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An Exploration of Confidence Related to Formal learning in Saudi Arabia

by

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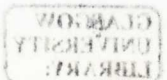

Abstract

Learners approach learning tasks with varying degrees of confidence and their confidence may influence the prospects of progress and success. The main purpose of the investigations reported in this thesis was to explore confidence in relation to learning, in the context of education in Saudi Arabia, focussing mainly on early university experiences. Because of access to students in Saudi Arabia, most of the sample of over 1400 students were female.

Confidence is an elusive concept but it can affect many areas of life. This study seeks to explore academic confidence, to see how it relates to other aspects of confidence and to see whether any aspects of learning or the nature of learning situations relates particularly to the enhancement of confidence with learners.

The study starts by exploring what is meant by confidence, specifically in an educational setting, and then moves on to consider how experiences held in memory relate to the formation and development of confidence. In thinking of confidence, it is suggested that confidence can be seen, at least in part, as an attitude towards oneself. It is how a person sees himself in the context of a task or opportunity.

This study starts by an attempt to explore several aspects of confidence to see to what extent confidence is a generic characteristic and how academic confidence might relate to that. Academic confidence might be related to specific cognitive characteristics or to views of learning or to specific kinds of learning situations. Questionnaires and interviews were the approach adopted in this study.

Semi-structured interviews were undertaken to establish some kind of measure of the validity of the questionnaires. Working memory capacity was measured using the digits span backwards test while examination and test data were also obtained. In every case, large samples were used in the data collection. The overall aim was to obtain a picture of the nature of confidence and to see how this was related to other attributes (which were also measured by survey) and to performance (as measured by formal examinations).

The key observation is that academic performance tends only to be correlated with academic confidence. Thus, confidence is probably not a general attribute. Interviews tend to confirm the outcomes from the survey. In that working memory is a well

established rate determining factor in much learning, it might be thought that that working memory capacity might be a factor in enhancing confidence but, in the context of the sample of female students used in this study, this was not found to be so.

Students were asked to look at themselves in the learning process, to indicate their preferred styles of learning and assessment but, in general, few aspects seem to show any strong relationship with the development of academic confidence. However, those who expressed specific confidence in their abilities related to studying tended to be those who were, in fact, better performers as measured by examinations. Thus, students seem to be appropriately self-aware. Also, the importance of tests and examinations was seen and it did appear that results from these were a major feature of confidence growth.

Attitudes to learning (following the Perry model, 1999) also tend not to correlate significantly with academic performance although there is a hint that assessment might be important. Aspects of learning style, purposes of learning, evaluation in examinations, group-working skills and academic self-perception showed few clear patterns in relation to confidence. The strong overall impression is that preferred curriculum approaches are *not* very important in developing confidence although the influence of the subject teacher may be very important. Also it seems to be an innate human characteristic to seek for meaning. Memorisation is not, perhaps, the natural way forward. All of this tends to give a kind of picture of characteristics that might describe some confident students rather than give a set of criteria for developing a confident person.

Although not the main purpose of the study, the patterns of results from the many questionnaires revealed major deficiencies in the Saudi education system as seen by the learners and offers an agenda for change for the future. There seemed to be an expressed interest in more opportunities for thinking (rather than memorising), for questioning, creativity and working in groups.

From all of this, it might be deduced that the key feature underpinning confidence lies in simple success (reflected in speed of learning, understanding, and examination success). Thus, confidence makes it possible for students to enjoy the challenges of further learning, to take risks and to take risks in a social learning situation like group work. Perhaps the most remarkable thing is the lack of features which correlate with measures of academic confidence.

Any attempt to find some kind of insight into a way of teaching and learning which generates increased confidence is not easy from the data. There are two possible reasons for this. Perhaps, different students prefer different ways and this hides any significant correlations overall. Perhaps, also, the students are so accustomed to a system which offers information in quantity and provides rewards only to those who can recall it accurately that this hides other possibilities for these students.

The one thing that stands out is that success seems to lead to confidence. These students are among those who have been more successful at school in terms of examinations. The fundamental question is how to offer success to those who are not so good at formal examinations based on recall. If success is so dependent on this and confidence is not related much to other aspects, then there is a real danger that the examination system will generate a population where many are unsuccessful. The system might be leading to a destruction of confidence. It does not seem to be the style of examination but the fact of success in examinations which is an important determinant of confidence. The samples considered were drawn from those who had been successful at school. Further studies might focus on those who were not so successful.

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Chapter 1

Confidence in and through Education

1.1 Introduction

It was observed many years ago (e.g. Johnstone *et al*, 1981; Johnstone and Reid, 1981) that the cognitive aspects of the educational journey often receive considerable attention while the other, less easily measured aspects, may not be considered much. Examinations and tests check what learners have acquired in terms of knowledge, understanding and, sometimes, thinking skills. Indeed, considerable energy is expended in developing tests and examinations which seek to probe what knowledge the learner has acquired. Decisions about future learning are then based on such assessments,

Practical skills are sometimes measured where appropriate. This can include the practical solving of mathematical problems or spoken language; it can also include experimental skills in the sciences or the considerable range of practical skills associated with the handling of materials, cooking, music or art.

Of considerable importance is that learners bring to the learning situation sets of attitudes, perspectives and beliefs. Also, the educational journey may well cause attitudes, perspectives and beliefs to develop but, not always in expected ways. Most are rarely measured at all; indeed, measurement may be impossible or inappropriate. However, that does not imply that such aspects are unimportant.

In this context, a much ignored aspect is learner confidence: confidence in themselves as learners, confidence in abilities to be successful, a self-belief that the learning process is worthwhile and meaningful. This is the focus of this study.

The difficulty is that each learner may bring strong elements of self-belief (or lack of it) to the process of learning. Equally, the experience of learning may develop such confidence. While there is minimal opportunity to influence what happens before formal education starts, it is important to explore what elements of the educational experience are likely to increase confidence in that, if a learner does not have adequate confidence that learning can be successful, then it is unlikely that future learning will be too successful or fulfilling.

Reid (2006) has noted the powerful effect that attitudes can have on subsequent learning. If confidence is some kind of attitude or evaluation of oneself, then subsequent learning may be greatly hindered if confidence is low. Reid (2006, page. 8), in the context of attitudes towards physics, observes that an "*attitude towards physics does require some knowledge of what physics actually involves, what feelings the [learner] has towards physics and it may lead to a commitment to take the next course in physics.*"

Looking at confidence as an attitude towards oneself, perhaps this statement could be adapted: An 'attitude towards oneself in the context of learning does require some knowledge of what learning actually involves, what experiences and feelings the learner has towards learning and such an attitude may lead to a commitment to take learning seriously'. Thus, confidence depends heavily on experience and may well influence future experiences.

Being successful in some situations can raise confidence. Thus, Reid and Yang (2002b) noted that confidence was lacking when secondary school pupils faced a new and open-ended problem but, after the completion of the first such problem, confidence was observed to grow markedly when facing subsequent problems even when the pupils were finding the tasks difficult. Students experience in a non-threatening and supportive context generated a remarkable rise in observed confidence. Yang (2000) also reported the growth in confidence did not necessarily seem to lead to better performance in her open-ended problems. However, it did mean that the school pupils approached these tasks more enthusiastically with more self-belief and assurance. Perhaps the negative is more important: without some confidence, it is unlikely that tasks will be approached with any self-belief or therefore-belief that success is likely.

1.2 The Nature of Confidence

Teachers and lecturers may often refer to confidence when describing their pupils and students. However, defining that confidence is not so easy. It involves self-belief in the context of learning, or it may reflect the personality: the person who is confident. It may involve quite subtle levels of self-evaluation or even evaluation of self in the terms that the person sees being the conclusions of the evaluations of others.

In some ways, confidence is an indefinable concept. It can mean the concept of how others see the learner and attitudes towards the subjects being studied. It encompasses the context of learning tasks and relates to how learners see themselves, how they see others and how they think others see them.

One aim of education must relate to the development of inner belief that a person can move on and be successful in life (however, success is defined) and to make a positive contribution to society. However, a deeper aim of education must relate to the development of the individual, as a person, as a lifelong learner, with a sense of inner self-belief. It is here that confidence may be particularly important. However, confidence must be seen in the context of the aims of the process known as education.

1.3 The Aims of Education

Mankind has existed, with some success, in a world where education was the privilege of the few. For many decades, education has been seen as the right of everyone (e.g. Whitehead, 1962). The aims and benefits of education can be seen in terms of bringing benefits:

For the individual
For the family
For society
Globally

Although social considerations cannot be ignored, the individual should be the first and the main issue in education in that individuals make up society. If an aim is to bring benefit to society by means of education, then individual benefits need to be considered. If this is the case, the education can be seen as a development of the individual, releasing the potential abilities within that person to lead to personal fulfilment

There is a need to prepare people for life, for practical activities of daily existence and for creative production, so that the individual person can utilise their abilities to the maximum to bring benefit for the person and the society in which (s)he is placed. The fundamental question now is how can this be done by using education? How can we help students to use information in increasing their study skills, in developing positive attitudes, with a confidence to face life experiences and learn more?

