannot be an individual outside of society but only in respect of the contribution one makes to that society, with heightened awareness, from an early age of the effect that one's actions have on others (Hayes 1993). According to Schooler Japanese society has traditionally been rigidly hierarchical with a powerful commitment to group loyalty and discouragement of egotistical goals or feelings - a deeply-embedded historical influence. Compliance and conformity are expected, with personal efforts for progress seen as part of a contribution to the progress of society. Within this structure there is equality of reward rather than of opportunity. Changing perceptions of the nature of autonomy and individualism in such a society would take generations, as would any substantive change to the British approach. However, systematic changes to our perspectives on individualism and autonomy, their value and their importance for economic and social well-being, have taken place within my lifetime and it is these socio-structural, rather than cultural changes affecting HE that I will address next.

Throughout the history of universities they have been seen as places concerned with the notion that 'Knowledge is power'. A university education

was valued by many as a means of escape from the poverty and entrapment of a working class upbringing. The existence of universities would prevent

'..many ripe wits being utterly lost for want of education'

or

'especially intended to confer the blessings of education upon...poor men's children.' (Williams, 1985, pp. 1 & 5).

Expansionist policies of the post-war government perceived universities, however, as dealing with manpower requirements rather than as ensuring greater social justice (Benn & Fieldhouse, 1993). In 1946 the focus for reforms was to be quantitative and targetted on scientists, engineers, doctors, dentists and teachers although the need for Arts-based training to produce managers and executives was also recognised. At this stage there was no explicit intention for the Government to control the jealously guarded autonomy of the universities but it was clear that greater control would need to be exercised in order to meet the perceived needs of the post-war economy (Benn & Fieldhouse, 1993). In order to enable expansion to occur in the targetted areas, funds were distributed strategically by the Government and an expansion of over 60% was achieved in five years. At the same time money was provided in the form of grants to support students whose family circumstances did not allow them to study. As we have seen in the time since then this scheme to widen access has not been as successful as was hoped and it appears that there are more than simply financial barriers to be overcome if universities are to be truly available to all. The difference between the massive expansion in the 1940's, the post-Robbins Report expansion of the 1960's and that which occurred in the late 1980's and early 1990's was that the first two were fully funded. The recent expansion has been accompanied by funding cuts, encouragement and requirement to expand student numbers whilst maintaining existing costs (cost-effectiveness measures) and no financial support for capital funding. This, according to Wagner (1995), explains why the earlier expansions led to optimism and enthusiasm, contrasting with the more recent expansion-related demotivation and pessimism.

The period of the 1980's and 1990's has been one of increasing government intervention in and control of university structure and functioning. The Conservative Government of Margaret Thatcher was committed to

> *'meritocracy, market forces, consumer choice, accessibility, enterprise and accountability.' (Benn & Fieldhouse, 1993, p. 307)*

Benn and Fieldhouse go on to say that it was not surprising that these ideologies had a major impact first on the primary and secondary sectors of education and then on further and higher education. Emphasis was placed on developing more, explicit, vocational routes through formal education in an attempt to meet society's perceived needs economically and to widen access to those who were viewed as socially or ethnically-disadvantaged so that

> *'..they will not be denied access to institutions which are central both to the higher values of our civilisation and to the allocation of its material rewards'. (Jackson, 1988 in Benn & Fieldhouse, 1993, p. 308)*

At the same time 'accountability' became a familiar word amongst educators, accompanied by systems that required us all to consider carefully what we were offering to the consumer, whether this was 'cost-effective' and to what extent it met the strategic aims of government. Accountability has many connotations and the university has found itself in the 1990s required to answer to a variety of 'stakeholders'. Students are stakeholders for whom charters have been written and who are presumed to be the main recipients of the benefits of outcome-based learning (Ecclestone, 1999a; Middlehurst, 1995). With the advent of fee payments and in line with the wider expectations of society to have their rights met, universities are now extremely litigation-sensitive in their dealings with students. Traditionally, it was felt by universities that students would:

> *'....suspend most questions concerning the appropriateness of their learning programmes for future labour market aspirations, deferring to the view that the experience of higher education was an end in itself' (Robertson, 1995, p. 291).*

but it was anticipated that, once grant support for students was removed they would become:

> *'increasingly attentive to the way in which funds to which they have made a personal contribution are being spent' (McGreggor, 1989, p. 9).*

Employers are also seen as 'stakeholders' in university education. They are encouraged by funding bodies to take an active interest in project steering committees and employment fora, influencing decisions made about the curriculum at one level and, as members of the governing bodies of universities, the very nature of higher education. According to McCarthy (1993)

'Educationally, important contributions have been made to the discussion by educational bodies such as the Business and Technician Education Council (BTEC), the Joint Board for Pre-Vocational Education (JBPVE) and the Department for Employment (DfE).' (p.33).

The third group to which universities are accountable includes the funding bodies and the government as representatives of society in general. Procedures for measuring performance have been put in place in the last ten years to satisfy all stakeholders that their needs are being met and money spent wisely in the areas of teaching (Teaching Quality Assessments and now Subject Reviews), research (the Research Assessment Exercise) and administration (Quality Audits).

In a recent presentation by Arthur Brown (2000) of the Quality Assurance Agency (QAA) it was stated (using standard QAA overhead slides) that there are three purposes of review. The first reason given was *'To secure value from public investment'*. This most important reason for instituting reviews indicates the accountability concerns that seem to drive much of the HE monitoring processes required by government. Educationally-valid reasons for undergoing reviews are only vaguely addressed in the second purpose - *'To encourage improvements in the quality of education through the publication of reports and the sharing of best practice.'* Note the extrinsic reward or punishment through published reports

in this statement, a situation noted by Swann & Ecclestone (1999) who stated:

> *'There is a widespread assumption, particularly among policy-makers, that improvement in services provided by educational institutions will be brought about mainly by increased external regulation, target-setting and the specification of common standards.'* (p.90)

However, they also noted that:

> *'Policies based on this assumption lead to increased centralization, comcomitant with a subtle shift from democratic to authoritarian approaches to decision-taking.....they tend to demotivate individuals...and stifle initiative and creativity.....the systems and procedures being developed and introduced will have a signiificant and, aruably, delterious effect on the nature of what is being taught and learned. Regulation may not stop at the 'threshold standards' and subject benchmarkıng'. (pp. 90-91).*

With educational purpose dealt with, in this second purpose, by Arthur Brown the third reason for reviews can again reflect the public accountability theme - *'To provide effective and accessible public information on the quality of higher education'*. These statements have been made very recently and indicate that, despite all the promises about a 'light touch' for those institutions that are seen to be doing a good job (as defined by the QAA), there ıs a strong, underlying anxiety at governmental and civil service levels about their accountability which is passed down the line.

Through accountability has come control. Since the early 1990's it has become clear to universities that they would not be able to exist financially unless they met external criteria or had private funds available to them. In 1989 the University Funding Council's (UFC) Chairman stated:

> *'funding will be adjusted to take account of the universities' performance in contributing to the Council's aims' (Chilver, 1989, in Benn and Fieldhouse, 1993, p.309).*

More recently the influence that the government is seeking to exert over the British research agenda, often through funding and control over processes and publication of outcomes, was highlighted in an article discussing an Office of Science and Technology consultation paper. The policy outlined in the document was described by academics as

> *'...(a cause for concern)..about what this says about government attitudes to academic freedom. The comments are not only bizarre but are rather offensive. It is inherent in the set of proposals that there is a concern to control the research agenda and indeed to bring it more closely in line with policy preoccupations.' (Baty, 2000)*

For most institutions there has been no option but to comply with the external demands placed on them, despite apparent opportunities to express opposing views in consultation exercises. It is difficult to identify the effects of responding to the various consultation exercises that have occurred. To my knowledge, no major plans put forward by government in the recent past have been abandoned or radically amended because of strong opposition from the HE sector, although more recently a determined stand has been made by HEIs who are objecting to aspects of the proposed subject review procedures (see for instance Tysome 2000).

Education has also become increasingly funded through alternative routes and universities have had to compete for limited 'pocket money' by writing development and sometimes research proposals. Projects thus funded are short term and highly constrained by the holders of the purse strings, many of whom have had difficulties understanding the context in which the project was taking place and who are, themselves, anxiously driven by the accountability' directive. Funding for many educational innovations in the last decade has been funnelled through the (now) Department for Education and Employment (DfEE) and through Training and Enterprise Councils (TECS), demonstrating that, even with New Labour the emphasis of higher education is on employability. Educational policy generally is focused on learning for economic competitiveness and, according to Blair (1998 in DfEE) education is the best economic policy we can have.

In the Green Paper, the Learning Age, there is some indication that other aims for education have re-emerged in that

> *'there are thoughts and ideas....which had not seen the light of day under recent governments - words such as citizenship and community, for example' (Standing Conference on University Teaching and Research in the Education of Adults, 1998, p.2).*

Armstrong (2000) also calls for a discussion of the ways in which universities intend to achieve one of the purposes of higher education that was identified in the Dearing Report - that of enabling students to be actively engaged in shaping a democratic, civilised, inclusive society. He points out that predetermined learning outcomes will not adequately equip graduates to deal with social responsibility in a changing world.

It would appear that, through various somewhat devious but very effective means, the decisions made by universities are constrained by the need to comply with government desires, whatever they might be. Most of the control is apparently exercised through the systems of funding - whoever pays the piper calls the tune - in a sector where government funding supports basic, survival activities It is only those with independent means who can afford to make decisions that are not in line with current government thinking. Even those not entirely dependent on government funding must keep an eye on the way that the cultural and political wind is blowing as, it might be argued, the broader changes in society are likely to influence the expectations of those stakeholders who have a less immediate direct effect on universities than does the government. So what does all this mean for the traditional autonomy of the university? In order to consider the answer to this question it is important to return to the arguments I made in the previous chapters concerning the nature of autonomy, whether applied to institutions or to individuals.

I have argued previously that autonomy does not have a measurable end-point and that it can only be described in relation to a potential within a context. Thus, for instance, Nelson Mandela (1994) described perceptions of autonomy within prison. As members of a society we can never be totally free to choose how we behave. Part of our contract with society is that we accept its rules and regulations. For universities there is an assumption that

we are working for the good of the society in which we operate, providing a resource for learning and supported financially by that society. From this perspective we might accept that it is very proper that society is involved in decisions about the nature of higher education. However, as HEIs, our perceptions of autonomy and capacity to function autonomously within society should not be diminished because of this involvement. Some of the underlying elements of autonomy (a strong identity, intrinsic motivation, adequate perceptions of competence and self worth and perceptions of internal control over outcome) are, however, clearly being eroded.

Identity is central to autonomy and, over the years, members of universities have lost the rather comfortable sense of permanent 'self". It could be argued that despite the secure base that this identity offered for autonomy it was too comfortable and too stable to cope with the increasing complexity and instability of the modern world. Barnett (2000) declared that universities have to accept *'continual pandemonium'* (p.172) and that the entrepreneurial spirit embraced by some indicates a move towards one form of expression of the essential new look of flexibility and spontaneity that is adaptive in and responsive to modern society. I would argue that this, more apparently amoeba-like state is, in itself, an identity which enables autonomy as long as the nucleus in terms of purpose and function is stable. Barnett (1999), however, seems perturbed by the idea that universities have even lost a sense of a stable nucleus of identity.

Another central tenet of autonomy is choice where chosen, autonomous behaviours or actions are related to sense of identity. There are many examples recently of universities acting to meet demands of government when local considerations might have suggested that there were other priorities. Universities have been required to reduce teaching space, increase access to a variety of under-represented groups, develop policies and charters, adapt curricula to endorse the teaching of employability skills, agree programme specifications and intended learning outcomes and much more. There is no doubt that, following the upheavals of change many of these required adjustments to practice will be (or are?) seen as a 'good thing' but the universities' perception of autonomy has been damaged by the ways in which changes have been introduced. It could be argued that they have

been installed for the greater good of society and, certainly the wearing of seatbelts in cars would not be as widespread as it is if it had not been legally required and enforced. Nevertheless, freedom to choose, albeit within a framework of options, based on the values and principles that define 'the self' is important for autonomy. Autonomy is thus eroded by powerful others who demand actions congruent with *their* aims and objectives, values and principles, by negating or over-riding local decisions and priorities, using 'carrots' or 'sticks' to persuade. This would be less of a problem if central demands were accompanied by extra resources that enabled both central and local requirements to be met. We know, of course, that this is not the case in education, the health service or in other publically-funded organisations such as the police force.

A sufficiently high perception of competence to undertake tasks identified as central for the achievement of aims may be severely eroded by external events. Systematic attacks on the professional expertise of schoolteachers in Thatcher's government were used to diminish the status of teachers within society and to reduce their power and influence. Similar attempts to reduce the effectiveness of university staff have not been made overtly although it could be argued that society in general now provides less status for the teaching profession overall than it did twenty years ago. As professional expertise has been progressively - some would say systematically - denigrated and devalued, so government ministers and civil servants have been able to make educational decisions based on government needs for perceived electoral advantage rather than on educationally-informed principles. Professor Black, who chaired the committee which produced the Black Report concerning the testing of children in schools was reported as saying that

> *'...the government had abandoned most of the principles embodied in the report. These changes had not been grounded in evidence but based on prejudice and 'are set fair to do serious harm to children's education'...The Educational Reform Act had become an instrument for direct government control in which the opinions of ministers were insulated from professional opinion and expertise.'* (The Times, 25 August, 1992 quoted in Margetson, 1994).

Through this sort of process the self-perceptions of teachers as being competent and valued were inevitably going to mirror society's view and decrease. As the various belt-tightening exercises over recent times have indicated, insecurity and threats to jobs and status further damage professionals' perceptions of competence and worth. Linked to competence is, of course, motivation with the desire to be competent (and be seen to be so) a strong motivator for action (see Chapters 1 and 2). For autonomy the motivation should be at the intrinsic end of the Deci and Ryan (1985) spectrum and thus congruent with the values, interests and principles of the society or individual. For universities the motivation to do what government wants them to do, if this is different from their considered priorities, will be extrinsically regulated. When motivated by fear (e.g. loss of funding) as in introjected regulation or simply because they have been instructed to do it (external regulation) by a powerful other (e.g. funding council) the motivation is not, according to Deci and Ryan, autonomy-related. In the recent debate about the ways in which subject reviews are to be conducted Professor Newby (President of the Committee of Vice-Chancellors and Principals, CVCP) is reported as having admitted that

> *'..the proposed scheme was "not a system the universities would have devised left to their own devices". But the CVCP had to take into account the funding councils' interests which were backed by legislation, he said. "The legislation contains reserve powers for the funding councils and one has to be aware of that," he added'* (Tysome, 2000, p 1)

Associated with autonomy, or perhaps indicative of it, is the extent to which people and organisations are prepared to take risks in order to achieve goals. In a paper which addresses lifelong learning, Ecclestone (1999b) discusses an argument made by Furedi (1996,1998) that there is a pervasive lack of confidence in the future across a number of societies. There are heightened levels of fear, risk aversion and increased state regulation (e.g. health scares such as BSE and listeria lead to avoidance of some foods and increased regulation of others such as 'blue' cheeses and non-pastuerised milk). There is also an emphasis on people as victims of fate and individual circumstances. All these factors lead to a perception that people per se lack

agency. We become accustomed to being looked after by experts and protected by policies or guidelines (healthy living, harassment at work, health and safety directives) and we expect that someone else will ensure that society remains morally robust. Fear and mistrust of others and increased reliance on regulation undermine initiative and autonomy. Anecdotally there is evidence within my university that this is the case. More academics are asking what the regulations are or requesting that we have standardisation of programmes, outcomes or procedures. There appears to be an increasing anxiety about making decisions in case they are wrong. Ecclestone (1999b) sees this creeping reliance on authority not as a

> *'conscious conspiracy. Instead any drift towards authoritanarianism is disguised by liberal intentions but not deliberately: it is clearly much more subtle than this....shifts of ideology and moral economy are never clear cut or uncontested, nor realised in standard ways (Ball, 1997). Nor are they always understood or even recognised by their exponents.' (p 339)*

For those working within higher education there are several processes that we recognise as ensuring compliance and control under the heading of 'quality assurance'. Inspections, audits, bench marking, programme specifications, learning outcomes and research assessment exercises all contribute to the surveillance culture of mistrust and dependence on regulations, codes of conduct, charters and guidelines. As Ecclestone (1999b) points out

> *'..guidelines and clarifications are necessary in any assessment or quality assurance system based on outcomes and criteria. Nonetheless, although they seem to offer more transparency about requirements they conceal a deeper tension. Guidelines and attempts to secure standardised interpretations through more 'clarification' soon become 'exemplars of good practice' and then rules, whilst criteria to specify standards of quality become checklists for self and external regulation.' (pp.341-342).*

The university, as an integral part of society, is subject to the various evolutionary changes that take place within that society and, indeed,

supports those changes by its compliance with them. The extent to which universities can reasonably expect to *influence* society in ways which are congruent with the aims and objectives, values and principles of higher education - i.e. exert their autonomy by acting to change the environment (what Heckhausen and Schultz, 1995, describe as demonstrating primary control) - will depend on several factors:

- a clear, strong sense of higher education identity which will include purposes, value systems, and principles;
- confidence in the importance of higher education and in the achievability of its stated aims through appropriate, expert-led changes to systems;
- a determination to empower all members of the university community and, by doing so, provide autonomy role models at every level,
- a desire to initiate change that is strong enough to overcome the many barriers that exist
- allocation of resources to confront the problems that the sector faces,
- the ability to work collaboratively towards agreed goals.

Whilst universities are competing with each other for survival and growth (and herein lies, of course, the sub-plot of the many publications of ranked lists of HEIs) there is unlikely to be any effective collaborative effort to define purpose or tackle issues that affect us all. Smaller groups of HEIs, defined by common purpose or practice, are successfully collaborating in limited ways but if higher education is to be able to demonstrate a pan-sector autonomy this will have to be through more wide-ranging attempts to change the context in which we operate. There is a risk that we will not value autonomy enough to fight for it and that we will succumb to the pressures to conform. If this happens then the effect is likely to filter down to students through university staff. The next section considers the evidence for this effect in other learning contexts.

3.3 The institution as a context for learner autonomy

Ryan and Powelson (1991), writing from a theoretical perspective that proposes strong links between motivation, locus of causality and self determination, state:

> *'Under conditions conducive to autonomy, competence and relatedness, people will be more likely to express their inherent tendency to learn, to do and to grow. In educational contexts and tasks where students experience support for their autonomy, and where they feel connected to and supported by significant others, they are likely to be highly motivated. By contrast, in contexts that are controlling (vs. autonomy-supportive) and where persons feel disconnected or unrelated to significant others, alienation and disengagement are the likely outcomes.'* (p.53).

They discuss a number of studies that provide evidence for the effect of environment on autonomy in children. Deci, Schwartz, Scheinman and Ryan (1981) found that children taught by teachers who had an autonomy-approach to teaching demonstrated more curiosity, more desire for challenge and more independent mastery attempts than did children taught by controlling teachers. Ryan and Grolnick (1986) found similar results when they compared children's perceptions of their classroom climates as control or autonomy-oriented. Many systems have been put in place in schools and universities to create change through the use of rewards or punishments (the perception of which of these is being used will depend on the individual or context). Consider the effects of the publication of Standard Achievement Test (SATS) results in schools, performance-related pay for teachers with increased salary partly based on pupils' results, the publication of innumerable ranked lists of universities, the Research Assessment Exercise processes and outcomes and the system for deciding on promotion to Senior Lecturer grade in some universities. The extrinsic motivational orientation that is engendered through the use of these mechanisms for change cannot be anything but damaging to autonomy and learning. According to Agassi (1996 in Swann & Ecclestone, 1999)

'the quality of life greatly deteriorates as the result of the use of the carrot and the stick....What we want to achieve is a system in which learning is a challenge and a pleasure....' (p.102).

Recognising the interactive effect of a child's disposition (autonomy vs. control orientation) with that of the classroom climate, Grolnick and Ryan (1989) investigated the parental practices that were influential in the child's development of autonomy and the child's adjustment to a school environment that encouraged autonomy. They found that parental style in relation to autonomy and control was an identifiable influence on children's classroom self regulation and competence. A further study (Grolnick, Ryan & Deci, 1990) revealed that parenting style was directly related to children's control understanding, perceived competence and autonomy.

As with children it appears that teachers' autonomy is affected by the influence exerted by powerful others. In similar investigations into the effect on teachers of externally-specified curricula and standard testing, Deci, Spiegel, Koestner and Kauffman (1982), Flink, Boggiano and Barrett (1990) and Grolnick and Ryan (1987) compared the effects on students of two groups of teachers. In each study one group of teachers was instructed to focus on ensuring that the children they taught performed up to standard (controlling orientation) whilst the other was told to facilitate the learning of their pupils (autonomy-orientation). Various methods were used to ensure that the manipulations were effective including, in one study, teachers being told that their effectiveness as teachers would be judged relative to the success of their pupils on tests at the end of the teaching period (compare this with the present proposals for performance related pay for schoolteachers in which one of the criteria for increased pay is the pupils' results on standard tests). The results across the studies were, not surprisingly, consistent. The pupils taught by teachers who were given the autonomy to decide what was an appropriate learning environment for achievement achieved more, were more creative and perceived themselves to be more competent and self-determined than did the children in the other group. This was a good example of the effect that controls placed on teachers through monitoring and reward systems can have on their pupils. And yet this is the system that not only prevails but continues to be

strengthened in our schools with a national curriculum, Standard Achievement Tests, school rankings based on examination results, numeracy and literacy hours and now performance-related pay. Teachers in school will have to be particularly subversive and confident, with a strong desire for autonomy if they are to resist the temptation to pass the control ethos down to their pupils.

There is a danger that this situation could apply to higher education and, there is indeed evidence that the process has already begun. It is difficult not to go with the flow. Invitations to join groups to discuss such changes as benchmarking and programme specifications have to be accepted if we are to influence future policies. However there is rarely any debate about whether or not the subject of discussion is a good or a bad thing - it is taken for granted that it will happen and all that can be achieved is some sensible input into the final form. The insidiously controlling nature of the changes to higher education are, as Ecclestone (1999b) says probably not deliberate and are justified on the basis that necessary change is very slow if its initiation is internal to a system as complex as higher education. Nevertheless a controlled university risks becoming, through a need to achieve externally-defined standards and thus survive, a controlling influence on students, to the detriment of learner autonomy and all the positive achievement outcomes that are commensurate with autonomy.

Throughout the discussion about autonomy in the thesis the control, motivation and perceived competence themes have recurred. The higher education community needs to actively and overtly value and support autonomous behaviour for all its members. Environments that offer students choice at various levels (e.g. choice of degree, of module, of assessment methodology and of deadlines for submission of work) are likely to enhance perceptions of personal control. Staff also need to perceive that they have choices about how they approach their work and be affirmed in these choices by significant others. Where choice is perceived as real, i.e. there are few constraints upon the choice, we assess the options in relation to two factors. These are our achievement aspirations (which might be career or study goals for students) and our expectations for a successful outcome (do I have the competence or resources to meet the demands of the tasks on offer?). For

achievement-oriented people the chosen task or route is likely to be congruent with our 'self' and at, or challengingly just above, what we know we can do. With these two factors affecting choice satisfied, motivation is more likely to be at the intrinsic end of the motivation scale and the student, in Deci and Ryan's (1985) terms, self determined.

Whilst the research described above indicates the importance of the environment in the ontogeny of autonomy, studies such as that by Grolnick and Ryan (1989) also provide evidence for the interaction between individuals' autonomy-related attributes and the context in which they are studying. The investigation that is the focus for this thesis concentrated on the dispositional aspects of the students at the very start of their university careers and the monitoring of changes to these attributes across time in higher education. As the Grolnick and Ryan study indicates this important part of the jigsaw cannot be ignored if we are to understand the nature and development of autonomy in learning. Whilst it would have provided a fuller picture of autonomy in higher education had the autonomy-related features of the environment been measured this was not the aim of this study for reasons explained below.

3.4 The study

The purpose of the study was to investigate the autonomy-related psychological constructs (as identified in Chapters 1 and 2) of students, considering age and sex differences, changes over time and relationships between the variables. Whilst the culture, society, context and specific situation in which the students study is readily acknowledged as affecting these psychological constructs and their associated behaviours, the intention was to consider only the organismic part of the important organismic-contextual interaction in the study of autonomy. As far as I am aware longitudinal research into this number of undergraduate students' psychological constructs related to autonomy has not previously been completed. If an holistic view of autonomy in study is required then measurements of the context as well as the individuals would be advisable but that was beyond the scope of this study. In fact it is unlikely that the necessary measurement instruments are available to reliably assess all these constructs at the subject level. Those used in this study measure at

the context level rather than at the specific task or subject level i.e. the measurements are concerned, for instance, with reasons for studying in higher education rather than reasons for studying a particular subject or topic. The context for the study in this case was a traditional university with about 7,000 students, almost all of whom were full-time. Most students were studying away from home and about one-third were mature (i.e. 21 years of age or over at first year registration). During the two years of the data collection degree programmes were being modularised and semesters replaced terms in the second year of the study. Honours degrees involved three or four years of study with degree classifications being calculated from second and final year marks. The university had experienced a rapid expansion of student numbers in the late 1980's and early 1990's, and, although processes for dealing with larger numbers of students had improved by the time this study was undertaken, there was a sense that staff were reluctantly still 'running to catch up' with all the changes.

The study provides us with dispositional information about the motivation, perceptions of competence and self-esteem, and locus of control of beginning students and changes in these autonomy-related variables across the first two years of their undergraduate education. Additionally I measured the students' approaches to study as an indicator of intention, perhaps more closely linked to behaviour (although evidence for this is equivocal) than the dispositional measures. Relationships between variables within this measure and between the autonomy-related constructs were investigated. The context of this particular research affected the design of the investigation.

I had become interested in the subject of autonomy having observed many very different students, both in schools and in university, over a number of years. The approaches that individuals took to their studies varied enormously and appeared to affect achievement in ways that were not always easy to explain. Research into various aspects of perceptions of competence provided some answers but, by itself, this was clearly not sufficient to account for most of the variance in behaviour and approach. The responses of students to autonomy-enhancing and controlling teaching styles also provided some food for thought. Why did some students like to be given

information and prefer not be required to be creative or involved in discussion whilst others wanted to be stimulated and challenged to think and debate? As a personal tutor I had students who had come to university for the social life, because their parents expected it or because of the opportunities to improve their climbing skills. The importance that I placed on the higher education experience was not initially shared by these students and I had to question whether I had the right to challenge their beliefs and attitudes.

Experiences with adolescents in different circumstances - as a mother, a teacher and a youth worker - had provided me with many opportunities to observe and affect the young adults' efforts to develop a sense of agency within a society that all too often required unquestioning compliance. Similar observations of colleagues highlighted the individual differences that occur in the willingness to take risks, make decisions or desire to be rule-governed. The notion of autonomy, confused in definition as it is, nevertheless provided me with an overall label for some of the phenomena I observed in my experiences with such colleagues and students. The opportunity came to bid with colleagues for funding to run a project concerned with guidance and learner autonomy in higher education.

In this bid for development funding, to enhance student autonomy through improved guidance processes, from the Department for Education and Employment (then the Department for Employment), the argument was made that change within the university would be facilitated if it was supported by research. Unusually, this argument was accepted and the research element funded as a small part of the overall project. The research had to be completed within the two years of the project, was designed and agreed before the project began and was subject to the tightly-prescribed, previously agreed targets that had to be met at each phase before funds were released. To a large extent this inhibited the opportunity to analyse sections of the data and use this information to plan the next phase of the research or introduce an experimental study. Qualitative investigations into some of the more interesting findings (e.g. concepts of ability and the atheoretical results concerning some of the motivation data) could not be followed through with this cohort of students because of the tight time-limits imposed by the funded project. As with any other research this one was constrained by the

pragmatics of finance and time. The investigation as described in this thesis thus is limited to a presentation of the data collected from a randomly-selected sample of first year undergraduates who were tracked through the first two years of study and measured on four different occasions before the project finished.

3.4.1 Participants

Students were randomly selected as they completed the first year registration process at the University of Wales, Bangor and were asked to volunteer twenty minutes of their time to fill in a booklet containing three questionnaires - motivation, self-perceptions and locus of control. 415 students filled in the inventories and 394 booklets were satisfactorily completed. In this sample there were 206 females (38 mature and 168 traditional) and 188 males (52 mature and 136 traditional). The 90 mature students were categorised as being those who were 21 years of age or over at registration whilst traditional students (n= 304) were those who were less than 21 years of age at that point. The ratio of males to females and traditional to mature students broadly matched the profile of the incoming cohort of students at Bangor. All but two of the Schools in the University were represented in the sample although no attempt was made to ensure that this occurred or that there was an equality of numbers of students from each School. More importantly the students were randomly selected as they emerged from the registration hall.

Subsequently these students were sent (through the post) a copy of the Revised Approaches to Study Inventory (Entwistle & Tait, 1995) in November of the first term. This inventory was not included in the original booklet as it refers to how students study in university and, at registration, students had not experienced undergraduate study. Those who responded to this inventory were then sent the full booklet of inventories (motivation, self-perceptions, locus of control and approaches to study) in March of their first year and in the September and March of their second year of study. 85 volunteer undergraduate students from across the university completed the questionnaires on four different occasions. 35 students were male and 50 were female, with 25 mature and 60 traditional-aged students. All students were informed of the broad research purpose of the study and were told that

they could withdraw from the study at any point in time. Continued participation was encouraged using raffle prizes of book tokens that increased in value over time.

3.4.2 Instruments

The inventories used measured motivation for study, domain-specific perceptions of competence and self-esteem, academic locus of control and approaches to studying. All were designed for use with higher education students. Details of the inventories used are provided in the next Chapter and copies of the inventories are in the Appendix.

3.4.3. Results and discussion

The results from the study are initially reported in two chapters. Chapter 5 is concerned with differences across age and sex in first year students' motivation, perceptions of self and locus of control (data collected at first year registration). Chapter 6 reports age, sex and time differences for the 85 students who completed all four of the test booklets. For clarity the results from the four inventories are reported separately within this chapter. Subsequent chapters use various statistical tools to investigate relationships between the variables. In Chapter 5 the findings from the analysis of beginning students' data is discussed in some detail as it provides a baseline of information about the cohort of students entering higher education. In Chapter 6, the results of the analysis of each of the four separate constructs across time are discussed separately following the report of the results. In subsequent chapters the relationships between the variables and the implications of the various findings are discussed.

4 Measurement tools

The four inventories that were used within the study are described in this chapter. They are the Self-Perception Profile for College Students (Neemann & Harter, 1986) from which four domains and global self worth items were extracted, the Academic Motivation Scale (Vallerand, Pelletier, Blais, Brière, Senécal & Vallières, 1992), the Academic Locus of Control Scale (Rossouw & Parsons, 1995) and the Revised Approaches to Study Inventory (Entwistle & Tait, 1994). Copies of the questionnaires used in the study can be found in Appendix 1.

4.1 Self-perception profile for college students (SPPCS)

The SPPCS (Neemann & Harter, 1986) acknowledged the importance to the self concept of the context in which students were living and working. Whilst students' self concepts can be measured using the Messer and Harter (1986) Adult Self Perception Profile (ASPP) there are clearly different areas of activity that differentiate students from the general population of adults. Originally the SPPCS was designed to measure those in late adolescence and early adulthood who were experiencing higher education. Although also applicable to mature students, a full version, where mature students are being questioned, might also incorporate questions (concerning, for instance, family management) that appear in the ASPP. For this study, as only four domains and self worth were to be measured, the SPPCS was adequate for both younger and older students.

4.1.1Theoretical base

Harter proposes that our self concept is a multi-dimensional construct that changes in relation to interpreted experiences. These experiences affect self-perceptions of adequacy in different areas of our lives and these self perceptions then affect the interpretation of new experiences. The self construct is thus both determining and dynamically adapting to life events in a multi-dimensional and multi-directional way. Depending on the importance we place on each area or domain in which we can assess our adequacy, there is a differential effect on overall self-esteem or perceptions of worth as a person. The more

importance placed on an adequacy domain the more likely it is that perceptions of self in that domain will affect self worth although Marsh (1994) argues that there is no empirical evidence to support this claim. According to Harter, in a valued activity or relationship a high perception of competence will enhance self worth whilst a low perception of adequacy will be detrimental to self worth.

The multi-dimensional model proposed by Harter (1983, 1990) suggests that global self worth can be measured as a separate dimension from the domains that contribute to its construction. It also proposes that although the various facets of the self are discrete they will also be correlated. For instance, whilst intellectual ability as a competence can be measured, there will be a relationship between that and perceived social acceptance when the individual feels that social acceptance by others is partly defined by their intellectual ability. This may well be the case for undergraduate students who are working in a social environment which focuses on intellectual ability and scholastic competence or the outcomes of these competences.

Harter's proposed model and subsequent empirical investigations indicated that, across the lifespan, the domains in which we can assess and describe our adequacy vary, partly as a function of age but also as a function of the various roles that we adopt. Young children, for instance, have a limited capacity for self-assessment, for using competence information and for differentiating between different aspects of themselves. College students, however, are involved in a wide range of activities and can differentiate between their competence or adequacy in each, using information from a variety of sources to make their assessments.

4.1.2. Development of the instrument

The development of the SPPCS was in parallel with a number of other age-specific instruments constructed by Harter and her associates (see Harter, 1985; Harter & Pike, 1984; Harter, 1988; Messer & Harter, 1986). It was designed for use with full-time, traditional-aged undergraduate students aged 17-23 years but Neemann and Harter (1986) suggested that the instrument could be used with students who were older but single and studying full time. The items within the four sub-domains and general self worth used in this study were felt to be relevant

for any group of students, providing only a partial profile of self-concepts.

Two samples of American college students were used to provide information for the initial instrument and for an item reduction analysis. No details of the analyses at this stage were provided by the authors. 300 undergraduate students (mean age = 19.8 years) from Colorado universities were then measured to provide norms data. Nearly half of these were beginning students and more than 75% were female. Internal reliability coefficients for the whole sample ranged from α = .76 (Job competence) to α = .92 (Athletic competence). The α coefficients reported for the four domains used in this study were: Scholastic competence (α = .84); intellectual ability (α = .86); close friendships (α = .82); social acceptance (α = .80). Validity was investigated using a principal components analysis of the specific sub-domains and factor loadings were reported as item means of between .69 (intellectual ability) and .89 (athletic competence). There were no cross-loadings greater than .35 although this is criticised by Byrne (1996) as being high and she suggests that confirmatory factor analyses would provide more evidence of the validity of the instrument. The internal reliability coefficients for the Importance Rating Scale ranged from α = .53 (Importance of social acceptance) to α = .84 (Importance of athletic competence) with inter-correlation coefficients between global self worth and each importance sub-scale ranging from r = .19 (athletic competence importance) to r = .86 (importance of physical appearance) (Neemann & Harter, 1986).

4.1.3. Structure of the inventory

The SPPCS is a 54-item self-report inventory with 13 sub-scales measuring perceptions of competence or adequacy and global self worth. Overall self worth is measured using six statements with four items for each domain measuring perceptions of competence or adequacy in the 12 domains. Additionally there are two items for each domain measuring the importance rating of that domain. There are no items for global self worth in the Importance Rating Scale.

The inventory sub-scales are divided into two categories with one focusing on self-perceptions of competence and the other on social relationships. The domains measured in the scale are as follows with the social category sub-scales listed

before the competence sub-scales:

- *Social acceptance:* measures the extent to which individuals perceive themselves to be socially skilled and accepted by other people;

- *Close friendships*: ability to make and keep intimate or close relationships with others;

- *Parent relationships*: sense of being at ease with parents and having a good relationship with them;

- *Romantic relationships:* measures perceptions of the ability to make and maintain intimate relationships with another person;

- *Physical appearance*: perceptions of physical attractiveness and satisfaction with the way one appears to others;

- *Sense of humour*: ability to see the funny side of things, to enjoy a joke with friends;

- *Morality*: perceptions of one's own behaviour in relation to society's and one's own expectations and ethical codes;

- *Athletic competence*: perceptions of physical skill and willingness to participate or try new activities;

- *Job competence*: perceived competence in relation to employment, measuring perceptions of productivity and pride in work;

- *Creativity:* perceptions of ability to be creative and demonstrate originality;

- *Intellectual ability:* perception of how clever or intellectually capable one is;

- *Scholastic competence*: ability to deal with coursework assignments, relating to skills in studying;

For the purposes of this study the first two sub-scales and the last two, together with the importance rating of each and global self worth were measured.

The items in the inventory are presented in a structured-alternative format to reduce responses based on social desirability. As can be seen in the Appendix students were offered two statements for each item and were asked to choose which statement most closely matched their self-perceptions. They were then asked to say to what extent that statement was congruent with their self-perception - 'really true' or 'sort of true'. The statements are presented so that half the items are in the negative direction and half in the positive direction.

4.1.4. Scoring of the data

Items are scored on a 1 to 4 scale where 1 represents low competence or adequacy and 4 is high. A mean score for each sub-scale is then derived. The Importance Rating Scale has an identical format and the scoring system is the same. The discrepancy between aspirations and achievement is calculated by taking the importance score away from the competence score in that domain. So, for instance, if a student scores a mean of 3 for competence in the scholastic competence domain and a mean of 4 for importance rating of scholastic competence then he or she has a negative discrepancy score of -1. If, however, competence is perceived as greater than importance then the discrepancy score would be positive.

4.1.5. Evaluation of the inventory

The decision to use this instrument for the investigation reported here was based on the fact that it was designed for young adults who were studying and thus contained sections very relevant to the research questions being addressed. There are, to my knowledge, no other instruments that specifically measure perceptions of competence and importance in a higher education context. There are potential cross-cultural problems that might affect the validity of the findings and the original instrument was designed for traditional-aged students rather than the more common mix of mature and younger students. It was felt, however, that the sub-scales to be used were not age-related and used language that was acceptable for all ages and in a British culture. From the rather scant information

available about the validity and reliability of the instrument it appears that further testing of it needs to be undertaken and that there should not be an assumption that any findings in this investigation are necessarily robust. The issues addressed in the ongoing debate about the empirically-dubious relationship between perceptions of competence and importance rating in relation to self esteem (see Chapter 1) are also salient here.

Whilst comparisons of the sub-scale means will be reported in this study it must be remembered that there are no recent, normative data from a British student population, against which the data gathered in this study can be compared. This raises questions about the validity of discussing significant differences between, say, close friendship scores and those of intellectual ability. Neemann and Harter (1986) provide some limited information about 300 students (mean age 19.8 years; 70 males and 230 females) from American universities who were measured during the validation of the inventory. For the subscales which will be used in this study the means and standard deviations were as indicated in Table 4.1 below.

Subscale	Overall	Females	Males
Self worth	3.19 (.60)	3.17 (.62)	3.25 (.51)
Intellectual ability	3.08 (.68)	3.02 (.68)	3.28 (.65)
Scholastic competence	2.82 (.67)	2.78 (.66)	2.94 (.69)
Social acceptance	3.17 (.63)	3.17 (.64)	3.16 (.58)
Close friendship	3.35 (.67)	3.42 (.65)	3.15 (.70)

Table 4.1: Means (standard deviations) from Neemann and Harter (1986)

Neemann and Harter report that females scored significantly higher than males on 'close friendship' ($p<.05$) and, as can be seen from the above table, scholastic competence is the only subscale in which students score themselves below 3 (i.e. they relate their competence to the lower half of the forced choice statements). Although these data may be used to infer whether, in this study, students are

scoring high or low, it must be remembered that there are cultural (i.e. US vs. British) and time (early 1980s compared with the present) differences that might affect the extent to which such comparisons are valid.

There is also an important issue about comparing subscales which, although they are measured on the same 4-point scale, using the same question format, may be interpreted differently from each other. For instance students may assess their competence in one area using different criteria for that assessment than in another and any comparison of the two may be spurious. Whilst statistically comparisons can be made, the interpretation of that difference, as it has the potential to affect behaviour, must be very cautious.

The value of the Neemann and Harter inventory is that it was designed to assess a profile of perceived competences in discrete domains that, together with an importance rating, indicate a multidimensional self perception *profile* of individuals and groups.

4.2 Academic Motivation Scale (AMS)

The AMS was validated by Vallerand, Pelletier, Blais, Brière, Senécal and Vallières (1992) as an English language version of the Echelle de Motivation en Education (EME; Vallerand, Blais, Brière & Pelletier, 1989). It was designed to assess the motivational orientations of university students towards their studies.

4.2.1. Theoretical base

The instrument is derived from Self Determination Theory (Deci & Ryan, 1985a; Deci, Vallerand, Pelletier & Ryan, 1991) which is a wide-ranging theory incorporating three sub-theories - Cognitive Evaluation Theory, Organisimic Integration Theory and Causality Orientations Theory. It is proposed that self determination is an innate need in humans and that we strive to gain and maintain control over our actions. Our reasons for behaving vary across a continuum of internalisation. At one end of the continuum intrinsic motivation has three differentiated, but equally internalised, sub-components that have motivational goals described as the desire 'to know', to achieve' and 'to be stimulated'. Intrinsic motivation as a reason for acting is completely internalised whilst, at the other

extreme, external regulation (a sub-component of extrinsic motivation) means that behaviour is initiated and controlled by influences outside the self. Between the two extremes are gradations of motivation with integrated, identified, introjected and external regulation being described as sub-components of extrinsic motivation. Another measurable motivational orientation is that of amotivation which does not appear on the internalisation scale. It describes a state in which the student is not interested in studying and does not know why he or she is at university (see Chapter 1 for more detail of the motivational orientations). As no normative data are available for this inventory any assumption about what is a high or a low score on any of the subscales is somewhat spurious except as a description of where the response lies on the scale. The AMS measures motivation at the contextual level and it is possible to record similar scores on both intrinsic and extrinsic motivation despite the theoretical dichotomy of the internalisation continuum on which the inventory is based. However, even with similar scores it cannot be assumed that the individual's response to each statement within subscales is not differentially biased by effects such as social desirability. Any comparison between subscales is therefore not valid.

Vallerand et al. (1992) note that integrated regulation was not included as a separate sub-scale in the EME inventory as initial investigations found that it was not differentiated from identified regulation and that it was not provided by students as a reason for studying. It consequently does not appear in the AMS.

4.2.2. Development of the instrument

More than 3000 students were used to investigate the validity of the EME which was demonstrated as having a mean α score of = .80 as well as a correlation of over .75 which indicated temporal stability over a month. Several correlational analyses between the EME and other scales provided evidence of construct validity (Daoust, Vallerand, & Blais, 1988; Vallerand & Bissonette, 1992). For the translation of the EME into English for the AMS the initial translation was back-translated by four individuals. From two versions of the English translation a single version was agreed by a group of people as providing items as close to the original as possible in acceptable English. This was then given to a group of students who commented on its clarity.

745 university students (mean age 21.0 years) completed the inventory and the data were analysed using confirmatory factor analyses (LISREL), analysis of variance, Cronbach's alphas and test-retest correlations on the sub-scales. The seven factor structure of the scale was confirmed using LISREL with no cross-loadings between factors. Cronbach's alpha values ranged from .83 to .86 except for identified regulation for which α = .62. These results were very similar to those of the EME. The temporal stability of the scale was investigated in a comparison of test and retest data at the beginning and end of a four week period. The values were quite acceptable (Vallerand et al., 1992) with correlation coefficients ranging from .71 to .83 (mean r = .79). Sex differences in motivation were investigated using analysis of variance. The results indicated that females (n = 484) scored significantly higher than did males on all the intrinsic motivation sub-scales and on identified and introjected regulation. There were no significant differences on the other sub-scales.

4.2.3. Structure of the inventory

The inventory asks students why they go to university and provides them with 28 statements which they are asked to rate on a 7-point Likert type scale. Respondents indicate the extent to which the statements correspond with their reasons for studying from 'does not correspond at all' to 'corresponds exactly'. The seven factors within the inventory are assessed with four statements for each factor.

Congruent with Self Determination Theory (but excluding integrated regulation as explained in 3.2.1. above) the seven factors are as follows:

- Intrinsic motivation 'to know': a self-initiated behaviour such as reading a book in order to learn something new for the sake of learning or for pleasure. There is no instrumental reason for engaging in the activity;

- Intrinsic motivation 'to accomplish or achieve': the aim is to acquire competence or to master a task. The focus is on the process of achievement and not the outcome;

- Intrinsic motivation 'to experience stimulation': students experience excitement or enjoyment in their studies and are stimulated by their activities;

- Extrinsic motivation, identified regulation; at the internalised end of the continuum, behaviours motivated by identification are personally valued but not initiated by the individual. This differentiates them from the intrinsic motivational sub-components;

- Extrinsic motivation - introjected regulation: next to identified regulation on the internalisation continuum, this orientation describes a motivation for studying that, whilst internalised has a negative component. Reasons for studying include fear of failure or the need to demonstrate to oneself and others that you are capable of succeeding in study;

- Extrinsic motivation - external regulation: the student motivated externally will study in order to get a better job or salary later. Their reasons for studying are not related to the value of the activity itself but to the outcomes of the action;

- Amotivation: students experiencing amotivation do not understand the contingencies between study and outcome. They are generally confused about why they are at university and are neither extrinsically or intrinsically motivated.

4.2.4. Scoring of the data

Scores for each of the seven sub-scales are separately summed and a mean score is derived for each. A mean for intrinsic motivation and for extrinsic motivation can also be calculated.

4.2.5. Evaluation of the instrument

Given its well-established theoretical base and developed from an established questionnaire, the AMS has a good pedigree. Moreover, at the time of data collection it was, to my knowledge, the only instrument that was designed to

measure motivation across the seven factors in university students.

Concerns with using it in Britain centre around the lack of validation of the instrument with British undergraduates. Vallerand et al. (1992) describe it as cross-culturally valid but the comparison made in its development involved cross-linguistic rather than cross-cultural issues.

4.3. Academic Locus of Control Scale (ALCS)

Designed for use with undergraduate students, the ALCS (Rossouw & Parsons, 1995) was developed by utilising inventories from two theoretical perspectives: social learning theory and attribution theory. The composite scale was adjusted to make it suitable for undergraduate students and then pilot tested. It is these pilot tests that are reported here.

4.3.1. Theoretical base

Locus of control as a concept was proposed by Rotter (1966). Rotter suggested that people apply two particular explanations for the causes of their successes or failures in achievement tasks and that people are pre-disposed to choose one or other explanation. Some people perceive that the outcome of their achievement attempt is contingent upon activities or attributes - the amount of effort expended or their ability at the task. They have an internal locus of control. Others see outcomes as being caused by luck or chance or by other people. They have an external locus of control.

By using two theoretical perspectives to develop the instrument, Rossouw and Parsons acknowledge that there is more than one way of explaining how people's behaviour is affected by psychological processes. Rotter's original definitions of locus of control used a social learning theory approach with individuals learning through experience that they have control (or no control) over the outcomes of their activities. Subsequent attempts are therefore mediated by perceptions that the outcome can or cannot be affected by, for instance, the amount of effort applied to the task. The role of others in forming opinions about the extent to which outcomes are controllable throughout development will have a crucial effect on perceptions. Attribution theory (see for instance Weiner, 1992) recognises that

there are more than two dimensions to the reasons that individuals give to explain achievement outcomes. A three dimensional model was proposed by Weiner (1992) and by Hyman, Stanley and Burrows (1991). The dimensions were each dichotomous with controllability-uncontrollability, stablility-instablility and internal-external features potentially combining differently with each other on each occasion. So, for instance, the outcome of an achievement attempt could be seen as being due to effort (controllable, internal but unstable) or to the right questions appearing on the exam paper (external, unstable and uncontrollable). Internal factors, such as examination anxiety, can be viewed as uncontrollable and internal with, in this case, a potential perception of stability creating more problems. Within the rationale for the items considered for inclusion in the revised scale, the 'unknown control' factor from Connell's (1985) Multidimensional Measure of Children's Perceptions of Control was considered to be relevant to higher education despite being included in an instrument for children. Rossouw and Parsons argued that students might be less sure of the source of control over the outcomes of their work than were other adults who perhaps had more experience of the context in which they worked.

4.3.2. Development of the instrument

In order to reflect this complexity, Rossouw and Parsons combined elements of four established locus of control instruments. These were the Multidimensional Multiattributional Causality Scale (MMMCS: Lefcourt, Von Baeyer, Ware & Cox, 1979), the Multidimensional Measure of Children's Perceptions of Control (MMPC; Connell, 1985), the Academic Locus of Control Scale (ALC; Trice, 1985) and the Internal Control Index (ICI; Duttweiler, 1984). The authors give almost no detail about how decisions were made about which items were to be included or not. The criteria used to select the four instruments were:

> *'...the items of the instrument should be specific to achievement in higher education. The instrument itself should address the issue in terms which relate to perceptions of the educational context and should include both perceptions of both success and failure. In addition the different sub-scales should have reliable and effective discriminatory value and these results should be consistent over*

time and different discriminatory tertiary settings. Finally...the results should be able to inform intervention. None of the existing instruments met all the criteria and therefore a composite instrument was developed, based on selected items derived from the original instruments.' (Rossouw & Parsons, 1995, p.298).

The composite instrument was tested using a small group of mainly male students studying an electronics course at a South African University. The authors provide no further demographic details of the participants. Cronbach's alpha scores for the sub-scales ranged from .79 to .81 and then a factor analysis using a Promax (oblique) rotation was conducted. Four factors were identified by the authors - an external dimension, an internal dimension, an unknown control dimension and a fourth factor that included ability and effort for success. Negative loadings across factors indicated a theoretically rational basis for this factor structure.

4.3.3. Structure of the scale

There are 36 items in the Revised Academic Locus of Control Scale (RALCS) with seven sub-scales. The seven sub-scales are: ability, effort, context, luck, internal control, powerful others control and unknown control. Within each of these sub-scales there are questions involving both failure and success outcomes of study activities. This provides a total of 14 variables that load into the factors as follows:

- External factor: context for failure, context for success, powerful others control for failure, luck for failure;
- Internal factor: internal control for failure, internal control for success, effort for failure;
- Unknown control factor: unknown control for success, unknown control for failure, powerful others control for success, luck for success;
- Factor four: effort for success, ability for success, ability for failure.

Students are asked record the extent to which they agree with statements about

success and failure in study.

4.3.4. Scoring of the data

The responses to the statements are made by circling a number on a 7-point Likert-type scale to reflect how closely the statement matches how the respondent feels about their success and failure in study. A score of 1 = 'does not correspond' and 7 = 'corresponds exactly'. Mean scores for success and failure outcomes in each sub-scale are calculated, providing 14 variables for analysis.

4.3.5. Evaluation of the inventory

Clearly this instrument requires considerable validity testing for the results of any data gathered from it to be accepted with confidence. At the time of testing, however, it was the only inventory that was in any way suitable for the measurement of academic perceptions of locus of control in higher education. Any locus of control data from this instrument will need to be interpreted with caution because of the lack of testing of its psychometric properties.

4.4. Approaches to Study Inventory (ASI)

The ASI (Entwistle & Ramsden, 1983) measures higher education students' intentions or goals in relation to their studies. It has been revised many times and the version used for this study was the 1995 revision of the Revised Approaches to Study Inventory (RASI; Entwistle & Tait, 1994).

4.4.1. Theoretical base

The conceptual or theoretical basis of the ASI evolved from qualitative and quantitative studies of learning and teaching in higher education. The studies at Lancaster (Entwistle & Ramsden, 1983) began by identifying lecturers' perceptions of what they were trying to achieve in relation to students' academic development. Previously Perry (1970) had identified an unfolding process of intellectual development that appeared to consistent of a relatively invariant sequence of stages of increasing sophistication. This notion of a developmental progression in students' intellect supported the findings at Lancaster and the work of Marton in Sweden who employed phenomenological interview techniques to

investigate student approaches to academic tasks. A consistent finding was that some students adopted a deep approach to learning whilst others relied on a surface approach. In testing and developing the concepts surrounding the notion of different approaches to study Entwistle and Ramsden (1983) used a number of psychometric tests related to learning and individual differences to expand their own understanding of the learning process. Students' memory, styles of thinking, and personality traits such as extraversion and introversion were all tested in association with the developing inventory in order to explore the various facets of their learning.

4.4.2. Development of the instrument

Qualitative analysis of interview data, using semi-structured interview techniques, (Ramsden, 1981 in Entwistle & Ramsden, 1983) identified three categories within a deep approach to learning (personal experience, relationships, meaning) and three within the surface learning approach (unrelatedness, memorisation and unreflectiveness) (Entwistle & Ramsden, 1983). Despite the different titles for these sub-components many of these early categories have not changed substantially over 15 years of investigation although the detailed investigations revealed a greater complexity of concept and an increasingly differentiated structure.

Using factor analytic techniques to identify related items in the expanding inventory, the final research version of the approaches to study inventory contained three orientations (meaning, reproducing and achieving) with another broad category that was labelled 'styles and pathologies of learning'. Cronbach's alpha category sub-component means ranged from .32 (strategic approach) to .78 (extrinsic motivation). Table 1-2 (Chapter 1) provides detail of this version of the ASI. Subsequent studies with the inventory have led to a number of changes and adjustments to its structure. Whilst the deep and surface orientations have consistently been verified there has been less convincing evidence to confirm the structure of the strategic orientation (Richardson, 1994). In 1994 (Entwistle & Tait) a shortened version of the ASI was tested and found to be valid and reliable and the version used for this study is the 1995 revision of the Revised Approaches to Study Inventory (RASI).

4.4.3. Structure of the scale

The 44 item 1995 revision of the RASI (see Table 1-3) contained 6 factors, 5 of which were used in this study. The five factors are:

- A deep approach with sub-scales that measures students intention to 'look for meaning', 'take an active interest in and a critical stance to learning', 'relate and organise ideas across different areas of study' and 'use evidence and logic when coming to conclusions or problem solving';

- A surface approach with four sub-scales that measure students' study intentions and feelings: 'rely on memorising material', 'have difficulty making sense of difficult material', 'have problems relating material across areas of study" and 'have concerns about coping with the amount or type of work';

- A strategic approach with four sub-scales that measure students' intention to achieve by using appropriate strategies: 'determination to achieve what he or she wants from the course', 'an intention to apply sufficient effort to succeed', 'an intention to organise resources in order to get work done' and 'use of good time management strategies for success';

- Lack of direction measures the difficulties students have in understanding why they are studying at university;

- Academic self confidence is a measure of the students' perception of competence in academic work.

Using a 5-point Likert-type scale students are asked to say to what extent their approach to study is represented by the statements in the questionnaire. Students are asked to respond truthfully but quickly and carefully, avoiding whenever possible, the score of 3 which indicates a neutral response.

4.4.4. Scoring of the data

The items are scored on the 5-point scale where 5 indicates that the student 'agrees' with the statement whilst 1 indicates that the student 'disagrees' with the

statement. Sub-scale means as well as factor means are derived from the relevant items.

4.4.5. Evaluation of the inventory

Whilst it is difficult to gather statistical data on the factor structure of the RASI there have certainly been many studies that broadly confirm its validity. The most recent study published on this topic is that of Waugh (1999) who used a Rasch model analysis to further improve the inventory. Waugh (1999) criticises the inventory for not clearly distinguishing what he terms attitude questions from behaviour questions or providing a balance of these within each orientation. When the questions in the inventory are scrutinised this criticism seems to be valid and may be an area that can be improved within the inventory structure. His analysis has produced an updated and, apparently improved, version of the instrument which looks promising but requires validation.

When the questions in the RASI are considered it is clear that there is a need to establish whether or not students are responding on the basis of a somewhat aspirational intention or are describing actual behaviours. As Waugh (1999) points out these two might lead to very different interpretation and action. In this study the pre-dispositional characteristics of students are the focus rather than actual behaviour in response to the study context but conclusions drawn from the analysis should take into consideration these potential problems. As the article by Waugh indicates, the different types of statements in the inventory create difficulties in making comparisons between the subscales, requiring, as it appears they do, responses that may be affective, descriptive of behaviour or concerned with intention. The potential for errors created by, for instance, bias through socially desirable responses, means that between-subscale differences may not be meaningful.

4.5. General comments

The four inventories that are used in this study measure psychological constructs at the contextual level - in this case higher education. All four contain subscales that are considered, in their development (Entwistle & Tait, 1995; Neemann &

Harter, 1986; Rossouw & Parsons, 1995; Vallerand et al., 1992), to be independent of each other and contribute to the description of students' psychological profiles. There are no normative data for the inventories that might be usefully used to compare the sample in this study with a student population and thus any discussion about 'high' and 'low' scores has to be in reference to the mid-point of the scale or to the mean of the sample. Similarly any comparisons between subscales may not be interpreted meaningfully as there is no evidence to indicate whether differences that arise are simply a result of the 'normal' response bias of the instrument (e.g. social desirability). Although statistically significant differences between subscales will be reported no definite conclusions about the nature of these differences can be made.

5 Perceptions of competence, motivation and locus of control in first year undergraduate students.

The self worth and perceptions of competence, motivation and locus of control data for 395 undergraduates at first year registration were examined for differences related to sex, age and groups defined by normatively high and low self worth scores.

5.1 Introduction

The capacity to think, learn and behave autonomously is often claimed as an outcome for students in higher education (Stephenson & Laycock, 1993) and is said to be highly valued by employers (CBI, 1994). This chapter reports an investigation into the autonomy-related characteristics of first year students, including age and sex differences where they occurred, providing baseline data for investigations into the changes in psychological profiles of students during their higher education experience.

5.2 Psychological Characteristics of Autonomous People

Throughout the literature there are common factors which emerge in any discussion of autonomous behaviour. Autonomous people are intrinsically-motivated, perceive themselves to be in control of their decision-making, take responsibility for the outcomes of their actions and have confidence in themselves (see, for instance, Deci & Ryan, 1985; Bandura, 1989b; Grolnick & Ryan, 1989; Zimmerman, 1989b; Doyal & Gough, 1991). Many authors link these characteristics to the sense of self which enables autonomous people to act within a personal belief system, providing them with the framework for their decision-making and personal planning (e.g., Bandura, 1989b; Koestner, Bernieri & Zuckerman, 1992; McCombs, 1991; McCombs & Marzano, 1990; Ryan & Powelson, 1991; Zimmerman, 1989a). In order to translate these underlying attributes into behaviour, McCombs & Marzano (1990) argue that metacognitive

skills such as self-appraisal, reflective practices, strategy choice and implementation, need to be acquired and applied. Corno (1993) reminds us that action cannot occur without a volitional element in which the will and the skill to act can overcome barriers to action. Autonomy is undoubtedly facilitated or constrained by the environment (Ryan & Powelson, 1991; Grolnick & Ryan, 1989) but is described by Deci, Vallerand, Pelletier, & Ryan (1991) as a basic human need which we all seek to satisfy. As was argued earlier in the thesis, perceptions of competence, motivation and perceived locus of control are all related to autonomous behaviours.

Self-perceptions of competence in domains (Harter, 1987) and task-related self-efficacy (Bandura, 1989b) are known to be powerful influences on behaviour and mediate motivational pre-dispositions to engage in achievement behaviour (Bandura, 1989b; McCombs & Whisler, 1989). Zimmerman (1989a) described self-efficacy as a 'thermostat' that regulates a learner's strategic behaviour in learning through a feedback loop. When the individual 'senses' that the necessary skills or knowledge to achieve a positive outcome on a task are lacking, more effort is expended to rectify the situation. This response may, however, be mediated by self-assessment of competence, with low self-efficacy or perceived competence often resulting in task avoidance (White, 1959; Harter, 1978, 1987; Bandura, 1989b; Zimmerman, 1989a).

For learners to be self-determined or autonomous they must have a sufficiently high self perception of competence to be prepared to risk short term failure at a task which they feel is important. Choosing a challenging task might be a risk which a student with a lower perception of academic competence may not be prepared to take. Thus the capacity to behave autonomously and to have the opportunity to act in a way that is personally relevant, will be enhanced or constrained by self-perceptions of competence or efficacy for the task. Tasks which are selected by the learner will be those which do not pose a threat to self-esteem, perceived competence, perceived self-efficacy or mastery (Heckhausen & Schulz, 1995). Similarly, perceptions of competence are motivational, leading to approach or avoidance behaviours in achievement contexts.

The desire to act (motivation) can be described as being internally or externally stimulated (see, for instance, Bandura & Schunk, 1981; Deci et al., 1991). Intrinsic motivation to act has its genesis within the individual and is congruent with the individual's sense of self and purpose. In higher education an intrinsically motivated student studies for personal satisfaction rather than for an instrumental reason. A student who is studying only in order to achieve a better job and who is not interested in the degree per se would score high on external regulation. External regulation can lead to action which itself is not in line with the value system of the individual and does not contribute to that individual's sense of self. Nearer to the intrinsic end of the continuum is introjected regulation where the student recognises the value of the activity in achieving a desired goal (such as passing a module) but is motivated by, for instance, by fear of failure or anticipation of reward rather than an interest in the activity. In contrast, although not primarily self-generated, identified regulation is stimulated by the expectation of achieving internalised, valued and personally-relevant outcomes. It differs from intrinsic motivation only in that the action is not initiated by the individual. Deci et al. also describe an 'amotivated' state in which individuals have no desire to act. This lack of motivation is clearly detrimental to achievement oriented or autonomous behaviour.

It is argued that a motivational orientation at the intrinsic end of the continuum is a logically necessary element of autonomy and that a learner who is only regulated externally could not be considered to be autonomous. The actions of an autonomous person will be congruent with their sense of self, in line with personal beliefs, attitudes and values and supported by an adequate perception of competence. Central to the relationships between motivation and perceived competence is the notion that one's behaviour will affect the outcome of an achievement event. This behaviour-outcome contingency leads to a sense of agency (Heckhausen & Schultz, 1995), of being an 'origin' rather than a 'pawn' (deCharms, 1968) and was described by Rotter (1966) as an internal locus of control.

An autonomous person, acting in a way which supports, and is supported

by, a personal framework, recognises that the outcome of the activity is contingent upon their behaviour (Brown, 1990; DeCharms, 1968; Rotter, 1966). A person with this perception, one who generally feels that their success or failure is under their own control, is described as having an internal locus of control. At the other end of the continuum is an external locus of control in which individuals perceive themselves to have little or no control over their achievement. Internally-controlled students who perceive their success or failure in, for instance, an exam, to be due to their efforts, will feel that they can influence the results of future exams by maintaining or increasing their efforts. Externally-controlled students will attribute their success or failure to luck or the action of powerful others and thus perceive that they have little personal control over outcomes. In the locus of control measures a high score on 'internal' locus, with a low score on 'external' and 'unknown' control factors would be an indication of autonomy-related locus of control. The emphasis here is that autonomous learners perceive themselves to be in control of their success and failure in an academic context.

The development of positive aspects of motivation, perceptions of self and locus of control is affected both by individual factors and those in the environment. Students arrive in higher education with an orientation which may or may not be advantageous to their studies and understanding the nature of that orientation, before it was affected by the higher education environment, was the purpose of this part of the study. Age and sex differences in academic motivation, self-perceived competence and perceptions of control were measured in first year undergraduates. Additionally, normatively high and low self worth groups of students were compared in relation to their scores on the other autonomy-related variables. The details of the study were reported in Chapter 3 (research design) and Chapter 4 (instruments).

5.3. Findings from the investigation

This section reports all the results, including those where statistically-significant differences between sub-scales are identified. However, subscale differences cannot be meaningfully interpreted (see Chapter 4) and, whilst these

results will not be discussed in detail, they may be of value for comparison purposes in future research.

5.3.1 Self-worth and Perceived Competence

A sex by age by domain (2 x 2 x 5) repeated measures MANOVA compared self-perceptions in global self worth, scholastic competence, intellectual ability, close friendship and social acceptance. Multivariate tests indicated a significant domain by sex interaction ($\lambda[F(4,387) = 2.878; p<.03]$) and a significant main effect for domain ($\lambda[F(4,387) = 16.105; p<.0001]$). A Greenhouse-Geisser adjustment for non-spherical data made no difference to the significance of the result. The between-subjects contrasts indicated that there was no overall significant main effect for sex [$F(1,390) = 1.585; p >.2$] or for age [$F(1,390) = .063; p >.8$].

Tukey's HSD follow-up tests for the domain main effect indicated that scores for self worth were significantly higher than those for scholastic competence ($p<.0001$) and for intellectual ability ($p<.0001$). Scholastic competence was perceived as significantly lower than both close friendship ($p<.0001$) and social acceptance ($p<.005$). Perceptions of intellectual ability were significantly lower than those of close friendship ($p<.002$). These differences may be simply an artefact of the ways in which students respond (e.g. biased by social desirability) to the scale rather than meaningful differences (see Chapter 4).

The follow-up tests for the domain-sex interaction indicated that the only within-domain sex difference occurred in intellectual ability where the males scored significantly higher than did the females ($p<.005$). The significant interaction is caused by the relative positions of males and females in academic-related domains (scholastic competence and intellectual ability) where males scored higher than females, and in the close friendship domain where females scored themselves higher than did males (see Figure 5-1). Females scored themselves significantly lower in intellectual ability and scholastic competence than did both sexes in self worth, close friendship and social acceptance and than did males in intellectual ability ($p<.008$).

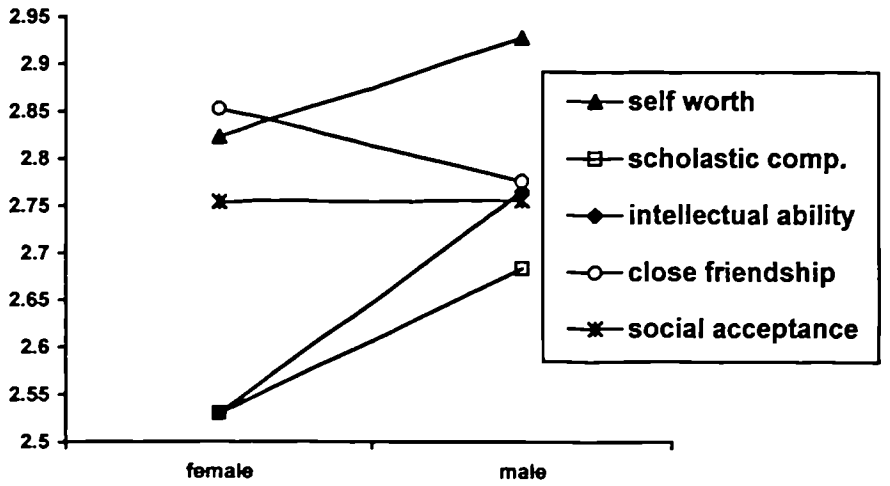


Figure 5-1: Sex differences in the self perceptions of students in global self worth, scholastic competence, intellectual ability, close friendship and social acceptance.

5.3.2. Importance ratings of domains

Multivariate tests of students' perceptions of the importance of intellectual ability, scholastic competence, close friendship and social acceptance using a 2 x 2 x 4 (age by sex by domain) repeated measures MANOVA, indicated a significant age by domain interaction (λ[F(3,388) = 5.598; p<.002]) and a significant main effect for domain (λ[F(3,388) = 54.584; p<.0001]). The application of a Greenhouse-Geisser adjustment did not substantially change the level of significance. There was a significant between-subjects main effect for sex [F(1,390) = 7.272; p<.008]. Overall females scored importance significantly higher than did males.

Follow-up tests indicated that scholastic competence was scored significantly more important than all the other domains (p<.0001) and that intellectual ability was scored significantly less important than all others. The age by domain interaction was accounted for by the non-significant differences between importance placed on intellectual ability by younger and older students (older students scored higher) and the importance of social acceptance which the younger students scored higher (see Figure 5-2).

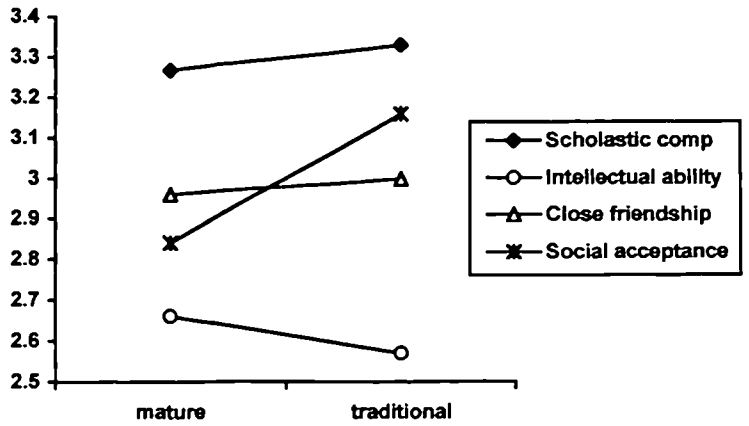


Figure 5-2: Age differences in the importance of scholastic competence, intellectual ability, close friendship and social acceptance.

5.3.3. Perceived competence and importance discrepancy

The discrepancy between perceptions of competence in a domain and the importance placed on that domain were calculated by subtracting importance score from competence score for each subject in each domain. A negative score (where perceived importance is higher than perceived competence) is more likely to inhibit positive achievement behaviours in that domain than if competence is perceived to be congruent with or greater than the importance attached to the domain.

Multivariate tests in an age by sex by domain (2 x 2 x 4) repeated measures MANOVA indicated that there was a significant age by domain interaction ($\lambda[F(3,388) = 5.518; p<.002]$) and a significant main effect for domain ($\lambda[F(3,388) = 32.185; p<.0001]$). A Greenhouse-Geisser adjustment to the analysis made no substantial difference to the level of significance. Between subjects analysis revealed a significant main effect for sex [$F(1,390) = 9.504; p<.003$] with males overall less negatively discrepant than females.

Follow-up tests indicated that scholastic competence discrepancy was significantly more negative than discrepancy in any other domain ($p<.0001$) and that intellectual ability, the only positive discrepancy score, was significantly more

positive than scores in the other three domains (p<.002). There were no significant age differences within domains. The significant interaction between domain and age was a function of the non-significant differences between mature and younger students in intellectual ability discrepancy (in which the younger students scored more positively than did the mature students) and the other domains in which younger students scored more negatively than did the older students (see Figure 5-3).

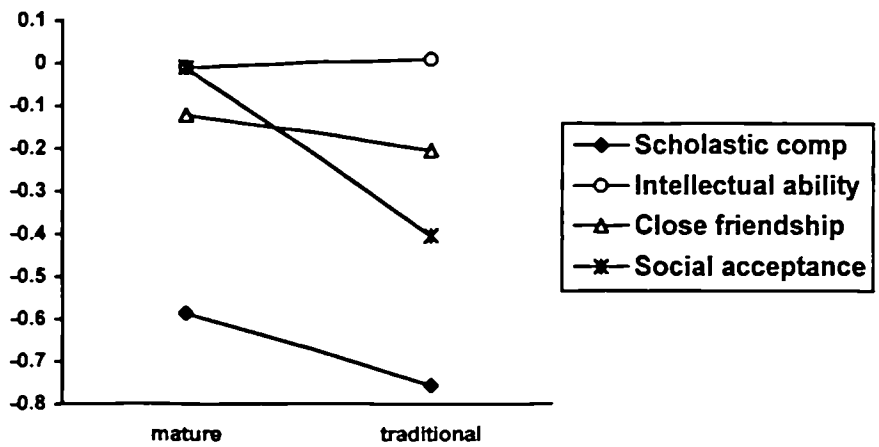


Figure 5-3: Age differences in the discrepancy between perceptions of competence and importance in domains.

5.3.4 Academic Motivation

An age by sex by motivational orientation (2 x 2 x 3) repeated measures MANOVA investigated differences between students in three levels of orientation - intrinsic motivation, extrinsic motivation and amotivation. Multivariate test results indicated that there was a significant motivation by age interaction (λ[F(2,389) = 11.154; p<.0001]) and a significant main effect for orientation (λ[F(2,389) = 1031.989; p<.0001]). Tukey's HSD tests revealed a significant difference between all three orientations. Extrinsic motivation was scored significantly higher than both the other two orientations whilst intrinsic motivation was scored significantly higher than amotivation (p<.0001). The significant age by orientation interaction was due to the different age-related rankings of intrinsic and extrinsic motivation. Mature students scored significantly higher than did the younger students on

intrinsic motivation (p<.002) but lower (although not significantly) than them on extrinsic motivation (p>.2). Traditional students scored extrinsic motivation significantly higher than they did both other orientations (p<.0001) whilst mature students' scores on intrinsic and extrinsic motivation were not significantly different (p>.7). The problems associated with the validity of any comparisons between the sub-scales of the AMS are addressed in Chapter 4.

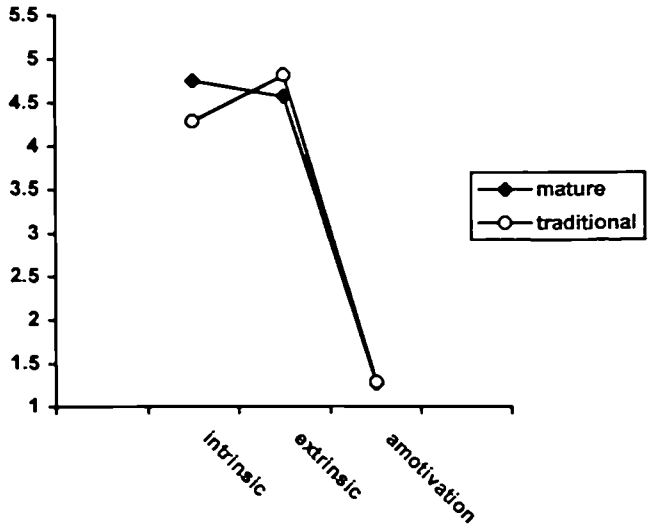


Figure 5-4: Age differences in intrinsic, extrinsic and amotivation orientations. There was a significant difference for age on intrinsic motivation (p<.002)

Intrinsic motivation was broken down into its sub-components (to know, to achieve and to be stimulated). An age by sex by sub-component (2 x 2 x 3) repeated measures MANOVA revealed a significant main effect for sub-component (λ[F(2,389) = 350.158; p<.0001]). A Greenhouse-Geisser adjustment did not affect the level of significance. Between-subjects analysis indicated that there was an overall significant age difference [F(1,390) = 13.099; p<.0001] with mature students scoring higher. Follow-up tests indicated that 'to know' was scored significantly higher than the other two sub-components and that 'to achieve' was significantly higher than 'to be stimulated' (p<.0001).

A number of significant differences related to age were revealed in the

Tukey's follow-up tests. The 'to know' score for mature students was signficantly higher than all other scores except that of traditional students 'to. Traditional students also scored 'to know' as significantly higher than their other scores ($p<.0001$) and 'to be stimulated' as significantly lower than 'to achieve'.

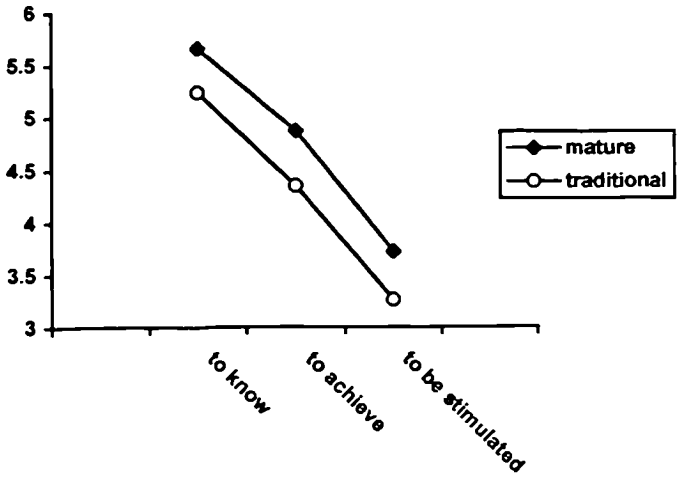


Figure 5-5: Age differences for the sub-components of intrinsic motivation. Overall, mature students scored significantly higher than did the traditional students ($p<.0001$).

The sub-components of extrinsic motivation (identified, introjected and external regulation) were also investigated in an age by sex by sub-component repeated measures MANOVA. Multivariate test results revealed a significant age by sub-component interaction ($\lambda[F(2,389) = 14.722; p<.0001]$) and a significant main effect for sub-component ($\lambda[F(2,389) = 54.135; p<.0001]$). The level of significance remained robust following a Greenhouse-Geisser adjustment. Follow-up tests indicated that the three sub-components were significantly different from each other. Identified regulation was significantly higher than the other two variables ($p<.0001$). External regulation was scored significantly higher than introjected regulation ($p<.04$). Age differences within sub-components were only significant within external regulation where mature students scored lower than the younger students ($p<.007$). Other results indicated that mature students' scores for identified regulation were significantly higher than for their external regulation

(but not for introjected) and that traditional students scored identified regulation significantly higher than both introjected and external regulation ($p<.003$). Although previous analyses had not revealed any significant differences for sex, the Tukey's test indicated that there were some within-sub-component and within sex differences that are worth reporting. Female students scored identified regulation significantly higher than all other scores for males and females ($p<.03$). Males scored identified regulation significantly higher than they did introjected and external regulation. Introjected and external regulation were not scored significantly differently within or between the sexes.

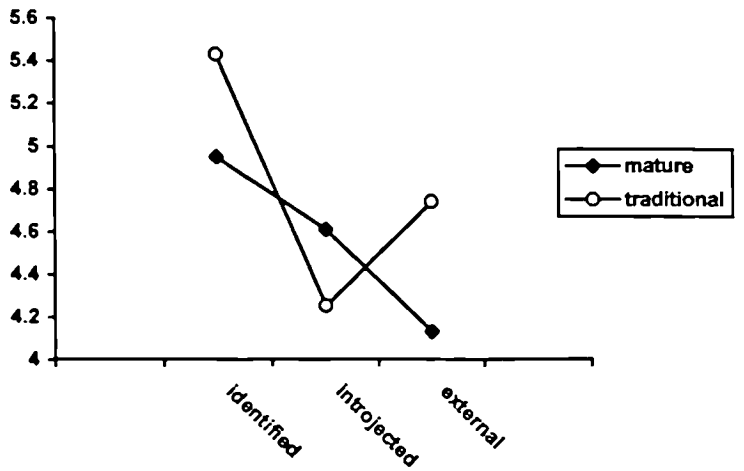


Figure 5-6: Age differences in the sub-components of extrinsic motivation. External scores are significantly different between age groups ($p<.007$).

5.3.5. Academic Locus of Control

As the questionnaire was developed using a group of mainly male engineering undergraduate students in South Africa, a factor analysis was applied to the data in this study to confirm the factor structure. Using a Principal Component Analysis, with a Promax rotation which enables items to correlate, three factors emerged. The first factor was labelled 'external'. This included 'luck for failure (LUF)', 'context for failure (COF)', 'unknown control for failure (UCF)', 'powerful others control for failure (POCF)', 'powerful others control for success

(POCS)' and 'ability for failure (ABF)'. Most of these items dealt with attributions for failure, the exception being POCS. ABF was an unexpected addition to this factor as ability is theoretically an internal variable. The second factor to emerge was labelled 'internal'. It included 'internal control for success (ICS)', 'effort for success (EFS)', 'internal control for failure (ICF)', 'effort for failure (EFF)', and 'ability for success (ABS)'. The third factor contained external or unknown items relating to success and was labelled 'external success' It included 'context for success (COS)', 'unknown control for success (UCS)' and 'luck for success (LUS)' (see Table 5-1).

A 2 x 2 x 3 (sex by age by locus of control factor) repeated measures MANOVA revealed a significant main effect for factor ($\lambda[F(2,389) = 542.231; p<.0001]$). A Greenhouse-Geisser adjustment did not change the level of significance. Tukey's HSD follow-up tests indicated that the internal factor was scored significantly higher than the two external factors ($p<.0001$) but this difference may not be meaningful (see Chapter 4). There were no significant age or sex differences within or between the factors.

Item	1	2	3
Luck for failure	*.735*	-.214	.187
Context for failure	*.689*		.333
Unknown control for failure	*.659*	-.175	.285
Powerful others control for failure	*.591*		.234
Powerful others control for success	*.514*	-.190	.371
Ability for failure	*.511*	.300	.184
Internal control for success	-.120	**.782**	-.133
Effort for success		**.766**	-.303
Internal control for failure	-.176	**.746**	.205
Effort for failure	-.238	**.691**	.242
Ability for success	.327	**.594**	-.371
Context for success	.351		.782
Luck for success	.377		.741
Unknown control for success	.436		.685

Loadings less than .1 are not displayed. 'External/failure' factor items are in italic type, 'internal' factor items are in bold type and 'external/success' items are in normal type.

Table 5-1: Item loadings for three factors in a Principal Components Analysis using a Promax Rotation with Kaiser Normalisation.

5.3.6 High and low self worth

Given the convincing evidence for the effect of high global self worth on achievement behaviour, the relationships between self worth and the other autonomy-related variables measured in this study were investigated. Students were divided into two groups based on their normatively high or low self worth score. The high self worth group's score was greater than the median score for the whole sample and students in the low self worth group scored on or below the median score. Using analysis of variance, differences between the two self worth groups were explored in relation to perceptions of competence, importance of domains, discrepancy between competence and importance, intrinsic motivation, extrinsic motivation, amotivation, 'external' locus of control, 'internal' locus of control and 'external success' locus of control variables.

The high self worth group (n = 235) scored significantly higher than the low self worth group (n = 159) in all perceived competence measures (p<.0001).

Dependent variable		SS	df	MS	F	Sig.
Scholastic competence	Contrast	6.274	1	6.274	24.77	.000
	Error	99.29	392	.253		
Intellectual ability	Contrast	13.66	1	13.66	41.78	.000
	Error	128.2	392	.327		
Close friendship	Contrast	11.99	1	11.99	26.98	.000
	Error	174.4	392	.445		
Social acceptance	Contrast	25.11	1	25.11	82.42	.000
	Error	119.5	392	.305		

Table 5-2: Differences between the high and low self worth groups in perceptions of competence. In all domains the high self worth group scored significantly higher.

There were no significant differences between the two self worth groups for the importance ratings of the domains (p>.1). However, significant differences were revealed between the two groups in all the discrepancy scores with the high self worth group's scores less discrepant or more positive than those of the low self worth group. Significance levels were p<.007 for scholastic competence discrepancy and p<.0001 for all other discrepancy scores.

Dependent variable		SS	df	MS	F	Sig.
SC discrepancy	Contrast	6.457	1	6.457	7.65	.006
	Error	330.9	392	.844		
IA discrepancy	Contrast	23.36	1	23.36	32.62	.000
	Error	280.8	392	.716		
CF discrepancy	Contrast	11.17	1	11.17	15.36	.000
	Error	284.9	392	.727		
SA discrepancy	Contrast	30.84	1	30.84	49.31	.000
	Error	245.2	392	.625		

SC = scholastic competence; IA = intellectual ability; CF = close friendship; SA = social acceptance.

Table 5-3: Differences between the high and low self worth groups in domain-specific discrepancy (competence-importance). In all domains the high self worth group was significantly less discrepant or more positively discrepant than the low self worth group.

For motivation the only significant difference between the two groups was in amotivation where the low self worth group scored significantly higher than did the high self worth group ($p<.0001$).

In the locus of control data there were significant differences between the groups for the two external factors with the low self worth group scoring significantly higher in both - 'external' ($p<.002$); 'external for success' ($p<.0001$).

5.4 Discussion

Despite the lack of research into students' autonomy-related psychological characteristics, conventional wisdom suggests that sex differences in perceived competence and age differences in motivation might have been anticipated. No other firm hypotheses could be proposed based on the literature and there are no norm tables against which these data can be compared. Whilst the results of the research elucidate some of the differences attributable to age and sex, not all were

in what might have been the expected direction. These results challenge some assumptions often made about new undergraduates.

5.4.1 Perceived competence and self-worth

There were no significant age or sex differences for self-worth in this cohort. Self-worth is constructed from self-perceptions in a number of domains, with each individual affected by those areas of self that are personally-valued. This group has a modest rating but overall does not appear to be at risk from low self-esteem (i.e. scores less than 2.5, the mid-point of the scale). The literature consistently reports that males score higher on self-perceived competence than do females (Harter, 1985) but this study does not generally confirm previous findings. Males scored significantly higher than did females in perceptions of intellectual ability (IA) and scored higher, though not significantly, in scholastic competence (SC), enabling them to be more confident about their ability to succeed in the academic domains than were the women students. Females scored higher than the males (although not significantly) in the close friendship domain. Both males and females scored themselves on the lower end of the competence scale for intellectual ability and scholastic competence, choosing statements that suggested that they did not perceive themselves to be particularly competent. Staff may need to offer beginning students opportunities to increase their perception of academic competence at an early stage. Beginning undergraduates appear to be cautious about assessments of their ability to meet the unknown demands of degree study and it may be that these relatively low scores (in relation to the potential for the scale and the data presented by Neemann & Harter, 1986 - see Chapter 4) in intellectual ability and scholastic competence reflect difficulties in understanding their competence in relation to a new environment.

There were no age differences in the perceived competence data although university staff often describe mature students as being more in need of reassurance and confidence-boosting than their younger peers. In the light of these findings it may be that we are misinterpreting mature students' more frequent requests for help. They may simply be more strategic in using whatever support is available to them. There are differences in the importance that mature

and traditional-aged students place on the domains with the mature students rating intellectual ability higher and the interpersonal domains lower than the younger students. This is almost certainly reflected in the stereotypical behaviour of younger students who often appear to let social events take precedence over study at the beginning of their degree.

Overall, when the importance ratings of the academic-related domains are considered, students are seen to rate scholastic competence much higher than they do other domains (although this might be an artefact of the scale) and higher than their perceived competence. Harter (1985) discusses the potentially harmful effect of a discrepancy between importance (i.e. value) of a domain and perceived competence in that domain when perception of competence is lower than the importance placed upon it. Such discrepancy creates anxiety and fear of failure in a salient aspect of the self. It may lead to avoidance behaviour where there is a risk of appearing incompetent (Nicholls, 1984) and it has a negative effect on self-worth. Clearly beginning undergraduates rate scholastic competence as important but are uncertain about their own capabilities. This confirms the observations of university teachers who recognise the anxiety of students when the first assignment is set. This study highlights the need to provide students at this stage with competence-enhancing tasks. It is interesting that the skill of study (SC) is rated so highly by students, perhaps reflecting an expectation that HE will demand a high level of study skill rather than an inherent ability. The discrepancy score for intellectual ability is very small in this sample, whereas that for scholastic competence is negative and high.

When the data was divided to create high and low self worth groups, there was a striking difference between the groups for perceived competence and discrepancy scores. Given the wealth of research (e.g. Bandura & Jourden, 1991; Harter, 1990; Weinberg, Gould & Jackson, 1979) that indicates the effect of perceptions of competence and discrepancy on achievement behaviour, the high self worth group are clearly at an advantage over the others. They perceived their competence to be significantly higher, and the discrepancy between competence and importance significantly smaller and more positive, than the low self worth

group in all domains. The high self worth group were also significantly less amotivated than were the low self worth group and perceived themselves to be significantly less externally controlled than did the low self worth group. Whilst these results are not, intuitively, surprising, it must be remembered that the groups were divided on the basis of a median split and not in relation to the potential mean of the scale which was lower. Although not scoring themselves high on global self worth, all these students were generally positive about themselves, making the significant differences in other variables more surprising.

5.4.2 Motivation

Academic staff often complain that students these days are not motivated to study but these data dispute those perceptions. This group of students was well motivated to study with very low amotivation scores and scores above the mid-point of the scale in both intrinsic and extrinsic motivation. The finding that, overall, students scored significantly higher on extrinsic motivation (EM) than on intrinsic motivation (IM) was of concern until the sub-components of these categories were examined. 'Identified regulation' (ID) and the intrinsic sub-component 'to know' were both scored very high by all students. ID, as the next point on the motivation continuum from IM, describes a reason for acting which is personally-valued but not initiated by the individual. When motivation is at the internalised end of the continuum, positive achievement behaviours such as commitment, persistence and challenge seeking are demonstrated (Deci & Ryan, 1985; Deci et al., 1991). The lack of normative data on this scale (see Chapter 4) means that it is difficult to interpret apparent differences between subscales. They are reported as indicators to be viewed as contributions to students' overall psychological profiles.

Whilst mature students scored higher than did traditional students on all the sub-components of IM it was the traditional students who scored significantly higher on ID and on external regulation. It is likely that the younger students perceived themselves to be externally regulated by the expectations of others such as parents and teachers to a greater extent than did the older students. Mature students, however, recorded higher scores on introjected regulation. As

this form of regulation is related to such concerns as fear of failure and the need to demonstrate ability, this is perhaps not surprising. (e.g. an 'introjected' statement is: 'To prove to myself that I can do better than I did in school'). Mature students are sometimes those who failed to make the grade at the age of 18 or who had left formal education early. It is likely that, for many mature students, the need to rectify past failures and demonstrate ability is often a strong motive for higher education study.

External regulation (EX), on the other hand is clearly an important regulator of traditional students' behaviour. An example of an EX statement is: 'in order to get a more prestigious job later on'. Traditional-aged students scored higher on EX than on introjected regulation (IJ) but significantly higher than both on ID. Whilst any motivational orientation leads to action, a high external regulation is risky in terms of persistence, commitment. Give the higher scores of ID neither age group appears to be motivationally at risk as their motivation to study overall is above the mean of the scale and amotivation is low.