Of course, one aspect of education is the passing on of knowledge, experience and the wider features of culture to the next generation. Long ago, Whitehead (1962, page. 7) noted that,

> "*The problem of keeping knowledge alive, of preventing it from becoming inert, is the central problem of all education.*"

However, there is a danger of seeing education as the transmission only as the transmission of past knowledge, values and cultural ideas. Whitehead (1962) argues that it is important to consider the student's curiosity, judgements, opinions and creative ideas. He believes that these should not be assessed only by examination to know if the student has learned the skills or not.

Education may share the outcomes of the past with learners. However, education must be set in the present, preparing the learners for a future which is, in large measure, uncertain. This is a difficult task. Whitehead (1962) again is perceptive when he notes that, when students are taught to solve problems, they may still not have the intention or the confidence to work out different and new solutions to different and new problems. What we need to see is the students' way of thinking and how they solve problems.

The knowledge and understandings which are imparted to learners need to be carried out in such a way that the expert knowledge can be built upon to move culture forward, to solve new problems and to take appropriate decisions as citizens. In other words, education needs to be set in terms of the future needs of future citizens. They need to be able to make sense of the world which is their world, to be able to contribute to that world as well as taking advantage of all opportunities offered to them but, perhaps more importantly, to see themselves in relation to the world, to others and have that inner security that they can cope and make progress.

Something of this was seen by Whitehead many years ago when he stated (1962, page. 3):

> *"Let the main ideas that are introduced into a child's education be few and important, and let them be thrown in to every combination possible. The child should make them his own, and should understand their application here and now in the circumstances of his actual life. From the very beginning of his education, the child should experience the joy of discovery. The discovery that he has to make is that general ideas give an understanding of that stream of events which pours through his life, which is his life."*

Such a picture is very different from what is often seen in schools and universities where there are overcrowded curricula, where information is provided to be memorised and recalled, and there is little opportunity to discover or apply ideas in the context of daily life. Again, Whitehead (1962, page. 6) notes this when he sees the importance of knowledge being able to be utilised.

Considerable resources have been made available to education but there is still a common problem about how to use these resources in the most effective ways. Sometimes there are laboratories, computer rooms, very expensive rooms for teaching music, technology or sport but little attention has been paid to the use of such resources and the kinds of aims which can be met through such resources. Teachers may work best when they are confident, not only in their knowledge base but also in the resources which can enable them to develop the minds of the next generation. Harlen and Holroyd (1997) reveal what can happen when teacher confidence is not good in the context of science teaching.

Haghanikar (2003) showed very clearly in a university context that it is quite easy for students to take a course, pass the examinations well but show very little understanding of what the ideas mean and how to use them. Although set in one subject area at a specific level, this may well be a very common problem. It then becomes very difficult for the students to develop confidence in their abilities. Lack of understanding may well make the approach to new problems very difficult. The student feels uncertain and uncomfortable. Confidence may well evaporate.

The problem is that education has often been determined by the subject matter to be taught and its logical ideas, neglecting the needs of the learner and the way the learner mind actually works when trying to make sense of what is being taught. Johnstone (2000) considers this in relation to chemistry but the principles might apply widely.

Thus, education seeks to prepare individuals to be active participants in society: to create, produce and work in society. It is logical that the individual is part of the society and cooperative skills will be needed as well as the development of attitudes which enable the individuals to see themselves as part of a wider group. There is an interplay between the aims of education to benefit individuals linked to the aims of education in enabling society to move forward. On top of this, in a world where communications and travel are growing exponentially, the learner needs to see himself in an even wider context. After all, no individual or country can insulate itself from world issues (like the development of the internet, climate change, changes in trade and economics).

In the light of this, what is the *substance* of education? What are the generic skills which need to be considered?

1.4 Skills Arising from Education

The skills are, perhaps, endless and difficult to reduce to any short list. Perhaps, they can be grouped under headings such as:

Cognitive skills
Attitudinal development
Practical skills
Social skills
Ethical perspectives

It is not suggested that this list is comprehensive. Bloom (1956) suggested six hierarchical levels of cognitive skills: knowledge, comprehension, application, analysis, evaluation and synthesis. Yang (2000) picked up Johnstone's ideas when she suggested that the list is not really hierarchical in that knowledge is the basis of the other five but each of the other five is a separate skill in its own right (see figure 1.1).

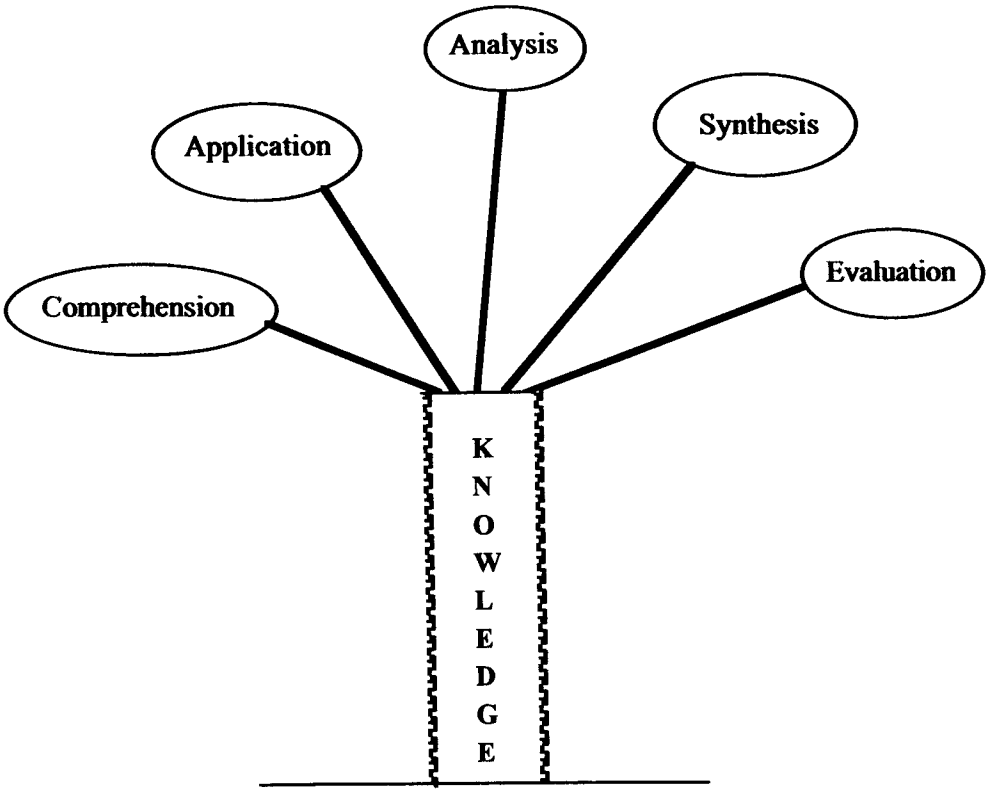


Figure 1.1 Some Cognitive skills (from Yang, 2000, page 7)

How does confidence relate to this? Too often by over-emphasising the recall of knowledge, the other five cognitive skills have been under-valued. The question then is how to develop the confidence in the learner so that he can develop and apply these skills, yet recognising that they are difficult to apply when there is a lack of knowledge.

The development of attitudes is a much neglected area in education (see Reid, 2006). This will be discussed later in this thesis and related to confidence. Perhaps the other three areas (practical skills, social skills and ethical perspectives) can be illustrated by thinking of the education process in the training of a doctor. Such a person will not only need much knowledge and other cognitive skills but will also need practical skills (as in surgery), high quality social skills (in relating to worried patients, for example) and a heightened ethical awareness (in deciding what is acceptable to do or not do). Education needs to address such areas and the successful learner will need to have a balanced confidence in developing practical skills, social skills and ethical perspectives. How it can do this is a much more difficult problem.

However, before outlining the approach used in this study, it is necessary to look briefly at Saudi education in that this study is set in that country.

1.5 Education in Saudi Arabia

Since the present study is mainly looking at different aspects relating to students' ways of learning and studying in (mainly) higher education in Saudi Arabia, it was important that the education system in this country should be understood and introduced to the reader. This section offers a brief description about how the education system operates in Saudi Arabia.

In the Saudi education system, there are 12 years of education, not compulsory but most attending: six years primary education (age 6-12), three years secondary education (age 13-15), and finally three years of high education (16-18). Each year has two terms, each of which lasts for four months.