Beginn ng students' major intrinsic reason for studying seems to be that of wanting to learn about new and interesting things and they no doubt have a high expectation that this is what university will offer them. Interestingly they do not score highly on 'to experience stimulation' that many of us anticipate from learning. 'To be stimulated' was rated significantly lower than all other sub-components of IM and EM. That, of course, could be an artefact of the scale rather than a meaningful difference (see Chapter 4). Enjoyment of and stimulation by activity is known to be a powerful motivator but these first year students do not, apparently, rate it highly as a reason for studying. Increases over time in this variable would be anticipated if HE provides the opportunity for stimulation.

5.4.3 Locus of control

The factor structure of locus of control followed, to a large extent, that expected theoretically. 'Powerful others control for success' (POCS) seemed out of place in a factor onto which loaded items referring to failure as did 'ability for failure' (ABS) which is generally considered to be an internal factor. Students

appear to recognise that they are sometimes successful for reasons not under their control, hence the third factor that incorporates most of the external/success items.

The finding that all students rated 'internal control' significantly higher than the other two factors might have important implications for the likely long-term success of students both within and beyond their university experience (although see Chapter 4 for a discussion of the problems associated with potentially spurious comparisons of subscales). Perceiving that you have control over the outcomes of your efforts means that you can congratulate yourself when successful and know that it is possible to repeat the success. Although accepting responsibility for failure is not always healthy, Lachman & Burack (1993) proposed that to take personal responsibility for failure gives the individual a sense of control in preventing the aversive event happening again. If failure is attributed to others or to chance then there is perceived to be no control over its recurrence. However, perceiving that failure is related to one's ability, if ability is viewed as a relatively stable capacity, is not necessarily a good thing and it may be a healthy sign that, in this cohort of students 'ability for failure' is perceived as an uncontrollable, external factor and not an uncontrollable, internal factor. Sarrazin, Biddle, Famose, Cury, Fox, & Durand (1996) found that some college students view ability as a fixed entity rather than incremental, a concept that will be detrimental to adaptive perceptions of control and competence in achievement situations. Developmental studies have indicated that adolescents can clearly differentiate between the concepts of effort and ability as cause of outcome (see, for instance, Nicholls & Miller, 1984) and thus it must be assumed that university students have a mature understanding of the concepts. Some observations of academic staff in university suggest that they may reinforce the view of ability as a fixed entity, not modifiable through effort or experience, perhaps to the detriment of students' progress.

The factor structure identified in this study indicates that effort for success and failure and ability for success are generally conceived as related items, loading as they do onto the internal factor. Students appear to be more equivocal

about ability as a reason for failure. Further investigations into the perceptions students have about the controllability of ability needs to occur before these relationships can be fully understood. It is interesting to note that the high and low self worth groups, although not different in their perceptions of internal control, were significantly different in their perceptions of external control. The low self worth group perceived themselves to be significantly more externally controlled in both failure and success, than did the high self worth group.

5.4.4 Autonomous learners

Bandura (1997) discusses the relationships between the desire for control (whether inborn or instrumental for the achievement of perceived benefits), the resulting action to master the environment that leads to re-assessments of competence and the motivational aspects of both of these. These three elements of autonomy - control, competence and motivation - investigated in this study, provide a profile for this student cohort that is promising. With a predominantly internal perception of control for both success and failure and motivation for study at the internal sed end of the motivation continuum, these students possessed attributes that would enable them to be self-determined in their studies. Relative to the students measured by Neemann and Harter (1986) in the USA, and to the mid-point score on the scale, the rather low scores on perceived competence cause some concern but are likely to be addressed rather than avoided given the perceptions of internal control.

The differences highlighted in some of these data suggest that mature students are at an advantage in that they are more intrinsically-motivated than are younger students but that their score for introjected regulation might indicate an underlying anxiety about the need to achieve. Males and females did not demonstrate the differences found in other studies and are, generally homogeneous. All students are at risk because of the high importance score for scholastic competence relative to lower perceptions of their competence in that domain. However, in both perceptions of competence and in the factor structure of locus of control, perception of intellectual ability does not appear to create a barrier to learning.

The relationships between self worth and the other variables are not, theoretically, surprising but this study does not investigate causal relationships between the variables. It may be that a higher score on self worth is an outcome of other positive attributes rather than an antecedent. Nevertheless, students with a normatively high perception of their self worth are less externally controlled, have higher perceptions of their competence, less discrepancy between aspirations and achievements and are less amotivated than those with normatively low self perceptions. The low self worth students are just as highly motivated and internally controlled as the other group, however and place as much value on the competence domains as do those with higher self worth.

Teachers need to be aware of the potential individual differences in these characteristics. The provision, for beginning students, of opportunities to enhance their perceptions of competence, exercise the control over the outcomes of their study and continue to be motivated to know and to achieve will support the positive, autonomy-related profiles that exist at first year registration. The next chapter will describe how the autonomy-related variables measured at first year registration change over time within the HE context. It was hoped that the positive autonomy profile displayed by the students at first year registration would be at least maintained if not enhanced by the HE environment in which they were studying.

6 Changes across time in students' autonomy-related characteristics

Undergraduate students' self-perceptions of their autonomy-related characteristics are reported in this chapter. The psychological variables were measured across the first two years of study and of particular interest was the extent to which they changed with exposure to the university environment. The discussion at the end considers student profiles in relation to notions of autonomy.

6.1 Introduction

In Chapter 5 it became apparent that those entering higher education scored in the top half of the scale for motivation (both intrinsic and extrinsic), very low on the scale for amotivation, scored higher on perceptions of internal control for success and failure than they did for external control but possessed apparently less positive perceptions of their competence than might have been expected. Given the often stated expectations that higher education will produce autonomous, flexible learners (see for instance, Biatecki & Domanski, 1995; CBI, 1994; Fuente, 1995; Stephenson & Laycock, 1993; Teichler & Kehm, 1995) it was anticipated that, if these expectations were being met, the higher scores on motivation and perceived internal control would be at least maintained over time and students' perceptions of competence would increase. The study is a repeated measures design with four constructs measured at four test points (see Chapter 3 for details of participants and procedures and Chapter 4 for information about the instruments). For clarity the analyses of the four different measures used in the study (perceptions of competence, motivation, perceived control and approach to study) are reported separately and each analysis is discussed before the next construct is reported. At the end of the chapter is a discussion section which provides a more holistic view of this group of students' autonomy-related characteristics over time and in relation to educational practice. Exploration of the relationships between the psychological constructs is reported in subsequent

chapters.

6.2 Perceptions of self

Although all significant results are reported, the problems associated with meaningfully interpreting differences between sub-scales should be noted (see Chapter 4) and are reflected in the discussion sections.

6.2.1. Self worth and perceptions of competence

A 4-way age by sex by domain by time (2 x 2 x 5 x 4) repeated measures MANOVA was used to investigate the data. The dependent variables were self worth (SW), perceived intellectual ability (IA), perceived scholastic competence (SC), perceived competence in close friendships (CF) and perceived social acceptance (SA). Oneway ANOVAs and Tukey's HSD test were used as follow-up tests.

There were no significant 2-way or 3-way interactions in the multivariate test results. There was a significant main effect for time (λ[F(3,79)=5.764; p< .002]) and a significant main effect for domain (λ[F(4,78) = 4.669; p<.003]). As Mauchly's Test of Sphericity indicated that the data were not spherical in either test or domain, the within-subject results are reported using the Greenhouse-Geisser adjustment. Within subject analyses indicated no significant two, three or four way interactions although the two main effects (time and domain) in the multivariate results remained robust (time: [F(3, 212) = 8.45; p<.0001]; domain [F(3, 224) = 4.799; p<.005]). As there was no significant effect of sex or age within the data, further analyses excluded these factors.

A domain by time (5x4) repeated measures MANOVA compared domain-specific perceptions of competence and self worth across four tests. There was a significant main effect for domain [F(4,229) = 9.67; p<.0001] and for time [F(3,220) = 18.37; p<.0001]. There was also a significant time by domain interaction [F(8,673) = 2.63; p<.009).

Oneway ANOVA results for each domain indicated significant within-domain time differences for intellectual ability [$F(3,339) = 3.195$; $p < .025$] and close friendship [$F(3,339) = 6.092$; $p < .0001$).

Tukey's follow-up tests indicated within-domain significant differences ($p<.05$) as follows: In intellectual ability, scores at test 1 were statistically significantly lower than at tests 3 and 4 and in close friendship scores at test 1 were also significantly lower than at tests 3 and 4.

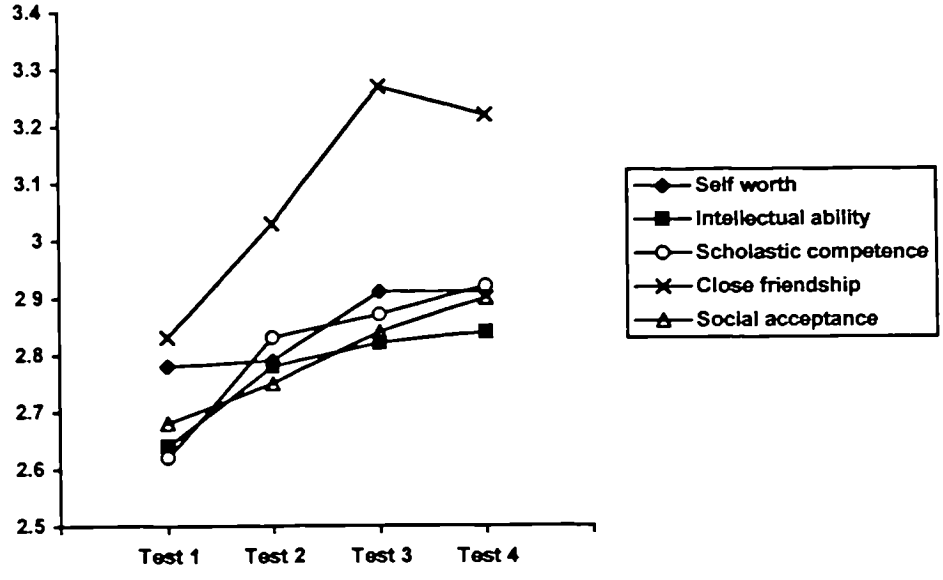


Figure 6-1: Self worth and perceptions of intellectual ability, scholastic competence, close friendship competence and social acceptance as measured at six monthly intervals.

Given the proposed relationship between perceptions of competence and self worth the relationship between normatively high and low self worth scores and perceptions of competence was investigated. The self worth data were divided into two groups on the basis of normatively high self worth (scores greater than the median at each test point) and normatively low self worth (scores equal to or less than the median at each test point). As the self-worth median scores in tests 1 and 2 were lower than those in tests 3 and 4, and consideration of the data indicated that some students would be categorised as high at

one test and low at another, it was decided to categorise students at each test point, based on the median score for that test. This meant that a MANOVA had to be used to investigate between group differences in perceptions of competence in the four domains at each test point separately and that time could not be used as a variable in this analysis (see Figure 6-2).

At test 1 the multivariate tests indicated a significant main effect for self-worth groups (λ[F(4,80) = 6.235; p<.0001]. The between subjects analysis revealed that the high self worth group scored significantly higher than the low group in intellectual ability [F(1,83) = 9.02; p<.005], close friendship [F(1,83) = 5.025; p<.03], and in social acceptance [F(1,83) = 22.936; p<.0001].

At test 2 multivariate tests indicated a significant main effect for self-worth groups (λ[F(4,80) = 20.572; p<.0001]. The high self worth group scored their competence significantly higher than did the low group in each domain (scholastic competence [F(1,83) = 23.599; p<.0001]; intellectual ability [F(1,83) = 28.096; p<.0001]; close friendship [F(1,83) = 10.567; p<.0001]; social acceptance [F(1,83) = 69.124; p<.0001]).

At test 3 multivariate tests indicated that there was a significant main effect for self-worth groups (λ[F(4,80) = 15.463; p< .0001]. Between subjects contrasts indicated significant differences in all domains (scholastic competence [F(1,83) = 25.049; p<.0001]; intellectual ability [F(1,83) = 20.299; p<.0001]; close friendship [F(1,83) = 13.201; p<.0001]; and social acceptance [F(1,83) = 45.328; p<.0001]). The high self worth group scored their competence significantly higher than did the low self worth group in each domain.

At test 4 multivariate tests indicated a significant main effect for self-worth groups (λ[F(4,80) = 14.87; p< .0001]) The high self worth group scored their competence significantly higher in each domain than did the low self worth group (scholastic competence [F(1,83) = 40.270; p<.0001]; intellectual ability [F(1,83) = 42.56; p<.0001]; close friendship [F(1,83) = 14.961; p<.0001]; and social

acceptance [F(1,83) = 26.864; p<.0001].

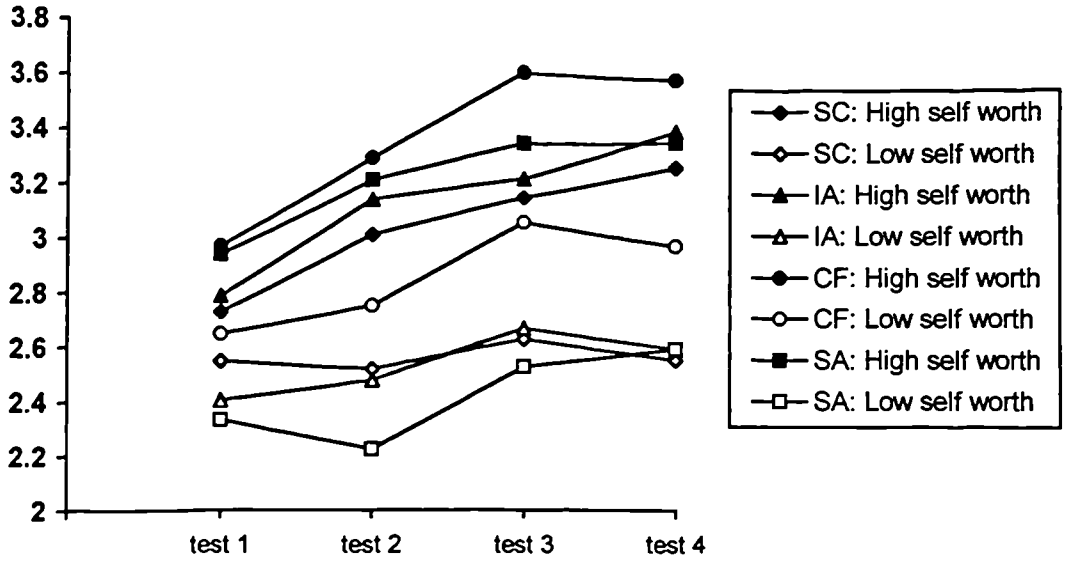


Figure 6-2: Perceived competence in domains across time with students divided into normatively high and low self worth groups at each test point.

6.2.2 Importance ratings of domains

A 2 x 2 x 4 x 4 (age by sex by domain by time) repeated measures MANOVA was used to investigate the data collected about the importance students place on four competence domains - intellectual ability, scholastic competence, close friendship and social acceptance.

The multivariate tests revealed a significant time by domain by age interaction (λ [F(9,73) = 2.493; p<.016]), a significant domain by age interaction (λ [F(3, 79) = 6.687; p<.0001]) and a significant main effect for domain (λ [F(3,79) = 46.627; p<.0001]). Greenhouse-Geisser adjustments were applied to analyses involving domain. Within-subjects analyses indicated a significant 3-way time by domain by age interaction [F(9, 612) = 2.843; p<.006], a significant interaction between time and domain [F(8, 612) = 2.094; p<.039], a significant interaction between domain and age [F(2, 191) = 8.743; p<.0001] and a

significant main effect for domain [$F(2,191) = 37.042$; $p<.0001$].

As sex as a variable did not contribute to any significant differences in the data a 2 x 4 x 4 (age by domain by time) repeated measures MANOVA was run excluding sex. The same significant interactions (time by domain by age and domain by age) and main effect (domain) were revealed in the multivariate analysis excluding sex. Within-subject comparisons indicated the same significant differences as above except that the time by domain interaction was no longer significant at the 5% level.

Significant differences over time were revealed within the importance of intellectual ability [$F(7,339) = 2.461$; $p<.02$], the importance of close friendships [$F(7,339) = 2.316$; $p<.03$] and the importance of social acceptance [$F(7,339) = 3-921$; $p<.0001$]. As Figure 5-3 indicates, the importance of intellectual ability increased over time whilst that of close friendship and social acceptance decreased. Tukey's HSD test indicated that the interactions between domain, age and time were accounted for within these same three domains. Significant differences occurred within perceived importance of intellectual ability in which mature students at test 4 scored significantly higher than traditional students at test 1 ($p<.02$). Within test 2 there were significant age differences for close friendship with traditional students scoring significantly higher than mature students ($p<.04$). Traditional students at test 1 scored significantly higher than did mature students at test 4 on the importance of social acceptance ($p<.01$).

Overall differences between domains were as follows: importance of scholastic competence was significantly higher than importance in all the other domains ($p<.0001$); importance of close friendship was significantly higher than importance of intellectual ability ($p<.0001$) and importance of social acceptance ($p<.0001$); importance of social acceptance was significantly higher than importance of intellectual ability ($p<.0001$). These differences may be an artefact of the scale however rather than a meaningful difference (see Chapter 4).

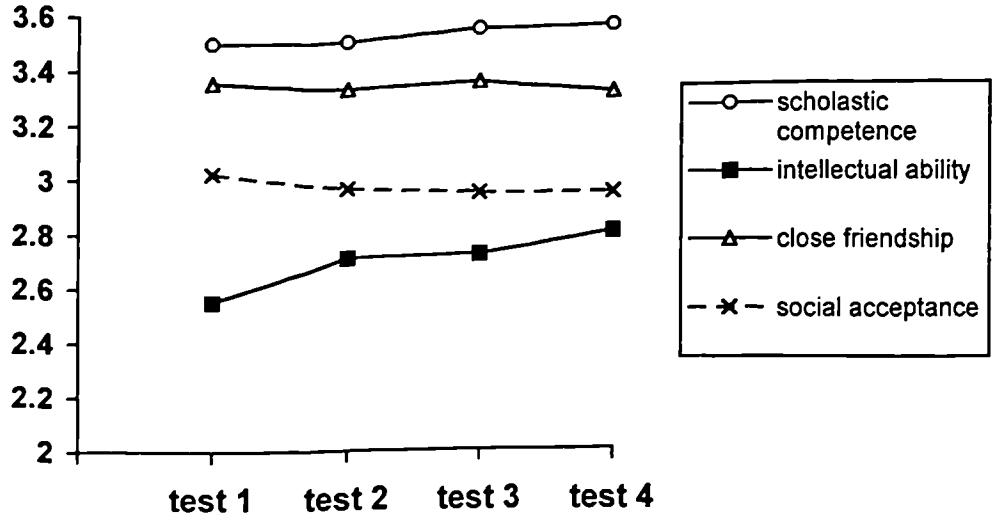


Figure 6-3: Importance of competence domains across time. Overall scores for each domain are significantly different from overall scores in all other domains (p<.0001).

The differences between the between high and low self worth groups (categorised using a median split for self worth at the relevant test point) and the importance placed on domains were investigated using a MANOVA. Importance in domains were the dependent variables and separate MANOVAs were used for analysis at each test point.

The multivariate tests revealed no significant main effect for group at any test point: Test 1 (λ[F(4,80) = .160; p>.9]); Test 2 (λ[F(4,80) = .571; p>.6]; Test 3 (λ[F(4,80) = .134; p >.96]); Test 4 (λ[F(4,80) = 1.115; p>.35] (see Figure 6-4).

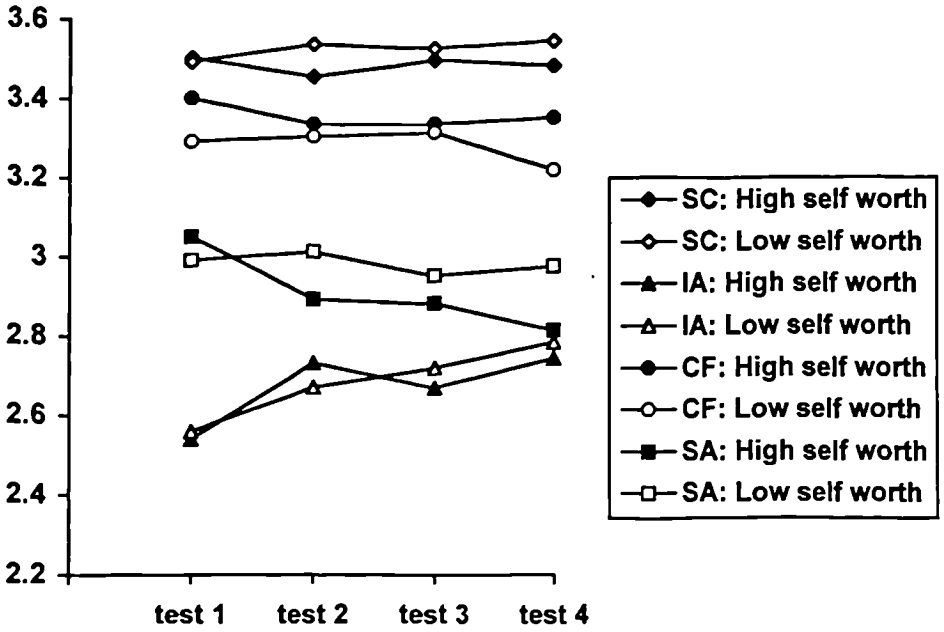


Figure 6-4: Importance ratings of domains at four test points with students divided into high and low self worth groups.

6.2.3. Self worth and competence/importance discrepancies

Discrepancy between domain-specific competence assessment and importance (competence score minus importance score) was calculated and explored in relation to changes across time, age and sex.

A sex by age by domain by time (2 x 2 x 4 x 4) repeated measures MANOVA with discrepancy scores in the four domains as the dependent variables indicated a significant time by age by domain interaction (λ [F(9,73) = 3.2; p<.004]), a significant age by domain interaction (λ [F(3,79) = 3.327; p<.03]), a significant main effect for time (λ [F(3,79) = 5.187; p<.004]) and a significant main effect for domain (λ [F(3, 79) = 32.379; p<.0001]). As Mauchly's Test of Sphericity revealed that data for the time by domain interaction were not spherical the Greenhouse-Geisser adjustment was applied to the within subjects analysis. The time by domain interaction was significant [F(9,204) = 2.489; p<.02] in the within subjects analysis, having not been so in the multivariate tests (λ [F(9,73) = 1.849;

p>.07]).

Tukey's HSD test revealed significant differences related to age in discrepancy scores within the two social domains across time - close friendship and social acceptance. In close friendship traditional students at test 1 were significantly more negatively discrepant than they were at test 3 ($p<.03$) and at test 4 ($p<.02$). In social acceptance traditional students at test 1 were significantly more negatively discrepant than were mature students at test 4 ($p<.009$).

Tukey's HSD test indicated significant differences within close friendship discrepancy between test 1 and tests 3 and 4 ($p<.0001$) with less negative discrepancy over time. Although there were no other significant changes over time (as Figure 6-5 illustrates) there was a trend towards discrepancies becoming less negative in three domains from test 1 to test 4. Tukey's HSD test indicated that the discrepancy between perceived competence and perceived importance in the scholastic domain was significantly more negative than that in intellectual ability, close friendship and social acceptance ($p<.0001$). Discrepancy in intellectual ability was significantly less negative than in all other domains ($p<.03$), with discrepancy scores close to zero and the only domain in which the scores were positive overall. There were no significant differences overall between discrepancy in the two social domains - close friendship and social acceptance - ($p>.9$) (see Figure 6-5).

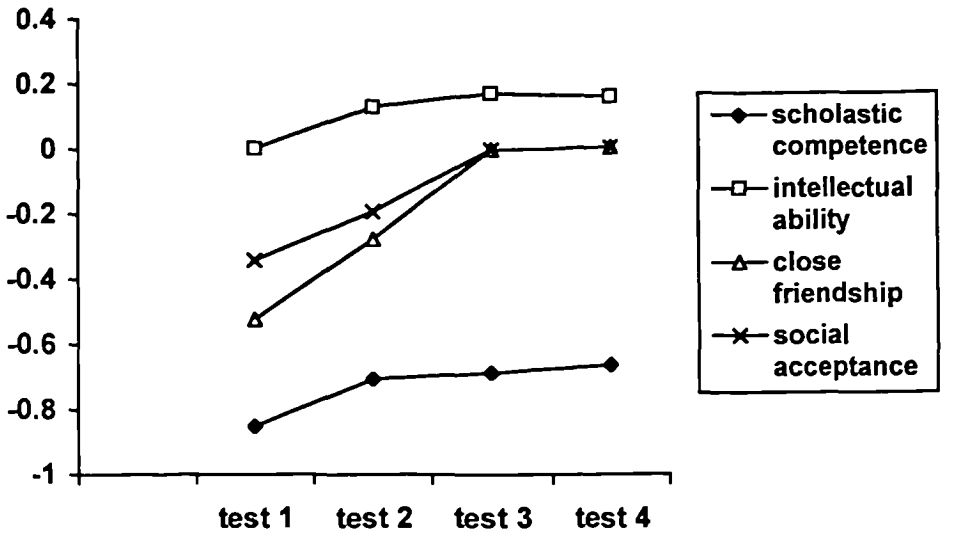


Figure 6-5: Discrepancies between perceptions of competence and importance in each domain across four test points.

6.2.4. High and low self worth

Differences between the two self worth groups (normatively high or low) were explored at each test point using a MANOVA, with discrepancy scores in each domain as the dependent variables.

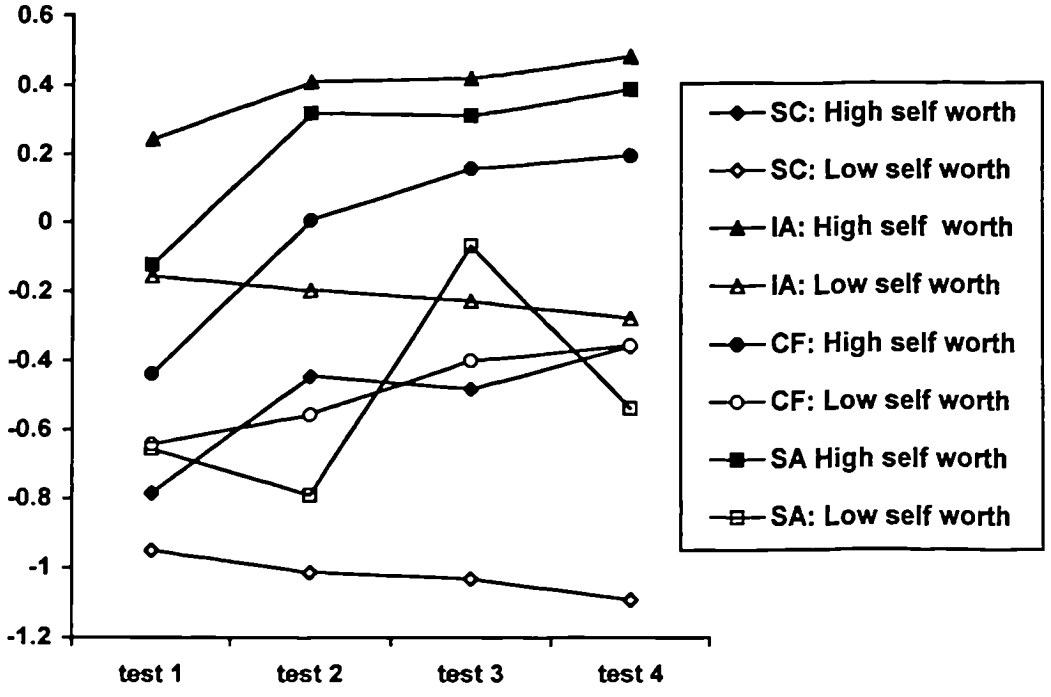
At test 1 the multivariate tests indicated that there was a significant main effect for group (λ[F(4,80) = 3.248; p<.02]). This main effect was largely accounted for by the significant differences between the groups in social acceptance discrepancy [F(1,83) = 11.408; p<.002] with the high self worth group having a less negative score than the low self worth group.

At test 2 the multivariate analyses revealed a significant main effect for group (λ[F(4,80) = 13.57; p<.0001]). In each domain the high self worth group scored less negatively than the low self worth group: scholastic competence [F(1,83) = 12.96; p<.002]; intellectual ability [F(1,83) = 8.852; p<.005]; close friendship [F(1,83) = 9.809; p<.003]; social acceptance [F(1,83) = 47.922; p<.0001].

At test 3 the multivariate tests indicated a significant main effect for group (λ[F(4,80) = 9.072; p<.0001]). The high self worth group's discrepancy scores were significantly more positive than were those of the low self worth group: scholastic competence [F(1,83) = 12.891; p<.002]; intellectual ability [F(1,83) = 12.791; p<.002]; close friendship [F(1,83) = 10.968; p<.002]; social acceptance [F(1,83) = 27.646; p<.0001].

At test 4 the multivariate tests revealed a significant main effect for group (λ[F4,80) = 10.829; p<.0001]). The high self worth group's scores were significantly less negative than those of the low self worth group: scholastic competence [F(1,83) = 23.241; p<.0001]; intellectual ability [F(1,83) = 16.724; p<.0001]; close friendship [F(1,83) = 9.551; p<.004]; social acceptance [F(1,83) = 22.4; p<.0001].

The high self worth group had positive discrepancy scores (i.e. the perceived competence score in a domain is greater than the importance rating of that domain) in all the four intellectual ability measures, close friendship at test 3 and 4 and social acceptance at tests 2, 3 and 4. The low self worth group had no positive discrepancies. The high self worth group's scores for scholastic competence were all negative but nearer to zero at each test point than those of the low self worth group (see figure 6-6)



SC = scholastic competence; IA = intellectual ability; CF = close friendship; SA = social acceptance

Figure 6-6: Domain specific discrepancy across time, divided by normatively high and low global self worth scores.

6.2.5 Discussion

Students' perceptions of their competence and their self worth tended to increase over time. For self worth, scholastic competence and social acceptance this increase was not significant whilst for intellectual ability and close friendship the scores at tests 3 and 4 were significantly higher than those at the first test point. The increases over time might, of course, be a function of students' caution about providing an over optimistic self-assessment of competence at the beginning of their studies. First year undergraduates at registration are unsure of their competence in relation to the, as yet unknown, demands of degree study and may be reporting a conservative assessment. However, this, as a *perception,* is likely to affect behaviour even if it is not accurate. The non-significant increase during the first year of study (i.e. between tests 1 and 2) in all measures indicates that it takes some time for students to change their perceptions of their

competence and, overall, that perceptions of competence are relatively stable. The trend towards an increase over time in all self-evaluations and significant increases in intellectual ability and close friendship, suggests that students become increasingly confident in their abilities although, even at the final test, competence and self worth scores are generally less than 3 (on a 1 to 4 scale). Comparison of the results of this study with those from the Neemann and Harter (1986) study indicates that the British students scored their competence lower than the US students in all domains except scholastic competence and had a lower self worth score.

The exception to the relatively low overall scoring of self worth and domain-related competence at the final test is the close friendship mean score of 3.22, indicating that most students in this group are increasingly satisfied with their abilities to make and maintain close relationships with others. In children Harter (1986) has argued that being valued by others increases the person's self-perceived value or self worth and that this in turn leads to more effective functioning. A number of other researchers also stress the effect that relationships with others has on the well-being of individuals (see for instance, Deci & Ryan,1991; Doyal & Gough 1991; Ryan & Powelson, 1991; Zimmerman, 1990). Interestingly, in this study, perceptions of competence in the other social domain (social acceptance), are not high relative to the mean score of the scale. A mean score of less than 3 indicates that students have some doubts about the way others view them. They must have chosen to describe themselves, at least once, as being in a group that, for instance, wishes '*..that more people would accept them*' and this level of perception remained stable over time. In both close friendship and social acceptance, discrepancy between perceptions of competence and importance are initially negative, with importance scores higher than perceptions of competence. This discrepancy disappears over time with a non-significant decrease in importance rating and increases in perceptions of competence.

At the beginning of the study students scored themselves very conservatively on scholastic competence whilst rating the

importance of scholastic competence high and consistently significantly higher than all other domains. Scholastic competence importance scores remained high over time with perceptions of competence increasing non-significantly to reduce the negative discrepancy by test 4. However, this scholastic competence discrepancy score which is, overall, significantly more negative than in all the other domains, puts students at risk in terms of their achievement behaviours. A negative discrepancy between importance and perceived competence may lead to avoidance strategies in order not to appear incompetent in an area that is perceived as important (Nicholls, 1984).

The value placed, by students, on intellectual ability increased significantly over time. It may be that students acknowledge the essential importance of intellectual ability only after some experience, although it seems unlikely that beginning students do not value intellectual ability. Alternatively a self-protective psychological mechanism which might be being applied here is that of discounting. Neemann and Harter (1986) describe discounting as a mechanism by which individuals manipulate potentially damaging discrepancies between the importance they place on a domain and their self-perceived competence in that domain. By reducing the importance of a domain in which one has a low self-perception of competence it is possible to safeguard self worth. Students arrive in university unsure of what the social and academic demands of degree work are going to be and often have doubts about their abilities to deal with these unknown demands. Certainly, in this study, the intellectual ability mean score at test 1 indicates that students are choosing at least one description of themselves from the negative statements. Placing less importance on these areas of uncertainty prevents potential damage to self worth. Once domain-specific competence is established it is 'safe' to raise the importance of that domain, and, indeed, difficult to discount domains that the university community signals as being important. This strategy, if it is being employed, appears to result in intellectual ability domain assessments being less discrepant than those in other domains. Importance and perceived competence are congruent at test 1 and become more positive over time in intellectual ability, indicating the maintenance of a healthy balance between value and perceived competence. It appears, however, that discounting is not a

strategy that is being applied to scholastic competence in that the importance rating is very high and the perception of competence much lower.

In a higher education community where intellectual ability is traditionally valued, there is evidence to suggest that some students regard ability as a fixed entity rather than as changeable (Sarazzin, Biddle, Famose, Cury, Fox & Durand, 1996). Those students who view intellectual ability as innately fixed rather than acquirable through effort and practice, will perceive themselves to have little control to change the situation. Students with a negative discrepancy between importance of the domain and perceived competence in it and who view intellectual ability as 'fixed', are less likely than others to demonstrate effective achievement behaviours. Applying effort, seeking challenge and persisting when tasks are found to be difficult, are behaviours demonstrated by those who feel that they can have an effect on their achievements. It may be, of course, that students generally view intellectual ability as 'fixed' and therefore choose to place less value on it because they feel that they have no control over it whereas scholastic competence is perceived as acquirable. Whilst it would have been reasonable to expect that students who have gained a place at university would perceive intellectual competence to be at least as important as the ability to deal effectively with assignments, this appears not to be the case. There is much greater emphasis being placed on a wider range of study skills in schools and universities now and this may also, in part, explain the greater value placed by students on this aspect of degree study even at the first test point.

6.2.5.1. Age and Sex Differences

The lack of significant sex differences in perceptions of competence is surprising as many studies have found that males report higher levels of self-perceived competence than do females (see for instance, Granleese, Trew & Turner, 1988; Zimmerman, 1990). Although most of this research involves children and teenagers there is also evidence of similar sex differences in adulthood (e.g. Campbell & Hackett, 1986) particularly in domains or activities which might be considered to be sex-stereotyped. Neemann and Harter (1986) however, in their study, found no sex differences for college

students' competence assessments in the four domains investigated here and the data in this study generally support that earlier finding. It may be that, having actively chosen to study a particular subject at a higher level, individuals' perceptions of competence for academic work has already differentiated between those who perceive themselves competent and those who do not, with sex no longer being a differentiating variable. As with perceptions of competence there were no significant differences between the importance placed on a domain by males and females at any test point or any significant sex differences in discrepancy scores. Generally it appears that differences between the sexes are very small and the findings of this study suggest that there is no reason to treat males and females in higher education as distinctive in relation to their perceptions of competence and self worth.

Significant age differences were also anticipated but not found in the perception of competence and self worth data. Many mature students present themselves as anxious on arrival at university, demanding more, and more precise, information about tasks and feedback concerning their performance. Teaching staff often interpret this behaviour as indicating that mature students lack confidence in their ability. This may be a misinterpretation as, according to this data they do not perceive themselves to be less competent than do the younger students. Mature students may simply have better strategies for ensuring that they receive the information that they know they need in order to succeed. Significant age differences for the importance placed on domains were evident in the analyses but, in a practical sense are of little relevance. Non-significant increases in perceptions of competence and decreases in importance ratings account for the differences in discrepancies over time and indicate what staff at universities observe as a 'settling-down' of the rather frantic social activity over the first year of undergraduate study for younger students.

6.2.5.2. 'High' and 'low' self worth comparisons

The profiles of the two groups of students are different for perceptions of competence and discrepancy data across time (see Figures 6-2 and 6-6) and

clearly differentiate the groups.

There is evidence of a consistent relationship between perceptions of competence and self worth. The high self worth group perceived themselves to be significantly more competent than did the low self worth group in all domains except at test 1 where there were no significant differences between the groups in perceptions of scholastic competence. Additionally perceptions of competence in all domains for the high self worth group increased over time. The scores for the high self worth groups were generally 3 or above, indicating that they consistently scored themselves on the positive side of the inventory scale. Given the importance rating overall of scholastic competence (it was rated significantly higher than all other domains) the relatively low assessments made by both groups of students of their competence scholastically is of concern. The discrepancy scores indicate that all the students experienced a large deficit between the value placed on scholastic competence and their own abilities. The domain specific discrepancies between competence and importance generally distinguish the groups but not so initially within scholastic competence or close friendship. However, by the second test point the two groups were scoring scholastic competence discrepancy significantly differently. Whilst the high self worth group had reduced the deficit by increasing perceptions of competence more than they increased its importance, the discrepancy for the low self worth group was greater. Their perceived competence dropped as importance increased. A mismatch between the value placed on an aspect of the self and self-perceived capability in that aspect can lead to dysfunctional behaviour in achievement contexts (see for instance Nicholls, 1984). Careful support for increasing skill in, for instance, satisfactorily completing assignments, seems to be essential in the early stages of undergraduate studies for all students. The low self worth group in this study experienced a decrease in perceived competence and appeared unable to simultaneously reduce the importance of scholastic competence.

A similar pattern emerged for the two groups within intellectual ability discrepancy. The high self worth group recorded a positive

discrepancy score initially and this became increasingly positive over time. The low self worth group, however, had an initial negative score and an increasingly negative discrepancy score over time. In the two domains that were concerned with academic abilities, the high self worth group is clearly at an advantage.

When the importance ratings of the two groups were compared the results indicated that the groups were not significantly different in the importance they placed on domains. For the high self worth students, with higher perceptions of competence than the low self worth students, the importance scores did not generally produce a large, negative discrepancy. The low self worth students experienced deficits across all domains, however and, over time seemed unable to use a discounting strategy to bring the importance ratings more in line with their perceived competence. This may be a function of social and academic pressures within the higher education environment. Harter (1986) states that children with low self worth have more difficulty in discounting than do those with a higher overall self-assessment and it is likely that, in higher education, students are constantly immersed in an environment that emphasises the importance of academic and social competence.

The next section of the study concerns motivation for study. Within the research literature the relationships between competence and motivation are well-established (e.g. Harter, 1978; Weiner, 1992). Although the instruments used for measuring motivation and competence do not provide an opportunity to integrate the two psychological constructs it is important to recognise that the desire to be competent, particularly when competence is valued within a context and by an individual, has been identified as a powerful motivator for achievement.

6.3. Academic motivation across the first two years of study

An age by sex by motivation category by time (2 x 2 x 3 x 4) repeated measures MANOVA was used to investigate the three categories of motivation - total intrinsic motivation, total extrinsic motivation and amotivation. The

multivariate tests indicated that there was a significant time by motivation category interaction (λ[F(6,76) = .2.881; p<.02]) and a significant main effect for motivation category (λ[F(2,80) = .254.659; p<.0001]) but no significant main effect for time (λ[F(3,79) = .294; p>.8]). When the Greenhouse-Geisser adjustment was applied to the time by motivation category interaction in which the data lacked sphericity the interaction was no longer significant at the 5% level [F,(4, 352) = 1.597; p>.1]. The between subjects contrasts indicated that there was no significant age by sex interaction [F(1,81) = .007; p>.9] and no significant difference overall for age [F(1,81) = .216; p>.6] or sex [F(1,81) = .339; p>.5]. Tukey's HSD follow-up test indicated that overall, amotivation scores were significantly lower than those of intrinsic and extrinsic motivation (p<.0001) but that intrinsic motivation and extrinsic motivation were not significantly different (p>.8) (see Figure 6-7). Amotivation was excluded from subsequent analyses.

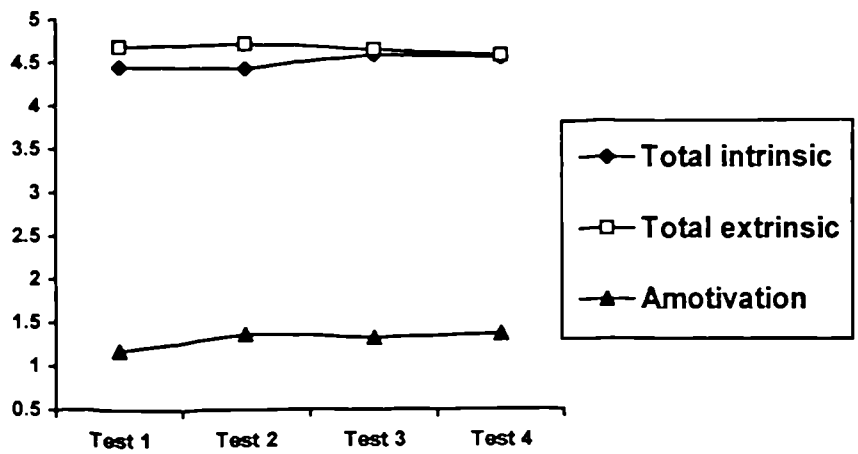


Figure 6-7: Three motivation categories across time. Amotivation is significantly different from the other two orientations (p<.0001).

The sub-components of intrinsic motivation (knowledge [Kn], achievement [Ac] and stimulation [St]) were investigated using a sex by age by sub-component by time repeated measures MANOVA. Multivariate tests revealed a significant time by sub-component interaction (λ[F(6,76) =6.564; p<.0001]) and a significant main effect for sub-component (λ[F(2,80) = 106.553; p<.0001]). A Greenhouse-

Geisser adjustment to both results indicated that the level of significance remained robust (time by sub-component [F(5, 418) = 7.042; p<.0001]; sub-component main effect [F(2, 144) = 120.751; p<.0001]). Follow-up tests indicated that the significant time by sub-component interaction was created by the differences across tests between Kn and Ac. The significantly higher scores of Kn at tests 1 and 2 were no longer significantly higher than Ac at tests 3 and 4. At each test point both Kn and Ac means were significantly higher than those of St. (see Figure 6-8). Problems associated with interpretation of these subscale differences are discussed in Chapter 4.

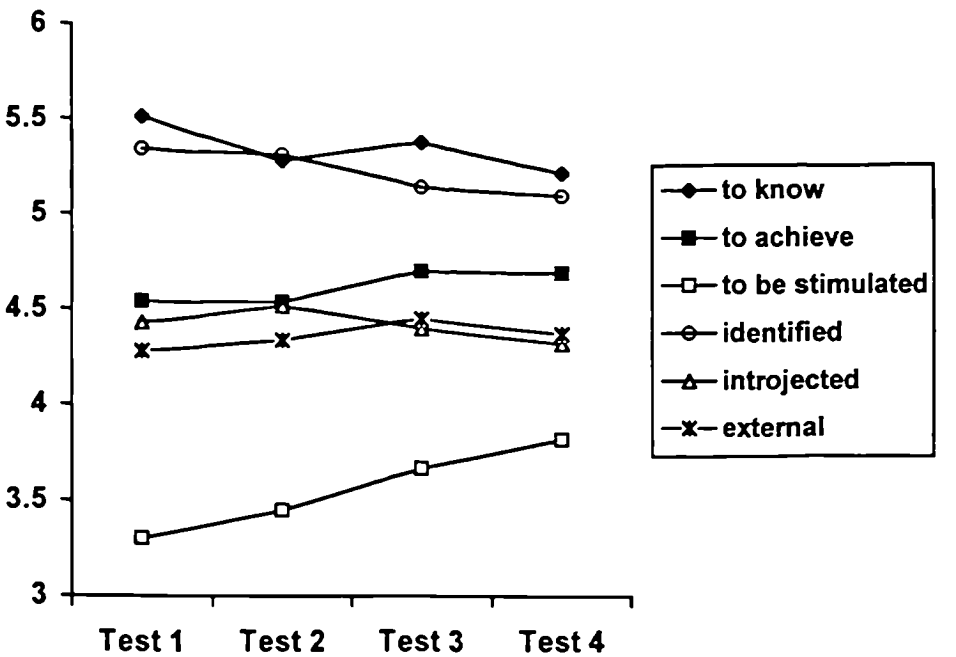


Figure 6-8: All sub-components of intrinsic motivation (to know, to achieve, to be stimulated) and extrinsic motivation (identified, introjected, external) across time.

The within subjects analysis indicated that there was an additional significant interaction which was between sub-components, age and sex [F(1,81) = 4.3;p<.05]. Although mature students scored higher than the traditional students at all test points for Kn and Ac and higher on most for St, Tukey's HSD test indicated that there was no significant within-sub-component difference for age at

any test point (see Figure 6-9).

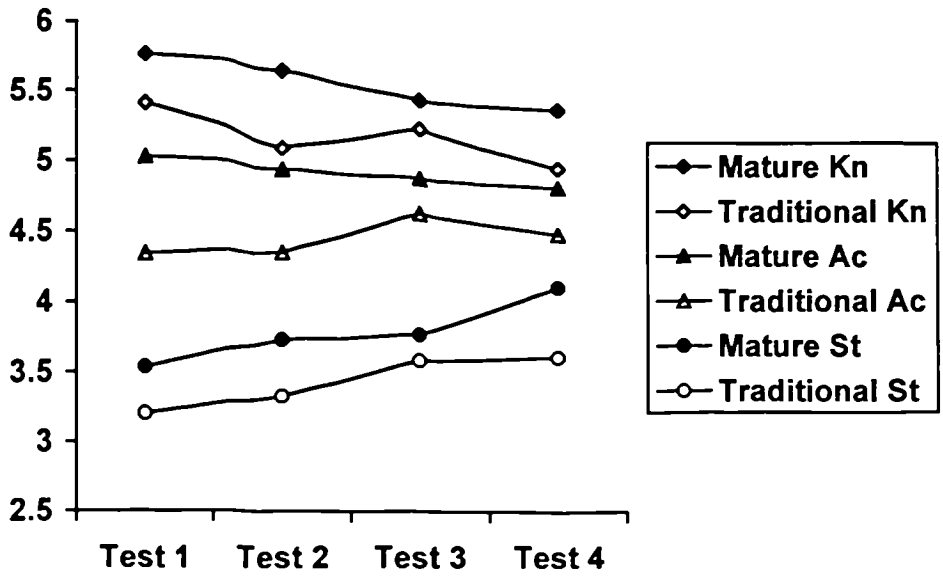


Figure 6-9: Intrinsic motivation sub-components (knowledge [Kn], achievement [Ac], stimulation [St]) across time, divided by age. There were no significant age differences within sub-components.

As the sub-components of extrinsic motivation (identified (ID), introjected (IJ) and external regulation (ER)) represent different levels of internalisation, they were used as discrete variables in subsequent analyses to further explore the relationships along the self-determination continuum. A sex by age by extrinsic sub-component by time (2 x 2 x 3 x 4) repeated measures MANOVA with three levels of extrinsic sub-component (ID, IJ, ER) was applied to the data. Multivariate tests indicated a significant extrinsic sub-component by age interaction (λ[F(2,80) = 12.493; p<.0001]) and a significant main effect for extrinsic sub-component (λ[F(2,80) = 16.608; p<.0001]). There was no significant main effect for time (λ[F(3,79) = 1.143; p>.3]). When a Greenhouse-Geisser adjustment was made to the non-spherical extrinsic sub-component data the main effect remained significant [F(2, 145) = 11.529; p<.0001]. Between subjects effects analysis indicated no significant age by sex interactions [F(1,81) = .054; p>.8] or significant main effects for age[F(1,81) .847; p>.3] or for sex [F(1,81) = .795; p>.7]. Sex was

removed from subsequent analyses.

An age by extrinsic sub-component by time (2 x 3 x 4) repeated measures MANOVA was used to investigate the age by extrinsic sub-component interaction. A additional interaction, between extrinsic sub-components and time, became significant at the 5% level in the within-subjects analysis [$F(6,498) = 2.434$; $p<.03$] (see Figure 6-10).

Tukey's HSD tests indicated that traditional students scored significantly higher on ID at all test points than did mature students at test 4. On IJ mature students at test 1 scored significantly higher than did traditional students at tests 1, 3 and 4 and higher at test 2 than did traditional students at test 1. There were no significant differences across age and time for ER scores ($p>.3$). In ID the mature students scored significantly lower than did the traditional students and overall significantly higher in IJ than did the younger students. Tukey's follow-up tests also indicated that, at all test points, ID was significantly higher than the other two sub-components ($p<.05$) whilst IJ and ER were not significantly different at the 5% level (see Figure 6-10).

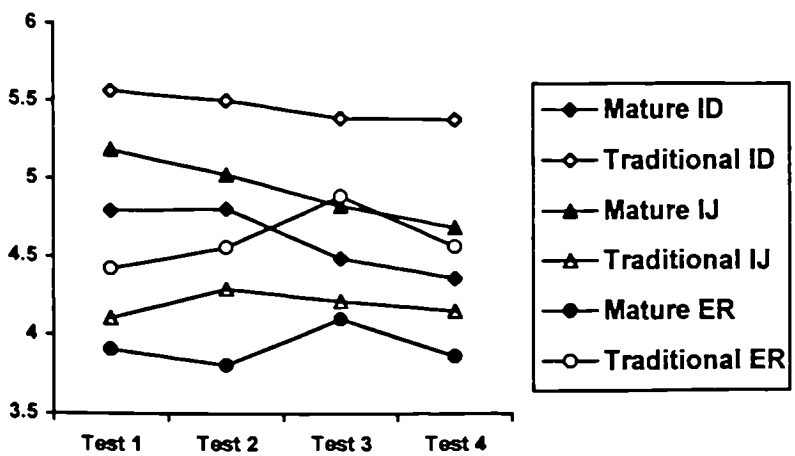


Figure 6-10: Age differences across time in identified (ID), introjected (IJ) and external (ER) sub-components of extrinsic motivation.

6.3.1 Discussion

Beginning undergraduates are clearly motivated for study - for intrinsic and extrinsic reasons - and maintain this motivation over the first two years in higher education. An intrinsic motivational orientation predicts positive achievement behaviours such as persistence, challenge-seeking and curiosity and relates to positive affect for the activity (Pelletier & Vallerand, 1989; Ryan & Powelson, 1991; Vallerand, 1997). When extrinsically motivated action is governed by external influences, with less value placed on the activity by the individual, less persistence when the demands are greater and less commitment to achievement. However, the finding that identified regulation, a sub-component of extrinsic motivation, contributed predominantly to the extrinsic motivation score, was a positive finding. Identified regulation of behaviour is at the internalised end of the continuum, differing from intrinsic motivation only in that the activity is not initiated by the individual for its inherent value alone, although it is valued. Most achievement behaviour contains an element of regulation through identification. Students study because they value learning but recognise the additional instrumental outcomes of studying such as to have better career opportunities in the future and to demonstrate to themselves that they can achieve. When the outcome of the activity has a value to the individual, positive achievement behaviours will emerge and the more internalised the reasons for acting the more resistant to negative influences will those positive behaviours be. In this study it appears that students were regulated more by internal reasons for studying than by the offers of rewards, avoidance of punishment or demands from others. Rewards and punishments work in the short term but those who rely on them to stimulate action are not committed to continuation or to looking for ways to expand learning for themselves. An intrinsic motivational orientation has been demonstrated as being reduced by the introduction of a reward (Deci, 1971) and an environment that relies on the use of rewards and punishment to achieve outcomes may lead to students adopting an extrinsic motivational orientation (Deci, Schwartz, Sheinman & Ryan, 1981).

The expectation that mature students would score significantly higher than

their younger peers on intrinsic motivation was not met. Categorising mature students as 21 years of age or over at registration might not be sufficient to differentiate between age related motivational orientations but specific age data with this cohort of students was not available to test this tentative conclusion. Age differences within the sub-components of extrinsic motivation were in an unexpected direction. Mature students scored significantly lower overall than traditional students on identified regulation and significantly higher than younger students on introjected regulation although there were no significant age differences within tests. The overall profile was consistent across time with the same pattern of relationships demonstrated at each test point. The lower scores on identified regulation for mature students and higher scores on introjected regulation were unexpected because it was hypothesised that mature students would have internalised reasons for entering higher education but would not be as externally-controlled as younger students. It may be that, within the mature group, demonstrating ability and avoiding appearing incompetent is more important than for the younger group who may have experienced more conventional educational success previously. Damaging experiences in education at an earlier age, leading to a need to demonstrate to others (and to yourself) that you are capable, might be more typical of older students. Internally-generated feelings of guilt and fear of failure that are associated with anxiety about studying are typical of an introjected regulation.

It was anticipated that differences between the sexes would be found as previous studies have demonstrated that females are more likely to be intrinsically-motivated than males and have higher levels of self-determination. In this cohort there were no significant sex differences. Meece and Courtney (1992) suggest that sex differences often occur because females generally have lower expectations of success than males and are affected by sex-stereotyped attitudes that place a lower value on study for females in some subjects. Their discussion related to students in school where there is less choice of subject and, indeed, of studying at all. Students in university have chosen to study a subject in which they perceive themselves to have an acceptable level of competence (Fazey & Fazey, in preparation) and which they value. It is therefore not surprising that females'

and males' motivational orientations are more homogeneous than in other educational contexts. Meece and Courtney (1992) acknowledge that the sex differences found in the studies they report are not always consistent and vary across age as well as in relation to variables such as environment and ability.

The lack of significant change over time indicates that reasons for studying are relatively stable. This group of students was studying a variety of degree subjects and their experiences over the two years would have been varied. Despite that the cohort maintained its motivation for study with very little group change to the pattern of responses. Throughout the study students' motivation was maintained at the internalised end of the self determination continuum.

Interestingly students do not arrive in higher education expecting to be excited or stimulated by their studies but they do want to acquire knowledge and understanding. Over time the desire 'to know' decreases as 'to be stimulated' increases. Whilst it is important to retain the motivation to learn new facts and understand relevant concepts (and 'to know' scores do remain high), the excitement and stimulation of learning is also important for sustaining lifelong learning. It appears that higher education does engender a positive affective and motivating response in students that, although low in relation to other intrinsic variables and therefore not perhaps a major influence on behaviour, nevertheless tends towards an increase over time.

6.4 Undergraduate students' perceived locus of control

Given the lack of information available about the instrument used to measure locus of control (see Chapter 4), a Principal Components Factor Analysis, using a Promax Rotation was used to identify the factors in the data at each test point. A Promax Rotation allows the factors to correlate, which, given the analysis in the original study, seemed likely to occur.

The following are the structure matrices which resulted from the analyses of the data at each test point. In each case a Promax Rotation with

Kaiser Normalisation was used. Factor loadings of .3 (absolute number) or less are excluded for clarity.

Item	Component			
	1	2	3	4
Powerful others/Failure	.796			
Context/Failure	.770	.392		
Unknown control/Failure	.631		-.441	
Powerful others/Success	.592			
Luck/Failure	.580		-.634	
Ability/Success	.473	-.480		.446
Luck/Success	.316	.821		
Unknown control/Success		.803		
Context/Success	.359	.760		
Effort/Failure			.878	
Internal control/Failure			.872	.334
Internal control/Success			.629	.626
Effort/Success				.831
Ability/Failure	.408	.438		.617

8 iterations and accounting for 68.4% of the variance.

Table 6-1: Factor analysis of all items at test 1.

Item	Component		
	1	2	3
Context/Success	.821		
Unknown control/Success	.756	-.506	
Luck/Success	.708	-.486	
Luck/Failure	.701		
Context/Failure	.694		
Powerful others/Success	.634	-.331	
Ability/Failure	.612		
Powerful others/Failure	.535		
Unknown control/Failure	.471		-.596
Effort/Success		.893	
Ability/Success		.769	
Internal control/Success		.709	.464
Internal control/Failure			.862
Effort/Failure			.840

22 iterations, accounting for 63.2% of the variance.

Table 6-2: Factor analysis of all items at test 2.

Item	Component			
	1	2	3	4
Luck/Failure	.824		.521	
Context/Failure	.792			
Powerful others/Success	.789	.351		
Context/Success	.627	.618	.376	
Unknown control/Success		.687		
Luck/Success		.640		
Ability/Failure			.793	.315
Unknown control/Failure	.533		.728	
Powerful others/Failure	.468		.691	
Internal control/Failure				.880
Effort/Failure				.849
Internal control/Success		-.476		.785
Effort/Success		-.717		.608
Ability/Success		-.768		.449

10 iterations, accounting for 70.2% of the variance

Table 6-3: Factor analysis of all items at test 3.

Item	Component			
	1	2	3	4
Context/Failure	.880	.373	-.374	
Powerful others/Failure	.821	.410		
Context/Success	.699	.604	-.602	
Luck/Success	.604	.539	-.482	
Powerful others/Success	.598	.535	-.587	
Unknown control/Success	.443	.785	-.585	
Luck/Failure	.558	.734		-.321
Unknown control/Failure	.383	.675		-.322
Ability/Failure		.673		
Effort/Success	-.325	-.312	.824	.386
Ability/Success			.792	
Internal control/Failure				.869
Effort/Failure				.829
Internal control/Success			.638	.657

8 iterations, accounting for 67.8% of the variance

Table 6-4: Factor analysis of all items at test 4.

These initial analyses indicated that the factor structure varied across time with several items loading onto different factors at different test points. At each test point it is possible to identify one or two external dimensions and one or two internal dimensions. Generally the two 'powerful others' items and the two 'context' items cluster together with at least one of the 'luck' items. Similarly there is a consistent relationship between 'effort for success (EFS)' and the two 'internal control' items. The two 'ability' items, however, although theoretically internal, move across different factors. 'Ability for failure (ABF)' loads onto an internal factor at test 1 (although it does not negatively load onto the external factors), onto an external factor at test 2 and an external/unknown factor at tests 3 and 4. 'Ability for success (ABS)' strangely loads onto an external factor that includes 'unknown' items at test 1 (although it also associates with EFS and ABF in factor 4) and subsequently is linked consistently with the internal item EFS. Given the instability of ABS and ABF as items in the first analyses, these were removed and the factor analyses repeated to find out if, without ABS and ABF, the factor structure was

more stable. Again a Promax Rotation with Kaiser Normalisation was used.

Item	Component			
	1	2	3	4
Context/Failure	.834	.402		
Powerful others/Failure	.826			
Luck/Failure	.646		-.610	
Unknown control/Failure	.641	.355	-.441	
Powerful others/Success	.539			-.663
Luck/Success	.369	.874		
Unknown control/Success		827		
Context/Success	.388	.770		
Effort/Failure			.881	
Internal control/Failure			.880	
Internal control/Success			.658	.589
Effort/Success				.857

9 iterations, accounting for 70.9% of the variance

Table 6-5: Factor analysis, excluding ABS and ABF, at test 1.

Item	Component		
	1	2	3
Unknown control/Success	.834	.348	
Luck/Success	.795	.308	
Powerful others/Success	.700	.318	
Context/Success	699	.595	
Context/Failure		.831	
Luck/Failure	.433	.675	
Powerful others/Failure		.660	
Unknown control/Failure		.534	-.514
Internal control/Failure			.867
Effort/Failure			.793
Internal control/Success	-.332	.308	.789
Effort/Success	-.718		.531

7 iterations, accounting for 67% of the variance

Table 6-6: Factor analysis excluding ABS and ABF, at test 2.

Item	Component		
	1	2	3
Context/Success	.814	.424	
Luck/Success	.754	.379	
Unknown control/Success	.715	.424	
Powerful others /Success	.706	.301	
Unknown control/Failure	.433	.803	
Powerful others/Failure		.764	
Context/Failure	.497	.746	
Luck/Failure	.571	.734	
Internal control/Failure			.836
Effort/Failure			.826
Internal control/Success			.820
Effort/Success	-.405		.737

6 iterations, accounting for 65.3% of the variance

Table 6-7: Factor analysis excluding ABS and ABF at test 3

Item	Component		
	1	2	3
Powerful others/Failure	.763		
Context/Failure	.759	.448	
Luck/Failure	.724	.371	
Luck/Success	.680	.450	
Unknown control/Failure	.585	.361	-.320
Powerful others/Success	.531	.750	
Context/Success	.671	.674	
Unknown control/Success	.605	.665	
Effort/Failure			.849
Internal control/Failure			.834
Internal control/Success		-.647	.700
Effort/Success		-.808	.446

10 iterations, accounting for 64.4% of the variance

Table 6-8: Factor analysis, excluding ABS and ABF, at test 4.

As can be seen from the tables, the exclusion of the two 'ability' items

created a more stable structure for the factors although there are still some items that load differently across factors at different test points. There are, however, none that load across internal or external boundaries, suggesting that the internal and external dimensions are now more clearly defined. There are two external factors at each test point, with items generally clustering under perceptions of control for success and for failure. The exceptions to this pattern are at test 1 where 'powerful others/success' loads onto the 'external/failure' factor and at test 4 where luck/success loads onto the 'external/failure' factor. The internal dimension is more consistently differentiated. At test 1 'effort/success' is a separate factor from the other internal factor. At all the other tests all four items load onto the one internal factor.

For the purposes of further analysis of the data, three factors were accepted, calculated with the exclusion of the two items relating to ability. The three factors were: external control for failure, external control for success and internal control. At each test point the external factors were calculated using the items that loaded onto the factor at that test point. The internal factor was calculated at each test point using all the internal items.

A 2 x 2 x 3 x 4 (age by sex by factor by time) repeated measures MANOVA was used to investigate differences in the three locus of control factors (external control for success, external control for failure and internal control). Multivariate tests revealed a significant factor by age interaction ($\lambda[F(2,80) = 3.738; p<.03]$), a significant time by factor interaction ($\lambda[F(6,76) = 12.99; p<.0001]$) and a significant main effect for factor ($\lambda[F(2,80) = 184.939; p<.0001]$). A Greenhouse-Geisser adjustment to the non-spherical factor and time by factor data did not affect the levels of significance.

Tukey's HSD tests indicated that there were no significant age differences within the external/failure factor but that the following significant differences for age were revealed in the other two factors: In the external/success factor mature students at test 1 scored significantly higher than did the traditional students at test 4 ($p<.05$) and traditional students scored significantly higher at test 1 than they did

at test 4 (p<.04); in the internal factor mature students at test 4 scored significantly higher than did traditional students at all test points - test 1 (p<.03), test 2 (p<.007), test 3 (p<.02), test 4 (p<.05).

The significant time by factor interaction was accounted for by the significant differences between all factors at the first test point with the internal factor significantly higher than the other two (p<.0001) and the external/success factor significantly higher than the external/failure factor (p<.003). The internal factor remained significantly different from the external factors at each test point (p<.0001). At test 2 and test 3 the external factors were no longer significantly different (p>.7) but at test 4 external/failure was scored significantly higher than was external/success.

Overall the internal factor was significantly higher (p<.0001) than the other two factors which were not significantly different (p<.1). (See Figure 6-11).

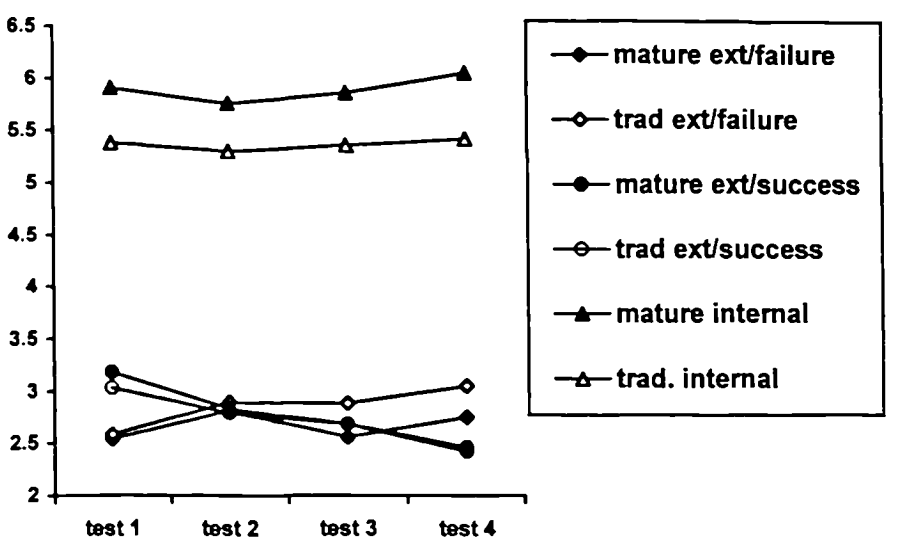


Figure 6-11: Differences for age and across time in the three locus of control factors (external/failure, external/success and internal).

6.4.1. Discussion

There were two main objectives concerning locus of control - to investigate the factor structure of the Rossouw and Parsons (1995) questionnaire and to

measure students' perceptions of control in their studies across time and in relation to age and sex.

The factor analysis indicated that items associated with ability as a reason for success and failure were not stable across the four test points. Both ABS and ABF changed between categories of internal and external control over time although ABS settled into an internal factor after test 1. At test 1 ABF and EFS formed a factor, with EFS staying in a separate factor after ABF was removed. This may indicate that beginning students are unsure about whether the application of effort will make any difference to success in studying, although lack of effort is clearly recognised as contributing to failure. Similarly there appears to be some confusion about the role played by ability in successful study at test 1. If a concept of ability as a fixed capacity, rather than changeable through effort and experience, is held (Dweck & Leggett, 1984; Sarazzin et al., 1996) then ability may be viewed as a god-given gift and thus externally controlled by a 'powerful other'. The existing literature that considers concepts of ability has identified two perspectives - that of an understanding that ability is a fixed entity (and thus uncontrollable) or that it is modifiable and thus controllable. If these students held a homogeneous concept of ability then ability for success and for failure would cluster in an internal or an external factor. As group data is used, it may be that students differ quite widely in their concepts of ability as contributing to successful outcomes and to unsuccessful outcomes, resulting in the rather confusing movement of the two items across the relatively stable factors. It may also mean that concepts of ability are not as stable as has been suggested (e.g. Sarazzin et al. 1996) and may also be situation-specific. There are interesting questions to be pursued here that are beyond the scope of this particular study.

Although perceiving oneself to be in control is generally considered to be a healthy state, with perceptions of lack of control leading, in the extreme, to situations of learned helplessness (see for instance Lachman & Burack, 1993), Heckhausen and Schultz (1995) discuss the importance of attributing failure to external influences in order protect self-esteem. The protection of self-esteem is important for future achievement attempts and expectations. This study was not,

however, measuring students' responses to a particular success or failure attempt but rather to a more global view of success and failure in study.

Removal of the ability items from the analysis enabled some of the other items to load more strongly in what were theoretically logical factors. Three factors - external control for success, external control for failure and internal control for both success and failure - were identified. POCS and LUS loaded into the 'external for failure' factor at test 1 and 4 respectively but otherwise the item loadings were stable across time.

The factor structure identified in this study differs from that revealed in the Rossouw and Parsons study. Rossouw and Parsons found that their data contained four factors which they labelled external (COF, COS, POCF, LUF, ABF), internal (ICF, ICS, EFF), unknown (UCS, UCF, POCS, LUS) and 'factor 4' (EFS, ABS). The internal factor was again relatively consistent with theory, with EFS loading moderately onto the internal factor as well as with ABS in factor 4. Interestingly students in the Rossouw and Parsons study did not clearly differentiate success and failure items as did the students in this study. More data would enable further confirmation of the factor structure of this questionnaire which appears to provide useful information about the reasons students perceive for the outcome of their studies.

When differences related to time were investigated there was no overall change over time with the three factors not varying significantly from test to test. It appears that experience at university does not change perceptions of control over the outcomes of study and that context-specific locus of control is a relatively stable construct over time. Relative to the scale ceiling the internal factor was scored high which is a positive indication that students hold perceptions of control associated with autonomy. In contrast the scores for external control were below the mid-point of the scale.

There were no significant sex differences in the data but differences for age emerged within the internal factor and external/success factor. Both mature and

traditional aged students scored significantly higher on external control for success at test 1 than did traditional students at test 4, indicating that, overall, scores for the external control of success decreased and that this decrease neared significance. A more interesting age difference occurred within the internal factor scores. Mature students at test 4 scored significantly higher than did traditional students at each test point, increasing their scores, although non-significantly, over time. The analysis indicated that there were no significant within-age group differences across time and no significant age differences within test points other than at test 4 although the mature students scored consistently higher throughout than did the traditional students. Mature students would be expected to score higher on internal causality as they have generally made a much more active choice to study than have traditional students for whom there is greater social pressure to go to university. The finding that mature students have a higher perception of internal control over the outcomes of that study suggests that they may, overall, feel more in control of their lives than do younger students. Mature students more often display behaviours that suggest they recognise the importance of checking information about assignments, making sure that they are on the right lines when working on drafts, asking questions for clarification in lectures and questioning for understanding. They are also generally more skilled at organising their, often more complex, lives to fit in study with other demands.

6.5 Approaches to Study

Age and sex differences across time in the three approaches to study were investigated using a 2 x 2 x 3 x 4 (age by sex by approach by time) repeated measures MANOVA. Multivariate test results indicated that there was a significant approach by sex interaction ($\lambda[F(2,80) = 5.342; p<.008]$) and a significant main effect for approach ($\lambda[F(2,80) = 34.078; p<.0001]$). A Greenhouse-Geisser adjustment for non-spherical data substantially reduced the level of significance of the interaction in the tests of within-subjects effects [$F(2,129) = 3.4; p<.05$] but not that of the main effect which remained at $p<.0001$. The within-subjects contrasts indicated that there were significant approach by time interactions between the first and second tests. The interactions were between the deep and surface

approaches [F(1,81) = 4.739; p<.04] and the surface and strategic approaches [F(1,81) = 6.022; p<.02]. As can be seen from Table 6-9 the scores for the deep and strategic approaches decreased from the first to the second test but the scores for the surface approach did not change. The between subjects effects indicated a significant main effect for sex [F(1,81) = 13.617; p<.0001] with females overall scoring higher than males. Overall the deep approach was scored significantly higher than both surface and strategic approaches and the strategic approach was significantly higher than the surface approach (p<.0001).

Test	Deep approach	Surface approach	Strategic approach
1	3.93 (.578)	3.04 (.722)	3.66 (783)
2	3.83 (.626)	3.04 (.725)	3.52 (.737)
3	3.88 (.620)	2.98 (.777)	3.56 (.780)
4	3.87 (.679)	3.03 (.743)	3.54 (.785)
Overall	3.88 (.635)	3 02 (.739)	3.57 (.770)

Table 6-9: Means and standard deviations for three approaches over time.

Tukey's HSD tests indicated that within-approach sex differences occurred in the surface orientation and in the strategic orientation. In the surface approach females at test 1 scored significantly higher than males at test 2 (p<.04) and at test 3 (p = .05). At test 2 females scored significantly higher than did males at all tests: Test 2 (p<.02), test 3 (p<.03), test 4 (p<.05). Females at test 4 scored significantly higher than did males at test 2 (p<.05). In the strategic approach males at test 2 scored significantly lower than did females at tests 1 (p<.002), 2 (p<.02), 3 (p<.02) and 4 (p<.04). At test 1 females scored significantly higher than males at test 4 (p<.03).

Between approach differences occurred as follows: females overall scored the deep approach significantly higher than they did the surface approach (p<.0001) and males scored the deep approach significantly higher than they did the surface (p<.0001) and strategic (p<.003) approaches; on the deep approach females scored significantly higher than did the males on surface (p<.0001) and strategic approaches (p<.02); on the deep approach males' scores were

significantly higher than females' surface scores (p<.0001); females scored the surface approach significantly higher than did males (p<.03) and both males (p<.003) and females (p<.0001) scored surface approach significantly lower than they did the strategic approach; males' scores on the surface approach were significantly lower than females' scores for the strategic approach (p<.0001).

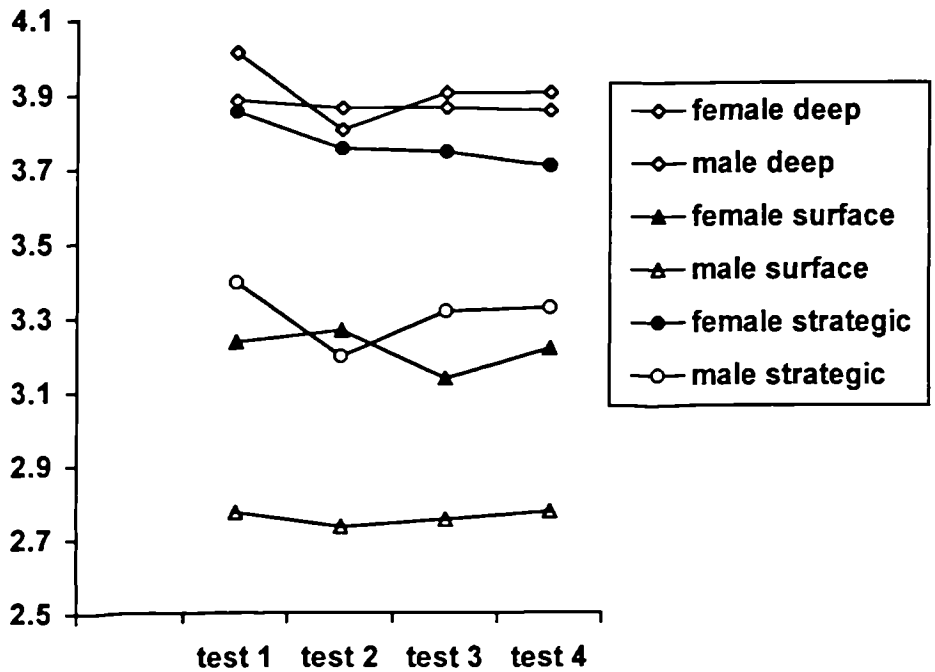


Figure 6-12: Three study approaches, partitioned by sex, across four test points.

The sub-components of each approach were investigated in three separate 2 x 2 x 4 x 4 (sex by age by sub-component by time) repeated measures MANOVAs with Tukey's HSD test as a follow-up.

6.5.1 Deep approach

Multivariate tests revealed a significant sub-component by age interaction (λ[F(3,79) = 5.133; p<.004]) and a significant main effect for sub-component (λ[F(3,79) = 13.349; p<.0001]). Follow-up tests indicated that the age by sub-component interaction was explained by the non-significant difference that was

revealed between mature students' 'looking for meaning' and traditional students' scores for 'relating ideas' ($p>.05$. Significant within age group differences occurred between scores recorded by the traditional-aged students for 'looking for meaning' and 'active interest' ($p<.05$) and between 'looking for meaning' and 'relating ideas' ($p<.04$). In both cases 'looking for meaning' was scored higher (see Figure 6-13).

Follow-up tests for the sub-component main effect indicated that: the sub-component 'looking for meaning' was scored significantly higher than all the other sub-components ($p<.03$); that the sub-components 'active interest or critical stance' and 'using evidence and logic' were both scored significantly higher than 'relating and organising ideas' ($p<.04$).

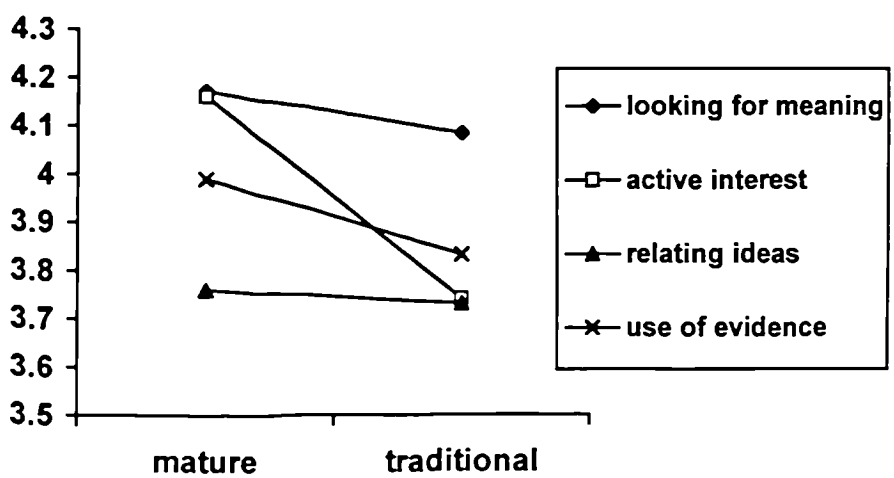


Figure 6-13: Significant age by sub-component interaction within the deep approach ($p<.004$).

6.5.2. Surface approach

Multivariate tests indicated that there was a significant main effect for sub-component ($\lambda[F(3,79) = 8.582; p<.0001]$). A Greenhouse-Geisser adjustment for non-spherical data did not affect the level of significance. Tests of within-subjects effects revealed a significant main effect for sex [$F(1.81) = 10.93; p<.02$] with females scoring the surface approach overall significantly higher than did males.

Follow-up tests indicated that the sub-component 'relying on memorising' was scored significantly higher than all the other sub-components ($p<.02$) and that 'concern about coping' was scored significantly higher than 'unrelatedness' ($p<.02$). Significant differences for sex were revealed as follows: females' scores for 'memorising' were higher than all other scores for females and males in all the other sub-components ($p<.02$) except for females in 'concern about coping' ($p>.4$); females scored higher on 'concern about coping' than did males ($p<.02$) and higher than they did on 'unrelatedness'; females' scores on 'concern about coping' were also significantly higher than males' scores for 'difficulty making sense' and 'unrelatedness' ($p<.04$).

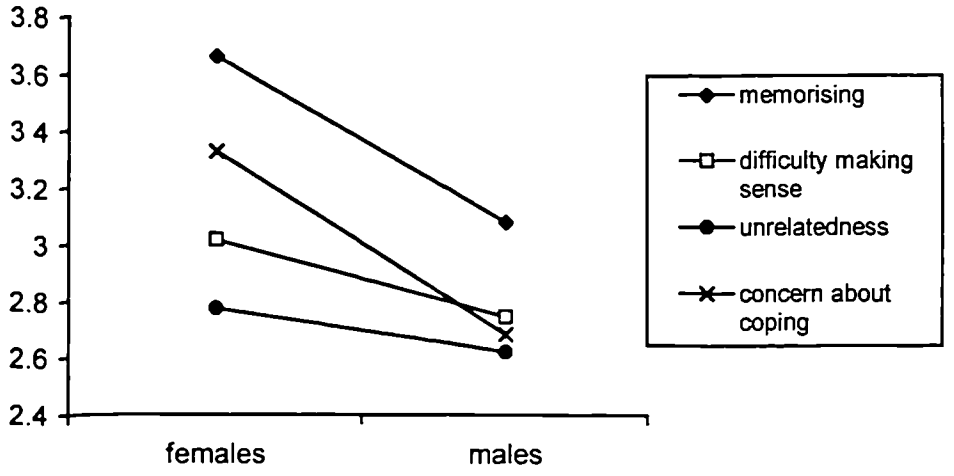


Figure 6-14: Significant main effects for approach ($p<.0001$) and sex ($p<.02$) within sub-components of the surface approach.

6.5.3 Strategic approach

Multivariate tests indicated that there was a significant main effect for sub-component ($\lambda[F(3,79) = 53.982; p<.0001]$). A Greenhouse-Geisser adjustment for non-spherical data made no difference to the level of significance. Tests for between-subjects effects revealed a significant main effect for sex [$F(1,81) = 6.702; p<.02$] with females scoring significantly higher than males on strategic approach overall. Follow-up tests indicated that: 'determination to excel' was scored significantly higher than the other three sub-components ($p<.0001$); 'effort

in study' and 'organised study' were both scored significantly higher than 'time management' ($p<.0001$). These differences between the subscales cannot, however, be interpreted meaningfully (see Chapter 4).

Significant differences within and between the sexes occurred as follows: females scored 'determination to excel' significantly higher than they did 'effort in studying' ($p<.002$) and 'time management' ($p<.0001$); females scored 'determination to excel' higher than did males on 'effort in studying', 'organisation of study' and 'time management' ($p<.0001$); males scored 'determination to excel' higher than they did all other sub-components ($p<.0001$) and 'time management' lower than all other scores (males and females and sub-components) ($p<.05$); females scored 'effort in studying' higher than both females and males on 'time management' ($p<.04$); females scored 'organisation of study' higher than did males ($p<.02$), higher than did males on 'effort in studying' ($p<.004$), and higher than both males and females on 'time management'; females scored higher than males on time management ($p<.0001$) [see Figure 6-15].

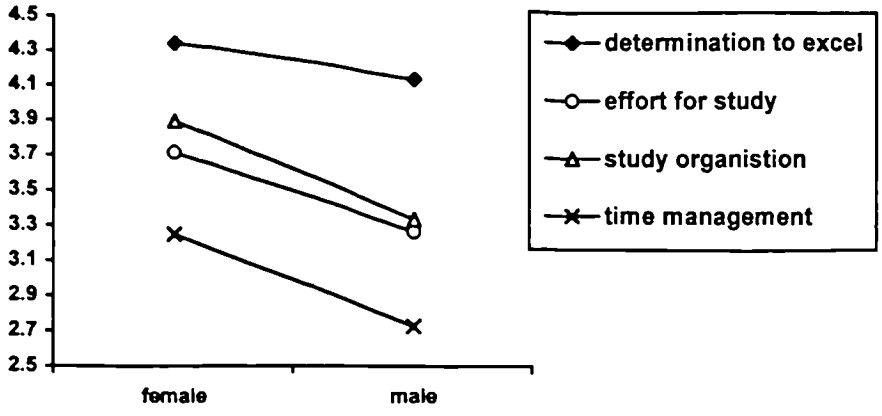


Figure 6-15: Significant main effects for approach ($p<.001$) and for sex ($p<.02$) within the sub-components of strategic approach.

6.5.4. Academic self-confidence

A sex by age by time (2 x 2 x 4) repeated measures ANOVA with academic self confidence as the dependent variable indicated that there were no significant age, sex or time interactions or significant main effects for time, age or sex. The

mean scores (ranging across tests from 3.52 to 3.64 on a 5-point scale) for the variable indicated that students were reasonably but not over-confident of their abilities.

6.5.5. Lack of direction

A sex by age by time (2 x 2 x 4) repeated measures ANOVA with lack of direction as the dependent variable, indicated that there were no significant interactions or main effects in the data. The scores for lack of direction were low on the 5-point scale, ranging from $\bar{X}$ = 1.44 to $\bar{X}$ = 1.64 across the tests, indicating that most students knew why they were involved in higher education.

6.5.6. Discussion

6.5.6.1 Time differences

As anticipated there were no overall, significant changes in approach to study over time although there was an interaction between approach and time that indicated a different pattern of non-significant changes between the surface approach and the other two approaches. The pattern that emerged was that scores for the deep and strategic approaches decreased from test 1 to test 2 (September and March, year 1), increased from test 2 to test 3 (March in year 1 and September in year 2) and decreased again across the second year. In other words the deep and strategic approaches tended to be higher at the beginning of the academic year and to decrease during each academic year. The surface approach, however, did not vary across the first year of study, was lower at the beginning of the second year and increased again during the second year. These differences were not significant at the 5% level but the trend that is indicated supports previous research findings. Meyer and Scrivener (1995) reported a significant decrease in deep approach scores during an academic year with engineering students and, despite interventions designed to encourage a deep approach to study, decreases in deep approach (Solomonides & Swanell, 1995) or no difference between intervention and non-intervention groups (Fyfe, 1995) were recorded.

Given that this sample of undergraduates, from a variety of degree programmes, will have been exposed to a number of different learning environments, and that they were being questioned on more of a pre-dispositional than a programme specific approach, the direct effect of their programmes on their approach to learning was not measured. Biggs (1993) stresses the importance of recognising whether pre-dispositions or task-focused approaches are being measured and, in this survey, students were not asked to focus on a particular learning episode but to answer more generally. It appears from the results of this study that the experience of higher education did not substantially change beginning students' pre-dipositional approaches to study over the first two years. This does not mean, however, that students' approaches did not change in response to particular events or environments. As Volet and Chalmers (1992) indicated there can be changes in students' goals across a short period of time without there being a measurable change in pre-dispositions. The non-significant changes that did occur within the deep and strategic approaches in this study might be accounted for by the timing of the data collections. At the start of each academic year students probably arrive with an enthusiasm for acquiring understanding at a deep level. As deadlines approach for course work or examinations in March and the time for a reflective, more holistic approach to learning is at a premium, the focus on meeting the requirements of the course becomes paramount and may force students into more surface learning. This does not, however, explain why the scores for a strategic approach tend to follow those of a deep approach as the strategic approach indicates an intention to choose the most appropriate method of achieving the desired outcome.

What is encouraging about the results of the analysis is that, overall, students scored the deep approach significantly higher than both of the other approaches and the strategic approach significantly higher than they did the surface approach. This position did not change over time. Despite any minor (and in this case, non-significant changes across time), the relative positions of the three approaches did not vary. Whilst this may be as a result of the structure of the scale (see Chapter 4) and must be interpreted cautiously, it may be considered as a positive finding in terms of the learning approaches of these students. It

appears that this sample will finish their degree programmes having intended to engage in their subjects in a way that will equip them to be knowledgeable at a deep level, critical and questioning as problem-solvers and effective lifelong learners and employees (see for instance, Biatecki & Domanski, 1995; CBI, 1994; Fuente, 1995; Teichler & Kehm, 1995).

6.5.6.2. Sex differences in the three approaches

Previous research has provided conflicting evidence of the direction of sex differences. Wilson et al. (1996) found no sex differences across the three approaches; Biggs (1987) found in Australia that females scored higher on a deep approach and males higher on surface and strategic approaches; Sadler-Smith (1996) found that males were higher on deep approach, females higher on a surface approach and no significant difference on the strategic approach. In this study, overall across the three approaches, females scored higher than males. This may be a function of sex differences in responding to questionnaires or it may be that females are more aware of the ways in which they approach their studying. The results support Greasley's (1995) findings of higher female scores on most items, although her interpretation of her results, that females prefer strategic and surface approaches whereas males prefer strategic and deep approaches, were not confirmed. This study indicated that the male students scored the deep approach slightly higher than did the females although the difference was not significant. Females scored sufficiently higher than males on both the strategic approach and the surface approach to produce the overall significant difference between the sexes. Previous researchers (e.g. Greasley, 1995; Sadler-Smith, 1996) have reported females as having a higher surface approach to learning than do males but have failed to report that, like males, female students score deep and strategic approaches higher than they do the surface approach. It appears however that, while both sexes have an intention to understand their work rather than just, for instance, memorising it, female students also record the importance of applying the appropriate strategy for achievement. For females there is no significant difference between their deep and strategic approach scores - they are both relatively high on the 5 point scale - whilst for male students the deep approach is scored significantly higher than the strategic as well as the surface

approach. Biggs (1993) states that a combination of the deep and strategic approaches is the most adaptive institutionally, suggesting that females in this study are at an advantage over the males whose strategic scores are significantly lower than their deep approach scores. It would be a mistake to assume that males are at risk - they are not. Their strategic approach scores are relatively high on the 5-point scale and only low in relation to females' scores.

6.5.6.3. Sex differences within the deep approach sub-components

There were no significant differences between the sexes within the sub-components of the deep approach. Within the surface approach where, as previously reported, females scored significantly higher than did males, it appears that females might be considered to be more 'at risk' than males because of their relatively high scores on 'memorising' and 'concerns about coping'. It may be that these two are linked. Anxiety about one's capacity to deal with a situation can lead to a reduced focus in order to make sure that the essentials of the task are achieved. By relying on memorising, as a basis for understanding or regurgitation of facts, students might feel more in control of their learning, more confident of being able to generate some kind of output and less concerned about their ability to cope. The higher rating by females than by males on 'concern about coping' might also be related to the lower perceptions of competence recorded generally by females, although not in this study. Greasley (1998) also reports high anxiety scores recorded by females relative to male peers. It may be easier for females to express their emotions than it is for males, resulting in scores on the sub-component 'concerns about coping' that suggest a major problem for female students and not for males. A meta-analysis undertaken by Severiens and Ten Dam (1994) found that women scored higher than did men on affective components of the ASI such as fear of failure and the likelihood of academic success. However, as most teachers know, men are also subject to anxieties about their ability to meet study demands but may be less likely to express them than are women.

As with the surface approach female students scored higher than their male peers on all the sub-components and significantly higher on 'organising study' and

on 'time management'. Observation of students confirms these findings in that, generally, the women are more organised and better at time management than are the men. It may, again, relate to the anxiety expressed by women about their ability to cope with the work. One response to anxiety is either to avoid the aversive event or to become more organised in order to achieve. Female students, in their various responses, do not indicate the use of avoidance tactics and they, like the males, record 'determination to excel' as their highest score within the strategic approach. It seems likely therefore that part of their strategy is to intend to be well-organised and a good time manager. For both sexes, time management is scored low relative to the other sub-components and, for the men, it is scored significantly lower than all the other scores (males' and females' scores on all strategic sub-components). This may be a function of the very busy life led by most undergraduates with social, sporting and other community activities vying with degree study for time during the academic year. The need to earn money on a regular basis is, for many students nowadays, another demand on their time.