At the end of each term, students sit formal exams and those of the second term determine whether the student will pass the year or stay and repeat the same year. If the student does not pass a year on two attempts, he/she will have to be transferred to be a special student who is able to continue education by sitting exams without being able to attend classes. The only year where students sit national exams is in the last year in high school where the student needs to enter university. University degrees last for four years. Subjects and numbers will be depending on the field of study.

As they go through their education journey in Saudi Arabia, skills of thinking, understanding, problem solving and those associated with critical thought are largely ignored for the students. The only aim is to pass examinations and to gain high marks, this being achieved by the memorisation of information and its recall under test conditions. It is engrained in students that the reason for going to school is to perform well in examinations, thus to able to proceed to the next stage.

This is a special problem in the final year at school. Success in national examinations is critical in that this is the key to the possibility of higher education. Great effort is therefore expended in gaining knowledge and information for these examinations. It is very common for students to undertake extra private study at home, with tutors. Overall, the whole system is examination driven and the focus is on correct recall of as much relevant information as possible.

The effect on parents is also considerable. They often make great efforts to encourage hard work and memorisation. They may be prepared to spend money on extra tuition to aid examination success. Getting results for their children is critical. However, asking parents or students about the usability of all the memorised information and knowledge at university is a rare question. Such a question is never really addressed by parents, teachers or students.

The Saudi Ministry of Education designs the curriculum and the teaching material. All curricula are the same around the country, even in private schools, and the style of teaching is teacher-centred where the students only copy what the books and the teachers say. The description of the good successful student is one who copies what the text books say as accurately as possible.

At the present time, the Ministry of Education is trying to introduce new technology in classes: computers laboratories and science laboratories; but unfortunately, teachers and classes yet are not qualified to use them effectively. Indeed, even reading libraries or reading rooms are not available in the majority of the schools, reducing the scope for students to gain wider knowledge or skills through reading.

Alsonbol *et al.* (1996) argue that, to be able to give the students the chance to learn everything from the past and present is an impossible plan in education. Unfortunately, the education system focuses on known facts more than focussing on how information can be obtained and teaching students how to search for knowledge. Thus, the system is only helping the students to recall information when they need it to pass examinations; it is not considering attitudes towards learning and logical ways of thinking. This kind of learning is preparing the next generation only for tests but not for life.

Alsonbol *et al.* (1996) also note that everything moves so fast today and ideas can be promoted very rapidly. For example, teaching the students how to use a computer is a good thing but helping them to be able to learn how to react to new ideas, new programs and new insights is more important. Students need to up-date themselves by means of the new technology more than learning the technical side of this technology. They need to develop research skills, group working skills and flexibility to face change. From their point of view, they see students in Saudi simply memorising information uncritically and storing it with no concern about how it applies in life, how to weigh information for its validity or truth, how to analyse and evaluate.

They argue human resources are the principal and critical assets in the development of the country. However, unfortunately, in Saudi there is a cyclical relationship between the learning and recalling; the memorising and summarising of books, and short examinations. There is a need to develop meaningful experiences at school level where students can apply ideas, experiment (intellectually and practically) and develop the key skills of creative and analytical thought.

It is amazing that, in a country with so much wealth, the education system is still largely at a stage which was left by many other countries over a century ago. It does offer some kind of explanation why the country relies so heavily on workers from overseas to run the major industries which can generate wealth (Saudi Arabia: Country Overview, 2006)

Al-Hamed *et al.* (2004) assume that the teacher-centred style is driving the students in Saudi to be more negative, less confident and more anxious about the marks and grades at the end of the year. The teacher gives the lecture, asks for explanations, gives homework, and the students do nothing except answer some questions asked by the teacher just to make sure students have memorised what the teacher has been saying. In the end, this generates a student population who have no idea about working in groups, no experience of discovering, and, even more seriously, no insight or inclination to cooperate to help a group of people to succeed in anything other than being able to recall in order to achieve grades. They argue that technology in teaching is hard to apply in Saudi Arabia because teachers are not motivated to develop the skills are needed in using technology or are not qualified to do so.

The university system tends to continue with the same approach, lectures delivering information which is to be memorised and recalled. The educated output of the system tends to be the generation of students who can recall knowledge for examination purposes (often forgetting much of it soon after) and who have little or no critical faculty. There is little confidence when it comes to knowing how to find out, how to consider information critically, how to evaluate, analyse or be creative with ideas.

1.6 The Themes of this Study

Even a superficial consideration of the aims of education and the way Saudi education functions reveals a massive gap in thinking. It is almost as if Saudi education has still to enter the 20th century, ignoring moves into the 21st century. It seems that there is a fear: fear of enquiry, fear to let go of the securities of factual information, intellectual fear, fear of letting students ask questions and of seeing education in its wider social and global dimensions.

Confidence is one major opposite of fear. When learners are confident, they are perhaps willing to take 'cognitive risks' (see Reid and Yang, 2002 b) so that they can launch into new areas of thought and enquiry, making themselves better equipped to face a world where change is the only certainty.

This study is set in Saudi Arabia and in the particular educational context of that country. However, it also seeks to explore the nature of confidence and to see what, if any, aspects of the educational journey assist in making that confidence accessible to students. It is recognised that any outcomes from this study may not be neatly transferable to other countries and educational cultures.

The study starts by exploring what is meant by confidence, specifically in an educational setting, and then moves on to consider how what is held in memory relates to formation and development of confidence. In thinking of confidence, it is suggested that confidence can be seen, at least in part, as an attitude towards oneself. It is how a person sees himself in the context of a task or opportunity. This is explored further in that attitude measurement is well established and may offer a way to make measurement which might throw light on the nature and development of confidence.

A series of experiments is then described. This starts by an attempt to explore several aspects of confidence to see to what extent confidence is a generic characteristic and how academic confidence might relate to that. Academic confidence might be related to specific cognitive characteristics or to views of learning. This is explored next.

Students show quite diverse learning characteristics (sometimes known as learning styles). It is possible that these relate to the development of academic confidence and this is considered next. Finally, a range of aspects of the educational process are looked at. These

include how courses are designed, delivered and assessed.

The overall aim is to try to find out what aspects of the processes of teaching and learning seem to be important in enabling student confidence to grow and develop. One obvious area is the personal characteristics of the teacher but this is beyond the scope of this study. The focus here is on the learner and the nature of the learning process.

The starting point is an attempt to try to describe and define what is meant by confidence and, specifically, confidence in a setting of learning.

Chapter Two

Self-Esteem and Confidence

2.1 Introduction

In the world of teaching and learning, confidence is often seen as an important issue. Teachers are well aware that a lack of confidence in the student may prevent the learner from making the necessary effort and thus not perform as well as his or her capability might suggest. Confidence can often arise as a result of an experience that was perceived as being satisfactory in some way. Thus, Reid and Yang (2002b) noted that confidence was lacking when secondary school pupils faced a new and open-ended problem but, after the completion of the first such problem, confidence was observed to grow markedly when facing subsequent problems even when the pupils were finding the tasks difficult. Students having experience in a non-threatening and supportive context generates a remarkable rise in observed confidence. Yang (2000) also reported the growth in confidence did *not* seem to lead to better performance in her open-ended problems. However, it did mean that pupils approached these tasks more enthusiastically with more self-belief and assurance.

Nonetheless, confidence is an elusive concept. In an academic context, it relates to success but is not simply a product of success and may not necessarily lead to success. It may involve perceptions of how others see the learner and attitudes towards the subjects being studied. It encompasses the context of learning tasks and relates to how learners see themselves, how they see others and how they think others see them.

Indeed, it might be thought that confidence is some kind of overall ability or aptitude: a generic characteristic. It is possible that a particular school pupil or university student is simply a confident person and that confidence carries over into study and examinations.

The concept of confidence will be explored in this chapter, the aim of which to see what is known in the field of psychology as it might apply to learning situations.

2.2 Self-esteem and Related Ideas

Confidence is not an idea which occurs much in literature pertaining to psychology. There is an emphasis on the individual's view of self, on self perception and on self-esteem. These related ideas are discussed here.

Schneider (1976, p. 336) argues that,

> *"All of the theorists on self agree that the self is something which has to be developed. Indeed, most theories assume that the self is not present in any form at birth. The role of parent's evaluations seems quite clear. It is important to recognise that one's attitudes, behaviour, and others evaluations are linked in a tightly integrated, mutually causal relationship. Positive self-evaluations may cause behaviour which leads to positive other-evaluations which in turn may confirm or modify the positive self-evaluation".*

It is very obvious that a person's perception of self will depend for its initial formation on the influence of parents but Schneider makes an important point when he stresses that confidence depends on evaluations and that such evaluations are linked tightly to contexts and causal relationships. From this, confidence can perhaps be seen as a positive self-evaluation with respect to something or someone.