6.5.6.4. Age differences

It was surprising to find that there were very few differences relating to age. Previous researchers (e.g. Biggs, 1987; Sadler-Smith, 1996) have found that mature students score higher than younger students on the deep approach whilst younger students score higher on a surface approach. In this study mature students scored significantly higher at the 6% level than the younger students on the 'active interest and critical stance' sub-component of the deep approach but this was the only age difference that neared significance at the 5% level. The finding by Säljö(1979) that it was only with experience that learners were able to recognise the need for different approaches and the evidence provided by Volet and Chalmers (1992) concerning the unfolding goals of students might help to explain this difference. Younger students might not yet be aware of the importance of being able to adopt a critical stance in learning or have developed sufficiently as learners to be able to set this as a goal or intention. If this is the case then clearly the first two years' experience of university education did not significantly change the approach of this cohort.

It had been expected that mature students would score significantly higher than did the traditional-aged students on the deep approach but, although mature students' scores were higher there were no significant differences within the sub-components or overall. All the students scored 'looking for meaning' high (>4.0 on the 5-point scale) and for the younger students this was significantly higher than all their other deep approach sub-component scores. This is a positive finding, indicating a desire to understand the subject of study rather than just acquire knowledge. An intention to relate ideas with other areas of study was, in comparison, scored low and might indicate a potential problem for students in integrating their knowledge and using an holistic perspective. However, with mean scores for the two age groups greater than 3.7, there is clearly no major difficulty here.

6.6 Psychological profiles across time

6.6.1. Proposed psychological characteristics of autonomy

Reiterated throughout the thesis is the hypothesis that autonomy has its roots in the self-structure that has been constructed over time and in response to interactions between predispositional and environmental influences. Limitations in reliably measuring self-definitions, beliefs and values led to the search for psychological variables which, theory indicates, would be indicative of autonomy in learning and for which there were quantitative measurement instruments. There is no suggestion here that this is the only, or necessarily the best, method of exploring the phenomenon but simply that it was the one that was chosen at the beginning of the study.

It was proposed that to be autonomous learners students need to have an adequate sense of their competences in academic work and socially in order to perceive themselves as capable members of the academic community. By perceiving oneself to have the competence to deal effectively with the environment the individual is able to explore, be curious, take risks and seek challenges. Given the acknowledged importance of relationships with others, as well as academic

competence, both aspects were measured as was the overall self-assessment of worth - self worth. Additionally measuring the value that students placed on academic and social competence in an environment that emphasises the importance of these was an attempt to elicit information about the value-expectancy relationships that exist. If the social and academic domains are not an important aspect of students' self-construct then, it was proposed, they were unlikely to demonstrate autonomy in learning. Specifically, positive self worth perceptions, positive perceptions of competence, high importance ratings and an importance/competence discrepancy score close to zero were to be taken as indicators of autonomy.

Within the literature (see Chapters 1 and 2) there is consistently powerful support for the relationship between motivational orientations and autonomous behaviour. Having a reason to act which stems from a personal investment and interest in the activity i.e. acting for internalised reasons, is clearly associated with the self-construct and autonomy relationship. Similarly a lack of motivation (amotivation) or a strong extrinsic volitional element in behaviour would be the antithesis of autonomy. It was proposed that scores at the internalised end of the motivation continuum with lower scores at the external end and in amotivation would be indicators of autonomy.

Perceptions of control appear to be central to autonomy (see Chapters 1 and 2). Being able to choose to act in accordance with personally-identified values, beliefs, principles and aspirations and perceiving that success and failure are under personal control is pivotal to autonomy in learning. It was decided at the beginning of the study to measure control over study outcomes - perceived locus of control - as it was felt that this was the most salient aspect of control for autonomy in this context. The perceptions of control characteristics associated with autonomous learning were proposed as a perception of internal control for success and failure and a lower perception of external control of success and failure outcomes.

Whilst not, theoretically, associated with autonomy per se, the

measurement of approaches to study appeared to add another dimension to the investigation into autonomous learning. The deep approach in particular is associated with an internalised motivation whilst a surface approach would seem to be more instrumentally focused. The hypotheses concerning approaches to study were thus that high scores on a deep approach would be associated with high scores on other variables that were related to autonomy whilst high scores on a surface approach would correlate with such variables as amotivation, low perceptions of competence and self worth and external perceptions of control. Given the more equivocal evidence concerning the strategic approach in the literature, it was difficult to predict how this orientation would relate to autonomous dispositions.

It was anticipated, given that the beginning of degree study is a time of major transition and adjustment for most students, that changes over time would occur in most of the variables although there is evidence that the more global self worth would be fairly stable. Age differences were expected, generally, to favour the mature students who, it was supposed, would have a more consistent view of themselves and who would have made a more active decision to study than might the younger students. Evidence in the literature about sex differences varied but it was anticipated that males would have an advantage in the perceptions of competence measures and that females would record the higher intrinsic motivation and deep approach scores.

6.6.2. Evidence from the study

6.6.2.1. Changes over time

Surprisingly few changes over time were recorded. The generally positive psychological profiles that were identified in the analysis of the larger sample of undergraduates at the beginning of their studies were, however, stable across time. The 85 students who completed all four sets of inventories did not register a decrement in the attributes associated with autonomy and tended to score positive attributes higher (although not significantly) over time. This is a promising finding in relation to the higher education and life-long objective of autonomy in learning

(see, for instance, Stephenson & Laycock, 1993) although significant increases in more of the autonomy-related variables would have provided the besieged higher education sector with a much-needed boost to morale. As students arrived at university recording a generally positive autonomy profile it may be that the potential for significant increases over time was limited except where scores were initially relatively low.

Significant increases over time were noted in perceived intellectual ability and its importance, and in perceptions of close friendship competence. There was also an increasingly positive discrepancy between close friendship importance and competence over the two years of the study. Steady increases in perceptions of competence and self worth and generally more positive discrepancies between competence and importance scores within domains augur well for autonomy, despite some anomalies. The significant increase in the importance placed on intellectual ability was matched by a decrease in importance placed on the social domains. These changes are likely to be a function of the settling-down process in which the highly-charged social first year of study becomes a more sober academically-focused second year when marks begin to contribute towards the final degree classification. The overall assessment of self worth did not change significantly over time, despite changes in domains. There were, however, changes for individuals, for example in their categorisation as normatively high or low in self worth at different test points and in the median score that defined these categories. Consideration of group results does not allow the complexity and mutli-dimensionality of the self-construct to be adequately explored and can only provide a very broad picture of changes. As students' self worth is constructed from, according to Neemann and Harter (1986), competence in twelve domains, the influence of four as measured in this study, is not sufficient to give a clear idea of what is happening. Additionally, of the four measured, only two domains were scored as very important (i.e. greater than 3) and would therefore be predicted by Harter to affect self-worth. They were close friendship and scholastic competence. It appears, however, that as self worth remained stable across these two years (which constituted, for most students, a dramatic lifestyle change) it can be assumed to remain resistant to change.

Motivation to study appears to be a relatively stable construct over time and students in this cohort demonstrated adequate levels of both intrinsic and extrinsic motivation. Whatever their primary reason for studying it is important to accept that the majority of students in this study were well motivated to actively pursue purposeful academic goals over two years. At the same time we must recognise that students have a variety of reasons for studying and that these reasons might not always imply inherent value of the activity. Indeed it would be unreasonable to expect all students' activities to be motivated at the internalised end of the continuum. The motivation measured in this study is at what Vallerand (1997) would describe as the education contextual level where the reasons for studying are related to achieving a broad educational goal - in the case of these students a degree. Everyday activities such as reading, producing assignments, working in laboratories (Vallerand's situational activities) that contribute to the attainment of the more distal goal, might be more or less intrinsically-motivating even when the student has highly internalised reasons for pursuing a particular qualification in the longer term. The research described in this paper concerns the contextual rather than the situational motives.

Within the intrinsic motivation sub-components there were no significant changes over time although the scores for 'to enjoy' increased steadily across the four tests. Throughout the study the total intrinsic motivation scores remained well above the mid-point of the scale with students agreeing 'moderately', 'a lot' or 'exactly' with statements reflecting an intrinsic motivation to study. This was particularly the case with the sub-component 'to know' in which mean scores of 5 or above (on a 7-point scale) were consistently recorded, indicating considerable congruence between the students' perceptions of their motivation and the intrinsic motivation statements. Changes over time in extrinsic motivation were not significant and consideration of the sub-components of intrinsic and extrinsic motivation revealed that the high extrinsic motivation scores were largely a function of the internalised 'identified regulation' which is indicative of autonomy. Amotivation scores remained low relative to the other two motivational orientations (no higher than a mean of 1.4). Amotivation was scored significantly lower than intrinsic and extrinsic motivation throughout the study with responses to the

amotivation statements being in the category 'does not correspond' with the students' perceptions of their reasons for studying.

The low perception of amotivation recorded in the AMS inventory by students was mirrored in the ASI in which similarly low 'lack of direction' scores were identified. 'Lack of direction', as with amotivation, did not change significantly over time and neither did any of the other 'Approaches to Study' variables. Within the study approaches data there was, however, an interesting pattern of non-significant change which indicated that deep and strategic approaches tended to decrease across an academic year whilst a surface approach increased across the year. Changes might reasonably have been expected as students became more interested and involved in their studies. Early research into study approaches by Säljö (1979) identified differences between students who had no formal experience of higher level education and those who had studied at a higher level. He found that experienced students recognised the need for alternative approaches to learning, depending on the requirements of a particular task. It would appear that experience at least raises awareness of the functions of different approaches to study. Volet and Chalmers (1992) provide more recent evidence that there is a developmental process in which students' learning goals unfold along a uni-dimensional continuum from 'remembering' through 'understanding' to 'critical analysis' and 'constructive' goals. In a study of 80 economics undergraduates whose learning approaches were measured at the beginning and end of a 12 week course, they identified only 12 students, however, whose goals were stable at the high (critical/constructive) or low (understanding/remembering) ends of the continuum. They argue that, whilst most available instruments measure global rather than context-specific approaches to learning, it is important to recognise the changes that can occur within a particular context without a measurable change in the overall preference for an approach.

There is little reliable research evidence to support the notion that a predisposition to adopt a particular approach to learning is changed radically during an undergraduate degree programme although, as teachers, we recognise

the development of most students' skills in critical analysis and, for some, constructive thinking, across their degree studies. The lack of empirical evidence may be a function of the measurement tools that we use or it may indicate that pre-dispositions are fairly stable and not always good indicators of behaviour at the context or task level. From evidence previously reported (Tait et al., 1995) it appears that general statements can be made about the different approaches within particular contexts. Successful science-based students reported using a surface approach to deal with the demands of their context - an approach that was not normally adopted by successful arts-based students. The consistency of student approach to learning is, according to Entwistle and Tait, (1990), to some extent, modified by the demands of context and task. The deterioration of a deep approach identified by Meyer and Scrivener (1995) in engineering students was likely to be, at least partly, due to the perceptions that students had of the requirements of the degree study together, possibly, with a heavy workload that must always mitigate against a deep approach.

Measures of locus of control in the study indicated that this was also a stable construct over time for this group of students. When age, sex and experience at university differences were investigated Watkins (1987) also found few individual differences or changes over time. In this study students consistently scored an internal perception of control near the top of the scale whilst 'external for success' and 'external for failure' control perceptions were scored below the mid-point. On a 7-point scale students were scoring internal control between 5 and 6 (statements 'correspond a lot' or 'correspond exactly' with 'my reasons for success or failure') whilst external perceptions of control over success and failure were scored between 2.5 and 3 (statements 'correspond a little'). In other words students appeared to identify predominantly with statements concerning an internal perception of control over their academic success and failure and this did not change substantially over the first two years of study. Taking responsibility for the outcomes of achievement events means that the individual feels that he or she can control future events either by repeating successes or addressing failures. The extent to which students felt that the outcomes of their studies were externally controlled was lower and so, overall, the findings of the study are reassuring. With

these profiles it is likely that students, even at the beginning of their degree, are taking control of their own studies and responsibility for their progress.

A number of studies have indicated the important relationship between academic locus of control and academic performance (Klein & Keller, 1990; Nunn & Nunn, 1993), academic confidence and controlled or autonomy-enhancing teaching style (Klein & Keller. 1990) and personality and test anxiety (Volkmer & Feather, 1991). Within a context however, the same events may be interpreted differently by individuals as a result of their previous experience (e.g. of powerful others as being controlling or as facilitating autonomy). Contextual features such as age, culture, gender and specific situational goals affect perceptions of control (Lachman & Burack, 1993) with concomitant effects on behaviours such as goal setting, persistence, choice, anxiety and regulation of motivation (Bandura, 1977; Rodin, 1990; Sansone, Weir, Harpster & Morgan, 1992).

This complexity might explain why investigations into the locus of control perceptions of undergraduate students, using a variety of measurement instruments, remain equivocal in terms of locus of control relationships with academic achievement (Cone & Owens, 1991; Millar & Irving, 1995). It is difficult to directly compare the results of many of these studies, however, as a number of different measurement instruments were employed. Given the theoretical importance of the relationship between perceptions of control over the outcomes of actions and achievement behaviours, students' perceptions of control during higher education and changes over experience of study at university in these perceptions, are still of interest despite the measurement difficulties.

To summarise, there were very few changes across time within the data, suggesting that the constructs, measured as they were at the contextual rather than the task level, are stable. Given that this student sample was taken from a variety of Schools within the University and that the measures used asked students about their general attributes, changes might have been expected to be unlikely or difficult to detect. However, the positive finding is that the autonomy-related characteristics of new undergraduates are not damaged by their

experiences in higher education and that two relevant competence perceptions - intellectual ability and close friendship - do demonstrate significant increases. The overall profile of students is also positive in that they demonstrate relatively high scores (i.e. above the scale mean) on motivation, internal locus of control and deep and strategic approaches to study. Variables that are the antithesis of autonomy (external locus of control, amotivation and lack of direction) are scored lower.

Of some concern are the lack of changes in the relatively low scores on self worth and perceptions of competence as perceptions of competence (self efficacy) are known to affect achievement behaviour (Bandura, 1997; Harter, 1990). In relation to the data reported by Neemann and Harter (1986) for American undergraduates the British students appear cautious about their competence assessments. It was suggested in Chapter 5 that the lower than expected scores on self-perceptions might be due to students' initial caution about assessing themselves in a new environment. If this were the case then increases over time would be expected and clearly this has not happened to any significant extent. The scores recorded by these students (consistently below a mean of 3 in all but close friendship) indicate that throughout the study they are choosing statements that describe themselves as a person who lacks competence or self worth. The university environment should be actively engaged in helping students to acquire perceptions of themselves as competent people, enabling them to be challenged, curious and interested with expectations that they will be successful in their studies.

The lack of changes over time might be viewed positively or negatively in relation to autonomy. The most positive outcome would have been a significant increase over time of autonomy-related characteristics with higher education stimulating a self-directed learning approach in its students. The lack of change could be interpreted as a sign that higher education does not dampen the potential for autonomy in learning even if it does not enhance it. Scores on some of the autonomy-related characteristics were generally, however, relatively high on their respective scales at the start of the study and it may be that there is a potential

ceiling effect here (or floor effect in the case of amotivation and external locus of control). This was clearly not the case within the self-perception measures which, more than any other measure, recorded changes across time. Despite the disappointing absence of change the overall pattern suggests that students maintained relatively healthy levels of autonomous attributes throughout the first two years of study.

6.6.2.2. Age and sex differences

Differences related to age and sex were not as numerous as anticipated and not always in the expected directions. There were no age or sex differences for perceptions of competence or self-worth and no sex differences within the importance ratings of domains or within the discrepancy data. The lack of consistent age differences was surprising, given the commonly held view of academics that mature students generally lack confidence in their abilities. It may be that differentiating between the 'young' mature and 'old' mature students, or taking recent pre-university experience into account, might yield different results. This more detailed data would be worth consideration in future.

Age differences within the importance ratings of domains indicated that mature students placed more importance on intellectual ability and less on the social domains than did the younger students. This is perhaps not a surprising result. Mature students have generally come to study and may have less need to establish themselves socially than do the younger students (though this may be a misinterpretation, given that the 'mature' students may only be 21 years of age at the start of the study). The discrepancy scores, however, perhaps indicate that younger students had more concerns about their social competence in relation to the importance of social aspects of their lives. In both close friendship and social acceptance they were significantly more negatively discrepant at some test points than were the mature students. Staff often report that mature students are anxious about their ability to meet the demands of higher education but these data do not indicate that it is a lack of perceived competence that creates this impression. It is more likely that mature students employ autonomy-related strategies to gather as much information as necessary to ensure that they know

what they are doing and that this is interpreted by staff as anxiety.

No age or sex differences were identified in the initial analysis comparing intrinsic motivation, extrinsic motivation and amotivation and no significant sex differences were found when the sub-components of intrinsic and extrinsic motivation were examined. On the three sub-components of intrinsic motivation the mature students scored consistently higher than the younger students but not significantly so at any test. The age differences revealed in the sub-components of extrinsic motivation, however, provided some food for thought. The expectation had been that mature students would score higher on identified regulation and lower on introjected and external regulation than did the younger students. Mature students were assumed to be more motivated for internalised reasons than their younger peers, having presumably made a very active choice to engage in higher education. In fact the younger students scored significantly higher than the mature students on identified regulation and significantly lower on introjected regulation. The overall scores for external regulation were not significantly different for the two age groups. Thus despite having generally higher scores on intrinsic motivation the mature students scored lower on the next most internalised category - identified regulation - and higher on introjected regulation. The differences on introjected regulation may be as a result of previous educational experiences which, for many mature students have left them with a fear of failure or the desire to demonstrate that they are capable. Introjected regulation is often the result of a need to study to avoid failure, to avoid feelings of guilt when personal goals are not met or to meet other people's expectations. All these are internally generated and anxiety-provoking and do not sit easily on the self determination continuum between identified regulation and external regulation. Eighteen year olds who have generally been labelled as educationally successful, having achieved a place at university may not experience the same fear and guilt led regulation. Introjected regulation is not, theoretically, commensurate with autonomy whilst high scores on intrinsic motivation would indicate autonomy in learning. There is, therefore, an equivocal finding here that warrants further investigation beyond the scope of this present study.

Mature students at test 4 scored significantly higher than younger students at each test point on the internal locus of control measure and thus were apparently more autonomy-oriented. There were, however, no differences for age within the approaches to study data. This might be a function of the somewhat arbitrary definition of a 'mature' student as being one who is at least 21 years of age at registration. A further division into 'older mature' might have elicited further information from the data. There are a number of studies that indicate differences in approach between older and younger students. Biggs (1987, in Magee et al., 1998), using the Study Processes Questionnaire (SPQ) in Australian higher education, found that older students reported higher scores on deep and achieving approaches than did younger students and that surface approach was scored higher by younger students. Using the RASI with business studies undergraduates, Sadler-Smith (1996) found that those under 23 years of age reported significantly higher scores overall on the surface approach and on the 'difficulty in making sense' sub-scale than did older students. The older students scored significantly higher on all the sub-scales of the deep approach. Richardson (1995b), Harper and Kember (1986), Watkins (1982 in Gow & Kember, 1990) and Watkins and Hattie (1981) have reported similar differences. These differences are not surprising. It seems likely that mature students, who have made an active choice to study in higher education, will be intrinsically motivated to learn for the sake of learning and out of personal interest in the subject - reasons that are congruent with a deep approach.

There were differences for sex in this study with women apparently more strategic than the men and more prepared to adopt a surface approach. There were, however, no differences between the scores for men and women on the deep approach. Sex differences in the ways that men and women structure their learning have been found by Meyer (1995). He provided evidence that there are gender-specific variations within the deep approach that emphasise different aspects of learning. From the behavioural perspective, he argues, it is likely that, at the beginning of undergraduate study women have already adjusted their learning styles to a male-dominated environment. Previous factor analyses of the ASI have not, however, differentiated between the sexes and it may be that the

items will cluster differently for males and females, requiring a different interpretation of the results. Meyer, Dunne and Richardson (1994) suggest that these differences should be acknowledged and managed by teachers in higher education. The finding in this study that females generally score all approaches higher than do males is difficult to explain, may be an artefact of the way that individuals respond differently to the statements and warrants further investigation.

The rather high scores for women identified in these data (around the mean for the scale and significantly higher than men) on concerns about the ability to cope with academic work, need to be recognised. Anxiety can stunt progress by reducing the willingness to be challenged, explore and take risks - all of which are behaviours or attributes aligned to a deep approach to learning. Whilst females primarily report an intention to use a deep orientation to their studies there is a risk that that approach might be curtailed if anxiety is high.

The evidence for sex differences in other research is more equivocal. Wilson, Smart and Watson (1996) found no sex differences in the three approaches when they used both the SPQ and the ASI instruments with psychology students whereas Biggs (1987) found differences in his sample of Australian students. In Biggs' study females scored higher than males on a deep approach while males scored higher on the surface approach and achievement motivation. Sadler-Smith (1996) however, found that that it was males who reported significantly higher scores on the deep approach, with females significantly higher on the surface approach and no differences on the strategic approach. Greasley (1998) found significant differences between men and women Business Management students within many of the ASI sub-scale items. Whilst men scored significantly higher than women on the 'questioning' item in deep approach, on the extrinsic motivational question relating to studying for a qualification and on the achievement item concerning competition, women scored significantly higher than did men on items within most sub-scales (relating ideas, intrinsic motivation, surface approach, fear of failure and strategic approach). By analysing her data item by item, Greasley has provided evidence that both supports and refutes previous research findings. For instance, within the 'meaning

orientation' of the ASI, deep approach, relating ideas and intrinsic motivation are usually reported as 'meaning orientation' but, in this study, are disaggregated. Men and women score in significantly different directions on items that together represent the meaning orientation. Although Greasley does not report sex differences for the factors it seems likely that, overall, there is less likely to be a significant main effect for sex within 'meaning orientation'. Greasley concludes that females prefer strategic and surface approaches to study whereas men prefer deep and strategic approaches but she does not provide any within-sex evidence for these conclusions. Whilst there are clearly differences between the sexes, the overall position of each, in terms of preferred approaches, is not clear from this study and warrants further investigation.

6.7. Conclusion

From the results reported so far in this study it appears that students' context-related motivation, self esteem and locus of control are stable over time and that there are relatively few changes in domain-specific perceptions of competence. Approaches to study, where changes were expected, did not demonstrate differences over time when group data was used. Taken separately the psychological constructs indicate that students generally possess stable, autonomy-related profiles with no significant differences between age groups and sexes. However positive scores on one construct are not sufficient to justify an 'autonomous learner' label and the following chapters seek to investigate the relationships between the constructs that might clarify the extent to which positive attributes are related within an autonomy framework.

7 Self worth and approaches to study: group differences

Anticipated relationships between self worth, perceptions of competence and their importance, motivational orientations, locus of control factors and approaches to study were explored using a variety of statistical tools. The differences between students classed as normatively high and low on self worth and high and low on deep approach to study data are reported in this chapter. Additionally there is an analysis that investigates differences between groups of students whose deep and surface approaches to study change over time.

7.1 Introduction

The thesis to this point has dealt separately with the variables that are proposed to affect the learner's capacity to act autonomously. It has explored differences related to age and sex and those that occurred over time in these various variables. However, as previously discussed, considering each variable separately is not sufficient in itself to indicate the potential for autonomy in learning. The relationships between self-evaluation, motivation, locus of control and approach to study that were discussed in theory in Chapter 2 are explored here using a variety of statistical methods.

7.2 Relationships with self worth

Many authors discuss autonomy as being inextricably linked to a sense of self with its framework of aspirations, ideals and values that guide behaviour (see for instance Appley, 1991; Deci & Ryan, 1991; Doyal & Gough, 1993; Zimmerman, 1990a). For each person that 'self' is individually constructed and, at its periphery, modifiable to a greater or lesser extent over time and in response to experience. It appears that the core self is relatively stable and it is this core that defines pre-dispositions and orientations to behave in particular ways. This complex and somewhat dynamic self is not conventionally measurable and no attempt has been made, in this study, to measure it. The closest measure available is that of self worth. This differs from the broader, personal framework of attitudes and beliefs that structure behaviour in that it is a self-evaluative measure of personal

worth. Self worth is closely linked, however, to the wider notion of self in that it provides an indication of the level of satisfaction with themselves that students are feeling. This satisfaction, described by Appley (1991) as a state of equilibration, is derived from a secure self construct that can withstand or adapt to, pressures from the context in which self is being evaluated. Self worth is strongly influenced by the environment in which the individual is operating as well as by the core set of beliefs and values of that individual. For instance, an unfit, overweight student living with a group of fit and physically active friends might be more influenced by the context than by a personal belief that exercise can damage your health. The resulting conflict between belief and context might damage the student's self worth or bring about a change of attitude to exercise. On the other hand the student's views about the dangers of exercise might be so strongly part of the self concept that no dissonance was felt.

Given that a reliable measure of core self is not available and that self worth provides a measure which is associated with achievement behaviour and other autonomy-related characteristics provide, the relationships between high and low self worth with other variables was investigated. In Chapters 5 and 6 a section of the analysis divided students into two groups using the median score of self worth to differentiate those who had a normatively high from those who had a normatively low self worth score. The two groups' scores for other variables were compared. The results from these initial analyses suggested that self worth distinguishes students on variables other than those closely related to self worth (i.e. perceptions of competence, the importance of domains and the discrepancy between perceptions of importance and competence) and also other variables. In this chapter further investigation of these relationships was made. Included in the report, in order for comparisons to be made with other variables, are the results of the group comparisons already reported in Chapter 6.

A one-way MANOVA at each test point, using the test-relevant median split for self worth to divide the groups, compared high and low self worth students on the following:

- perceptions of scholastic competence, intellectual ability, close friendship, social acceptance, importance ratings for these domains and

discrepancies between domain-specific competence and importance;

- intrinsic motivation, extrinsic motivation, amotivation, the sub-components of intrinsic motivation (to know, to achieve and to be stimulated), the sub-components of extrinsic motivation (identified, introjected and external regulation);

- external/failure, external/success and internal locus of control factors;

- deep, surface and strategic approaches to study, academic self-confidence and lack of direction.

The following tables indicate where differences between the groups were revealed at the 5% level, test by test, for the 85 students who provided data across four test points.

7.2.1 Test 1

There were 50 students in the high group and 35 students in the low group with a median split of 2.83. Multivariate test results indicated a significant main effect for group (λ[F(23,61) = 2.366; p<.005]).

Variable		SS	df	MS	F	Sig.
Intellectual ability	Contrast Error	2.973 27.355	1 83	2.973 .330	9.020	.004*
Close friendship	Contrast Error	2.071 34.206	1 83	2.071 .412	5.025	.028*
Social acceptance	Contrast Error	7.324 26.503	1 83	7.324 .319	22.936	.000*
Discrepancy Social acceptance	Contrast Error	5.830 42.417	1 83	5.830 .511	11.408	.001*
Surface approach	Contrast Error	3.607 40.16	1 83	3.607 .484	7.455	.008+
Lack of direction	Contrast Error	9.741 66.447	1 83	9.741 .801	12.168	.001+
Academic self confidence.	Contrast Error	5.206 42.606	1 83	5.206 .513	10.142	.002*

* high self worth group scored higher, + low self worth group scored higher

Table 7-1: Differences (significant at the 5% level) between high and low self worth groups at test 1.

7.2.2 Test 2

There were 46 students in the high self worth group and 39 students in the low group with a median split of 2.83. Multivariate test results indicated a significant main effect for group (λ[F(23,61) = 5.709; p<.0001]).

Variable		SS	df	MS	F	Sig.
Scholastic competence	Contrast Error	5.009 17.619	1 83	5.009 .212	23.599	.000*
Intellectual ability	Contrast Error	9.263 27.365	1 83	9.263 .330	28.096	.000*
Close friendship	Contrast Error	6.279 49.320	1 83	6.279 .594	10.567	.002*
Social acceptance	Contrast Error	20.135 24.177	1 83	20.135 .291	69.124	.000*
Discrepancy scholastic comp.	Contrast Error	6.789 43.483	1 83	6.789 .524	12.96	.001*
Discrepancy Intellectual ability	Contrast Error	7.621 71.457	1 83	7.621 .861	8.852	.004*
Discrepancy Social acceptance	Contrast Error	25.457 44.090	1 83	25.457 .531	47.922	.000*
To accomplish	Contrast Error	14.878 113.769	1 83	14.878 1.371	10.854	.001*
Total intrinsic motivation	Contrast Error	6.229 89.221	1 83	6.229 1.075	5.794	.018*
Surface approach	Contrast Error	9.218 34.93	1 83	9.218 .421	21.904	.000+
Lack of direction	Contrast Error	8.726 66.321	1 83	8.726 .799	10.92	.001+
Academic self-confidence.	Contrast Error	6.421 31.142	1 83	6.421 .375	17.113	.000*

* high self worth group scored higher, + low self worth group scored higher

Table 7-2: Differences (significant at the 5% level) between high and low self worth groups at test 2.

7.2.3 Test 3

There were 33 students in the high self worth group and 52 students in the low self worth group with a median split of 3.0. Multivariate test results indicated a significant main effect for group (λ[F(23,61) = 4.422; p<.0001]).

Variable		SS	df	MS	F	Sig.
Scholastic competence	Contrast Error	5.379 17.823	1 83	5.379 .215	25.049	.000*
Intellectual ability	Contrast Error	5.911 24.167	1 83	5.911 .291	20.299	.000*
Close friendship	Contrast Error	6.010 37.784	1 83	6.010 .455	13.201	.000*
Social acceptance	Contrast Error	13.630 24.958	1 83	13.630 .301	45.328	.000*
Discrepancy scholastic comp.	Contrast Error	6.119 39.400	1 83	6.119 .475	12.891	.001*
Discrepancy Intellectual ability	Contrast Error	7.161 46.467	1 83	7.161 .5601	12.791	.001*
Discrepancy Close friendship	Contrast Error	5.458 41.304	1 83	5.458 .498	10.968	.001*
Discrepancy Social acceptance	Contrast Error	16.165 48.530	1 83	16.165 .585	27.646	.000*
External/success	Contrast Error	3.093 58.361	1 83	3.093 .703	4.399	.039+
Surface approach	Contrast Error	4.250 46.498	1 83	4.250 .560	7.586	.007+
Academic self-confidence.	Contrast Error	6.240 34.088	1 83	6.240 .411	15.193	.000*

* high self worth group scored higher, + low self worth group scored higher

Table 7-3: Differences (significant at the 5% level) between high and low self worth groups at test 3.

7.2.4 Test 4

There were 35 students in the high group and 50 students in the low group with a median split of 3.0. Multivariate test results indicated a significant main effect for group (λ[F(23,61) = 3.942; p<.0001]).

Variable		SS	df	MS	F	Sig.
Scholastic competence	Contrast	10.652	1	10.652	40.270	.000*
	Error	21.954	83	.265		
Intellectual ability	Contrast	13.271	1	13.271	42.560	.000*
	Error	25.881	83	.312		
Close friendship	Contrast	7.625	1	7.625	14.961	.000*
	Error	42.301	83	.510		
Social acceptance	Contrast	12.049	1	12.049	26.864	.000*
	Error	37.226	83	.449		
Discrepancy schol. comp.	Contrast	12.457	1	12.457	23.241	.000*
	Error	44.487	83	.536		
Discrepancy Intellect. Ability	Contrast	14.527	1	14.527	16.724	.000*
	Error	72.095	83	.869		
Discrepancy Close friendship	Contrast	4.659	1	4.659	9.551	.003*
	Error	40.488	83	.488		
Discrepancy Social accept.	Contrast	17.453	1	17.453	22.400	.000*
	Error	64.669	83	.779		
Motivation to know	Contrast	8.641	1	8.641	6.201	.015*
	Error	115.672	83	1.394		
Motivation to accomplish	*Contrast*	*8.603*	*1*	8.603	4.875	.030*
	Error	146.478	83	1.394		
Identified regulation	Contrast	13.723	1	13.723	8.452	.005*
	Error	134.758	83	1.624		
External regulation	Contrast	22.207	1	22.207	10.212	.002*
	Error	180.491	83	2.175		
Amotivation	Contrast	5.956	1	5.956	6.348	.014+
	Error	77.872	83	.938		
Total intrinsic motivation	Contrast	8.692	1	8.692	6.056	.016*
	Error	119.138	83	1.435		
Total extrinsic motivation	Contrast	9.282	1	9.282	9.309	.003*
	Error	82.752	83	.997		
External/Failure	Contrast	3.015	1	3.015	4.759	.032+
	Error	52.585	83	.634		
External/Success	Contrast	5.979	1	5.979	7.863	.006+
	Error	63.114	83	.760		
Deep approach	Contrast	3.716	1	3.716	8.825	.004*
	Error	34.952	83	.421		
Surface approach	Contrast	11.687	1	11.687	27.941	.000+
	Error	34.717	83	.418		
Strategic approach	Contrast	2.937	1	2.937	4.993	.028*
	Error	48.832	83	.588		
Lack of direction	Contrast	9.681	1	9.681	11.398	.001+
	Error	70.493	83	.849		
Academic self-confidence.	Contrast	10.971	1	10.971	21.028	.000*
	Error	43.305	83	.522		

* high self worth group scored higher, + low self worth group scored higher

Table 7-4: Differences (significant at the 5% level) between high and low self worth groups at test 4.

7.2.5. Discussion

The differences between the two groups were surprisingly large and, in some variables, consistent over time. The self worth median scores (2.83 for tests 1 and 2 and 3.0 for tests 3 and 4) used to define the groups were not particularly low on the 4-point scale. Given that the groups were constructed on the basis of normative scores for the sample rather than the halfway point on the scale, it is perhaps more remarkable that so many group differences should be revealed. Additionally, all participants' scores were used, including those clustered around the median score and it appears that the differences between the groups were sufficiently strong to overcome the potential dilution of the effect by the use of these middle-of-the-range scores. Overall the pattern of differences is as might be predicted with the high self worth group scoring higher on variables associated with autonomy and achievement. Across the four tests the group differences increase. It is interesting to note that there are differences in seven variables at the beginning of the first year, twelve by the end of that year (test 2), eleven at the beginning of the 2nd year and a considerable increase to twenty-two at the end of the second year. As well as the number of variables in which there were significant group differences increasing during each year and steadily over the two years, the levels of significance are generally higher with time.

7.2.5.1. Perceptions of competence, *domain importance and discrepancies*

Group differences within the perceived competence, importance and discrepancy between competence and importance scores were as reported in Chapter 5. As can be seen from the tables there were no significant differences between the groups on the importance placed on domains at any of the test points. This means that both groups of students placed similar value on scholastic competence, intellectual ability, close friendship and social acceptance. However, the group differences revealed in the results for perceptions of competence, when used in the equation with importance ratings to produce a discrepancy score, indicate that the low self worth group generally had discrepancy scores that were significantly more negative than were those for the high self worth group. A negative discrepancy score indicates a dissonance between the value placed on a domain and

perceptions of competence in that domain - with potential detriment to achievement behaviour and autonomy in learning. Interestingly this was the case for social acceptance at all test points, indicating perhaps that the low self worth group arrived at university with a mismatch between their perceived social competence and the value they placed on being socially acceptable. Over time this negative discrepancy persisted whereas the high self worth group were less discrepant.

At the first test point, before students had experienced higher education and were able to assess themselves in relation to its standards, there were no significant discrepancy differences between the two groups for the academic domains. The differences between the groups appeared at test 2 when the high self worth group's discrepancy scores became significantly more positive than those of the other group. Close friendship discrepancies were significantly different for tests 3 and 4. There were a number of occasions when the high self worth group had positive discrepancy scores. The high self worth group generally scored their competences significantly higher than did the low self worth group across all tests, the only exception being scholastic competence at test 1.

7.2.5.2. Motivation

The pattern of relationships between self worth and motivation is less clear than that with perceptions of competence. Amotivation appears in the tables at test 4 but in the early tests does not reach a 5% level of significance. In contrast, lack of direction, a variable within the Approaches to Study Inventory measuring a similar characteristic to amotivation, demonstrates significant group differences at all tests except test 3 with the low self worth group scoring higher than the high group. This is a predictable finding. When discrepancies between perceived capabilities and the importance placed on domains that contribute to self worth assessments are negative, as is the case with the low self worth group, then students are likely to start to question why they are involved in studying at all.

Theoretically the group differences in lack of direction might be expected to be linked with external regulation. The differences between the

groups that are revealed are, however, not consistent across time or in the expected direction. External regulation appears at test 4 (p=.002) but it is the high self worth group that scored higher. This was an unexpected finding. However, when the questions that are scored as external regulation were considered, they are all concerned with studying as a means of finding a prestigious job, having a better salary, and leading a more comfortable life after graduation. Students scoring these questions high might be considered to be pragmatists who have high expectations of themselves and aspirations that will be congruent with engagement in studying. They know why they are studying and are motivated to achieve for instrumental reasons as well as intrinsically. Importantly all students scored more highly towards the internalised end of the motivational continuum than on external regulation (see Chapter 6). External regulation is not detrimental to these students who have internal reasons for studying and a high perception of competence relative to the potential for the scale.

Interestingly, although there are few motivational variables that indicate group differences in the first three tests, at test 4 it is only introjected regulation in which differences do not occur. Apart from the unexpected direction of external regulation as discussed above, the differences in the motivational variables were congruent with an expectation that those with higher self worth will present higher scores on other autonomy-related variables also. The high self worth group scored all the sub-components of intrinsic motivation (and consequently total intrinsic motivation) significantly higher than did the other group except 'for enjoyment' (p=.06). They also scored identified regulation (at the internalised end of the motivation continuum), external regulation and overall extrinsic motivation higher than did the low group. Intrinsic motivation and identified regulation are reasons for acting that are closely related to 'the self'. High scores on these variables indicate that, in this case, studying is inherently valued and an integral part of the individual's constructed self. Students with higher scores at the internalised end of the motivational continuum, as well as higher self worth scores, are predicted to be more autonomous in their learning than those with lower scores.

Introjected regulation scores for the high self worth group are not significantly different from those with lower self worth. Introjection is more internalised than is external regulation but studying is motivated by fear of failure or guilt and, as such, indicates a lack of confidence or anxiety that is probably more likely to interfere with autonomy aspirations than is the striving for a better career or income. As identified regulation and external regulation are both sub-components of extrinsic motivation, the higher scores for the high self worth group on extrinsic motivation were to be anticipated.

7.2.5.3. Locus of control

There were no significant differences between the two groups on internal locus of control at any of the test points although, given the discussion in Chapter 2 this would have been anticipated. There were differences on external/failure at test 4 (p=.032) with the low self worth group scoring higher. A high score on external/failure indicates a perceived lack of control over failure outcomes, with the outcome attributed to such influences as luck or powerful others. Whilst not taking responsibility for failure, with lack of perceived control resulting in a perception that future failures are also beyond personal control, a high external attribution for failure can be detrimental to achievement. However, it can also be a mechanism for protecting self-esteem (see for instance Heckhausen & Schultz, 1995). To adopt a strategy that denies responsibility for failure can prevent damage to feelings of worth, particularly in a context where success or failure is constantly under scrutiny. Clearly any of these explanations for apparently conflicting results could be applied but it is not possible in this study, to ascertain whether any or all are valid.

The results concerning external/success confirmed expectations. Differences between the groups were revealed at tests 3 and 4 - the second year of study. In each case the low self worth group scored significantly higher than did the high self worth group. Perceiving that successful outcomes of study are externally controlled does not give the individual an opportunity to boost self worth by attributing success to internal factors. It is not surprising then, to find a higher score on this variable associated with relatively low

scores on self worth. However, from the overall results of the locus of control analysis, as reported in Chapter 7, it appears that the pattern of perceived control for all students is congruent with that expected for autonomous learners. Although there are differences between the two self worth groups, students overall scored internal control significantly higher than they do the two external control factors.

7.2.5.4. Approaches to study

The surface approach was scored significantly differently by the two groups at each test point, with the low self worth group having the higher score at each point. A surface approach is used when the intention is to memorise work, and take notes because of difficulties in recognising links or prioritising important aspects of the work. It also involves concerns about the amount of work that needs to be done and anxiety about coping. It is not clear from the literature whether a surface approach is used because of anxiety about the ability to cope or whether students choose a surface approach for instrumental reasons i.e. to get the work done to an acceptable standard with the minimum of effort. It seems likely that a surface approach is less likely to be used by those who have an intrinsic interest in the subject and who set out to understand their topics. However, the influence of heightened anxiety - from low perceived competence or a heavy workload - on approach cannot be dismissed and might also occur for those who are autonomy-oriented. Nevertheless the evidence here suggests that, in the second year of study, students with a lower self worth have significantly higher scores on a surface approach to studying. It must be noted that despite the differences between the groups, overall, students scored a surface approach lower than they did that of the other two approaches.

Differences between the groups on deep and strategic approaches only occur at test 4, towards the end of the second year of study. These are in the expected direction, with the high self worth group scoring higher than the other group. Biggs (1993) suggests that the best combination for success within an institutional framework is a combination of deep and strategic approaches to learning. The pattern presented here for the two groups puts the high self

worth group at an advantage over the low self worth group - they score significantly higher on the two approaches most likely to lead to successful outcomes and lower on the less effective surface approach. A deep approach is consistent with an internalised interest in learning that is thus valued in relation to the self. It is proposed to be congruent with learner autonomy in that there is an active choice to go beyond what is required because of self-interest. The adoption of a strategic approach indicates a pragmatism that recognises the need to respond to contextual demands in order to succeed in a system. The response may not be entirely satisfying if a deep level of learning is desired but it will achieve other valued outcomes.

Academic self-confidence, measured within the ASI, provided a similar pattern across time to that of the Neemann and Harter (1986) measures. The high self worth group scored significantly higher than the low group at each test point. Perceiving oneself to be capable of meeting study requirements is an important aspect of autonomy. It does not suggest that there is no challenge involved but that there is confidence in being able to deal with challenges.

7.2.6. Conclusion

In this comparison of the high and low self worth groups there is a surprising number of variables that demonstrate significant differences in autonomy-related attributes, particularly at the final test point. Most but not all were in the expected direction with the high self worth group scoring higher on competence, competence/importance discrepancies, intrinsic, extrinsic and identified motivation, deep and strategic approaches to study and academic self-confidence but also on external regulation. The low self worth group scored higher on lack of direction, surface approach and external/success locus of control. The variables in which the high self worth group displayed higher scores are, in the majority, those indicative of the hypothesised autonomous learner.

7.3 Differences between high and low deep approach groups

At the beginning of this thesis it was argued that learner autonomy

leads to more effective learning, enabling a lifelong approach that is increasingly desirable for individual and societal progress at the start of the new millennium. The question remains about how we can best encourage students to be (or at least intend to be) autonomous learners. An investigation of the potential two-way effect of study approach and autonomy over time is not within the scope of this study but of interest is the relationship between normatively high and low deep approach scores and the other autonomy-related variables. The question here is whether students with high deep approach scores score significantly higher on internal control, perceptions of competence and self worth and intrinsic motivation than do those with normatively low deep approach scores. The deep approach measure is the focus of this analysis because it is this orientation that is, theoretically, most closely linked to autonomy or self-direction when a motivational perspective is applied (e.g. Deci & Ryan, 1991). Use of the deep approach to explore learner autonomy should not be taken to mean that the other approaches are not utilised by autonomous learners but rather they are not central to the notion of autonomy as is the deep approach.

Of all the variables measured in this study it appears that the one over which university teachers have most influence is that of the student's approach to learning. Although much work still needs to be done to provide convincing and generalisable empirical evidence for this there are studies that indicate the context-sensitivity of a student's intention or goal in learning. If increases in a deep approach to learning are accompanied by changes in variables indicative of autonomous behaviour then there is a strong argument for ensuring that our teaching methodologies allow students to adopt a deep approach to their studies. The analyses reported here explore these relationships.

The first analysis follows the pattern used in the previous section to explore the differences between groups classified as normatively high and low on self worth. In this case the variable of interest is a deep approach to study. It was hypothesised that students with a normatively high deep approach score would score significantly higher than the 'low' group on variables associated with autonomy (e.g. self-perceptions, intrinsic motivation and an internal locus of control) and significantly lower on amotivation and external sources of

control. The groups were identified for each test point separately as individuals might vary over time for membership of a group. The median score that differentiated groups was found to vary across time. Students with scores above the median were described as 'high' whilst those scoring the median and below were described as 'low'. It is important to note that the overall scores for a deep approach were not particularly low in relation to the potential for the scale and that 'low' and 'high' in these groups are sample-specific terms. Table 7-5 indicates the distribution of students (N = 85) at each test point.

	Test 1 (median = 4)	Test 2 (median = 3.8)	Test 3 (median = 3.9)	Test 4 (median = 4)
High deep approach	37	38	39	36
Low deep approach	48	47	46	49

Table 7.5: Numbers of students in normatively high and low deep approach groups across tests

The dependent variables used in the analysis were: self worth; perceptions of scholastic competence, intellectual ability, close friendship, and social acceptance; importance of scholastic competence, intellectual ability, close friendship and social acceptance; discrepancy within the domains of scholastic competence, intellectual ability, close friendship and social acceptance; intrinsic motivation sub-components 'to know', 'to accomplish', 'to enjoy'; total intrinsic motivation; extrinsic motivation sub-components identified, introjected and external regulation; total extrinsic motivation; amotivation; ability for failure and for success; external control for failure and for success; internal control. These were compared across the two deep approach groups using a MANOVA. A brief summary of the variables in which significant group differences were found appears in Table 7-6.

Variable	Significance level when groups are significantly different (p<.05). * = high DA group has higher scores; + = low DA group has higher scores.			
	Test 1	Test 2	Test 3	Test 4
Perceived scholastic comp.	.018 *	.027 *		.000 *
Perceived intellectual ability				.033 *
Scholastic comp. Discrepancy				.034 *
Motivation: to know	.038 *			.000 *
Motivation: to accomplish			.039 *	.002 *
Motivation: to enjoy		.016 *	.000 *	.000 *
Total intrinsic motivation.			.002 *	.000 *
Control: Ability/success	.027 *			.027 *
Control: Ability/failure		.016 +		
Control: External/failure				.009 +
Control: External/success			.049 +	

Table 7.6: Significant differences between high and low deep approach groups across time.

7.3.1. Discussion

As with the self worth high-low group comparison, the differences that were revealed for the deep high-low group comparison increased over time. At the fourth test there were significant differences between the groups in nine of the variables tested whereas at each other test point there were only three or four variables in which significant differences occurred (see Table 7.1). Supporting the hypothesis that a deep approach to studying will be associated with other autonomy-related variables, the analysis of all the test results, at test 4 in particular, indicates significant differences in the expected direction. At test 4 the group with a normatively high scores on a deep approach to study scored significantly higher than the low deep approach group on perceptions of competence, intrinsic motivation and the 'ability for success' locus of control measure. Several of these variables also appeared as significantly different at other tests. The three variables on which the low group scored significantly higher were all locus of control variables that were not indicative of autonomy. The three variables were 'ability for failure' at test 2, 'external control for failure' at test 4 and the 'external reasons for success' at test 3. Whilst none of these was significantly different at more than one test point and, as a whole, do not therefore provide strong support for the hypothesis, the results are congruent with the general hypothesis.

It was surprising not to find more consistent group differences between the deep approach groups on the intrinsic motivation scores although all the three sub-components each display significant differences at two test points. One of the major tenets of a deep approach is the desire to know which, in this data, was the strongest of the intrinsic motivation sub-components. This only produced significant group differences at the 3rd and 4th tests whereas the desire to enjoy, be stimulated and challenged by study was scored significantly differently, and at a higher level of significance, at all but test 1. The questions relating to a deep approach do not address the students' affective responses to study and it may be that the excitement and challenge involved in learning at a deep level is a relationship that warrants further investigation.

Another expectation that was not met in this analysis was that of a difference on amotivation which, in previous analyses had a negative relationship with a deep approach and was scored significantly differently by the high and low self worth groups. It must be remembered, however, that the normative split used to determine group membership meant that, at test 4 for instance, students could be scoring quite highly (4 on a five-point scale) and be placed in the 'low' deep approach group. It is perhaps surprising, given this very conservative classification, that as many differences appear in the data as are indicated in Table 7.6.

7.4. Changes in deep and surface approaches

Previous analyses (see Chapter 6) indicated that there were no significant changes over time in any of the three study orientations when group data was examined. However, this does not mean that individuals did not change over time. It was of interest to this study to compare students who changed over time in their study approaches. The change could, of course, be in a positive or in a negative direction or there could be no change at all. Of particular interest were the relationships between a change in deep approach and other variables - are there differences in the scores on other variables for those students whose deep approach changes in a positive or negative direction? A similar investigation was undertaken to explore the surface approach data. As a surface approach has been shown consistently in this

study to relate negatively with a deep approach, it might be anticipated that such an analysis would produce an inverse result to that of the deep approach. In other words, an increase in a surface approach would produce differences between direction of change groups (positive and negative) in a different direction to those of the deep approach results.

In order to consider an approach which increased, decreased or showed no change over time, a new variable was created for each of the deep and surface approaches. An individual's approach score at test 1 was subtracted from that at test 4. Where an increase over time occurred this new score would be positive whereas a decrease would be indicated by a negative score and a zero would indicate no change across time. Three groups were formed - group 1 was students for whom the approach increased over time, group 2 for those who had not changed and group 3 for those whose scores decreased over time. Groups were generated for both the deep approach and the surface approach to study, and within and between group differences were examined across the two test points. The groups were labelled as follows:

Direction of change in approach to study	Test 1 groups	Test 4 groups
Increase	1.1	2.1
No change	1.2	2.2
Decrease	1.3	2.3

Table 7.7: Change in approach group labels for both deep and surface approaches to study.

85 students' data were used in the analysis, taken from tests 1 and 4. For the deep approach to study there were 37 students in group 1 (the change in deep approach across time was positive), 13 students in group 2 (no change in approach) and 35 students in group 3 (a decrease in deep approach scores between test 1 and 4). For the surface approach there were 40 students in group 1 (increase), 4 in group 2 (no change) and 41 in group 3 (decrease).

Deep and surface approaches were investigated separately in two 3 x 2 x 13 (group by time by self-perception variables) repeated measures MANOVA and Tukey's HSD tests as follow-up tests. The self perception variables in the analysis were: self worth, perceptions of scholastic competence, intellectual ability, close friendship, social acceptance, the four domain-specific

importance ratings and the four discrepancy scores. Two 3 x 2 x 7 repeated measures MANOVAs investigated the motivation data (variables to know, to accomplish, to enjoy, identified, introjected and external regulation). The locus of control data was similarly subjected to two 3 x 2 x 5 repeated measures MANOVAs (variables ability for success and for failure, external locus for success and for failure and internal locus of control). Two test points were used to compare the variables - test 1 and test 4. Only the results which involved significant differences for groups are reported in this section as other aspects of the analysis have been reported in previous chapters.

7.4.1. Results

For *self-perceptions and a deep approach* a significant three-way interaction was revealed in the multivariate tests ($\lambda[F(18,148) = 2.054; p<.02]$). Following a Greenhouse-Geisser adjustment the level of significance increased to $p<.002$. Follow-up test results indicated significant differences as in the table on the next page:

Variable	Deep approach group differences over 2 test points	Sig. level
Perceived scholastic competence	Group 2.2 > Group1.3	.029
	Group.2.2 > Group 2.3	.014
Perceived intellectual ability	Group 2.1 > Group 1.3	.006
	Group 2.2 > Group 1.3	.017
	Group 2.1> Group 2.3	.047
Perceived close friendship	Group 2.1 >Group 1.3	.002
	Group 2.2 > Group 1.3	.002
Importance of close friendship	Group 1.1 > Group 2.3	.031
Discrepancy scholastic competence	Group 2.1 > Group 1.2	.044
Discrepancy close friendship	Group 2.1 > Group 1.1	.011
	Group 2.3 > Group 1.1	.017
Discrepancy social acceptance	Group 2.1 > Group 1.3	.013

Key: 1.1 = test 1 increase in deep approach (DA); 1.2 = test 1 no change in DA; 1.3 = test 1, decrease in DA; 2.1 = test 2, increase in DA; 2.2 = test 2 no change in DA; 2.3 = test 2, decrease in DA.

Table 7.8: Deep approach change group differences in self perceptions across tests 1 and 4.

For the *self-perceptions data with a surface approach* a multivariate test indicated that there were no interactions involving group in the data ($p > .6$). Tests of between subject effects confirmed that there was no main effect for group [$F(2,82) = .145$; $p > .8$]. There were however two significant group differences revealed by the Tukey's follow-up tests. These were in the close friendship discrepancy scores where the 'increase in surface approach' group in the 4th test (group 2.1) scored significantly higher than they did at test 1 ($p < .03$) and significantly higher than the 'decrease' group at test 1 (group 1.3) ($p < .003$). This is congruent with the general finding that close friendship discrepancies became more positive over time. A similar finding was reported in the deep approach results above.

For *motivation with a deep approach* the multivariate test revealed a significant three-way time by motivation by group interaction ($\lambda[F(12,154) = 2.242$; $p < .02]$), a significant two-way interaction between motivation and group ($\lambda[F(12,154) = 2.203$; $p < .02]$) and a significant time by group interaction ($\lambda[F(2,82) = 4.571$; $p < .02]$). Tests of between subjects effects indicated that

there was no significant main effect for group ([F(2,82) = 1-966; p>.14]. Significant differences between groups at different test points are reported in the table below (Table 7.9).

Variable	Deep approach group differences across two test points	Significance level
'to know'	Group 1.1 > Group 2.3	.001
	Group 1.3 > Group 2.3	.038
	Group 2.1 > Group 2.3	.001
'to accomplish'	Group 2.1 > Group 2.3	.011
'to enjoy'	Group 2.1 > Group 1.3	.000
	Group 2.1 > Group 2.3	.001
Amotivation	Group 2.3> Group1.1	.003
	Group 2.3> Group 1.3	.024
	Group 2.3> Group 2.1	.003
	Group 2.3> Group 2.2	.019

Key: 1 1 = test 1 increase in deep approach; 1.2 = test 1 no change; 1.3 = test 1, decrease; 2.1 = test 2, increase; 2.2 = test 2 no change; 2.3 = test 2, decrease

Table 7.9: Deep approach change group differences in motivation across tests 1 and 4

For *motivation with a surface approach*, multivariate test results indicated that there were no interactions involving group that were significant at the 5% level (p>.09). Tests of between subject effects revealed no significant main effect for group [F(2,82) = .854; p>.4].

For *locus of control with deep approach*, multivariate analysis indicated no significant interactions involving group (p>.3). The between subject effects test indicated that there was no significant main effect for group [F(2,82) = .123; p>.8]. Tukey's follow-up tests, however, revealed three significant differences in the data as tabled below (Table 7.10).

Variable	Deep approach group differences	Significance
External reasons for failure	Group 2.1 > Group 1.3	.048
	Group 2.3 > Group 1.3	.045
External reasons for success	Group 1.3 > Group 2.1	.036

Key: 1.1 = test 1 increase in deep approach; 1.2 = test 1 no change; 1.3 = test 1, decrease; 2.1 = test 2, increase; 2.2 = test 2 no change; 2.3 = test 2, decrease

Table 7.10: Deep approach change group differences in locus of control across tests 1 and 4.

For locus of control with a surface approach, multivariate tests indicated that there were no significant interactions involving groups ($p>.07$). Tests of between subject effects revealed no significant group main effect [$F(2,82) = .279$; $p>.757$]. Two significant differences were revealed in the follow-up Tukey's tests, both within 'external reasons for success'. Group 1.1 scored significantly higher (at test 1) than they did at test 4 ($p<.02$) and significantly higher than group 2.3 (decrease in surface approach at test 4).

7.4.2. Discussion

The differences that were revealed in the analysis generally support the hypothesis that students whose deep approach to study increases from test 1 to test 4 (group 1) will demonstrate higher scores on autonomy-related characteristics than will those students whose deep approach decreases over time. There is less evidence that an increase in a surface approach to studying is accompanied by significant group differences in autonomy-related characteristics.

In the self-perception results for the deep approach there are two within-test differences at test 4 that are of interest. The no-change group (DA0) scored significantly higher than did the decrease group (DA-) in perceived scholastic competence. Secondly, in perceived intellectual ability, the increase group (DA+) scored significantly higher than did the DA- group. Within these two academic-related domains there are other differences that are in line with the hypothesis, indicating time and group interactions. DA- students at test 1 scored significantly lower than DA0 at test 4 on perceptions of scholastic competence and intellectual ability and also lower than DA+ at test 4 on

intellectual ability. The results reported in a previous chapter indicate that intellectual ability scores increased significantly from test 1 to test 4 overall whilst this analysis indicates that there was no increase over time in intellectual ability perceptions for those students whose deep approach decreased. Given the demonstrated relationship between perceptions of competence and achievement behaviour (see for instance, Bandura, 1997; Harter, 1990) these results suggest that the students in the DA- group are more at risk than are those whose deep approach to study increases or remains constant. The correlation patterns in the previous chapter indicate the significant, moderate association between a deep approach to study and perceptions of academic competence at test 4 and these results reinforce the importance of those relationships.

There were no within-test differences between the groups in perceptions of close friendship competence domains but there was a time by group interaction. DA- at test 1 scored significantly lower than DA+ and DA0 at test 4. DA- at test 1 also scored significantly lower than DA+ (test 4) on social acceptance discrepancy, indicating that DA- (test 1) was more negatively discrepant than was the deep approach increase group. This may indicate that the group with decreases in deep approach had some concerns about their ability to make friends and be socially acceptable at test 1. This was not the case at test 4 where their discrepancy scores were significantly higher than were those of the DA+ test 1 group scores for close friendship discrepancy.. One result that does not support the hypothesis is that of the significant difference for close friendship discrepancy between DA+ (test 1) and DA- (test 4) in which the decrease group (DA-) scored higher. However, given that there is a significant increase over time for the DA+ group and no significant difference at test 4 between DA+ and DA- this is probably not an important finding. Deci and Ryan (1991) and Ryan and Powelson (1991) stress the importance of social relationships for autonomy and it appears from this data that, generally, the DA+ and DA0 groups have more positive perceptions of their interrelationships than do the DA- group at test 1. These results indicate, however, that there is not a clear, linear relationship between changes in a deep approach to study and changes in perceived social acceptance or close

friendship capability.

In the surface approach change groups there were only two differences and these were both in the close friendship discrepancy variable. The SU+ group (increase in surface approach) significantly increased its scores from test 1 to test 4 and, at test 4 was significantly higher than the SU- group at test 1. Neither of these findings supports the hypothesis that an increase in surface approach will be accompanied by a decrease in autonomy-related variable scores. An increase in discrepancy (i.e. a less negative discrepancy between competence and importance) would be expected to accompany a decrease in surface approach which is clearly not what is happening here. However, caution must be taken when interpreting the discrepancy data which is a score calculated from two other interval variables (see Byrne, 1996) and when comparing across subscales (see Chapter 4).

Interestingly, given the significant differences that were observed when normatively high and low self worth groups were compared, self worth in this investigation of the data was not significantly different between the groups. As the deep approach differences for self worth groups were not significant until the 3rd and 4th tests any differences may not be sufficiently large to be significant at the 5% level in this investigation.

As with the self perception data significant differences in motivation in line with those hypothesised were revealed in the deep approach relationships but not in the surface approach groups for which there were no differences that reached significance at the 5% level. All the significant group and test differences for the deep approach groups occurred within the intrinsic motivation sub-components and amotivation. There has always been a strong theoretical relationship (Entwistle & Ramsden, 1983) between intrinsic motivation and a deep approach to study and the significant, moderate to strong correlations between a deep approach and intrinsic motivation variables reported previously added support to this association. In this investigation it is interesting to note that it is not just a high score on deep approach that is associated with high intrinsic motivation but the direction of change in a deep approach to study that differentiates between higher and lower scores in

intrinsic motivation. Importantly for the proposal that an decrease in a deep approach will be accompanied by an decrease in autonomy-related motivation, the DA- group's desire 'to know' decreased significantly from test 1 to test 4. There was not, however, a corresponding significant increase in any of the intrinsic motivation variables for the DA+ group which would, theoretically, be expected. There were significant differences within tests however, with DA+ significantly higher than DA- at test 4 for all three intrinsic motivation sub-components. DA+ at test 4 also scored significantly higher than did DA- at test 1 on 'to enjoy' and DA+ 'to know' scores at test 1 were significantly higher than those of DA- at test 4. Whilst this is considerable support for the proposal that positive and negative changes in a deep approach to study are related to differences in intrinsic motivation - a central characteristic for autonomy - the more direct relationship, where change in one is accompanied by change in the other, was not upheld.

Support for the hypothesis was provided by the amotivation results. At the 4th test the DA- group reported significantly higher scores than they did at test 1, than did the DA+ group at test 1 and than did both DA+ and DA0 at test 4. In other words a decrease in deep approach was associated with an increase in amotivation and significantly higher amotivation scores than most of the other groups. Within the overall analysis of amotivation which indicated no significant changes over time, the increase in amotivation for the DA- group from test 1 to test 4 suggests that these students may be at risk in relation to continued achievement behaviour. Amotivation describes a lack of motivation and a confusion about why the student is engaged in higher education at all. The lack of direction typified by high amotivation scores is the antithesis of autonomy. However, it must be remembered that, overall, students recorded low scores on amotivation and it may be that, despite these significant differences there are not many students in the study who were at risk because of high amotivation scores.

There was equivocal support for the hypothesis in the locus of control results but this in line with most of the other analyses of these variables which have not generally supported the hypothesised relationships between perceptions of control and the other autonomy-related variables. Group

differences in deep approach were identified within 'external reasons for failure' with groups DA+ and DA- at test 4 scoring higher than group DA- at test 1. This indicates a significant increase over time in the DA- scores i.e. as a deep approach decreases, external reasons are increasingly seen as contributing to failure. However it also suggests that there may be an increase in DA+ scores on this variable over time as this was not significantly higher than DA- at test 1 but is at test 4. There are, therefore, two different messages from the group comparisons in this variable - that external reasons for failure increase as deep approach decreases but that these attributions also increase as deep approach increases. Previous discussions of this perception of control variable have pointed out that to attribute failure to external sources can sometimes be healthy by protecting self esteem (see for instance Heckhausen & Schultz, 1995). However, it can also lead to a state of helplessness in which one perceives oneself to be a 'pawn', consistently feeling unable to take control to ensure that failure is not repeated (deCharms, 1968; Lachman & Burack, 1993). Higher scores on 'external reasons for failure' might indicate that either of these processes are being employed but neither is supportive of the autonomy model.

The other locus of control variable in which differences were found in the deep approach groups was 'external reasons for success'. This was hypothesised to be negatively associated with autonomy. In this study the scores for the DA- group at test 1 were significantly higher than those for the DA+ group at test 4. This lends some tentative support for the hypothesis although there was no significant decrease of the variable over time for the DA+ group. In the surface approach groups two significant differences were evident, both within the 'external reasons for success'. There was an increase over time for the SU+ group which, at test 1, was also significantly higher than the SU- group scores at test 4. These results are congruent with the notion of autonomy. As a surface approach increases, so does the perception that success is not under personal control. This is not esteem-enhancing and is not likely to lead to positive achievement behaviours. A surface approach, measured as it is by items that ask about anxieties related to coping, appears to be related to feeling out of control perhaps more closely than was indicated

by the correlational data.

7.4.3. Conclusions

This manipulation of the data lends some considerable support to the validity of the claim that the characteristics of students whose deep or surface approach scores increase or decrease over time will vary in relation to the direction of the change. The conclusions that can be drawn are not as straightforward as would have been the case if there had been more within-group changes across the two test points. However the differences between the groups are generally in the expected directions and at a convincing level of significance. This was particularly the case for the motivation data with all the sub-components of intrinsic motivation recording differences in the expected directions and amotivation changes providing powerful support for the hypothesis.

What the analysis has not done is measure the extent of the changes that have occurred in the two approaches. For instance, a student who scored low on deep approach and increased minimally would have been placed in the DA+ group with students who scored highly on deep approach and who also increased minimally. On the other hand a student who scored highly at the beginning and whose scores decreased minimally would have been placed in the DA- group with low-scoring students who also decreased. Additionally there may be a ceiling effect with low or high scoring students at the limit of the range being placed erroneously in the 'no change' groups. Although these difficulties might have been detrimental to the search for evidence to support the hypothesised relationships between approaches to study and autonomy, the less refined method that has been used to define the groups has nevertheless produced support for the proposal. Were more sophisticated ways of classifying changes in deep and surface approaches to be employed it is anticipated that the evidence would be more substantial than it is.

7.5. Overall discussion

Once again there is evidence in these results to suggest a consistency in the pattern of relationships between autonomy-related variables, even when

the data is manipulated in somewhat unconventional ways. The differences between the normatively high and low deep approach groups were surprisingly robust, given the very conservative division of the groups and, although not all the anticipated variables demonstrated differences, those that did supported the notion of an autonomous learner. Similarly when direction of change in deep approach was used as an independent variable the resulting differences between those students who increased and those who decreased in deep approach was consistent with the hypothesis.

The change in direction of surface approach was not a similarly useful indicator and this suggests that a surface approach is not necessarily entirely incongruent with autonomy. Scrutiny of the questions in the inventory reveals that the surface approach is largely concerned with measuring affective responses to study whereas the deep approach is much more about metacognitive style. As teachers we know that some very successful students, whilst adopting a deep approach to study, also experience anxiety about whether or not they can cope with the work. This sometimes interferes with their work but often is associated with the setting of very high standards and acts as a stimulus to study harder. It may be that the deep and surface approaches are measuring very different aspects of students' approaches to study and are not dichotomous as was assumed here. Further investigation of the relationships between these two variables might extend our understanding of the different combinations of processes that students employ in their studies.

7.6. Summary

Both the analyses that demonstrated differences between students classed as normatively high and low on self worth and the analyses concerning the approaches to study support the notion that there are consistent patterns of relationships between the variables measured that are generally supportive of the theoretical framework discussed in Chapters 1 and 2. These relationships become stronger and more clearly differentiated in the time from the beginning of the students' degree study until the end of their second year of study. Changes over time in a deep approach to study are

accompanied, to some extent, by changes in autonomy-related variables although this evidence is not as unequivocal as might have been expected. The lack of evidence concerning locus of control relationships with other variables suggests that either the inventory is not providing unambiguous questions for students or that the central notion of control within autonomy is more complex than at first envisaged. Further study on this important construct is evidently needed.

The next chapter considers how the various variables relate to each other using correlational analyses to identify patterns. It also reports analyses that investigate student characteristics and their final degree result.

8 Relationships between the constructs

Rather than dividing students into groups based on self worth or approach to study as in the previous chapter, these analyses explore the relationships between all the variables. In the first section correlations between perceptions of self, motivation, locus of control and approach to study are calculated. In the second section factor analysis is used to determine in what ways variables cluster together. As a final analysis some of the data is used to explore the relationships between autonomy-related variables and degree result.

8.1. Correlational analysis

As investigations in Chapter 7 revealed differences relating to self worth and indicated that these differences were most marked at test 4, a correlational analysis of all the variables or factors at test 4 was used to explore relationships. Included in this analysis were the composite variables such as intrinsic and extrinsic motivation but also the locus of control variables 'ability for success' and 'ability for failure'. These had not been included in the locus of control factors as they were not reliably related across time to a particular factor.

It was hypothesised at the beginning of this thesis that autonomy in learning would be indicated by positive associations between the following psychological attributes: self worth; perceptions of competence; the importance placed on study-related domains and the relationship (discrepancy) between perceptions of competence and importance; intrinsic motivation and identified regulation; internal locus of control; deep and strategic approaches to study and academic self confidence. Negative associations with the above variables were expected in: amotivation; introjected and external regulation; external locus of control for success and failure; surface approach and lack of direction. The two locus of control variables - ability for success and ability for failure - which had not been included in the factors (see empirical research chapter for an explanation) were an unknown quantity. Theoretically, they might both be expected to relate positively with the positive variables (self worth etc.) or ability for failure might be expected to relate negatively with these variables.

The table of correlations appears on the next few pages, indicating only

those correlations that were identified as significant. As there is a risk of making a Type I error when multiple correlations are performed (Huck & Cormier, 1996), a Bonferroni adjustment was applied to the data. Those correlations that were no longer considered significant following this adjustment, which indicated that an acceptable level of significance is $p \leq .002$, are highlighted in the table. The key to the table appears at the end of the table.

	PSW	PSC	PIA	PCF	PSA	ISC	IIA	ICF	ISA	DSC	DIA	DCF	DSA	MK	MA	ME	
PSW		.643**	.688**	.462**	.686**					.549**	.553**	.435**	.600**	.369**	.387**	.264*	PSW
PSC			.803**	.357**	.425**					.717**	.545**		.288**	.556**	.570**	.484**	PSC
PIA				.411**	.503**					.630**	.725**	.351**	.398**	.469**	.463**	.368**	PIA
PCF					.515**			.543**	.316**	.244*	.335**	.487**					PCF
PSA										.387**	.315**	.391**	.728**	.287**			PSA
ISC							.255*			-.655**							ISC
IIA									.265*		-.742**						IIA
ICF									.583**			-.469**	-.288**				ICF
ISA												-.274*	-.635**				ISA
DSC														.281**	.331**	.373**	DSC
DIA														.229*	.321**	.279**	DIA
DCF																	DCF
DSA														.219*			DSA
MK															.700**	.710**	MK
MA																.705**	MA
ME																	ME
Cont.	PSW	PSC	PIA	PCF	PSA	ISC	IIA	ICF	ISA	DSC	DIA	DCF	DSA	MK	MA	ME	Cont.

Cont.	PSW	PSC	PIA	PCF	PSA	ISC	IIA	ICF	ISA	DSC	DIA	DCF	DSA	MK	MA	ME	Cont.
MID	.400**	.287**	.265*								.293**						MID
MIJ						.235*				.236*				.364**	.566**	.320**	MIJ
MEX	.269*		.222*												.335**		MEX
MAM	-.503**	-.560**	-.593**	-.281**	-.330**		.214*			-.390**	-.547**	-.242*	-.323**	-.423**	-.491**		MAM
LAS	.253*	.431**	.336**			.300**	.237*							.265*	.406**	.221*	LAS
LAF	-.360**		-.430**	-.223*	-.268*	.321**			.216*	-.366**	-.409**	-.324**	-.356**				LAF
LES	-.256*	-.287**	-.343**		-.241*							-.254*	-.280**	-.239*			LES
LEF		-.257*															LEF
LIN						.273*	.226*							.275*	.245*		LIN
ADA	.319**	.565**	.417**		.268*					.296**	.266*			.598**	.522**	.573**	ADA
ASU	-.471**	-.562**	-.561**		-.332**					-.532**	-.475**		-.336**	-.217*	-.242*	-.283**	ASU
AST	.290**	.569**	.300**			.279**				.236*				.483**	.472**	.435**	AST
ASC	.546**	.703**	.567**	.347**	.383**					.447**	.406**		.270*	.355**	.426**	.312**	ASC
ALD	-.468**	-.579**	-.583**	-.286**	-.341**					-.415**	-.452**	-.338**	-.369**	-.472**	-.607**	-.439**	ALD
Cont.	PSW	PSC	PIA	PCF	PSA	ISC	IIA	ICF	ISA	DSC	DIA	DCF	DSA	MK	MA	ME	Cont.

Cont.	MID	MIJ	MEX	MAM	LAS	LAF	LES	LEF	LIN	ADA	ASU	AST	ASC	ALD	Cont..
MID		.239*	.608**	-.367**	.302**							.253*	.284**	-.279**	MID
MIJ			.239*		.308**	.274*			.236*	.281**		.236*		-.246*	MIJ
MEX					.335**								.300**		MEX
MAM						.228*	.260*			-.377**	.354**	-.328**	-.603**	.679**	MAM
LAS							-.336**		.397**	.266*	-.221*	.338**	.363**	-.392**	LAS
LAF							.342**	.326**			.308**			.236*	LAF
LES								.663**		-.236*	.324**	-.218*	-.280**	.377**	LES
LEF									-.273*		.347**			.275*	LEF
LIN															LIN
ADA											-.285**	.538**	.558**	-.351**	ADA
ASU													-.545**	.313**	ASU
AST													.496**	-.352**	AST
ASC														-.395**	ASC
ALD															ALD

Table 8-1: Correlations between all variables at test 4. Only significant correlations are included(*p<.05; **p<.01; [redacted] p>.002)

3. *Key to abbreviations:*
4. ***Prefix P = perceptions of; SW (self worth); SC (scholastic competence); IA (intellectual ability); CF (close friendship); SA (social acceptance)***
5. ***Prefix I = importance of: SC (scholastic competence); IA (intellectual ability); CF (close friendship); SA (social acceptance)***
6. ***Prefix D = discrepancy in: SC (scholastic competence); IA (intellectual ability); CF (close friendship); SA (social acceptance)***
7. ***Prefix M = motivation: K (to know); A (to accomplish); E (for enjoyment); ID (identified); IJ (introjected); EX (external); AM (amotivation).***
8. ***Prefix L = locus of control: AS (ability for success); AF (ability for failure); ES (external/success); EF (external/failure); IN (internal).***
9. ***Prefix A = approach to study: DA (deep); SU (surface); ST (strategic); SC (academic self confidence); LD (lack of direction***

8.1.1. Discussion

The hypothesis at the beginning of this thesis concerning positive and negative associations between the variables was largely supported by the correlation analysis although there are some interesting anomalies. Given the complexity of structuring the discussion so that it covers all the salient points without too much repetition, each of the four sets of measures (self worth and associated variables, motivation, locus of control and approaches to study) will be considered in relation to 'within the set' correlations. Correlations with variables outside the set will then be discussed.

8.1.1.1. Self perceptions

As anticipated there were moderate to strong correlations between self worth and perceptions of competence in all the domains with close friendship, the domain in which competence was scored the highest of all the domains (see Chapter 6), indicating the lowest correlation coefficient. This finding supports the theory that self worth is related to perceptions of competence in domains. However, in theory this association is mediated by the importance or value that an individual places on a domain and this analysis provides few significant correlations between domain related competence and importance ratings. The competence-importance discrepancy scores in this study do provide some interesting support for Harter's (1990) proposals about the relationships between perceptions of importance, competence and self worth. Significant associations between discrepancy and self worth were moderate to strong, indicating (as did the ANOVA reported above), that higher scores in self worth are related to a higher discrepancy score (i.e. less negative or more positive). Discrepancy scores around zero indicate that students perceive that their competence is congruent with the importance they place on the domain.

A small negative discrepancy might be considered to be healthy in that students are likely to be motivated to improve their competence to achieve. A large negative discrepancy could present students with a problem in that they perceive that their ability to meet the demands of an important domain to be very much lacking. Such decrement might lead to avoidance, anxiety and a tendency to give up.

Discrepancy scores, as an indication of how students perceive their abilities in relation to valued activities, can be seen to correlate systematically with other variables. They are significantly and negatively related to 'lack of direction', to amotivation and to a surface approach (with the exception of close friendship). In other words as discrepancy becomes more negative, scores in amotivation, lack of direction and a surface approach are also higher. This is to be expected as learners are likely to become demotivated and narrower in their focus when they perceive a big gap between their abilities and their aspirations. The small but positive correlations between scholastic competence discrepancy scores and the various components of intrinsic motivation are in line with expectations. Students with less conflict between their perceptions of competence and their value systems will be able to set internalised goals for studying rather than struggling to meet external demands. Confirmation of this conclusion are the positive correlations found between scholastic competence and intellectual ability discrepancy scores and the deep approach to studying and the stronger, negative correlations with the surface approach. The significant relationships between discrepancy and deep approach must be viewed with caution as the significance level falls below that indicated as acceptable using the Bonferroni adjustment.

The significant, negative associations between all discrepancy scores and 'ability as a reason for failure' were to be expected. If failure is attributable to ability perceptions of which are reflected in the domain-specific competence measures and again in the discrepancy scores, then high attributions of ability as a reason for failure indicate a perception of a lack of ability to meet the demands of the situation. Consideration of the table confirms the moderate but negative association between perceived intellectual ability and 'ability for failure' but there is no significant relationship between 'ability for failure' and perceived scholastic competence. Scholastic competence is measured more in relation to skill at completing assignment work than to that of intelligence. The different associations between 'ability for failure' and scholastic and intellectual competence might indicate that ability is defined more in relation to intelligence than it is to an acquirable skill. The positive, though low correlations between 'ability for failure' and external locus of control for both success and failure, and the weak association with surface approach to learning and lack of direction in learning, reinforce the view that a high score on 'ability as a reason for failure' is

contraindicative of autonomy. Interestingly there is also a positive but weak (p>.002) association with introjected regulation - a motivational orientation associated with fear of failure and guilt. The anxiety related to study perhaps leads students to a restricted surface approach to learning, with its reliance on memorising and regurgitation and a tendency to wonder why they are studying at all. They perceive themselves to be externally controlled for both success and failure outcomes. Unlike those who score high on 'ability as a reason for success' 'ability for failure' is not significantly associated with the internalised reasons for studying - to know, to achieve, for enjoyment and identified regulation.

There are small but positive relationships between the importance of scholastic competence and 'ability for failure', 'ability for success', an internal locus of control, a strategic approach to study and introjected regulation. These somewhat incongruous associations (although not considered significant following the Bonferroni adjustment) reinforce the view that the rating of domains as important is not strongly indicative of an autonomous learner. Students' ratings of domain importance do not seem to be congruent with other variables that denote high achievement or autonomy related characteristics.

8.1.1.2. Motivation

The correlations within the motivation variables provide some interesting relationships. There are strong, predictable, positive correlations between the sub-components of intrinsic motivation, supporting the theory that these have parity in their contributions to the overall measure of intrinsic motivation. There is, however, no significant relationship between these variables and identified regulation as might be expected, given that they are close on the internalisation continuum (Deci & Ryan, 1985a). Instead all the intrinsic motivation variables correlate positively with introjected regulation. It is difficult to explain these associations within an autonomy model, particularly having just argued (above) that an introjected regulation is associated with anxiety that restricts the enjoyment and intrinsic interest in study for its own sake. It may be that it is the affective nature of these two areas of motivation that creates the relationship, over-riding the traditional view that internalisation per se is the link. Nevertheless, these associations do not conform to the expected pattern and raise some interesting questions about the traditionally-received view of student motivation. The pattern

of negative correlations between all the intrinsic variables and identified regulation with amotivation is congruent with the overall hypothesis. A person who is motivated to study for any reason, intrinsic or extrinsic, is not going to score highly on amotivation.

Patterns of relationships between motivation and other variables are more consistent with the proposed characteristics of the 'autonomous learner'. Positive correlations between self worth and all the intrinsic motivation variables were predicted as were the self worth relationships with identified regulation. It would have been surprising to find that external regulation was weakly but positively associated with self worth without the previous analysis that demonstrated difference between high and low self worth groups as reported above. It may be that external regulation, as was discussed in the previous section, provides a motivation for achievement that, although totally extrinsically driven, nevertheless is anticipated to provide personal satisfaction in the future. Amotivation provided the expected negative correlation with self worth.

Moderate to high positive relationships between intrinsic motivation variables and perceptions of competence in the two study-related domains are consistent with the hypothesis but it was surprising to find few significant relationships between intrinsic motivation, or any of the extrinsic motivation variables, and the interpersonal competences. Deci and Ryan (1991) stress the importance of relationships in achievement motivation. Whilst close friendship competence demonstrated no significant relationships, social acceptance was weakly associated with 'to know' and appears to be more important than is close friendship competence in the self-construct. This pattern, not surprisingly, is repeated in the intrinsic motivation-discrepancy relationships with positive correlations occurring with the two study-related domains but with only one association with social acceptance - that of 'to know'.

The only extrinsic motivation variable to associate significantly with discrepancy was that of identified regulation with intellectual ability and this was not a strong association or significant following the Bonferroni adjustment. Students with more positive discrepancy scores were predicted to be more likely to score higher on the variables contributing to intrinsic motivation, as was the case in this analysis. Competence, its demonstration or acquisition has long been

recognised as a motivator (see for instance, Harter, 1978; Nicholls, 1984; Weiner, 1992; White, 1959) and perceiving oneself to be competent (i.e. with a good balance between competence and aspirations) provides students with the confidence to set goals beyond the minimum and to enjoy challenging themselves. This competence-motivation link might also explain the moderate but positive associations between the locus of control variable 'ability as a reason for success' and all the motivation variables except amotivation with which there was no significant correlation.

It had been predicted that there would be a positive, significant association between intrinsic motivation variables and an internal locus of control but none of these associations was significant at the $p \leq .002$ level. Other relationships between motivation variables and locus of control were not predicted. Introjected regulation provided a puzzling pattern once again. It was positively correlated with 'ability for success', 'ability for failure' and internal locus of control though not at the p .002 level. Although these correlations were low and, given that the 'ability for failure' generally associated negatively with variables that were autonomy-related whilst the other two had positive associations, the positive correlations with all three is inconsistent with the overall pattern for introjected regulation and for 'ability for failure'. Introjected regulation was consistently positively correlated with variables hypothesised to contribute to autonomy whilst, in every other correlation apart from two importance ratings, 'ability for failure' was negatively correlated with autonomy variables. Clearly there is scope here for further investigation.

The positive correlations between the intrinsic motivation variables and 'ability for success' were predicted, but this locus of control variable also correlated positively with all the extrinsic motivation variables. This is another indication that extrinsic motivation is not the antithesis of internal control and autonomy, although there are still some anomalies that suggest a more complex relationship exists than has so far been proposed

The expected correlations between all the intrinsic motivation variables and deep and strategic approaches to study were moderate to strong, and the predicted negative correlations with a surface approach were also evident although with a significance level below that acceptable following a Bonferroni adjustment. Interestingly introjected regulation followed the same pattern of

association with deep and strategic approaches whilst identified regulation only associated positively and weakly with a strategic approach. Theoretically, given the relative positions of these two motivational orientations on the internalisation continuum (Deci & Ryan, 1985a), identified regulation would have been expected to be more likely than introjected regulation to relate to a deep approach.

For amotivation the relationships with the approaches to study variable were as expected - negative with deep and strategic approaches and positive with the surface approach. All correlations between the motivation variables and 'academic self confidence' and 'lack of direction' confirmed expectations.

8.1.1.3 . Locus of control

Although 'ability for failure' and 'ability for success' did not consistently load onto internal and external locus of control factors when the initial analyses were performed, it appears that, at this final test point, they can be differentiated as relating to internal and external locus of control factors. 'ability for success' associated positively with 'internal locus of control' and negatively with 'external reasons for success'. 'ability for failure' correlated positively with the two external variables - 'external control of success' and 'external control of failure'. The relationships between these two 'ability' variables and other variables generally support the notion that attributing successful outcomes of study to ability is consistent with an autonomy approach to learning whilst attributing failure in study to ability indicates a lack of control, of motivation for achievement and a surface approach to learning. Interestingly it appears that ability can be categorised differently, depending on the outcome of the study. The changing concept of ability and its assessment has been the subject of research for some time (see for instance, Ames & Archer, 1988, Dweck & Leggett, 1988; Nicholls, 1984; Sarazzin, Biddle, Famose, Cury, Fox, & Durand; 1996) but adults have rarely been the subject of investigation. This study suggests that adults' concepts of ability might be more flexible than has previously been thought.

The other locus of control variables generally correlated predictably with each other. 'Internal control' associated negatively with 'external control for failure' but surprisingly not with 'external control for success', again raising questions about students' different responses to success and failure outcomes. The two 'external' variables were strongly positively correlated and the correlation patterns

with approaches to study reinforced the view that high scores in these variables are the antithesis of autonomous learning. They related positively to a surface approach and 'lack of direction' and negatively to deep and strategic approaches and to 'academic self confidence'. The 'internal locus of control' variable appears to be less clearly differentiated than the external variables. It had no significant correlations ($p \leq .002$) with approaches to study, and the only significant association was with 'ability for success'. It may be that the validity and reliability of this variable is questionable although it did seem to present a coherent, if weak, pattern.

8.1.1.4. Approaches to study

Expected correlation patterns were revealed in this analysis with positive correlations between a deep and strategic approach and 'academic self confidence' and between a surface approach and 'lack of direction'. The surface approach and 'lack of direction' were negatively associated with the deep approach and 'academic self confidence' and 'lack of direction' was negatively correlated with a strategic approach. The lack of an association between the surface and strategic approaches might be an indication of the problems of identifying a clearly differentiated approach that is labelled strategic (see for instance, Richardson, 1990). However, in this study the strategic approach generally followed the pattern of relationships that were predicted, in line with a deep approach to study and autonomy in learning.

8.1.2. Conclusion

The pattern of relationships between the variables investigated is largely consistent with the predictions at the start of the thesis. The variables can be broadly divided into two groups - those that are related to the more positive attributes associated wit success in studying and those that are associated with a lack of interest or motivation in studying. The first group includes: self worth, perceptions of competence, discrepancy between competence and importance, intrinsic motivation, extrinsic motivation, 'ability for success', 'internal control for success', deep and strategic approaches to study and academic self confidence. The second group includes: amotivation, 'ability for failure', external locus of control for failure, external locus of control for success, a surface approach to study and 'lack of direction'. The two groups generally display negative

correlations with each other. Excluded from these lists because of difficulties classifying them consistently are the importance ratings of the domains relating to self worth. They were sometimes positively correlated with autonomy-related variables but also with the second group (see for instance importance of intellectual ability with 'ability for success' and with amotivation). Although included in a group because of a predominance of associations, introjected regulation had associations with 'ability for success' and 'ability for failure' and with importance of scholastic competence that were somewhat inconsistent with the rest of the group.

There are clearly unexplained aspects of introjected regulation, of the importance ratings of domains and of the concept of ability as it relates to success and failure, that warrant further investigation. However, the pattern of relationships that emerges from this analysis identifies the two distinct groups of attributes that would differentiate achievement oriented, autonomous learners from others who do not present a self-determined approach to study. The relationships between variables as indicated by the size of the correlation coefficients is not strong in most cases, with few correlations greater than .7. Most of the highest scores are between related variables such as sub-components of intrinsic motivation or perceptions of academic competence. The pattern of relationships as identified, although supporting the hypothesis, does not therefore provide a strong case for defining autonomous characteristics in learners.

8.2. Correlation pattern at test 1

From the above analysis which identified relationships between variables in a broadly predicted pattern at test 4, the question arose as to whether this pattern was stable across time. Analyses of variance within each area of measurement (self construct, motivation, locus of control, approaches to study) had revealed few if any changes across two years of study. The comparison of the two self worth groups in this chapter had, however, indicated that differences at test 4 were more marked than at test 1 whilst the pattern of relationships between the variables at test 4 was clearly defined. This next section compared the pattern of relationships between the variables at test 1 with that of test 4, using the same 85 students whose data were analysed above.

	PSW	PSC	PIA	PCF	PSA	ISC	IIA	ICF	ISA	DSC	DIA	DCF	DSA	MK	MA	ME	
PSW		.273*	.469**	.380**	.620**						.371**	.227*	.478**				PSW
PSC			.563**				.265*			.589**				.271*	.430**		PSC
PIA					.400**					.349**	.558**		.335**				PIA
PCF					.519**			.422**				.462**	.309**	-.224*			PCF
PSA								.252*					.688**				PSA
ISC										-.720**					.265*		ISC
IIA									.220*		-.789**				.273*		IIA
ICF									.297**			-.610**					ICF
ISA													-.572**				ISA
DSC																	DSC
DIA													.271*				DIA
DCF													.280**	-.312**		-.221*	DCF
DSA																	DSA
MK															.620**	.502**	MK
MA																.473**	MA
ME																	ME
Cont..	PSW	PSC	PIA	PCF	PSA	ISC	IIA	ICF	ISA	DSC	DIA	DCF	DSA	MK	MA	ME	Cont.

Cont.	MID	MIJ	MEX	MAM	LAS	LAF	LEF	LES	LIN	ADA	ASU	AST	ASC	ALD	
PSW				-.282**		-.232*					-.316**		.369**	-.263*	PSW
PSC				-.249*	.443**			-.235*			-.390**		.320**		PSC
PIA					.389**	-.340**		-.414**			-.423**		.393**	-.249*	PIA
PCF													.388**	-.232*	PCF
PSA													.425**		PSA
ISC	.213*	.275*				.286**									ISC
IIA		.327**			.334**	.309**									IIA
ICF															ICF
ISA															ISA
DSC											-.280**				DSC
DIA		-.256*		-.242*		-.466**		-.240*			-.303**			-.223*	DIA
DCF						-.243*					-.305**		.273*		DCF
DSA											-.256*		.369**		DSA
MK		.300**			.469**	.269*			.358**	.253*					MK
MA		.507**		-.218*	.562**				.366**	.218*				-.245*	MA
ME					.262*										ME
Cont..	MID	MIJ	MEX	MAM	LAS	LAF	LEF	LES	LIN	ADA	ASU	AST	ASC	ALD	Cont..