The concept of evaluation has many aspects. The word can be used in the sense of evaluating something to see if it is correct or appropriate. Thus, for example, a school pupil might be trained to look at the answer from a mathematical manipulation and evaluate if it is reasonable as an answer or what might be expected. This can be seen as related to the analysis of Bloom (1956) whereby he lists evaluations as one of several higher order thinking skills. In other words, this is a cognitive evaluation.

However, the word reappears in the literature of attitude definitions. Thus, as far back as 1958, Rhine referred to an attitude as a "concept with an evaluative dimension" (Rhine, 1958) and this drew attention to an important insight. Attitudes involve more than the cognitive and, in particular, the "evaluative dimension" proposed by Rhine has assumed greater importance in later work (e.g. Chaiken and Eagly, 1993).

Reid (2006, p. 4) observes that,

> *"In some ways, this is what distinguishes an attitude from other latent constructs. A person may know, may have feelings or may experience. However, it is possible that these may lead to evaluation and subsequent decisions. Thus, for example, a school student may have studied some chemistry. In doing this, the student gains knowledge of chemistry and of the learning of chemistry. The person may come to have negative feelings towards chemistry and the acquisition of chemical ideas. Indeed, the behaviour demanded of the student in such studies may be objectionable. Overall, a negative attitude towards chemistry and study in chemistry has developed, such an attitude being expressed in negative evaluations of aspects of chemistry learning. In turn, such an attitude may lead to the rejection of further studies."*

Confidence is based on some kind of self-evaluation. In that sense, it has both cognitive and attitudinal aspects. It involves self-knowledge, it involves an attitude towards self but it also involves attitudes related to contexts and other people (see figure 2.1). All of these aspects will be explored in this study.

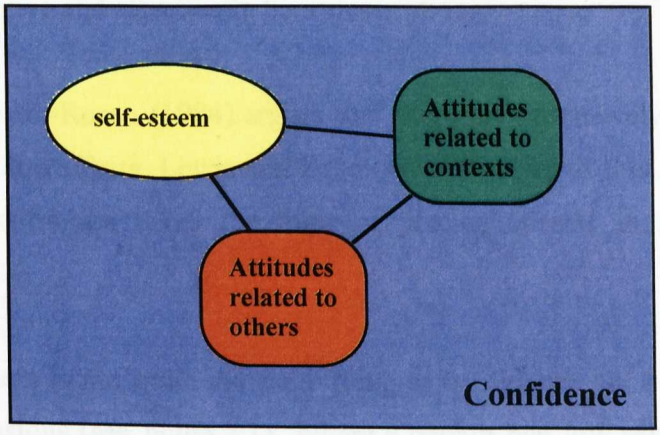


Figure 2.1 **Confidence, Self-Esteem and Attitudes**

Baumeister *et al* (2004) argue that self-esteem is essential for psychological health. They argue that increasing self-esteem might not help to increase achievement and performance; however, it helps to be more assured of being successful to do something and feel happier about it.

The cognitive and attitudinal features are apparent in many studies. For example, Cassidy (1990) argues that there are two main dimensions which have been found to determine self. She speaks of 'self-cognition' and 'self-affect'. She defined terms related to self-cognition to include self-concept, self-image, self-schema and self-understanding, and

terms related to self-affect to include self-esteem, self-worth, self-evaluation, and self-feeling. From her point of view, self-cognition is a descriptive reference to the self: a definition of character and qualities of the self, without necessarily being evaluative. However, she talks of self-affect having terms related to the value of the self.

Perhaps value is not quite the right word. Self-affect is more specifically the kind of feelings a person has about oneself. Such feelings may well be able to be grouped to give the person a sense of self-value. Beliefs can come together to give rise to attitudes and attitudes can come together to give values. Thus, self-beliefs can have strong affective dimensions and lead to attitudes towards self. Self value arises from these attitudes.

Many years ago, Coopersmith (1967) described self-esteem as a "conclusion of value" that the people maintain toward themselves. Later, Harter (1982) describes the feeling of general self-worth as that of being satisfied and glad about the way that people act or think. Harter uses the idea of perceived competence to describe a person's perception of the skills in certain areas like sports, school, and social networks. Both seem to be identifying the cognitive and affective in their descriptions.

Cicchetti and Schneider-Rosen (1984) argues that there are extensively clear distinctions between cognitions and affects. Lewis and Brooks (1979) refer to this as the "categorical self" because the definition takes the form of placing oneself in a whole range of categories.

Of course, self-esteem is not quite the same thing as confidence but both have cognitive and affective dimensions (see figure 2.1). Where a person has low self-esteem, then this may well result in low confidence in facing a new task. However, self-esteem is more of a total description whilst confidence might be very task specific. Thus, a person with low self-esteem may well face most tasks with little assurance of success while a person of high self-esteem may, on one hand, feel confident in one task (writing an essay, for example) whilst, on the other hand, show a complete lack of confidence in another task (solving a differential equation, for example).

For people with low self-esteem, there is a high risk that they will draw inaccurate assumptions about themselves. They may assume that they are insignificant, because they are unable to do what other people expect them to. The question to be posed is,

from where does the person get his or her self-perception or is it an innate characteristic? Harter (1982) argues that 8 year old children are able to make direct judgements about their competence in different domains but that, by this age, they are also able to construct a view of this general self-worth as a person, over and above this specific competence judgement. If his observations are correct, self-esteem is developed early in life and is not the same as confidence.

In considering behaviour in general, the environment may have elicited the behaviour or, perhaps, the behaviour probably occurred because of internal needs, wants, or abilities (Bem, 1972). There are many aspects which can affect and influence self-esteem (Coopersmith, 1967; Bowlby, 1973; Scroufe and Waters,1988) .For example, Coopersmith (1967) described self-esteem as a "conclusion of value" that the people maintain toward themselves. This value can be gained from parents, friends, or any other experiences that the person encounters through his/her life. If the person was told many times that he is good in sports and had many experiences of being competitive in athletic competence, then it will be clear that he will have a positive athletic self perception. Harter describes the feeling of general self-worth as being satisfied and glad about the way that people act or think. Perceived competence is a term used by Harter (1982) to describe a person's perception of the skills in certain areas like sports, school, and social networks. Main et al, (1985) discovered that children's self-esteem or concept is highly related to their parents or caregivers.

> *"The knowledge structure, or working models, that develop in these contexts are thought to shape and constrain interpersonal behaviour by providing roles of information processing and affect regulation and expectations about how others are likely to respond in a variety of situations."* (Main *et al*, 1985,p.69)

Harter (1985) looks at low self esteem and suggests that children, in academic contexts, might think that goals set for them are not achievable. They see themselves as simply having problems. They may believe they are 'bad' while, in many situations, improvement is impossible. In social contexts, they might feel odd and not accepted whereas, from an athletic perspective, they may conclude they are awkward and be anxious of being involved in any form of sporting participation, there is an increased feeling of humiliation in public. It seems important that, in order to improve self-esteem and confidence, we need to offer positive experiences where some success can take place.

2.3 Self-aspects

The concept of social self is a very popular topic in the literature and in many studies relating to the self-concept field. Accordingly, popularity and social acceptance will be considered in this section. It can be concluded that most self-aspects, like school achievement, athletic competence, acceptable behaviour, are linked in some way to social self.

Social relationships can involve the relationships that the student has or has built in school or anywhere else that include peers in his or her age group. Franke (1985) argues that people experiencing peer difficulties display negative examples of self-perception, including low perceived social competence, low self-efficacy and low prospects for social outcomes and peers' judgement.

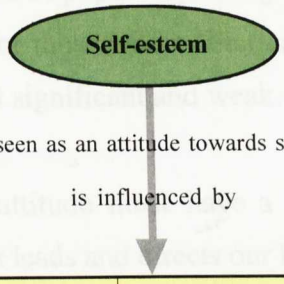
Coleman et al., (1964) discovered that male high school athletic students had higher self-esteem than those who were not athletic. Similarly, the success of various diet books and the popularity of hairpieces, dyes, cosmetics, and bodybuilding exercises suggest that physical attractiveness is important for many people. Therefore, satisfaction with one's body is related to self-evaluation and that being shorter, taller, fatter, or thinner than average is connected to feelings of low self-esteem in men (Schneider, 1976) and Pike and is probably true for women as well.

Harter suggests that even school competence is related to social interaction. Children are becoming increasingly better at judging their scholastic competence. Undoubtedly, this results from their greater ability to understand how others are evaluating their competence. Thus, they come to share a common set of criteria with teachers, peers, and parents (Harter, 1985).

2.4 The Influence of Circumstances

Self-esteem is important and will affect and influence the way that people judge themselves. Reid (2003, page 32) suggests that "*attitudes express our evaluation of something or someone. They may be based on our knowledge, our feelings and our behaviour and they may influence future behaviour.*" Self-esteem can be seen, at least in part, as an attitude towards oneself. If seen this way, self-esteem will develop based on

knowledge, feelings and/or behaviour. This may involve the self as well as others and also circumstances and experiences. This can be illustrated in figure 2.2.



	Self	Others	Contexts
Knowledge	What I know about myself	What I know about others	Experiences I remember
Feeling	What I feel about myself	What I feel about others	Experiences which have affected me
Behaviour	What I do or have not done	What others do or have done to me	Activities in specific contexts

Figure 2.2 Influences on self-esteem

Figure 2.2 is not meant to be comprehensive. It seeks to illustrate the point that self-esteem can develop from three perspectives: self, others, contexts. The contents of each of the nine boxes are illustrative rather than definitive. Indeed, what a person knows or feels may not necessarily be correct in any objective sense. However, it represents their standpoint.

If the student does not feel good at school and believes that it is important to be good, he/she will not feel good about himself. In contrast, if the child feels ugly and believes that it is not important to be attractive, he or she will not feel bad. So Harter (1985) argues that the emotion and beliefs depend not only on themselves, but also on how important each area is believed to be. A child may be very intelligent, but may live in a social framework where academic skills are not valued. If the child believes that being intelligent is not of high significance, then their academic skills may not increase their self-esteem.

> "*The extent to which an area is important to the person and more specifically how much he expects and desires to achieve success in it, play a direct role in his evaluation of himself.*"
>
> (Harter and Pike, 1984, p. 117)

Rosenberg (1979) has also emphasised the role in the importance of giving attribute to the individual. In his terminology, the 'psychological centrality' of the characteristic in

question must be established and be specific because it will influence the global self-esteem. He found that, among those for whom likeability was central or important, the relationship between self-evaluation of popularity and global self-esteem was very strong; on the contrary, for the samples for those whom the quality of popularity did not count that much, the relationship was not significant and weak.

Reid (2003) points out that an attitude must have a target: a person has an attitude towards something or someone. It leads and directs our behaviour and feelings toward the environment around us. Having a target is important in holding an attitude and this target should be built according to the importance of this attitude. On one hand, people who believe that being good at school or being competitive in sports will produce clear targets to achieve high standards in these things, and that can influence their self-view. On the other hand, if being good in sports or school is not important, the target of improvement will be weaker and self-view will not be influenced.

If attitudes are seen as being able to offer a positive view about the possibility of achieving goals and targets in an academic setting, then such attitudes are held in long term memory and can be recalled. They will have developed on the basis of past experiences and such experiences are also held in memory. Thus, memory plays an important role in the development and retention of self-esteem. This is now discussed further.

2.5 Self-esteem and memory

Butler and McManus (1998) argues that it is not only the issue or the event that affects self-esteem. It is also affected by the way that people recall their own past and organise it as a reference to their attitudes. It may not be apparent to others who are viewing the situation, but it will be significant to the individual.

> "*Meaning and the reason of events are more important than what has happened in the past. If self has been meaningful to a person so it will be well recognised later in a situation even if these situations are simple but it has to be meaningful to the individual.*"
>
> (Butler and McManus, 1998, p .42).

Goals and emotions are considered by Conway and Pleydell-Pearce (2000) as one of the major foundations of categorising and recollecting the memory. They view the working self as grounded by memory where people normally store their goals and emotions. Working self's goals depend on working memory processes which categorise goals in hierarchies that serve cognition and behaviour. Conway and Pleydell-Pearce (2000) describe a model of autobiographical memory:

> *'Memories are transitory mental constructions within a self-memory system (SMS). The SMS contains an autobiographical knowledge base and current goals of the working self. Within the SMS, control processes modulate access to the knowledge base by successively shaping cues used to activate autobiographical memory, knowledge, and structure and, in the way from specific memories. The relation of the knowledge base to activate goals is reciprocal, and knowledge base 'grounds' the goals of the working self. It is shown how this model can be used to draw together a wide range of drivers data from cognitive, social developmental, personality, clinical and neuropsychological memory research.'*
>
> (Conway, Pleydell-Pearce, 2000, p. 261)

Consequently, it is clear that memory is particularly important in determining how people perceive themselves. Memory is the key resource in times where individuals need reference to take action in situations they have experienced before. If memory is the main source of self-perception, it also controls the way people believe in themselves and behave in the way they do and it also guides them to solve their own problems, using the same routine they have developed in the past.

> *"So what goals the self has will be depending on one's own memories on how useful and effective they are. From his point of view the working self makes available memories and knowledge that are congruent with the goal of the self."*
>
> (Conway, 2001, p. 1367)

Robinson (1992) argues that we use our own past experience to build models that allow us to understand our inner world and that of others and thereby to predict the future. Lockhart (1989) says that the main work of autobiographical memory is to facilitate the updating of the concepts that help individuals to understand the past and what to expect in the future. Thus, from his point of view, autobiographical memory is a type of resource that individuals use to organise the present and to expect the future.

Conway (2003) believes that autobiographical memory is essential to structure cognition and behaviour. He argues that cognitive mechanisms facilitate many types of processing such as goal evaluation and generation, perception of one's self, connection to reality.

How people see themselves as they move into the future and how they behave the way they do at the present time may both be linked directly to their memories. "*Knowledge of the self in the past and as projected into the future has been seen as one critical type of self-knowledge*" (Neisser, 1988,p.178). Pillemer (1992) assumes that there is a psychological and emotional influence on the self when recollecting one's own history.

Moreover, Wilson and Ross (2003) revealed that autobiographical memory is important in the creation of identity. He found evidence of the link between memory and identity. He contributed that an individuals' current self-views, beliefs and goals influence their recollection and appraisal of former selves. However, peoples' self-views are affected by what they recall from their past and how they recall their selves and episodes of life.

The overall key thing to note is that confidence, seen as a kind of attitude towards oneself, is strongly related to self-esteem; and past experience, stored in memory, will be a vital underpinning. Positive and affirmative experiences will strengthen self-esteem and confidence will grow. Such experiences will be strongly connected to family and societal influences and the latter will be influenced by social culture.

2..6 Cultural Differences in Self

The influence of culture on self-perception and self-esteem has also been explored by researchers. Two broad but strong cultural influences have been identified by Kitayama:

> *"Individualistic cultures value and promote self-actualisation, individuation and autonomy. They stress attending to the self, the appreciation of one's differences from others, and the importance of asserting the self. Individualists give priority to personal goals over the goals of collectives. Collectivistic cultures value the pursuit of common goals, group harmony, and shared identities. They favour an approach that involves attending to and fitting with in others and the importance of harmonies of interdependence with them."*
>
> (Kitayama, 1997, p .224)

Roland develops these ideas further (Roland, 1991, p. 165):

> *"Collectivists either make no distinctions between personal and collective goals, or if they do make such distinction, they subordinate their personal goals to the collective goals. In some Asian cultures, self-experience is that of other-self in contrast to the highly individualistic I-self of Westerners that form a dualistic relationship between 'I and you'."*

Cultural perspectives in collectivism and individualism ought to be apparent not only in overt behaviours and activities but also in the organisation of thought, including memory:

> *"A second consequence of having an interdependent self as opposed to an independent self concerns the ways in which knowledge about self and others is processed, organised and retrieved from memory."*
>
> (Kitayama, 1997, p .232)

Accordingly, students in collective cultures are expected to be more strict in doing the exact things laid down by their teachers. Ateachers might be classified as one of the important adults who can evaluate students for being good or bad but not for being creative and unique. These cultural dimensions may have enormous importance in developing confidence.

In such a collectivist society, young people may respect those who are older because, from their point of view, elders know better and are supposed to be experienced. Accordingly, meeting the expectations of others is considered to be a healthy way to think and act in such society. Also, it is accepted that parents bring up their children in such a way that children do as they are told. Regarding the use of group discussion in this cultural setting, a problem of sharing information and creating ideas will be clear because authoritarian relationships are emphasised and equal collateral roles are not represented.

Sue and Sue (1990) claim that, in some cultures, relationships tend to be more lineal, authoritarian, and hierarchical (traditional Asian culture) in which the father is the absolute ruler of the family. Some cultures may emphasise horizontal, equal, and collateral relationships, while others, like the US society, value individual autonomy and group relationshis whish tend to be more equal.

It is true that there are roles in western societies and criteria that put pressure on an individual's behaviour but their strength and power differ from that in an Arab society where many children still behave and interact in the way taught to them by their parents or care givers. Vygotsky (1978), makes the point very clearly:

> *"Each culture provides individuals with the tools necessary for becoming a competent member of that culture. Tools are conceptualised broadly as culturally appropriate forms and strategies for performing activities and tasks. Tools that cultures provide for individuals are both internally and externally directed. The skills that individuals learn are used to regulate their activities and performance in the world, but they are also internalised and used to regulate inner activities."*

Saudi culture is associated with a collectivist orientation that asserts the importance of the needs, interests and characteristics of social units like family and society.