Cont.	MID	MIJ	MEX	MAM	LAS	LAF	LEF	LES	LIN	ADA	ASU	AST	ASC	ALD	Cont..
MID			.601**				.225*					.298**			MID
MIJ					.235*				.378**						MIJ
MEX					.369**							.326**	.267*		MEX
MAM								.219*						.438**	MAM
LAS							.226*	-.274*	.301**	.309**	-.385**		.426**		LAS
LAF							.343**	.368**	.247*			.220*			LAF
LEF								.396**	-.245*						LEF
LES											.290**				LES
LIN										.314**					LIN
ADA												.413**	.345**		ADA
ASU													-.541**	.438*	ASU
AST													.351**		AST
ASC														-.367**	ASC
ALD															ALD
	MID	MIJ	MEX	MAM	LAS	LAF	LEF	LES	LIN	ADA	ASU	AST	ASC	ALD	

Table 8-2: Correlations between all variables at test 1. Only significant correlations are included(*p<.05; **p<.01; p>.002)

Key to abbreviations

Prefix P = perceptions of , SW (self worth), SC (scholastic competence) IA (inte lectual ability), CF (close friendship), SA (social acceptance)

Prefix I = importance of: SC (scholastic competence) IA (intellectual ab ty) CF (close friendship) SA (social acceptance)

Prefix D = discrepancy in SC (scholastic competence), IA (intellectual abi ty) CF (close friendship) SA (social acceptance)

Prefix M = motivation K (to know), A (to accomplish), E (for enjoyment) ID (ident fied), IJ (introjected) EX (external) AM (amotivation)

Prefix L = locus of control AS (ab lity for success) AF (ab lity for failure) ES (external/success), EF (external/failure) IN (internal)

Prefix A = approach to study DA (deep approach), SU (surface approach) ST (strateg c approach) SC (academic self confidence) LD (lack of direction

8.2.1. *Discussion*

A comparison of the two correlation patterns at tests 1 and 4 indicates that the pattern of relationships is broadly the same. The direction of the relationships does not change i.e. positive correlations remain positive and negative relationships remain negative over time. What is striking is that the significant associations revealed at test 1 are fewer than at test 4 and, where they exist, are generally weaker. In other words students seem to develop more clearly differentiated associations between variables as they progress through their studies. It could be argued that this is a function of having answered the same questionnaire four times and there is a test-familiarity effect by test 4. However, the questionnaires were answered at six monthly intervals in order to try to reduce the chance of responses being remembered from the previous occasion. It is possible that students' awareness of the way they studied or felt about themselves in relation to study was raised by repeated questioning. Without a control group which was measured only at the beginning and the end of the period it is not possible to test this possible explanation. The experience of study at a higher level might in itself, be the reason for the stronger pattern of relationships that was found, with students becoming more self aware by the end of their second year as undergraduates. The lack of significant associations between strategic approaches to study and other variables at test 1, with many more significant correlations at test 4, is perhaps a good example of a developing awareness. It is particularly interesting that significant correlations between a strategic approach to study and both the self construct and intrinsic motivational sub-components are evident at test 4 and not at test 1.

Whilst the 'within-inventory' associations appeared to be relatively stable across time (see for instance perceptions of competence, intrinsic motivation sub-components and approaches to study) even these associations were less strong at the first than at the last test. Discrepancy scores in relation to the importance placed on the matching domain were, however generally more strongly (and negatively) associated at test 1 than at test 4. Discrepancy was calculated from perceptions of competence and importance and these two variables demonstrate fewer associations at test 4 than at test 1. On the other hand associations (positive) between perceptions of competence and discrepancies in domains

increase and become stronger at test 4 than at test 1. At test 1 students who scored importance in a domain high were more likely to have a negative discrepancy score (i.e. importance is greater than perceived competence) than was the case at test 4. At test 4 students with a high perception of competence had a higher (i.e. less negative) discrepancy score than was the case at test 1. This shift of emphasis away from high importance scores relative to competence might again indicate that students are more aware of their capacities and (or) of the demands of the environment after some experience.

To check that the differences in the number of associations evident at the two test points was not a function of dissimilarities within the two measures of the variables (although previous analyses had not indicated many significant differences over time), correlation coefficients for each pair of variables were calculated and are reported in the next section.

8.3. Within-variable correlations

With n = 85, the following table reports a Pearson product moment correlation coefficient for each variable when scores at test 1 and test 4 were compared

Variable	R	Sig. of r
Self worth	.649	.000
Scholastic competence	.472	.000
Intellectual ability	.489	.000
Close friendship	.492	.000
Social acceptance	.705	.000
Importance of scholastic competence	.406	.000
Importance of intellectual ability	.600	.000
Importance of close friendship	.469	.000
Importance of social acceptance	.529	.000
Discrepancy of scholastic competence	.364	.000
Discrepancy of intellectual ability	.514	.000
Discrepancy of close friendship	.298	.006
Discrepancy of social acceptance	.537	.000
Motivation 'to know'	.394	.000
Motivation 'to achieve'	.434	.000
Motivation 'for enjoyment'	.592	.000
Identified regulation	.678	.000
Introjected regulation	.629	.000
External regulation	.750	.000
Amotivation	.531	.000
Locus of control: Ability for success	.462	.000
Locus of control: Ability for failure	.585	.000
Locus of control: external for success	.707	.000
Locus of control: external for failure	.687	.000
Locus of control: internal	.603	.000
Deep approach to study	.616	.000
Surface approach to study	.590	.000
Strategic approach to study	.633	.000
Academic self confidence	.596	.000
Lack of direction in study	.590	.000

Table 8-3: Within-variable correlation coefficents at tests 1 and 4

As can be seen from the above table there were significant correlations within each variable across the two test points and the relationships were generally moderate. Low linear correlations are reported for two discrepancy scores - scholastic competence and close friendship - and for the intrinsic motivation variable 'to know'. Significant changes over time within close friendship discrepancy (see Chapter 5) help to explain the low correlation here but there

were no significant changes over time within scholastic competence (although scores did increase from test 1 to test 4) or within 'to know' where scores decreased over time.

The results of this analysis enable a conclusion to be drawn from this and the previous analyses with some certainty. Whist relationships within each variable across time remain relatively stable, the pattern of associations with other variables strengthens and becomes more complex over from test 1 to test 4. The pattern indicates that associations between variables proposed to reflect autonomy in learning did exist in this group of students. A desire to know and understand relates positively to perceptions of competence in the academic and social domains as well as to achievement-oriented approaches to learning. The negative associations which are evident with amotiivation and external attributions of study outcomes reinforce the emerging consistent pattern.

8.4. Factor analysis of the constructs and their sub-components

As has been seen above in the correlation tables there are a number of relationships between the variables which warrant further investigation. Further analyses in this section that will (or will not) confirm the patterns between the variables proposed in the thesis to indicate autonomy are reported. A Principal Components factor analysis with a Promax rotation (which allows the variables to correlate as has been indicated is the case) and a Kaiser normalisation (eigenvalue greater than one) is reported in this section. The pattern matrix (reflecting the causal weights) and the structure matrix (indicating the correlations) are reported, together with the matrix of correlations between the components. Values of less than .3 are not reported. Of interest is the extent to which constructs that are proposed to indicate autonomy are associated within the factor structure that emerges from the analysis.

8.4.1 Self perceptions, motivation, locus of control and approaches to study

Most of the variables measured at test 4 are included in this analysis. Data from test 4 is used as previous analyses have indicated that it is at this point that there is greater differentiation between those who score normatively high and low on the variables. As 'academic self confidence' and 'lack of direction' (both from the approaches to study inventory) were highly correlated with 'scholastic

competence' (from the self-perception inventory) and 'amotivation' (from the motivation inventory) respectively, they were excluded from the analysis. Intrinsic motivation was used as a total rather than as three separate sub-components as the sub-components were highly correlated. Extrinsic motivation was, however, broken down into the three subscales as previous analyses have indicated that the pattern of relationships between these three is varied and worthy of further investigation. The factor analysis produced the following tables of results.

	Component				
Variable	1	2	3	4	5
Total intrinsic motivation	.946				
Deep approach	.910				
Strategic approach	.797				
Scholastic competence	.673	-.342			
Introjected regulation	.527	.500	.337		
Amotivation	-.523				
Ability for failure		.820			
External control for success		.710		-.454	
External control for failure		.679	.409	-.442	
Surface approach		.667			
Intellectual ability	.403	-.535			
Self worth		-.528	.338		
Social acceptance		-.498			
External regulation	-.324		.995		
Identified regulation			.853		
Internal control				.655	
Importance of intellectual ability				.637	
Ability for success			.416	.617	
Importance of scholastic competence				.561	
Importance of close friends					.902
Importance of social acceptance					.825
Close friendship		-.363			.693

Table 8-4: Pattern matrix for all variables. 63.9% of the total variance was explained in this analysis.

Variable	Component				
	1	2	3	4	5
Total intrinsic motivation	.833				
Scholastic competence	.824	-.607	.436		.314
Deep approach	.778				
Strategic approach	.719				
Amotivation	-.652	.482	-.482		
Introjected regulation	.509		.438		
Intellectual ability	.668	-.730	.494		
Surface approach	-.362	.710			
Self worth	.567	-.703	.596		
Ability for failure		.700			
External control for success		.640		-.438	
Social acceptance	.370	-.602	.355		.409
External control for failure		.572		-.462	
Identified regulation	.320		.802		
External regulation			.793		
Importance of intellectual ability				.617	
Internal control				.617	
Importance of scholastic competence				.596	
Ability for success	.448		.424	.579	
Importance of close friends					.858
Importance of social acceptance					.757
Close friendship		-.466		.306	.756

Table 8-5: Structure matrix for all variables.

Component	Component				
	1	2	3	4	5
1	1.00	-.360	.468	.103	.197
2	-.360	1.00	-.232	.000	-.153
3	.468	-.232	1.00	-.127	.220
4	.103	.000	-.127	1.00	.000
5	.197	-.153	.220	.000	1.00

Table 8-6: Component correlation matrix for all variables

8.4.1.1. Discussion

Not surprisingly this analysis, using an oblique rotation, provides a pattern of relationships that began to emerge in the correlational data reported earlier. In Table 8-4 five factors have emerged that, together, account for 63% of the total variance. Factor One (contributing 26.3% of the variance) contains the autonomy-related variables of intrinsic motivation, deep and strategic approaches and scholastic competence but also that of introjected regulation, a situation which is not congruent with theory. It might be described as an internally-achieving factor in which variables that involve personal commitment to achieve cluster. Surprisingly, from this perspective, self worth and internal control are not included

although perceived intellectual ability loads (less strongly) on this factor. Negatively associated with this factor (and not positively associated with any other) is amotivation, which makes sense. Factor One is negatively correlated (Table 8-6) with Factor Two (12.1% of the variance) which contains external control variables and the surface approach. Finding 'ability for failure' in this factor is not surprising as the previous analyses of the data have generally placed it with variables that are the antithesis of autonomy. Again this raises questions about contextually or situationally specific concepts of ability held by students. The nature of introjected regulation again creates some confusion as it loads almost as heavily on this factor as on the first. The negative loadings in this factor are more plausible, being all the self-perception variables (self worth, scholastic competence, intellectual ability, social acceptance and close friendship). Given the theoretically close associations between those variables that have negative loadings within Factor Two it might be appropriate to consider this factor as indicating a lack of (or anxiety about) perceived personal control over outcomes of study The affective components of introjected regulation (fear, guilt, etc.) and the worries about ability to cope as measured by a surface approach, would fit well with this description. Factor Three (9.5% of the variance) only really involves external regulation and identified regulation although self worth loads positively onto it as do introjected regulation and external control for failure. This cluster is difficult to interpret although there have been previous indications of the links between external and identified motivations. The relatively strong correlation between this and Factor One is surprising although, theoretically, identified and external regulation are both concerned with personal reasons for achieving through study. Factor Four (8.8% of the variance) relates the academic importance data with internal control and ability as an internal reason for success. This might be described as an academic value-control factor which should be more strongly correlated to Factor One than is the case. Factor Five (7.3% of the variance) appears to be entirely concerned with perceptions of competence in close friendships and the importance of social relationships. There are no other variables involved and this factor is positively correlated with Factor One.

Overall the pattern of relationships is still not entirely clear although there are indications that the hypothesised pattern exists. The next section uses three analytical techniques to investigate the relationships between the variables

measured and the degree classification that was achieved by students after three or four years of study.

8.5. Autonomous characteristics and degree result

Clearly one of the interesting questions is the extent to which the variables measured relate to the final classification of the degree. There are several reasons why this association might not be identifiable, even if those students with autonomous characteristics are in reality at an advantage over those who are not autonomous in their learning. The first of these concerns the measures that have been used in the study. All the inventories used are investigating students' characteristics at the contextual level. In each case (self perceptions, motivation, locus of control and approaches to studying) the students were asked to record their broad perceptions about their study and intentions in relation to higher education and not to their particular degree, specific module or task. Thus a student might have very positive view of their ability, of the importance of studying or their intention to adopt a deep approach but, measured contextually rather than specifically, this is some way from affecting actual behaviour. Similarly the study did not measure behaviour per se and thus no direct relationship between that and degree result can be investigated or reliably inferred. Another reason to doubt the emergence of a close link between degree classification and autonomy is that of actual ability or educational achievement of the student. A student who is very able but disinterested in studying, working at a level which is very instrumental in order to successfully meet the demands of the programme of study, may achieve the same degree result as a student who is less able or less well-equipped but who has a deep approach to study and an intrinsic motivational orientation. Similarly a student who scores high on autonomy might experience personal difficulties throughout the time at university that are detrimental to the eventual degree classification. Finally it appears that some students who are autonomous in their behaviour take an active decision to withdraw from university. They may have chosen to come because they felt that it was the right thing to do but found that it was not what they expected, or they may have been persuaded by significant others to register but subsequently take the personal, autonomous decision to withdraw. Identifying those who choose to withdraw autonomously from those who drop-out through amotivation and potential failure is difficult, even

when data about perceived reasons for withdrawal is available. However, given all the potential for no relationship between autonomous characteristics and degree result, an investigation into the possibility that a relationship exists is still valid.

In total the data from 68 students was used in the analyses that followed. Data from students (n=4) who withdrew was not included in the analysis for the reasons stated above. There were two students who failed and, as this number was too small to include in a category, and it was felt that they could not be included in a category with students who had achieved a degree, their data was also excluded. One student was found to have been studying for a PhD which could not be placed within an undergraduate degree classification and thus was excluded. The degree results from ten students could not be traced - a rather odd situation given the sophistication of the present recording system but indicative of initial data collection and central recording problems at the university. Given the consistently low age and sex differences in previous analyses, these 68 students were treated as a homogeneous cohort. They were collapsed into three categories for analysis although the lowest category contained only five students. The following table indicates the spread of students across three categories into which the degree classifications were collapsed.

Degree result	Number of students	Category for analysis
Ist class	6	3
2.1 Honours	33	3
2.2. Honours	24	2
3rd class	2	1
Ordinary/Pass degree	2	1
Diploma	1	1

Table 8-7: Degree results achieved by students in the final data set and categories used for analysis.

8.5.1. Autonomy in learning and degree result

The first investigation proposed that autonomy-related variables would predict degree result and a regression analysis was used to explore this hypothesis. Using a stepwise regression the variables hypothesised to be positively associated with autonomy were used as the predictor variables. None of them were included (i.e. the analysis was not completed) as the probability of F of each was greater than 0.1. When variables negatively associated with autonomy were used as predictors (ability for failure, external control, amotivation and

surface approach), surface approach was the only one to be included (probability of F to enter was .05 and for removal .1). Surface approach was a significant predictor of degree classification in that, as surface approach increased, degree result was lower. The regression statistics are reported in Table 8-8.

Model	R	R^2	Adj R^2	R^2 change	F Change	df1	df2	Sig.F change
1	.242	.059	.044	.059	4.109	1	66	.047

Table 8-8: Stepwise regression model summary in which surface approach was included and ability for failure, external control and amotivation were removed.

The second investigation used cluster analysis to identify students who were normatively high and normatively low on autonomy-related variables. Chi-square analysis, as a non-parametric statistic, was used to explore the extent to which students in the 'high' (i.e. autonomous) cluster were also in the higher degree categories. Table 8-9 indicates which variables were used to cluster the students and the ANOVA results that demonstrate differences between the clusters for each variable.

Variable		Mean square	df	F	Sig.
Self worth	Cluster Error	7.586 .382	1 83	19.85	.000
Scholastic competence	Cluster Error	14.446 .219	1 83	66.03	.000
Intellectual ability	Cluster Error	10.500 .345	1 83	30.42	.000
Intrinsic motivation	Cluster Error	67.367 .728	1 83	92.48	.000
Ability for success	Cluster Error	12.312 .898	1 83	13.71	.000
Internal control	Cluster Error	4.867 .625	1 83	7.78	.007
Deep approach	Cluster Error	10.767 .336	1 83	32.03	.000
Strategic approach	Cluster Error	22.559 .352	1 83	64.1	.000

Table 8-9: Variables used to identify students with 'high' and 'low' autonomy scores with ANOVA results indicating differences between the clusters.

There were 48 students in the 'high' cluster and 37 students in the 'low' cluster. A cross-tabulation chi-square analysis investigating the extent to which membership of the 'high' or 'low' autonomy groups indicated membership of a

particular degree category revealed the results as indicated in Table 8-10 below.

Degree classifications		'High' cluster	'Low' cluster	Total
3rd, pass, ordinary	Actual number	1	4	5
	Expected number	2.9	2.1	5.0
	% of students within this degree class	20%	80%	100%
	% of total	1.5%	5.9%	7.4%
2.2 Honours	Actual number	13	11	24
	Expected number	14.1	9.9	24
	% of students within this degree class	54.2%	45.8%	100%
	% of total	19.1%	16.2%	35.3%
1st and 2.1 Honours	Actual number	26	13	39
	Expected number	22.9	16.1	39
	% of students within this degree class	66.7%	33.3%	100%
	% of total	38.2%	19.1%	57.4%
Total	*Actual number*	**40**	**28**	**68**
	% of total	**58.8%**	**41.2%**	**100%**

Table 8-10: Cross-tabulation results indicating membership of students with 'high' and 'low' autonomy scores within three degree categories

The Pearson chi-square statistic indicated that the actual frequency of 'high' and 'low' students in the degree categories was not significantly different from the expected frequency at the 5% level (χ^2 =4.317; df(2); p>.11). However, the figures in Table 8-10 indicate that two-thirds of those with a higher classification of degree are 'high' scorers whilst only 20% of those with the lowest category of degree are 'high' scorers. Those with a 2.2 classification are almost evenly split between 'high' and 'low' scorers. This lends support for the notion that a higher degree category is more likely to be achieved by students who are members of a 'high' autonomy cluster. A Kruskal-Wallis test (a non-parametric test similar to ANOVA) was used to compare the two clusters to see if there was a significant difference between these in degree result. Degree result was used as the dependent variable and the cluster (high and low autonomy scores) as the grouping variable. The analysis indicated that the two groups were not significantly different at the 5% level ((χ^2 =.287, df(1); p>.58). From these two analyses it appears that the incidence of 'high' autonomy variables is not significantly related to degree result although the percentages indicated in Table 8-10 would suggest that there is a trend for 'high' autonomy to occur more frequently in higher degree classifications. A larger cohort of students might have enabled this potential relationship to be clarified.

As a surface approach predicted degree result in a regression analysis it

was decided to cluster the non-autonomous variables (ability for failure, external control for success and failure, amotivation and a surface approach) and test these clusters against the degree result categories. The results are reported in Table 8-11.

Degree classifications		'low' cluster	'high' cluster	Total
3rd, pass, ordinary	Actual number	4	1	5
	Expected number	3.2	1.8	5.0
	% of students within this degree class	80%	20%	100%
	% of total	5.9%	1.5%	7.4%
2.2 Honours	Actual number	14	10	24
	Expected number	15.2	8.8	24.0
	% of students within this degree class	58.3%	41.7%	100%
	% of total	20.6%	14.7%	35.3%
1st and 2 1 Honours	Actual number	25	14	39
	Expected number	24.7%	14.3	39.0
	% of students within this degree class	*64.1%*	*35.9%*	*100%*
	% of total	36.8%	20.6%	57.4%
Total	Actual number	**43**	**25**	**68**
	% of total	**63.2%**	**36.8%**	**100%**

Table 8-11: Cross-tabulation results indicating membership of students with 'high' and 'low' 'non-autonomy' scores within three degree categories

As can be seen from the table above 63.2% of students scored normatively 'low' on this combination of variables. In all degree categories the percentage of students scoring 'low' was greater than the percentage of students scoring 'high' and the differences between actual and expected frequencies not apparently great The chi-square analysis proved to be non-significant at the 5% level (χ^2 = .865, df (2), p>.64). Using a Kruskal-Wallis test to compare the 'high' and 'low' cluster groups it was confirmed that there was not a significant difference between the two clusters in terms of the degree categories achieved ((χ^2 = .069, df(1); p>.79). It is therefore concluded that the combination of these variables, which are generally negatively associated with autonomy-related variables, does not provide a means of differentiating between the degree classifications achieved by students.

8.5.2. Conclusion

Rather disappointingly, but perhaps not unexpectedly for all the reasons cited above, the students' degree results could not be predicted by various combinations of autonomy-related variables and were not convincingly related to 'high' and 'low' scores on either autonomy-related variables or those variables that

are the antithesis of autonomy. The evidence that a surface approach to study predicts degree result - the higher the score on surface approach the lower the degree category - is interesting and perhaps challenges the proposal by Gibbs (1992) that this approach is the one most commonly used by students in higher education. However, in this study students' intentions were being measured and not their actual approach. It may be that those who do not express an intention to use a surface approach achieve a higher degree classification although, in reality, they may use a surface approach to, as Biggs (1993) stated '*satisfice*' the demands of the degree work. Of course a positive interpretation of this finding would be that the university education at Bangor does not reward students who adopt a surface approach to study but there is no direct evidence to support this interpretation.

The extent to which students who were categorised as 'high' on autonomy-related variables were also in the highest degree category (38.2% of the total) and the frequency pattern across the degree categories, leads me to suspect that, with a larger sample, the results might have been more positively in support of the hypothesis It would be worth extending this study, with final year students, to explore the issue further.

8.6. Summary

The evidence to support the thesis that intrinsic motivation for study, high self perceptions in academic work and a deep approach to study are related is *provided, to some extent, in the correlation data.* A strategic approach to study appears to be an additional variable to add to the 'autonomy' list but the internal control variable does not strongly correlate. 'Ability for success' is differentiated from 'ability for failure' in that the former associates with positive attributes and the latter with negative attributes. As this was also indicated in previous chapters the evidence here confirms what was already known. There is less certainty about the variables that are proposed as being the antithesis of autonomy although amotivation is consistently negatively related to such variables as a deep approach and intrinsic motivation.

There is no convincing evidence that a higher degree result will be achieved by those with a normatively high autonomy-orientation but there are so many other

extraneous variables that affect degree classification that this is not surprising. A surface approach as a predictor of degree category is, however, worthy of further investigation with larger numbers of students. The measurement of actual as well as intended study behaviour would enrich such a study. The next chapter discusses the overall findings of the study, highlights some of the measurement problems that might have contributed to the equivocal nature of the results and places the study back into its context within higher education in Wales.

9 Autonomous characteristics: Evidence, issues and implications

In this final summary and concluding chapter the original hypotheses concerning the autonomy-related psychological characteristics of students are examined in the light of the evidence collected. Measurement issues that have arisen during the course of the investigation are discussed. The implications of the findings for those of us who are concerned about the student experience in higher education are considered with particular reference to the potential erosion of autonomy within the university sector.

9.1 Proposed psychological characteristics of autonomy

Reiterated throughout the thesis is the hypothesis that autonomy has its core in the self-structure that has been constructed over time and in response to interactions between predispositional and environmental influences. Limitations in reliably measuring self-definitions, beliefs and values led to the search for psychological variables which, theory indicates, would be indicative of autonomy in learning and for which there were quantitative measurement instruments. There is no suggestion here that this is the only, or necessarily the best, method of exploring the phenomenon but simply that it was the one that was chosen at the beginning of the study.

It was proposed (see Chapters 1, 2, 5 and 6) that to be autonomous learners students need to have an adequate sense of their competences in academic work and socially in order to perceive themselves as capable members of the academic community. By perceiving oneself to have the competence to deal effectively with the environment the individual has the confidence to explore, be curious, take risks and seek challenges. Given the acknowledged importance of relationships with others as well as academic competence both aspects were measured as was the overall self-assessment of worth - self worth. Additionally measuring the value that students placed on academic and social competence in an environment that emphasises the importance of these was an attempt to elicit

information about the value-expectancy relationships that exist. If the social and academic domains are not an important aspect of students' self-construct then, it was proposed, they were unlikely to demonstrate autonomy in learning. Specifically, high self worth perceptions, high perceptions of competence, high importance ratings and an importance/competence discrepancy score close to zero were to be taken as indicators of autonomy.

Within the literature (see Chapters 1, 2, 5 and 6) there is consistently powerful support for the relationship between motivational orientations and autonomous behaviour. Having a reason to act which stems from a personal investment and interest in the activity i.e. acting for internalised reasons, is clearly associated with the self-construct and autonomy relationship. Similarly a lack of motivation (amotivation) or a strong extrinsic volitional element in behaviour would be the antithesis of autonomy. It was proposed that high scores at the internalised end of the motivation continuum with low scores at the external end and in amotivation would be indicators of autonomy.

Perceptions of control appear to be central to autonomy (see Chapters 1, 2 5 and 6). Being able to choose to act in accordance with personally-identified values, beliefs, principles and aspirations and perceiving that success and failure are under personal control is pivotal to autonomy in learning. It was decided at the beginning of the study to measure perceived control over study outcomes - perceived locus of control - as it was felt that this was the most salient aspect of control for autonomy. When success in particular is seen as contingent upon behaviour (i.e. under internal control) then achievement is more predictable. The perceptions of control characteristics associated with autonomous learning were proposed as a high perception of internal control for success and failure and a low perception of external control of success and failure outcomes.

Whilst not, theoretically, associated with autonomy per se, the measurement of approaches to study appeared to add another dimension to the investigation into autonomous learning. The deep approach in particular is associated with an internalised motivation whilst a surface approach would seem to be more instrumentally focused. The hypotheses concerning approaches to study were thus that high scores on a deep approach would be associated with

high scores on other variables that were related to autonomy whilst high scores on a surface approach would correlate with such variables as amotivation, low perceptions of competence and self worth and external perceptions of control. Given the more equivocal evidence concerning the strategic approach in the literature, it was difficult to predict how this orientation would relate to autonomous dispositions.

It was anticipated, given that the beginning of degree study is a time of major transition and adjustment for most students, that changes over time would occur in most of the variables although there is evidence that the more global self worth would be fairly stable. Age differences were expected, generally, to favour the mature students who, it was supposed, would have a more consistent view of themselves and who would have made a more active decision to study than might the younger students. Evidence in the literature about sex differences varied but it was anticipated that males would have an advantage in the perceptions of competence measures and that females would record the higher intrinsic motivation and deep approach scores.

When relationships between the variables were examined it was expected that there would be demonstrable associations between autonomy-related variables, with negative associations between these and variables proposed as non-autonomous. It was also anticipated that some students would demonstrate normatively high levels of autonomy-oriented characteristics and that these students would be differentiated from those with normatively low scores. The extent to which high or low autonomy scores could predict degree classification, or to which degree classification could be predicted by any of the constructs or combinations of these, could not be hypothesised, given the number of extraneous variables known to impact on degree result.

9.2 Evidence from the study

9.2.1. Changes over time

Surprisingly few changes over time were recorded. It was anticipated that in the period from the beginning of the undergraduates' study to the end of their

second year in university a considerable number of changes would be reported. Learning about themselves within the context and expectations of higher education was expected to result in students recording a number of changes, particularly in relation to perceptions of competence and motivation.

Steady increases in perceptions of competence and self worth and generally more positive discrepancies between competence and importance scores within domains augur well for autonomy, despite some anomalies (see Chapter 6). An increase in the importance placed on intellectual ability was matched by a decrease in importance placed on the social domains. These changes are likely to be a function of the settling-down process in which the *highly-charged social first year of study becomes a more sober* academically-focused second year. At Bangor the marks gained in the first year do not contribute towards the final degree classification whereas those in the second year do.

Within motivation the initial intrinsic and extrinsic motivation scores were maintained over time with a stable and very low amotivation score throughout the *study. Consideration of the sub-components of intrinsic and* extrinsic motivation revealed that the extrinsic motivation scores were largely a function of the internalised 'identified regulation' and are thus indicative of autonomy. Apparent changes over time in the sub-components were not significant.

A similar pattern emerged within the locus of control results and in the approaches to study in which there were non-significant changes over time. Across the two years of the study, within the perceived control data, the internal control scores remained high in relation to the potential ceiling of the scale whilst both of the external factors were scored below the mid-point. These findings are viewed as a possible positive indication of perceived autonomy. Overall the deep approach, also theoretically related to autonomy, was apparently preferred to the strategic and surface approaches although the problems associated with this inventory, which make any comparisons between approaches, have been discussed (e.g. Chapters 2 and 4). The lack of changes over time might be viewed positively or negatively in relation to autonomy. The most positive outcome would have been a significant increase over time of autonomy-related

characteristics with higher education stimulating a self-directed learning approach in its students. The lack of change could be interpreted as a sign that higher education does not dampen the potential for autonomy in learning even if it does not enhance it. Scores on the autonomy-related characteristics were generally, however, relatively high on their respective scales at the start of the study and it may be that there is a potential ceiling effect here (or floor effect in the case of amotivation and external locus of control). This was clearly not the case within the self-perception measures which, more than any other measure, recorded changes across time. Despite the disappointing absence of change the overall pattern suggests that students maintained relatively healthy levels of autonomous attributes throughout the first two years of study.

9.2.2 Age and sex differences

Differences related to age and sex were not as numerous as anticipated and not always in the expected directions. There were no age or sex differences for perceptions of competence or self-worth and no sex differences within the importance ratings of domains or within the discrepancy data. Age differences within the importance ratings indicated that mature students placed more importance on intellectual ability and less on the social domains than did the younger students. This is perhaps not a surprising result. Mature students have generally come to study and may have less need to establish themselves socially than do the younger students (though this may be a misinterpretation, given that the 'mature' students may only be 21 years of age at the start of the study). The discrepancy scores, however, perhaps indicate that younger students had more concerns about their social competence in relation to the importance of social aspects of their lives. In both close friendship and social acceptance they were significantly more negatively discrepant at some test points than were the mature students. Staff often report that mature students are anxious about their ability to meet the demands of higher education but these data do not indicate that it is a lack of perceived competence that creates this impression. It is more likely that mature students employ autonomy-related strategies to gather as much information as necessary to ensure that they know what they are doing and that this is interpreted by staff as anxiety.

No age or sex differences were identified in the initial analysis comparing intrinsic motivation, extrinsic motivation and amotivation and no significant sex differences were found when the sub-components of intrinsic and extrinsic motivation were examined. On the three sub-components of intrinsic motivation the mature students scored consistently higher than the younger students but not significantly so at any test point. The age differences revealed in the sub-components of extrinsic motivation, however, provided some food for thought. The expectation had been that mature students would score higher on identified regulation and lower on introjected and external regulation than did the younger students. Mature students were assumed to be more motivated for internalised reasons than their younger peers having presumably made a very active choice to engage in higher education. In fact the younger students scored significantly higher than the mature students on identified regulation and significantly lower on *introjected regulation*. *The overall scores for external regulation* were not significantly different for the two age groups. Thus despite having generally higher scores on intrinsic motivation the mature students scored lower on the next most internalised category - identified regulation - and higher on introjected regulation. The differences on introjected regulation may be as a result of previous educational experiences which, for many mature students have left them with a fear of failure or the desire to demonstrate that they are capable. Eighteen year olds on the other hand have been labelled as educationally successful, having achieved a place at university. Introjected regulation is not, theoretically, commensurate with autonomy whilst high scores on intrinsic motivation would indicate autonomy in learning. There is an equivocal finding here that warrants further investigation beyond the scope of this present study.

Mature students scored significantly higher than younger students at each test point on the internal locus of control measure and thus were apparently more autonomy-oriented. There were, however, no differences for age within the approaches to study data. There were differences for sex with women apparently more strategic than were the men and more prepared to adopt a surface approach. There were, however, no differences between the scores for men and women on the deep approach. It may be that men and women are responding differently to the questionnaire or that women in fact do use the three approaches

more than do men. Another possible explanation is that the questions relating to the surface approach focus on feelings and emotions rather than goals and may be more openly answered by women than by men. Whatever is the case neither sex could be described as more autonomy-oriented than the other on the basis of the approaches to study data.

To summarise there are almost no sex differences that would indicate that one or other sex is more disposed towards autonomy than the other. Mature students placed more value on intellectual ability and suffered less than the younger students from a mismatch between social competence and its importance but neither age group scored highly on perceptions of competence. The age differences within the motivational measures provided a muddled pattern that is difficult to interpret in relation to autonomy but mature students appear to be more autonomous when the locus of control data is considered. The hypothesis that older students would be more autonomous than those coming straight from home was only partially upheld. The very young ages of some of the mature students might mitigate against finding convincing differences for age and future studies should consider using more categories in order to differentiate between young and older adults.

9.2.3. Differences in relation to self worth

In Chapters 5, 6 and 7 the comparison of high and low self worth groups produced a surprisingly large number of significant differences within autonomy-related variables. These differences increased in number and in the levels of significance over the two years of the study. Self worth scores were used to differentiate students as this was the closest measure available of the 'core' self which is so central to theories of autonomy. Whilst it clearly is not synonymous with the 'self' that provides a framework for behaviour, the evaluative nature of self worth is well-established as a powerful mediator of interpretations of experiences, expectations for success, planning and achievement (see Chapters 1 and 2 for a review). The analysis using the two self-worth groups was therefore speculative and, given that the groups were divided normatively and included those clustered around the median score, the results unexpectedly differentiated the groups on a number of different variables. The higher scores for the high self worth group on

the perceived competence measures are congruent with the theoretical relationship between self worth and perceptions of competence but there was a lack of significant differences on importance ratings. However, when discrepancy scores are considered, the high self worth group tended to be less negatively discrepant than were the low self worth group, indicating that the high group had a more realistic relationship between their competence and importance scores.

Motivationally the high and low self worth groups did not generally differ at the beginning of the study except on amotivation. However, at test 2, the end of the first year of study, the high self worth group scored significantly higher than did the low self worth group on two autonomy-related motivational orientations - to accomplish (an intrinsic motivation sub-component) and overall intrinsic motivation. However this group difference also occurred within external regulation which is considered to be contraindicative of autonomy. When the questions relating to external regulation are examined an explanation for this apparent anomaly is feasible. All the statements in this category relate to students' aspirations concerning future careers and earning potential which are clearly 'external' to an inherent interest in studying. It is not unreasonable, however, for autonomy-inclined students to score high on career-related questions in which they declare that one of their reasons for studying is to have a better career and earning potential. These aspirations might be related to this group's higher scores on the desire 'to accomplish' within their studies. Deci and Ryan's (1985a) Self Determination Theory does not allow for this possibility.

Ryan and Connell (1989) use a Relative Autonomy Index measure to determine levels of autonomy. In their theory autonomy or self determination is closely related to internalised reasons for acting and they argue that an individual's level of autonomy can be measured by weighting their scores on the motivational orientation continuum. In this construct intrinsic motivation is given a double, positive weighting, identified regulation a single positive weighting, introjected regulation a negative single weighting and external regulation a double negative rating. 'Autonomy' is thus higher where internalised scores are highest and introjected and external regulation scores low. Although there were differences in an unexpected direction for the two groups in external regulation the evidence in Chapter 6 indicates that overall students scored the more internalised identified

regulation significantly higher than they did introjected and external regulation and therefore, overall, students were more internally than externally regulated.

The high and low self worth groups were not motivationally different at the 3rd test point which was at the beginning of their second year of study but by the end of that academic year they were significantly different on all motivation measures except introjected regulation. This is a considerable change over one year and perhaps reflects the more intense study that is experienced by second year students for whom grades achieved during the second year contribute to the degree classification. High self worth students scored higher on both overall intrinsic and extrinsic motivation, indicating a higher level of motivation for study than was recorded by the low self worth group.

Self worth also differentiated students on the basis of their perceptions of control over the outcomes of their study but not consistently and only on their perceptions of external influences. Interestingly there was no difference between the groups in the extent to which they perceived themselves to have internal control over success and failure. If the proposed relationship between control and competence in Chapter 2 was to be supported then the consistent and considerable differences between the groups on perceptions of competence would have been reflected in differences in internal control perceptions.

The approaches to study results generally supported the speculative hypotheses that a high self worth would be associated with a deep approach and that a low self worth would be associated with a surface approach. The results for the surface approach were consistent across tests and in the expected direction but the differences between groups on the deep approach were not apparent in the first year of study. Those who feel less sure about themselves generally (although the division between groups here was based on a sample norm and not a population norm) are perhaps more likely to adopt the 'safe' surface approach and less likely to use an orientation that implies more self-confidence in study. The relationship between a deep approach to study and autonomy-related variables was further explored using groups based on a high-low deep approach split.

9.2.4. Differences in relation to a deep approach to study

In Chapter 7 differences between high and low deep approach groups and changes across time in a deep approach in relation to other variables are reported. The classification of students according to their deep approach score does not provide as much convincing evidence concerning autonomous learning as did the self worth split. Whilst generally in the expected directions and, as with the self worth data, increasing over time, the differences did not demonstrate a consistent pattern. By test 4 there were eight autonomy-related variables in which the high deep approach students scored higher than did the low group. These results lead to the conclusion that a relatively high score on deep approach to study is more likely to be associated with autonomy characteristics in students than is a relatively low score. This conclusion is more strongly supported when it is recognised that, in the whole sample, the deep approach to study was scored significantly higher than were the other two other approaches.

The differences between groups for perceptions of academic competence support the proposed link between behaviour intentions (approach) and the self-confidence in ability that allows the individual to seek challenge, be curious and intend to engage in extra-curricular activity as was discussed above. The differences between the groups in all the sub-components of intrinsic motivation and on some of the control measures are also congruent with proposed relationships based on theory.

When changes in deep approach to study across time were investigated in relation to changes in other variables it was concluded that there was little evidence to link a change in a deep approach with changes in a similar direction in other variables. However, the results indicate that those students who increased their deep approach scores over time displayed higher scores on some autonomy-related variables than did those whose deep approach scores decreased over time. Similarly the group whose deep approach score decreased had significant increases over time in two variables that are not indicative of autonomy - amotivation and external control of failure. Changes in a surface approach were treated similarly. It is often assumed that a surface approach is at the opposite end of a continuum to that of a deep approach. If this is the case then changes in

a deep approach and its associated variables should be mirrored by a change in the opposite direction in variables associated with a surface approach. The data does not support this assumption. The only variable that was significantly different between surface approach change groups was that of close friendship discrepancy and this changed in the same direction as it did with the deep approach change groups. The causal relationships between variables were not analysed, limiting the opportunity for further conclusions to be drawn but there is clearly potential here for further investigation.

9.2.5. Correlations between variables

At two points in time - test 1 and test 4 - the pattern of correlations and the direction of the relationships were relatively consistent (see Chapter 8). As with other analyses the relationships between variables increased in number and in the strength of their associations from test 1 to test 4 although scores within variables did not generally increase or decrease significantly over time.

There are a number of relationships that provide support for links between various psychological characteristics that were hypothesised in Chapter 2 and others, where relationships were expected, that do not demonstrate them. Central to the proposals concerning autonomy was the connection between perceptions of control and other autonomy-related variables. The internal locus of control measure presented no significant affiliation with any other variable at test 4 but did correlate positively with a deep approach, two of the intrinsic motivation sub-components and, contrary to autonomy predictions, introjected regulation at test 1. All of these correlations were low. Deci and Ryan (1985b), from the perspective that autonomy has its base in motivation, argued that an internal locus of control was not associated with autonomy because an autonomous individual could not be motivated by introjected regulation with its internal, negative affective influences of fear and guilt. At test 1 this proposal appears to be supported but the problems with the internal control measure are highlighted by its association with both positive and negative variables.

Other control variables, although correlating in hypothesised directions with other variables did not provide evidence for strong associations. 'Ability for failure'

was negatively and moderately correlated at both test points with discrepancy between competence and importance in intellectual ability and, at test 4, with perception of intellectual ability. These are theoretically valid associations and it is surprising that they are not stronger. The confusion between the nature of 'ability' as an internal or an external influence on outcomes is highlighted by the significant (though weak) correlations between 'ability for success' and 'ability for failure' and other control variables. 'Ability for success' associates positively with perceived internal control and negatively with perceptions of external control for success. In other words, when associated with success outcomes, ability is perceived as an internal factor. However, when associated with failure, ability correlates with the external control variables - external control of both success and failure. Similar questions about ability concepts arose in a study of South African undergraduates by Meyer (1996) in which the use of ability as a reason for success or failure varied according to the classification of students as being high or low risk of failure. As discussed in Chapter 6 this study raises a number of unresolved issues surrounding the definitions of ability.

Moderate to high positive correlations between perceptions of academic competence, intrinsic motivation sub-components and autonomy-related approaches to study are congruent with the proposals about the characteristics of autonomous learners. Negative correlations between perceptions of competence and amotivation, a surface approach to study and lack of direction in study are also supportive of the hypotheses. The extrinsic motivation sub-components do not generally provide evidence for or against the proposals although there is an interesting, strong, positive correlation between external regulation and identified regulation. Theoretically identified regulation is viewed as a positive orientation for autonomy whilst external regulation is viewed as contraindicative of autonomy. Possible explanations for the role of external regulation in autonomous learning were discussed previously.

The associations between a deep approach to study and perceptions of scholastic competence and perceptions of intellectual ability were positive and moderate to strong. The same variables had moderate to strong but negative associations with a surface approach to study. An autonomous learner, it was proposed, would perceive him or herself to have an adequate level of

competence with which to deal with the demands of the environment. Competence was also proposed as a necessary pre-requisite of the intention to go beyond the syllabus, be curious and seek the challenges associated with a deep approach to study. Students with less confidence in their capabilities, it was proposed, would lack the security of knowing that they could rely on personal resources to succeed. They would be more anxious about their ability to cope and thus more syllabus-bound, focusing on what was required by others in order to meet external demands. These are characteristics measured in the surface approach to study questions and are not proposed as attributes or behaviours of an autonomous learner.

Whilst the correlations between variables were not as strong as might have been anticipated there is evidence here that supports the broad hypothesis concerning the characteristics that cluster together and that might describe an autonomous learner. The evidence from the correlation analyses was supported by the factor analysis of all the variables. Some of the patterns that had emerged in the correlations appeared again with deep and strategic approaches loading onto the same factor as intrinsic motivation and scholastic and intellectual competence. I would have anticipated that self worth would also have appeared in this factor and its lack of a strong positive association with autonomy-related variables is an interesting anomaly, given the evidence for its differentiating role in Chapter 7. Although the hypothesised relationships between variables are again supported to some extent in this factor analysis, identifying students who scored normatively high on these variables did not provide any substantial evidence that being in the 'high' autonomy cluster necessarily resulted in higher degree classifications than those in the 'low' autonomy group. Perhaps this is not surprising when the measurements were some distance from actual behaviour and there was no attempt to control for extraneous variables (educational experience, attainment and skill, the different contexts in which the students studied, barriers to learning experienced by some students etc.). There was a suggestion in the data that this aspect of the study would be worth pursuing with a larger student sample. It was interesting to find that surface approach to study was the only variable that predicted degree result and encourages me that perhaps, at Bangor, we are not using assessment methods that will ultimately reward a surface approach to study.

9.3 Measurement issues

9.3.1. General measurement issues

Concerns about the very global nature of the measurements used in this study have emerged and there is a question about whether the rather broad-brush approach provides any useful insight into student autonomy. When this study was designed one objective was to identify the extent to which undergraduates from a range of degree programmes recorded themselves as possessing psychological characteristics that were hypothesised to relate to autonomy in learning. The measures were not specific to a particular degree subject or to particular tasks within a discrete context and students were asked to think broadly about themselves within the university environment. The data gathered provides information about students' perceptions of their learning predispositions within higher education at Bangor. It does not measure behaviour or responses to a specific context or task. Bandura (1997) warns that measurements of psychological variables such as self-efficacy can only reliably predict behaviour at the task level and that the more generalised the measure across a number of or unspecified situations the less reliable it is in predicting behaviour in a particular circumstance. He criticises Harter's use of domain-related measures for perceived competence as being too broad to adequately capture individuals' concepts of their capabilities. He does acknowledge, however, that the mutlidimensional approach is more effective than the more omnibus measures of self (Bandura, 1997, pp.48-49). Harter (1990) argues that domain-related competence assessments predict achievement behaviour in relevant contexts, such as willingness, in this case, to engage in higher education. Theoretically an assessment of competence which is above the mean for the scale, (although not consistently at the positive end of the inventory scale), together with high valence will lead to approach rather than avoidance behaviour generally, to expectations of success and to a desire to demonstrate and enhance competence in the domain. It is anticipated that those students with high self worth in this study are likely to have engaged appropriately with their studies to achieve a degree but that low self worth students might have experienced some difficulty. Similarly the dispositional measures of motivation and locus of control at the contextual level - the term used

by Vallerand (1997) to describe, in this case, the academic context of higher education, cannot be expected to reliably predict behaviour (or involvement) at the task level. They do, however, provide an indication of the potential for motivated, self-regulated behaviour within study and thus autonomy in learning. Whether or not these potentials are realised will depend on the autonomy-related features of the learning climate.

Pajeres (1996), in a review of self-efficacy research, supports Bandura's views about the extent to which behaviour can be predicted from globally-measured attributes. However he also cites a large number of studies that have demonstrated the link between domain-specific measures and expectancies, strategies, self-regulated behaviour and achievement. There is also evidence for the generalisability of self efficacy across similar tasks and situations that suggests a model, such as that proposed by Harter, of a self construct which provides a global, umbrella-like self evaluation. This self evaluation predisposes the individual to respond relatively consistently to different but similar situations. There is sufficient research evidence to associate self-perceptions of competence with behaviour using the various Harter inventories but the use of global rather than situation-specific measures remains an issue across all the inventories used in this study.

Vallerand's (1997) hierarchical model of motivation proposes that, like perceptions of competence, there is a two-way effect of motivation at the global, pre-dispositional level to the contextual level and then lower down the hierarchy to the situational level. Whilst Vallerand accepts that motivation at the situational end of the hierarchy is most predictive of behaviour, he presents a wide range of evidence of the effect of global and contextual motivation on behaviour. The Academic Motivation Scale (Vallerand, Pelletier, Blais, Brière, Senécal, & Valliéres, 1992) used in this study was designed to measure motivation at the contextual level in Vallerand's hierarchical model. As such it is less predictive of actual behaviour than would be a situational inventory but it provides information about why, in a general sense, students are studying at university. The locus of control questionnaire is similarly intended for the higher education context and does not ask students to focus on a particular event when answering the questions but rather to respond more generally. As with the other questionnaires this

sometimes leads to uncertainty about the appropriate interpretation of results which might or might not be more straightforward with a specific task or event. For instance, when motivation is considered, the more complex the situation (e.g. motivation to study for a degree) the less likely it is that only one motivational orientation will be highlighted. The complexity of the decision making and the number of influences affecting behaviour, both internal and external, will increase as does the distance away from the actual behaviour. The results of the study support this in that students record scores that are equally high on both intrinsic and extrinsic motivational orientations, a situation that appears to be contrary to theory. It is likely that, as students are questioned on more specific tasks, the intrinsic and extrinsic reasons recorded will become more polarised. A similar situation arises in the locus of control data. When normatively high and low self worth groups were compared it was found that there were no significant differences between them in internal control whilst differences were revealed in the external control measures. This indicates that internal and external measures are not dichotomous when measured globally although at the task level it might be anticipated that either internal or external influences would be predominant. It may be, of course, that we always acknowledge the presence of both but to a greater or lesser degree relative to each other.

A parallel debate has occurred in the development of inventories to measure students' approaches to their studies. Volet and Chalmers (1992) and Biggs (1993) suggest that it is important to recognise the gulf that exists between students' goals, intentions and predispositions and their actual behaviour. The extent to which the orientations identified using the RASI are measured as global approaches and relatively stable pre-dispositions, or as contextually-relevant or situation specific responses that will change in relation to the demands of the moment, is still a matter for debate. In relation to study approaches, Biggs (1993) warns that we should be aware of the need to clarify whether or not we are measuring processes adopted for learning at the time of engaging in a task or whether we are measuring pre-dispositions to adopt a particular process. The RASI is generally used to measure pre-dispositions to particular approaches at the global level or within a particular context such as a module or a course and information gained in such circumstances must be limited in its predictive effect on

behaviour. One of the intriguing issues that arises from a consideration of the approaches to study findings is the extent to which students' responses were indicative of approaches actually adopted in studying. We are all capable of wishful thinking and of setting ideal goals that, in reality, are difficult to achieve. That is the nature of goal-setting in achievement contexts. When students are faced with the pragmatics of a heavy workload and summative assessments, as well as all the extra-curricular activities and responsibilities that demand attention, the best-laid plans can go awry. Although students can respond to the RASI statements from experience and from an intention to apply the approach, it does not mean that they are actually applying the approaches about which they are questioned, on a regular basis. An interesting research study to undertake would be an investigation into how often students applied any one of the approaches or its sub-components. This underlines the importance of measuring students more frequently than has been attempted in this study as it seems likely that the approaches may be applied differentially by any one student in response to a particular task or context. Newstead (1998) makes this point when reporting a study that measured students several times during a semester. The proximity of an assessment point, and the amount of other work that needs to be completed at that time, is likely to affect actual (rather than intended) approach. Students may set themselves particular goals but whether they enact them is not only dependent on the strength of their volition and their skill but also on the demands of the context in which they are working. The Newstead & Findlay (1997 in Newstead, 1998) study in which students' deep approach' intentions at the start of a module were scored lower towards the end of the module, may illustrate this.

One of the consequences of using global rather than situationally-specific cognitive and affective appraisals is that there are less likely to be measurable changes over time. The evidence gathered in this study supports the statements made about stability of self worth (Harter, 1990), locus of control (Rotter, 1990; Watkins, 1987), motivation measured at the global level (Vallerand, 1997) and approaches to study (Biggs, 1993). Perceptions of competence in domains appear, however, to be more subject to change in response to experience, possibly as a consequence of the ways in which we appraise our abilities in comparison with others and against situational standards. As the second level of

evaluation in Harter's model it is congruent with discussions of stability that perceptions of competence would be more changeable than is self worth at the apex of the hierarchy.

9.3.2.Specific measurement issues

9.3.2.1. Locus of control

Problems associated with the reliable and valid measurement of locus of control have been consistently recorded within the literature (see for instance Millar & Irving, 1995 and Palenzuela, 1984). As well as the obvious confusion about how ability is perceived as contingent with success and failure, the debate about whether we can ever truly differentiate control as being internal or external continues. For instance, a student may perceive that their failure in an examination was due to their lack of effort (internal) but might also surmise that, had the right questions been in the exam (external), they would not have failed. Their failure was thus contingent upon internal and external factors. One of the questions asked in the Rossouw and Parsons (1995) inventory illustrates the dilemma well. Students are asked to say to what extent the following statement corresponds with how they feel about their success or failure in study: "My success in exams depends on some luck".

Another measurement issue in locus of control is that of clarity of what is being measured - attributions or locus of control. Palenzuela (1984) argues that post hoc appraisals of control are attributions and not the pre-event appraisals measured by locus of control. However, the questions asked of students in locus of control inventories sometimes appear to be asking them about the outcomes of previous study experiences rather than more explicitly focusing on expectations of control of future events. For instance two questions in the inventory are: "In my case the high marks that I receive are always the direct result of my efforts" and "My lower marks have seemed to be partially due to unfortunate circumstances". These questions may be open to interpretation but it is certainly an area that requires further development in the design of appropriate measurement instruments. This was a plea that Palenzuela made in 1984 when he stated that contingency-noncontingency aspects of control are not always dichotomous. Recognising this, he stated, is important

'...since recent approaches seem to refer more to the factors that control an outcome than to the strict relationship of contingency-noncontingency between behavior and outcome. Research on locus of control should devote more attention to this question.' (p.698).

9.3.2.2. Approaches to study

Despite its eminent pedigree, many revisions and the confirmation of the structure of the concept of approaches to study by a number of independent researchers across cultures, there are still a number of concerns about the nature of the questions in the Approaches to Study Inventory. This inventory was designed to focus on students' predispositions to employ particular processes when learning rather than their actual behaviour or intentions immediately prior to a learning episode (Biggs, 1993) and as such it measures global intentions. Close scrutiny of the statements to which students respond on a Likert-type scale from 'agree' to 'disagree', however, indicates that the aspects of learning that are being measured are not consistent across the approaches (deep, surface and strategic). For instance, the following statement measures a surface approach (difficulty in coping subscale): "Often I lie awake worrying about work I think I won't be able to do". The following is an example of a deep approach statement: "I try to relate ideas I come across to other topics or other courses wherever possible". One statement relates to feelings whilst the other refers to intended cognitive activity. Although most of the deep approach statements are in a similar category to the one above, the surface approach statements vary from affective responses to those more similar to the deep approach statements. For instance "I'm not really sure what's important so I try to get down just as much as I can in lectures" is a surface approach statement that concerns a chosen behaviour rather than an affective response. The strategic approach is addressed with statements about study behaviour e.g. "I work steadily throughout the course rather than leaving everything to the last minute" and "I generally try to make good use of my time throughout the day". This problem with the nature of the statements in the inventory suggests that, at present, the results of the surface approach analysis should be viewed with caution.

The affective nature of the surface approach measures might, in part,

explain the increase over a semester in surface approach in the Newstead and Findlay (1997 in Newstead, 1998) research. As examination time approaches students are more likely to record feelings of anxiety about their ability to cope, particularly when the students are in their final year of study and the outcomes of the examination may be, or will appear to be very salient. This anxiety is likely to lead to a restriction in the breadth and depth of learning unless the assessment procedure explicitly requires a deep learning approach. Using affect to measure a surface approach might also explain the sex differences that were identified in this study. Women students reported significantly higher scores on the surface approach than did men, a finding that replicated that of a number of other studies (Clarke, 1986; Greasley, 1998; Sadler-Smith, 1996). Women are more likely to report their feelings than are men and may therefore score higher than do men on the affective statements that relate to the surface approach. Wilson, Smart and Watson (1996) argue that this difference might be a function of the analytical procedures in many of the studies which, by using multiple univariate analyses, created the possibility of a Type I error.

Another criticism that affects the interpretation of the results is that of Biggs (1993). He points out that rote learning per se should not necessarily be classed as a surface approach to study. It may be a strategy for achievement (strategic approach) or considered a pre-requisite for understanding and thus part of the intended behaviour in a deep approach. The 'surface approach' statement about rote learning (I spend a lot of time repeating or copying out things to help me remember them) in the Approaches to Study Inventory might describe the behaviour of a strategic or deep approach to learning. Waugh (1999) used a Rasch analysis to improve the Approaches to Studying Inventory and devised a questionnaire in which the statements were more explicitly attitudinal and behavioural. Additionally the wording encourages students to think about their intentions (" I aim to...." or "I set out to...") and expectations ("I expect to..."). The statements relating to feelings about coping did not fit the model and were thus removed from the inventory.

9.3.2.3. Competence-importance discrepancies

Byrne (1996) warned that reliability may be compromised when variables

that are calculated from other variables (such as the discrepancy score - the perceived importance score minus the perceived competence score in a domain) are used. According to Byrne the variance score derived when the discrepancy score is calculated may not have the same meaning as did the two variance scores (importance and competence). Secondly the arithmetically-derived discrepancy score cannot be interpreted as being measured on a true interval scale and thirdly, because the correlation between importance and competence is expected to be high, reliability is detrimentally affected. Whilst acknowledging the problems inherent in the first two points here, the last point appears not to be as relevant in this study. There were almost no significant correlations between competence and importance variables in any of the data, providing a wide range of discrepancy scores and no compromise to reliability. Certainly discrepancies did not produce any particularly interesting findings within the majority of the analyses but are nevertheless of interest as an indicator of dysfunctional appraisals with some groups of students.

9.4 The learning context and learner autonomy

The evidence from this study, as discussed above, suggests that most of the variables measured were relatively stable across time. The exceptions to this were the domain-specific perceptions of competence which are measured at a level closer to behaviour than is global self worth. There is evidence in the literature to indicate that the nature of the environment can affect many of the variables measured in this study and Entwistle and Ramsden (1983) pointed out this apparent anomaly in relation to approaches to study:

> *'If we stick closely to the empirical findings we should be forced to accept that styles and approaches are both relatively stable over time and consistent over subject areas, but that both are importantly variable between tasks or teachers. The apparent contradiction in this description does reflect the complexity of the interrelationships we find among the constructs used in research on student learning.'* (p198)

The lack of changes noted in this study might be considered from three perspectives. The first is that the learning context to which students at Bangor were exposed did not have a detrimental effect on students' overall autonomy-related characteristics- a positive finding. The second is that the students' learning experiences did not enhance their perceptions of autonomy - a negative finding. The third perspective is that the differences between those who were advantaged in relation to reported self worth and a deep approach to study were increasingly advantaged in other variables indicative of autonomy over time. This widening of the gap by the end of the second year of study is perhaps of particular concern.

So, given the evidence in this study indicating that students are generally autonomy-oriented, what are the implications for the ways in which we structure the higher education learning environment if we wish to enhance all students' opportunities to further develop the autonomy that is the basis for lifelong learning? There are several indicators in the research literature and in social-cognitive theories of learning. This next section considers briefly a number of levels at which changes to practice are likely to have an effect on student autonomy in their learning.

9.4.1. Culture and society

As beginning students, first year undergraduates search avidly for the clues that tell them what sorts of behaviours, attitudes and aspirations they should adopt that will allow them to become members of the university community that they have chosen, and been selected, to join. That society is, however, constructed of a number of sub-cultures that can often dispense different solutions to the quest for an undergraduate identity. Students arriving with a well-established identity of their own may choose to reject some of these sub-cultures and, if they find that the over-riding effect creates dissonance or conflict with their own identity, may choose to leave the university. Within the academic community it is important to establish, at an early stage, an understanding of the aims and objectives of higher education generally, with a clear indication of how those are to be achieved by the institution and by the individual. DeCharms (1968) points out that there is a potential conflict between individual freedom and any attempt to change the achievement orientation of individuals. However, if the individual has chosen to

participate in higher education and is well-informed about the implications of joining the university community then individual freedom is apparently not at risk. Doyal and Gough (1991) also discuss the importance of structure within a society which, as long as it does not neglect the rights of individuals to be differentiated from others in ways that do not substantially offend society's norms, is essential for the well-being of all its members. In higher education, if one of its objectives is learner autonomy, the framework of rules and regulations must allow its members to develop autonomy. As discussed in Chapter 3 the present climate, although paying lip-service to the encouragement of people to make decisions, take control and be flexible in the ways in which they approach learning (e.g. the lifelong learning culture), the present governance of the country is using a number of tactics such as accountability to ensure that control is actually centralised. Valuing and affirming individuals' autonomy in a real sense is difficult in such a climate.

Choice has to be a central element of the learning environment. That choice has already been exercised by students (to a greater or lesser extent) when they enter university but they must continue to feel that they have some control over their continued participation and that they can individually tailor their experiences throughout their studies to some extent. Structuring degree programmes so that movement between them and choice of modules within them is facilitated, even if the majority of students do not take advantage of the opportunities offered, will enhance perceptions of autonomy. There is an important role here for guidance structures that enable students to access information that is individually, programme and post-university relevant and which is autonomy-related in its philosophy. When time or expertise is lacking or when advice is biased because of the need to maintain or increase student numbers, student autonomy is likely to be compromised. The network of support structures for students, offering them not only advice and guidance but also practical help to meet perceived or actual needs must, within the university setting, be extensive, professional and accessible. It must also be learner-centred in its approach. The recognition that autonomy is not synonymous with independence but that it involves both dependence on others to provide the framework and structures in which it can develop and the interdependence that exists in any society, was highlighted by Deci and Ryan (1991). Fazey (1999) discusses the specific nature

of this dependence and interdependence within the university community, indicating how learner autonomy is facilitated in a well-structured autonomy-oriented environment.

As important as providing appropriate structures for autonomy in learning is the general orientation of the community towards recognising that autonomous behaviour is appropriate and reinforced for all its members. The perception that people are expected to take responsibility and make decisions within their roles, that their individual needs and aspirations are met, that there is a structure that enables and supports personal development, that they can affect aspects of their working environment by providing feedback, are all important in engendering an autonomy-enhancing society. This applies to all those who work in the university - academic staff, students, cleaners, senior managers, librarians, computing staff, secretaries etc. - and is a philosophy that is all-pervasive, seeping through the layers of structure that surround individuals.

9.4.2. Classroom autonomy

There is a wealth of research, mostly relating to children in compulsory education, that provides evidence for the effect of the learning and teaching environment on learner autonomy. Some of these have already been cited at the beginning of the thesis and this section focuses on those that, in the light of the evidence of autonomy-related characteristics in undergraduates from this study, inform our understanding of how the teacher-student interaction might enhance autonomous and effective learning in higher education.

One of the more startling lines of research into teaching style on autonomy in learners is that reported by Ryan and Stiller (1991) in which the autonomy development and achievement of children in the classroom was manipulated by increasing or decreasing the autonomy of teachers. Deci, Spiegel, Ryan, Koestner and Kauffman (1982) and Flink, Boggiano, and Barrett (1990) compared children that had been assigned to one of two groups. Teachers of the two groups were given instructions that they should either facilitate the children's learning or that they should make sure that the children performed up to the required standard. Results from the studies indicated that teachers given the second set of

instructions (controlling) were more controlling in their teaching, talked more and demanded more than did the other teachers. The Flink et al. study and a study by Pelletier and Vallerand, (1989) both indicated that, in a controlling climate, students were less interested in learning and demonstrated a lower quality of learning. Ryan and Stiller conclude that:

> *'The capacity of teachers to promote self regulation and internalization of value for learning in students in inexorably intertwined with teachers' opportunities to regulate their own activities and thus to be innovative, creative and intrinsically motivated on a day-to-day basis. The attempt to control teachers, dictate standardized curricula and ensure accountability and performance from the outside will translate into classroom practices that are less spontaneous, engaging and participatory.' (pp.130-131)*

It is important to recognise the wider implications of this research for student autonomy in higher education. If teachers perceive themselves to be 'syllabus-bound' (a surface approach to learning), motivated by rewards or threats *(introjected regulation), externally-controlled and with their professional* competence questioned, it is unlikely that they will perceive themselves to be autonomous in their teaching. Curriculum designers, administrators, external auditors, mentors and those who influence more directly the ways in which we teach can all affect our ability to encourage student autonomy.

Other research emphasises the role of feedback and interpersonal involvement in developing autonomy through competence and self regulation. Positive feedback reinforces interest, a sense of competence and, when the activity is self-initiated, autonomy. For children, the contact with adults who enhance autonomy leads to greater intrinsic motivation, self-regulation and achievement. Some teachers in higher education are not skilled at providing the positive, constructive feedback to students that encourages an appropriate sense of competence and, with increasing numbers in classes, the opportunities for informal, individual feedback is increasingly rare. If we want to encourage student autonomy the personal guidance information is as critical for development at the

task-specific level as it is at the general university level as discussed above. As student numbers expand there is also a risk that fewer students will have the opportunity to engage in face-to-face discussion with academics who can provide them both with cognitive stimulation and a role model of autonomy and enthusiasm for the subject. There has to be space made available in the higher education curriculum for individual or small group interactions with significant others if university education is to be effective and achieve its objective of autonomy in learning.

Classroom practices that enhance the internalisation of motivation, even when tasks are perceived as uninteresting, include providing choice in tasks and the timing of these (Zuckerman, Porac, Lathin, Smith & Deci, 1978), highlighting choice rather than using a controlling style (Deci, Eghari, Patrick & Leone, 1991) and using language that suggested choice rather than control (e.g.'might' instead of 'must') (Koestner, Ryan, Bernieri & Holt, 1984). A more recent study with college students by Garcia and Pintrich (1996) found that students who perceived their teachers to be supportive of autonomy, by allowing them to participate in decision-making at various levels, reported higher scores on task value, intrinsic goal orientation and self efficacy. In the module students had been given opportunities to choose assignment topics, negotiate deadlines and share in some of the decision-making about the structure of the module. None of these is difficult to implement, even with large classes but they appear to give students a stronger sense of ownership of and engagement in studying that is autonomy-enhancing.

In the absence of any empirical evidence, although based on personal experience (and see texts such as that by Chalmers & Fuller, 1996 and Gibbs, 1992) the following suggestions about how higher education teachers can support the development of learner autonomy are somewhat speculative. Firstly is the notion that, to be autonomous, students must have strategies for monitoring and assessing their own progress. Personal development can only occur if the student knows what he or she can do, can assess changes in relation to self-knowledge and required standards and has a clear idea of the goal that is at the end of that particular learning episode. Teachers can facilitate this by providing, within the teaching periods, opportunities for self-assessment. These do not have to be time consuming but they should be relatively frequent. They may be supported by

peers (discussions, peer reviews of written work, peer reviews of verbal presentations, peer marking of short tests etc.) as long as the climate is supportive and not competitive or negatively critical. Self assessments must also be accompanied, but less frequently, by tutor feedback so that the student can compare his or her perceptions of standards against the tutor's. Ideally all students will be given the opportunity to acquire self-assessment and recording skills, perhaps through the use of a portfolio or personal development file, with opportunities to discuss this with a tutor who can contextualise the student's perceptions and support their development.

Secondly the vexed question of assessments that are apparently detrimental to intrinsic motivation (Smith, 1974), conceptual learning (Benware & Deci, 1984), creativity (Amabile, 1979) and a deep approach to learning (Newstead & Findlay, 1997). Assessments are, however, essential for learners, who need to know whether they are making progress, as discussed above. It is thus the nature of assessments and not the assessment per se that is the problem. Assessments must be designed to provide students with autonomy-enhancing information and provide them with an opportunity to recognise what they know and can do. The following are suggestions about how assessments can become more autonomy-enhancing:

- More assignments can be formative, providing competence information without the salience of a summative mark. This reduces the need for students to get the best grade possible and allows them to focus on learning;

- *More formative* assignments should be optional. Students can hand them in and be provided with competence information but if they feel that they do not need this practice attempt or the information then they can choose to focus their energies on other work.

- Assignments need to encourage a deep approach to learning rather than the usual reversion to a surface approach. There are several ways in which this can be achieved. For instance: allowing students to choose a topic in which they are interested; encouraging collaboration amongst peers before the assignment is written so that topics are explored, discussed and expanded;

requiring the work to be presented verbally in a formal presentation to peers or in a viva voce examination; presenting concepts using mind-mapping to develop integration of ideas. Even formal, written examinations can enhance a deep approach. For instance: pre-released questions that are discussed with peers and tutors; open-book examinations; the use of mind maps as answers as well as text.

- Assessment methodologies should be practised, at least in part, before the summative attempt. This is competence enhancing and allows students to focus on the learning rather than on the skills required for the particular methodology.

- Criteria for assessment should be discussed and can be negotiated in some circumstances. This provides the students with a sense of ownership, shared decision-making and better understanding of the criteria by which their work will be judged.

Thirdly there is the issue about the climate that is created by individual teachers whose concept of teaching and learning and his or her role and responsibility in the process affects the students' approach to learning. Chalmers and Fuller (1996) briefly present some of the research that has identified five approaches to teaching in higher education. These five approaches may be categorised under two headings - a teacher-centred, transmission-of knowledge approach and a student-centred, interactive approach. In the first category the teacher controls the content, timing and pace of the teaching sessions with responsibility for learning seen as that of the student. Assessments measure quantitatively what has been learned and the teacher's role is to present information accurately and clearly. Imparting information, transmitting subject-specific knowledge and attitudes to the discipline, and facilitating a particular, defined understanding of the material are the three approaches in this teacher-centred category. The approaches within a student-centred teaching climate are activity aimed at changing students' concepts or theoretical view of the world and providing support for learning. Assessments are designed to provide feedback for the learner about their understanding and encourage a deep, divergent approach to the study of the content. In both of these student-centred approaches the

responsibility for learning is actively shared between teacher and student. The teacher nurtures the growing expertise of the student, providing many opportunities for students to be constructive in their thinking. Whilst not explicitly addressing autonomy in learning, these descriptions of teachers' concepts of teaching provide the potential for identifying very different environments in which autonomy will be constrained or enhanced. The process of changing what is often seen as the traditional model of university teaching i.e the transmission of information, often through teacher dominated lectures, has begun in most universities and will be encouraged by the value being placed on the activities of the Institute for Learning and Teaching. Most new professionals engage in some kind of programme to support the development of their initial teaching skills and, whilst it will be some time before this can overcome the cynicism of some established academics, the change in culture will take place. Despite the slow nature of change it is important to establish and resource a staff development programme in universities that is seen as credible, relevant and valued by the institution. There is no doubt that high quality teaching, that focuses on development of student autonomy, will offer opportunities for the development of all individuals, including those who might be at risk. One of the strengths of an 'autonomy' approach to teaching is that, implicit in such an approach is the structuring of environments which:

> *"...challenge (learners) to become personally and actively involved in their own learning; are perceived as related to personal needs, interests and goals; present tasks that can be successfully accomplished; and allow for personal choice and control matched to age, stage and task requirements." (Radford, 1991. p. 14)*

Confident, skilled and committed teachers with a personal autonomy-orientation, who value autonomous approaches in their students, are needed to create such environments.

9.4.3. Threats to autonomy

At the end of this thesis I remain committed to the notion that autonomy is a 'good thing'. Autonomous people are comfortable with themselves, confident that

they know their capability and how to address deficits, are able to work and think independently but can also relate effectively with others. They are self-motivated but can also strategically use external motivators to effect satisfactory outcomes. The evidence from the literature consistently links dispositional autonomy to positive achievement behaviours. The research evidence in this study indicates that, at Bangor University a random sample of students maintained psychological profiles over time that are indicative of an autonomous approach to learning. Disappointingly these profiles did not improve over time. The environmental factors that affect autonomy are discussed in Chapter 3 and throughout the thesis, and it may be that the climate at Bangor during the time of the data collection did not facilitate enhanced student autonomy. Without any empirical evidence to support any further discussion about the learning climate at Bangor, its positive or negative effects are merely conjecture. Certainly there were changes occurring within the University and across the sector that presented, and indeed still present, *a potential threat to autonomous learning and functioning* (see Chapter 3).

The main threat to autonomy within higher education is the lack of commitment to it, understanding of what it is and the benefits to the learner that can accrue from its development at all levels throughout society. There is a powerful tendency, at the political level, to control, prescribe and standardise activities throughout education, making it more accountable to its clients and the public. Although higher education has remained aloof to some extent from these increased controls there are monitoring and standardising procedures in place that threaten to erode existing autonomy. These procedures threaten the autonomy of all members of the community by imposing external controls and encouraging an *unhealthy dependency on guidelines, frameworks* and regulations. As discussed in Chapter 3, where external demands have required us to demonstrate accountability, unless the managers and administrators within the institution possess a strong sense of personal and institutional autonomy, the controlling effects from the external influences will be passed down the line and will eventually affect learner autonomy. It is in all our interests, as individuals and as institutions, to resist the erosion of autonomy. To do so we will have to have a clear set of principles that define our objectives, a positive sense of the value of those objectives and a desire to achieve them because they are valued,

confidence in our abilities to achieve the objectives, sufficient skills to achieve the goals we have set for ourselves and the means by which we can assess goal achievement. In other words we must be autonomous.

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Appendix: Inventories

1. The Self Perception Profile for College Students ('What am I like' and 'How important are these areas to you?')
   (Neemann and Harter, 1986).

2. The Academic Motivation Scale ('Why do you go to University?')
   (Vallerand, R.J., Pelletier,L.G., Blais, M.R., Brière, N.M., Senécal,C. & Valliéres, E.F., 1992).

3. Academic Locus of Control Scale ('Reasons for my success or failure in studies')
   (Rossouw & Parsons, 1995)

4. Revised Approaches to Study Inventory (Questionnaire on approaches to study)
   (Entwistle & Tait, 1995)

WHAT AM I LIKE

The following are statements which allow college students to describe themselves. There are no right or wrong answers since students differ markedly. Please read the entire sentence across. First decide which one of the two parts of each statement best describes you; then go to that side of the statement and tick whether that is just sort of true for you or really true for you. You will just tick ONE of the four boxes for each statement. Think about what you are like in the college environment as you read and answer each one.

	REALLY TRUE FOR ME	SORT OF TRUE FOR ME			SORT OF TRUE FOR ME	REALLY TRUE FOR ME
1	☐	☐	Some students like the kind of person they are	BUT	Other students wish that they were different.	☐ ☐
2	☐	☐	Some students feel confident that they are able to master their coursework	BUT	Other students do not feel so confident.	☐ ☐
3	☐	☐	Some students are not satisfied with their social skills	BUT	Other students think their social skills are just fine.	☐ ☐
4	☐	☐	Some students are not happy with the way they look	BUT	Other students are happy with the way they look.	☐ ☐
5	☐	☐	Some students get lonely because they don't really have a close friend to share things with	BUT	Other students don't usually get too lonely because they have a close friend to share things with	☐ ☐
6	☐	☐	Some students feel that they are just as clever or more clever than other students	BUT	Other students wonder if they are clever.	☐ ☐
7	☐	☐	Some students often question the morality of their behaviour	BUT	Other students feel their behaviour is usually moral.	☐ ☐
8	☐	☐	Some students feel they are just as creative or even more so than other students	BUT	Other students wonder if they are creative.	☐ ☐

	REALLY TRUE FOR ME	SORT OF TRUE FOR ME			SORT OF TRUE FOR ME	REALLY TRUE FOR ME
9.	☐	☐	Some students are often disappointed with themselves	BUT	Other students are usually quite pleased with themselves.	☐ ☐
10.	☐	☐	Some students do very well at their studies	BUT	Other students don't do very well at their studies.	☐ ☐
11	☐	☐	Some students find it hard to make new friends	BUT	Other students are able to make new friends easily.	☐ ☐
12	☐	☐	Some students are able to make close friends they can trust	BUT	Other students find it hard to make close friends they can really trust.	☐ ☐
13	☐	☐	Some students do not feel they are very mentally able	BUT	Other students feel that they are very mentally able.	☐ ☐
14	☐	☐	Some students usually like themselves as a person	BUT	Other students often don't like themselves as a person.	☐ ☐
15	☐	☐	Some students have trouble figuring out homework assignments	BUT	Other students rarely have trouble with their homework assignments.	☐ ☐
16	☐	☐	Some students like the way they interact with other people	BUT	Other students wish their interactions with other people were different.	☐ ☐
17	☐	☐	Some students don't have a close friend they can share their personal thoughts and feelings with	BUT	Other students do have a friend who is close enough for them to share thoughts that are really personal.	☐ ☐
18	☐	☐	Some students feel they are just as bright or brighter than most people	BUT	Other students wonder if they are as bright.	☐ ☐

	REALLY TRUE FOR ME	SORT OF TRUE FOR ME			SORT OF TRUE FOR ME	REALLY TRUE FOR ME
19	☐	☐	Some students really like the way they are leading their lives	BUT	Other students often don't like the way they are leading their lives.	☐ ☐
20	☐	☐	Some students sometimes do not feel intellectually competent at their studies	BUT	Other students usually do feel intellectually competent at their studies.	☐ ☐
21	☐	☐	Some students feel that they are socially accepted by many people	BUT	Other students wish more people accepted them.	☐ ☐
22	☐	☐	Some students like their physical appearance the way it is	BUT	Other students do not like their physical appearance.	☐ ☐
23	☐	☐	Some students are able to make really close friends	BUT	Other students find it hard to make really close friends.	☐ ☐
24	☐	☐	Some students would really rather be different	BUT	Other students are very happy being the way they are.	☐ ☐
25	☐	☐	Some students question whether they are very intelligent	BUT	Other students feel they are intelligent.	☐ ☐
26	☐	☐	Some students are often dissatisfied with themselves	BUT	Other students are usually satisfied with themselves.	☐ ☐

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HOW IMPORTANT ARE THESE AREAS TO YOU?

Think about how important these things are to how you feel about yourself as a person. These questions do not concern whether these things should be important or whether it is a value one tries to live up to or whether one appreciates these qualities in another person or whether it is important to society. We want you to think whether these items really are important to you personally and whether you behave as though they are important.

REALLY TRUE FOR ME	SORT OF TRUE FOR ME			SORT OF TRUE FOR ME	REALLY TRUE FOR ME
1 ☐	☐	Some students feel that it is important to be able to make really close friends	BUT	Other students do not feel that it is all that important to be able to make close friends ☐	☐
2 ☐	☐	Some students feel that being clever isn't all that important	BUT	Other students feel that it is important to be clever. ☐	☐
3 ☐	☐	Some students do not feel that creativity is very important	BUT	Other students feel that creativity is important ☐	☐
4 ☐	☐	Some students feel that being able to make new friends easily is not that important	BUT	Other students feel that being able to make new friends easily is important. ☐	☐
5 ☐	☐	Some students feel that doing well at their studies is important	BUT	Other students do not feel that doing well at their studies is all that important ☐	☐

	REALLY TRUE FOR ME	SORT OF TRUE FOR ME				SORT OF TRUE FOR ME	REALLY TRUE FOR ME
6	☐	☐	Some students think it is important to be bright	BUT	Other students do not think that being bright is all that important.	☐	☐
7	☐	☐	Some students feel that being able to make close friends they can really trust is not that important	BUT	Other students feel that being able to make close friends they can really trust is very important.	☐	☐
8	☐	☐	Some students feel it is important to be socially accepted	BUT	Other students do not feel that being socially accepted is all that important.	☐	☐
9	☐	☐	Some students think that it is not that important to be good at their degree work	BUT	Other students feel that being good at their degree work is very important.	☐	☐
10	☐	☐	Some students feel that being good looking is important	BUT	Other students do not think that being good looking is very important.	☐	☐

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WHY DO YOU GO TO UNIVERSITY?

Using the scale below, indicate to what extent each of the following items presently correspond to one of the reasons why you go to university. Circle only one number for each question.

Does not correspond	Corresponds a little	Corresponds moderately	Corresponds a lot	Corresponds exactly
1	2 3	4	5 6	7

1.	Because with only secondary school education I would not find a job that pays enough.	1 2 3 4 5 6 7
2	Because I experience pleasure and satisfaction while learning new things	1 2 3 4 5 6 7
3	Because I think that a post-secondary education will help me better prepare for the career I have chosen.	1 2 3 4 5 6 7
4	For the intense feelings I experience when I am communicating my own ideas to others.	1 2 3 4 5 6 7
5	Honestly I don't know. I truly have the impression that I am wasting my time in university.	1 2 3 4 5 6 7
6	For the pleasure I experience while doing better than I thought I could in my studies.	1 2 3 4 5 6 7
7	To prove to myself that I can do better than I did in school.	1 2 3 4 5 6 7
8	In order to get more prestigious job later on.	1 2 3 4 5 6 7
9	For the pleasure I experience when I discover new things never seen before .	1 2 3 4 5 6 7
10	Because eventually it will allow me to enter the job market in a field that I like. .	1 2 3 4 5 6 7
11	For the pleasure that I experience when I read interesting authors.	1 2 3 4 5 6 7
12.	I once had good reasons for going to university, however, I now wonder whether I should continue.	1 2 3 4 5 6 7
13.	For the pleasure that I experience when I am doing well in something that I am good at.	1 2 3 4 5 6 7

Does not correspond	Corresponds a little	Corresponds moderately	Corresponds a lot	Corresponds exactly
1	2 3	4	5 6	7

14.	Because the fact of succeeding in university makes me feel important	1 2 3 4 5 6 7
15.	Because I want to lead a comfortable life later on.	1 2 3 4 5 6 7
16.	For the pleasure that I experience in knowing more about the subjects which appeal to me.	1 2 3 4 5 6 7
17	Because this will help me make a better choice regarding my career orientation.	1 2 3 4 5 6 7
18	For the pleasure that I experience when I feel completely absorbed by what certain authors have written	1 2 3 4 5 6 7
19	I don't understand why I go to university and, frankly, I don't give a damn	1 2 3 4 5 6 7
20	For the satisfaction I experience when I am in the process of achieving difficult academic activities.	1 2 3 4 5 6 7
21	To show myself that I am an intelligent person	1 2 3 4 5 6 7
22	In order to have a better salary later on.	1 2 3 4 5 6 7
23	Because my studies allow me to continue to learn a lot of things that interest me.	1 2 3 4 5 6 7
24	Because I believe that a few additional years of education will improve my competence as a worker.	1 2 3 4 5 6 7
25	For the "high" feeling that I experience whilst reading about various interesting subjects.	1 2 3 4 5 6 7
26.	I don't know. I don't understand what I am doing at university.	1 2 3 4 5 6 7
27.	Because university allows me to experience a personal satisfaction in my quest for excellence in my studies.	1 2 3 4 5 6 7
28.	Because I want to show myself that I can succeed in my studies.	1 2 3 4 5 6 7

REASONS FOR MY SUCCESS OR FAILURE IN STUDIES

Think about yourself as a student. Using the scale below, indicate to what extent each statement matches your feelings about your success and failures in study by circling one number for each question

---

Does not correspond	Corresponds a little		Corresponds moderately	Corresponds a lot		Corresponds exactly
1	2	3	4	5	6	7

1.	The most important ingredient in getting high marks is my academic ability.	1 2 3 4 5 6 7
2	When I receive a low mark, I usually feel that the main reason is that I haven't studied hard enough for that subject	1 2 3 4 5 6 7
3	In general, when I have received a high mark in a subject, it was due to the lecturer's easy marking scheme.	1 2 3 4 5 6 7
4	My success in exams depends on some luck	1 2 3 4 5 6 7
5	If I get low marks in the exams, it's my own fault.	1 2 3 4 5 6 7
6	When I do well academically, it's because the tutor likes me	1 2 3 4 5 6 7
7	When I don't do well on tests or exams, I usually can't figure out why	1 2 3 4 5 6 7
8	In my case the high marks I receive are always the direct result of my efforts	1 2 3 4 5 6 7
9	If I were to receive low marks it would cause me to question my academic ability	1 2 3 4 5 6 7
10	My high marks may simply reflect that these were easier subjects than others.	1 2 3 4 5 6 7
11	In my experience, once a lecturer gets the idea you're a poor student, your work is more likely to receive low marks than if someone else handed it in.	1 2 3 4 5 6 7
12	I feel that my high marks depend to a considerable extent on chance factors, such as having the right questions show up on an exam.	1 2 3 4 5 6 7
13.	I won't do well in my subjects if I have a bad tutor/lecturer.	1 2 3 4 5 6 7

Does not correspond	Corresponds a little	Corresponds moderately	Corresponds a lot	Corresponds exactly
1	2 3	4	5 6	7

14.	When I get a high mark on a test or exam, I usually don't know why I did so well.	1 2 3 4 5 6 7
15.	My lower marks have seemed to be partially due to unfortunate circumstances.	1 2 3 4 5 6 7
16	If I want to do well academically, it's up to me to do it.	1 2 3 4 5 6 7
17	If I were to fail a subject it would probably be because I lacked skill in that area.	1 2 3 4 5 6 7
18	Whenever I receive high marks, it is always because I studied hard for that subject.	1 2 3 4 5 6 7
19	Often my lower marks are obtained in subjects that the lecturer has failed to make interesting.	1 2 3 4 5 6 7
20	I feel that my high marks reflect directly on my academic ability.	1 2 3 4 5 6 7
21	When I fail to do as well as expected academically, it is often due to a lack of effort on my part.	1 2 3 4 5 6 7
22	I get high marks only because the subject material was easy to learn.	1 2 3 4 5 6 7
23	My academic failures make me think I was just unlucky	1 2 3 4 5 6 7
24	It's up to me to get high marks in tests or exams.	1 2 3 4 5 6 7
25	The best way for me to get high marks in a test or exam is to get the tutor to like me.	1 2 3 4 5 6 7
26	If I get a low mark on a test or exam, I usually don't understand why I got it.	1 2 3 4 5 6 7
27.	If I were to get low marks I would assume that I lacked ability to succeed in that subject or subjects.	1 2 3 4 5 6 7
28	Low marks indicate to me that I haven't worked hard enough.	1 2 3 4 5 6 7
29.	I feel that I have to consider myself lucky when I get high marks.	1 2 3 4 5 6 7

Does not correspond	Corresponds a little	Corresponds moderately	Corresponds a lot	Corresponds exactly
1	2 3	4	5 6	7

30.	It's my own fault I don't do well academically.	1 2 3 4 5 6 7
31.	When I do well academically, I usually can't figure out why.	1 2 3 4 5 6 7
32.	If I don't have a good lecturer, I won't do well in that subject.	1 2 3 4 5 6 7
33	I can overcome most obstacles in the path of academic success if I work hard enough.	1 2 3 4 5 6 7
34	The low marks I've received seem to me to reflect the fact that some lecturers are just stingy with marks.	1 2 3 4 5 6 7
35	When I get high marks it is because of my academic competence.	1 2 3 4 5 6 7
36	My low marks may have been a function of bad luck, being in the wrong course at the wrong time.	1 2 3 4 5 6 7

Questionnaire on Approaches to Learning and Studying

This questionnaire has been designed to assess your approaches to studying. Please respond truthfully, so that the answers you give represent accurately your real ways of studying. Answer quickly but carefully, and above all honestly. Avoid using the 'unsure' or 'not applicable' responses wherever possible. The whole questionnaire will take about 15 minutes to complete. **Please circle only one number for each question.**

5 = agree (√) **4** = agree somewhat (√ **?**) **2** = disagree somewhat (**x?**) **1** = disagree (**x**).

Try not to use **3** = unsure (**??**), unless you really have to, or if the item really cannot apply to you.

	√	√?	??	x?	x
1 I'm not prepared just to accept things I'm told: I have to think them out for myself	5	4	3	2	1
2 I don't think much about why we have to learn the things we're given to do.	5	4	3	2	1
3 One way or another I manage to get hold of books or whatever I need for studying.	5	4	3	2	1
4 Often I feel I'm drowning in the sheer amount of material we're having to cope with on this course	5	4	3	2	1
5 So far, I seem to have a good grasp of the subjects I am studying.	5	4	3	2	1
6 Sometimes I find myself thinking about ideas from the course when I'm doing other things.	5	4	3	2	1
7 I often have trouble in making sense of the things I have to remember.	5	4	3	2	1
8 When I start a piece of work, I try to think out what is really required and how to tackle it.	5	4	3	2	1
9 Often I lie awake worrying about work I think I won't be able to do.	5	4	3	2	1
10 Generally, I find the set work easy to do.	5	4	3	2	1
11 Often I find myself questioning things I hear in lectures or read in books.	5	4	3	2	1
12 Although I can remember facts and details, I often can't see any overall picture.	5	4	3	2	1
13 I make sure I find conditions for studying which let me get on with my work easily.	5	4	3	2	1
14 When I look back, I sometimes wonder why I ever decided to come here	5	4	3	2	1
15 I seem to be able to grasp things for myself pretty well on the whole.	5	4	3	2	1
16 I try to relate ideas I come across to other topics or other courses whenever possible.	5	4	3	2	1
17. I don't think much about how to go about studying: I just get on with it.	5	4	3	2	1
18. I put a lot of effort into making sure I have the most important details at my finger tips.	5	4	3	2	1
19. Coming here wasn't really my choice: more other peoples' expectations and no obvious alternative.	5	4	3	2	1
20.I don't usually have much difficulty in making sense of new information or ideas.	5	4	3	2	1
21. Sometimes I worry about whether I'll ever be able to cope with the work properly.	5	4	3	2	1
22. I organise my study time carefully to make the best use of it.	5	4	3	2	1

PTO.....→

	√	√	??	x?	x
23. When I'm reading an article or book, I try to work out for myself exactly what's being said.	5	4	3	2	1
24. I spend quite a lot of time repeating or copying out things to help me remember them.	5	4	3	2	1
25. I know what I want to get out of this course and I'm determined to achieve it.	5	4	3	2	1
26. Some of the ideas I come across on the course I find really interesting, even exciting at times.	5	4	3	2	1
27. Often I find myself reading things without really trying to understand them.	5	4	3	2	1
28. When I'm doing set work, I keep in mind the lecturers I'm doing them for and what they want	5	4	3	2	1
29. I usually set out to understand for myself the meaning of what we have to learn.	5	4	3	2	1
30 I'm not really sure what's important, so I try to get down just as much as I can in lectures.	5	4	3	2	1
31 I work hard when I'm studying and generally manage to keep my mind on what I'm doing.	5	4	3	2	1
32 When I m working on a new topic, I try to see in my own mind how all the ideas fit together	5	4	3	2	1
33 I find I have to concentrate on memorising a good deal of what I have to learn.	5	4	3	2	1
34 It s important to me to feel I'm doing as well as I really can on the courses here.	5	4	3	2	1
35 Ideas in course books or articles often set me off on long chains of thought about what I m reading	5	4	3	2	1
36 I rather drifted into higher education without deciding for myself what I really wanted to do.	5	4	3	2	1
37 I think I m quite systematic and organised in the way I go about studying.	5	4	3	2	1
38 When I'm reading, I examine the details carefully to see how they fit in with what's being said.	5	4	3	2	1
39 I often seem to panic if I get behind with my work.	5	4	3	2	1
40 I generally try to make good use of my time during the day.	5	4	3	2	1
41 It's important to me to be able to follow the argument or see the reasoning behind something.	5	4	3	2	1
42. I think I'm on this course more to please other people than because I really wanted it myself.	5	4	3	2	1
43. I work steadily throughout the course, rather than leaving everything until the last minute.	5	4	3	2	1
44. I look at the evidence carefully and then try to reach my own conclusion about things I'm studying.	5	4	3	2	1

Thank you for completing this questionnaire.

Diolch i chwi am lenwi'r holiadur hwn.