> *"Autobiographical memory in cultures that value and encourage common values and groups as compared to individual identification, the individual's best strategy for explaining the present and predicting the future is to look to common cultural myths and narratives. In individualistic societies common narrative no longer exists and the individual has the freedom and burden of creating a unique life story both to serve their own needs and continuity (self-function) and to others (social function)".*
>
> (Aron et al, 1991, p.241)

Trafimow *et al.* (1991) argues that the individualistic culture accepts more cognition about the private self and less about the collective self than a collectivistic culture. Also, in evaluating individuals, collectivist orientation stresses academic achievement. Thus, even school competence can be sought for the sake of others: education in the Arab family is linked with assuring that the academic success of the child is an essential source of delight and satisfaction for the whole family.

In this context, confidence has to be seen not only as an element of the awareness of self but also a component of self awareness as part of a larger social grouping. However, it raises the question about whether confidence is to be seen as a social phenomenon rather than an individual trait. In a Western society, it is possible to speak of developing confidence and this is to be seen in personal terms. Perhaps, in an Arabic setting (such as Saudi Arabia) where the family and social context is so strong, such an idea of confidence development has less meaning. However, is there such a thing as 'family confidence'?

Finally, confidence is important in teaching and learning. In the present chapter the influence of confidence on academic self perception has been mentioned. Perhaps, teachers have to consider the students' achievement as a reward which might support their academic self.

Low self confidence in learning can keep the students away from trying and gaining more experience. The experience of learning needs to be updated by the confidence in itself which feeds the learning. Confidence, in itself, might not have affected achievement directly (see Yang's results, 2000) but it did mean that pupils approached these tasks more enthusiastically with more self-belief and assurance.

Confidence was observed to grow markedly when facing problems even when the pupils were finding tasks difficult (Reid and Yang, 2002b). This means that, even if confidence does not influence achievement directly, it does affect the passion to learn or to solve problems. It might be suggested that, while growth in confidence does not guarantee better performance, it is very likely that low confidence levels will hinder learning in that students will be unwilling to attempt tasks and unprepared to take risks in developing new understandings.

The next chapter will explore the possible relationship of confidence to cognitive aspects of learning.

Chapter Three

Learning, Memory and Confidence

3.1 Introduction

In the previous chapter, there was an initial discussion on the possible role of memory and self on students' achievement and the psychological feelings of performance. An important feature of a person is the desire to reach some kind of consistency: there is a need that what is familiar forms some kind of consistent picture; equally, beliefs and attitudes also require a degree of consistency. This is well expressed in the balance models in early work done on attitudes (Conway, 2003; Butler and McManus, 1998; Reid, 2003). Indeed, Reid (2003, p.33) points out that one major function in the development of attitudes is the role they play in cultivating a consistent understanding of the self, the world around them and relationships. This follows much earlier work by Katz and Sarnoff (1964). Indeed, attitudes may change to retain consistency while perceptions of self may change to fit initially incongruent autobiographical knowledge or memories themselves may be alerted, misremembered, or inhibited in order to preserve the self from change.

The focus of this chapter will be on learning processes and memory. Nonetheless, it has to be recognised that beliefs and attitudes held by an individual based on their previous experiences are also very important. Many years ago, Hastorf and Cantril (1952) found that memories are encoded in terms of the self while Conway and Dewhurst (1995) argues that experiences with strong self-references may receive privileged encoding that render them highly accessible and capable of evoking intense experiences of recollection such as vivid and flashback memories.

Understanding of the learning process and the nature and role of memory has developed enormously over the past 50 years. Some of the main developments will now be outlined and their possible significance for the development of confidence related to learning will be discussed.

3.2 Memory and Learning

Many important insights have arisen as a result of thinking about learning in terms of the way the individual processes incoming information. Most information is received in formal learning by means of sight or sound. Some incoming information is held for a very short time while other information seems to be retained permanently. Indeed, most incoming information is discarded immediately (Slavin, 2000).

These observations and much subsequent research (e.g. Atkinson and Shiffrin, 1968 ; Anderson, 1995; Ericsson and Kintsch, 1995, Brunning *et al*, 1995; Ashcraft, 1994) have led to the idea of a multi-stage model of the way memory works. In simple terms, this suggests three stages:

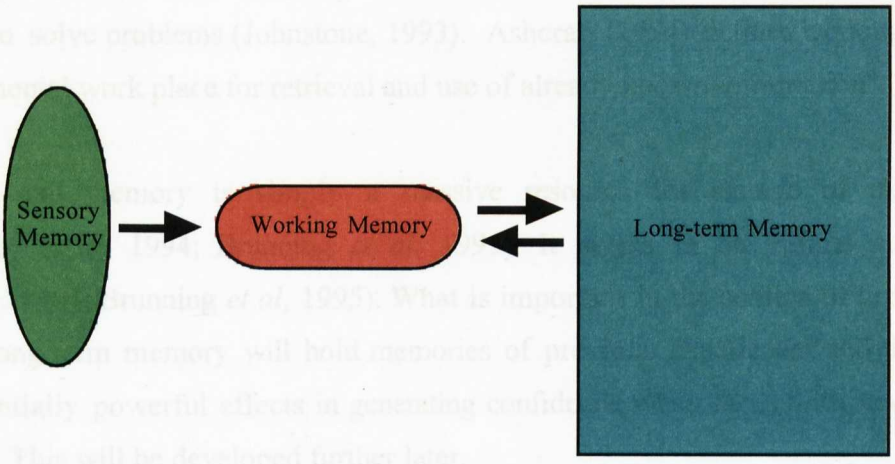


Figure 3.1 Multi-stage Memory

The sensory memory receives information from the senses, selecting what to pass on to the working memory before it is processed. The information may be discarded or passed to long term memory for storage. Ashcraft (1994) notes that short-term memory includes an impermanent stable store that is limited in the total amount of information it is able to retain.

Sensory memory is known as the sensory register (Atkinson and Shiffrin, 1968) and perception filter (Johnstone, 1991). It can take in a lot of information but it can only hold it for very short periods of time (Slavin, 2000). Incoming information is mainly in visual and auditory forms (Ashcraft, 1994; Brunning *et al.,* 1995). Visual is held for one second while auditory is held for approximately four seconds. The selection of information to be passed to the working memory is known as perception (Brunning *et al.*, 1995). The major function of the sensory memory is to select information that is perceived important to the learner.

Johnstone (1993) points out that the perception filter (his phrase) is driven by the long-term memory. In other words, what a person already knows will influence the selection process for new incoming information. This is clearly very important in all learning. Indeed, the long-term memory will not only hold previously learned knowledge and understandings but will also hold memories of learning experiences, satisfaction in past learning, success and failures in past learning. All of these will influence the selection of new information to be admitted to the working memory. Clearly, confidence generated by past experiences will also influence the selection process and may be an important factor in future learning and success.

The working memory is the place where the learner thinks about new information, relates it to previously held information, tries to understand what is incoming as well as making attempts to solve problems (Johnstone, 1993). Ashcraft (1994) defines working memory as, "The mental work place for retrieval and use of already known information".

The long-term memory is simply a massive resource for storage of information (Johnstone, *et al*, 1994; Brunning *et al*, 1995). It seems to be infinite in capacity (Baddeley, 1994; Brunning *et al*, 1995). What is important in the context of this study is that the long term memory will hold memories of previous experiences and these may have potentially powerful effects in generating confidence when faced with new learning situations. This will be developed further later.

The working memory is of very limited capacity. Miller (1956) measured the capacity of working memory (he described it as short term memory). He found that the adult person could hold, on average, 7 pieces of information at the same time. Indeed, his paper was entitled: "The magical number 7±2", showing how most adults have a capacity lying between 5 and 9. The capacity of the working memory grows with age (about 1 unit for every two years to the age of 16) but cannot be expanded. It is the rate controlling stage in all learning when learning is seen as understanding (see Johnstone, 1997).

The descriptions 'working memory' and 'short term memory' need clarified. Originally, the latter phrase was used in that this part of the brain was seen as simply a temporary memory. Later, it was appreciated that many processes (e.g. thinking, understanding and problem solving) also used space in this part of the brain and it was renamed as 'working memory'. It is a shared thinking-holding space. If there is much to hold, there is little space for thinking; if there is much to think about, there is little space for holding.

When the number of pieces of information to be held at the same time (plus space needed for thinking) exceeds the capacity of the working memory for an individual, then whatever task is being faced by that individual becomes more or less impossible. This has been found to be the basis of learning difficulties in the sciences (see Johnstone and El-banna, 1986). Of course, information can be passed through the working memory and stored in a rote fashion without understanding. This can often happen when the learning tasks make demands on the working memory which exceed the capacity. This is known to have the effect of generating negative attitudes towards the learning tasks and possibly related tasks (see, for example, Hussein, 2006).

The implications for confidence may be important. Thus, it is possible that overloading the working memory may not only lead to increased lack of understanding and the increased use of rote memorisation in order to pass examinations, but also to loss of confidence: the person feels (s)he is not coping. Such loss of confidence may have a major impact on future learning.

Johnstone brought together the idea of information processing with research from other areas of learning to present a model of the way the mind works in all learning situations (see figure 3.2). His model has been used predictively to underpin numerous studies which have explored learning and been found to offer very useful insights (Johnstone *et al*, 1998; Johnstone, 2000; Sirhan and Reid, 2001; Danili and Reid, 2004; Hassan *et al*, 2004).

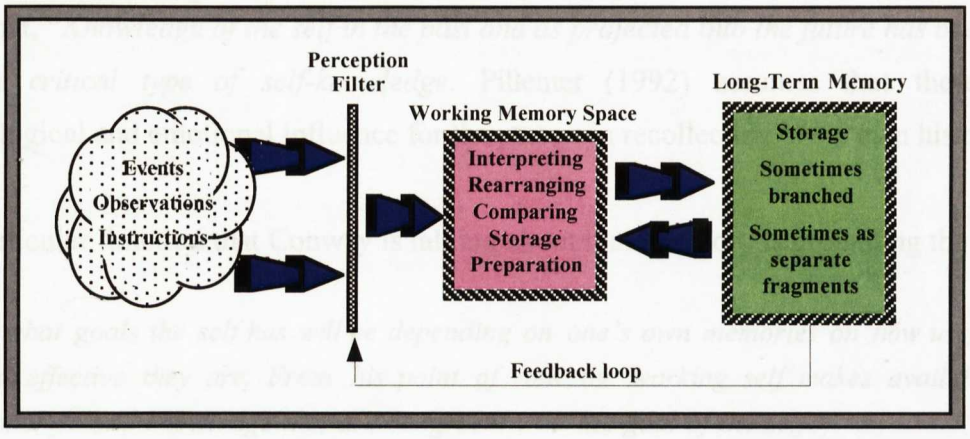


Figure 3.2 Information Processing Model (after Johnstone, 1993)

3.3 Autobiographical Memory and Confidence

Personal memories from past learning experiences and, perhaps, related experiences may contribute to the development of confidence. Such memories are stored in long term memory where they may influence the perception of incoming information (the perception filter) or may influence the processing of information in the working memory. Conway and Pleydell-Pearce note that,-

> *Autobiographical memory is of fundamental significance for the self, for emotions, and for the experience of personhood, that is for the experience of enduring as an individual, in culture, over time. There are characteristics types of knowledge with different levels of specificity.*
>
> (*Conway* and PleydellPearce, 2000, p.2)

Autobiographical memory is thus particularly important in providing and determing self. Autobiographical memory is a resource at times when individuals need reference to take action in situations they have experienced before. If memory is the main source of self-awareness, it is also controls the way people believe in themselves and how they behave .

Many researchers in this area (e.g. Barclay, 1996; Conway, 1996) believe that there is an effective relationship between self and autobiographical memory. From their point of view the normal and healthy adult person has the skill to search autobiographical knowledge and to build autobiographical memories in order to update his or her progress toward working aims (Barclay, 1996; Conway, 1996). Similarly, Neisser (1988,p.178) notes that, "*Knowledge of the self in the past and as projected into the future has been seen as one critical type of self-knowledge.* Pillemer (1992) assumes that there is a psychological and emotional influence for the person in recollecting one's own history.

The particular function that Conway is talking about that memory is grounding the self:

> *So what goals the self has will be depending on one's own memories on how useful and effective they are. From his point of view the working self makes available memories and knowledge that are congruent with the goal of the self.*
>
> (Conway, 2001, p. 1367)

Robinson (1992) argues that we use our own past experience to build models that allow us to understand our inner world and others and thereby to predict the future. Lockhart (1989) says that the main work of autobiographical memory is to facilitate the updating of the concepts that help individuals to understand the past and expect the future. So from his point of view, autobiographical memory is a type of source that individuals function to organize the present and to prepare for the future.

Conway (1996) claims that competence of autobiographical memory depends on its skill to support development and growth of the self. Baddeley (1987) maintains that autobiographical memory is essential in solving problems and building opinions and approaches that direct people's actions.

3.4 Information Processing and Problem Solving

Looking at specific physical quantities in relation to the learning of physics, MacGuire (1981) explored pupil and student understanding of the concepts underpinning various physical quantities (like inertia, kinetic energy, momentum) by giving a series of statements and asking the respondents to say what the physical quantity was and how confident they were that it was correct. This offered very useful insights in to the build up of an idea. However, a repeated observation was the way confidence ratings rose and then fell.

When the respondents thought that the evidence pointed towards some particular answer, their confidence rose. Frequently, further information caused them to rethink or to change their direction of thought. Confidence was observed then to drop. This series of experiments, although set in a very specific context, suggest the importance of success in generating confidence. Where information and evidence all fitted together in a coherent way, success appeared to be in sight and confidence then grew.

In a very different area of enquiry (scientific thinking), Serumola (2003) also explored the rise and fall of confidence as school pupils were asked to see underlying patterns from observations derived from the playing of an academic game (Zieglar; Eloosis, 1974) which illustrated scientific thinking. Here again, when the pupils thought they had the pattern, and the observations seem to support the hypothesis, confidence rose. It was often observed to fall back as further observations raised questions about their proposed hypothesis.

Although both set in very specific circumstances, these two studies do suggest that confidence is tied tightly to a feeling of success which might be expressed in a feeling that a person has understood or grasped something, or solved a problem or achieved an answer which is correct. Confidence is thus related strongly to perceived success in such circumstances. It also shows how confidence (in such specific situations) can be caused to drop when some new observation challenges the road to success in some way. It might be deduced that confidence can grow slowly and steadily but can be easily lost when success is challenged. If this is so, it has major implications for the development of academic confidence in a more general sense. It illustrates something of the nature of confidence in solving problems.

In the context of a consideration of confidence, one area seems very important: problem solving. Problem solving is an integral part of life and, as such, holds an important place in education. Reid and Yang (2002a) summarised much of the literature in relation to the sciences and have noted the central role of such skills in living. In previous work, Yang (Reid and Yang, 2002b) observed that, again and again, confidence seemed very important for school pupils (aged 14-17) when they approached open-ended problems. Although these problems were set in a school discipline, they were very open and much more like the kinds of problems which humans face on a daily basis (see Reid and Yang, 2002a). A person with confidence seemed prepared to take risks in approaching a problem and this may have great significance in academic studies where new material may place intellectual demands of a new order on the learner. Those without such confidence in their ability to cope may simply capitulate and resort to memorisation while those with more confidence may be prepared to engage fully with the material until understanding arises. This has massive implications for learning at all levels. Reid and Yang (2002b) referred to 'cognitive risk taking' as a description of an attribute they observed when pupil confidence was high. By this they meant that pupils were prepared to experiment with ideas, take intellectual risks and try new approaches when faced with novel open-ended problems.

Many researchers (e.g. Lawton and Gordon, 1996; Kempa and Nicholls, 1983; Gayford, 1989; Bowen and Bodner, 1991) have been trying to define problem solving. It is tempting to describe problem solving in terms of a set of procedures to be followed but the difficulty is that such a set rarely works in all situations with all learners. Obviously previous knowledge and experience is an essential prerequisite in helping problem solvers to find a way to interpret a situation which is new.

According to Wheatley (1984), problem solving is defined broadly as "*what you do when you don't know what to do*". Similarly, Bowen and Bodner (1991) defined problem solving as: *"figuring out what to do when one does not already know what to do"*. Gayford (1989) saw problem solving as *"part of the process of investigation where the solution is not obvious to the investigator at the outset of the activity"*. All these descriptions emphasise the unknown or uncertain nature of problem solving. This distinguishes problems from exercises. In most school and university courses, most of what are described as 'problems' are, in fact, little more than exercises where a known procedure is applied to a given situation to reach a desired answer (see Bowen and Bodner, 1991).

Johnstone and Kellett (1980) found out that problem solving ability is linked with the ability to arrange or chunk the information provided in a problem in a functional way. Their evidence showed very clearly that working memory should not be overloaded with too many pieces of information. The limited capacity of what they called 'short term memory' will not allow the processing of this information unless it is grouped (or chunked: see Miller, 1956, who introduced this description) to enable it to fit into the limited space. The limiting nature of the short term memory (later described more accurately as working memory space) has been confirmed in many studies (e.g. Johnstone and El-banna, 1986)

Sleet *et al.* (2003) claim that long-term memory and working memory have important roles in solving problems. They consider that long-term memory aids the learners to recall specific solutions, which supports skills and knowledge. Thus, both working memory and long term memory have a role in problem solving.

When facing a new challenge, the working memory (where actual problem solving takes place) searches the long-term memory to seek a plan to offer a clear technique and know-how in order to analyse the new problem situation. Information processing thus offers useful insights into how this is actually done. At the same time, it is possible that working memory also picks up messages from the past which suggest that the problem can be solved, reflecting confidence in achieving success.

Perez and Torregrosa (1983) claimed that problem solving could be considered as an "investigative task". Garrett (1987) assumed that problem solving is a complex learning activity.The argument in this research is how can problem solving be related to confidence

and memory? And why can they influence the way that students adopt a specific strategy in their problem solving situations?

Niaz (1987-1989) demonstrated that working memory space is an important factor in gaining problem solving success. However, other studies (e.g. Danili and Reid, 2004) showed very clearly that the extent to which a person can use their working memory efficiently is also vitally important. Field dependency has been defined as the ability to see specific information in the context of surrounding information and this was found to be a determinant of the problem solving process (Ronning *et al.*, 1984).

After surveying the research literature, Reid and Yang (2000a, pages. 94-95) summarised the key factors influencing problem solving:

- *"**Procedures and algorithms**: While procedures and algorithms have some place, their value is limited. Using an algorithm does not equate to understanding and, therefore, to a move in to a new situation. Too many problems simply cannot be fitted in to any neat set of procedures.*
- ***Long Term Memory**: It has clearly been established that what is already known and how that knowledge was gained and stored will strongly influence new learning. Information already held may have been learned in one context which doesn't readily translate into another.*
- ***The Working Memory**: This space is needed to hold new information as well as accept information already held in long term memory. On top of that, the working memory space also has to have room to process information. With such a limited space, it is easy for overload to occur.*
- ***Confidence/Experience/Expectations**: Experience, especially successful experience, builds up confidence. Experienced confidence enables the problem solvers to use the skills and to look at a new problem and to be able to draw from past experience to say, 'it is something like this'.*
- ***Psychological Factors**: Factors like the extent of field dependency, extent of convergency-divergency, and the ability to develop representational skills (both mental and physical) may all be very important. It has been shown that field dependency is important while the ability to develop appropriate models is a key skill leading to success. It might be hypothesised that divergency would also be advantageous".*

One key thing to note is that, in their review, they pinpoint confidence along with experience and expectation as one the five broad factors affecting problem solving success. In later work conducted by Al-Qasmi (2006), she deliberately sought to develop confidence in open ended problems in biology with university students by offering them experience with several problems, always working in small groups. When faced later with an individual problem, the observation was that the students approached it with confidence. However, the importance of her work rests in the insights it offered into the way links between ideas held in long term memory had an influence on problem solving success. Perhaps confidence relates in some way to the way a person is able to access information from long term memory.

When people work on their own, confidence may grow if the learning or problem solving are successful, at least in some degree. Working with others might have two effects. For some, working with another person may merely expose their perceived or actual weaknesses and levels of confidence may fall. On the other hand, working with others may generate increased confidence in that the task to be carried out is shared and the possible blame for failure is shared.

Group working in problem solving has been given attention by many researchers. Johnson and Johnson (1975) found that, overall, it is better for students to solve problem within groups rather than individually. Perez and Torregrosa (1983) argued for putting the class into many groups while discussing solutions to any problem. He believed that, in facing challenges, groups search and analyse the problems in better ways than individuals by themselves. Group-working requires a change in perspective, moving away from a competitive culture in learning towards one where cooperative and collaborative learning are seen as acceptable and valuable. Indeed, Qin *et al.* (1995) pointed out that problem solving is a naturally cooperative process in ordinary life.

Slavin (1983) said that small groups support development in solving problems. When a student tries to solve a problem independently, he or she uses only his or her own past setting. In this case, the student will use her or his own learned skills and working memory space: success may be elusive. However, that does not mean that group discussions always solve all the problems. Participants may challenge each other in the process but at least they come up with shared useful experience. Explaining and understanding the demanding schema and plans for facing challenges is **avery** basic factor which distinguishes successful groups from unsuccessful groups.

Qin *et al.* (1995) observed that, when members with individual differences share discussion in the same group and attempt to solve a problem that is difficult for the individual, members feel more confident and develop new approaches to solve problems, and improve their skills to face the problem details. They exchange ideas and learn about things even if some of the group members were not able to take an effective part in coming up with a solution.

Overall, it can be seen from the discussion in this chapter that problem solving is related to confidence. Problem solving skills are an integral part of human living: the way we solve our problems is the way we live. Those with confidence are more likely to tackle new problems with a self-belief that success is possible.

This has important implications for all education. It is inadequate to view education simply in terms of passing on knowledge. There is a need to show our children and students many ways and techniques in solving problems. In this way of learning, students will learn effectively and create new unexpected outcomes. Also, they will develop more confidence and enthusiasm to learn and work out problems in the future. We need to generate a population of graduates who are able to contribute to society competently and confidently. This urgent need is not only in one society in particular: all societies need this to make sure that they are developing civilization and their own education.

However, societies do vary in their ability to generate and encourage confidence. For example, in Arabic culture, traditional learning, which depends on the teacher as the main source of information, is supported and practised more than learning which expects new ideas and skills from students. Thus, there is a very great need to place more emphasis on how to gain information and solve problems rather than just on the acquisition, memorisation and recall of information.

3.5 Cultures, Confidence and Learning

As societies develop, they will face many new and often exciting problems. However, societies will vary in the way they encourage confidence throughout the education process. This section will consider the culture that is Saudi Arabia and the social context in which confidence has to develop in its education system.

Saudi Arabia is a collectivist culture where there is little opportunity for individual thought and opinion. Confidence is set in the context of a strong family or social grouping and is not something which is primarily individual. The idea of individual experiences which are different from the social group is relatively foreign. Open discussion of issues is not a part of life. The culture tends to be governed by rules and regulations and the freedom to experiment intellectually is not normally acceptable. This inevitably has large effects for individual confidence.

Alsonbol *et al.* (1996) argue that, in a country like Saudi Arabia, students prefer copying and memorising information and have few opportunities to develop skills to solve problems or to look at things from a critical perspective. They go on to state that the aim is to gain scores in examinations when they are tested. The idea of working hard at ideas in order to gain understanding is not a normal pattern. Memorising is the preferred strategy and skill that is used in traditional learning. Alsonbol *et al.* (1996) argued that, in the Saudi education system, the *amount* of information matters more than the *quality* of it. While students can learn and solve their study problems by many techniques, focusing on quantity more than quality can drive the students to concentrate on the amount of information they need to gain good grades. Repetition is usually the core skill that students can use to maintain the information that they want to remember for examinations.

The emphasis in Saudi Arabia is then on recall type skills. This will probably mean that those who are most successful are those whose commitment in memorising and ability in recalling are greatest. Such students may well develop greatest academic confidence in that they become aware that they can be successful in what is asked of them

3.6 Conclusions

Memory and confidence and self are related to each other. Based on their past experiences, students can judge their abilities to solve new problems and this, in itself, can build positive or negative self-views depending on their experiences. Attitudes to learning ar a total experience in the learning journey that students hold and develop during their study life.

Accordingly, offering students positive experiences is a fundamental issue that educators have to bear in mind during the learning process. Educators have to be certain about the way they influence the students' attitudes toward subjects and how they can be positive about learning its techniques and skills.

This chapter has focussed mainly on cognitive aspects of learning and linked these to the development of confidence. If confidence is seen as a form of self-perception, self esteem and thus, perhaps, an attitude towards oneself, then the development of attitudes ar also important. Such attitudes will be stored in long term memory. The next chapter looks at attitudes in general and some specific areas where attitudes may be important in relation to confidence.

Chapter Four

The Relationship to Attitudes

4.1 Introduction

Memory and information processing were discussed in the previous chapter. In this chapter, attitudes will be discussed in relation to confidence and how learning styles can affect this confidence.

Looking at attitudes in general, Reid (2003,p.33) indicates that they have three main functions.

> "*In general, attitudes in life allow us to*:
>
> *(a) Make sense of ourselves;*
> *(b) Make sense of the world around us;*
> *(c) Make sense of relationships."*

It is possible that confidence can be conceptualised in terms of *attitudes towards oneself.* Researchers have raised many questions about the relationship between confidence and attitudes (McGuire, 1981), and attributes (Bem, 1972) or as a set of cognitive schemas (Markus, 1977). Attitudes involve both the cognitive and affective.

It is worth noting that a person can be very confident and strong with regard to academic work but have no assurance in sport and similarly, have a lack of social confidence. Thus, people can appear to be different in different situations: confident in one context and not in another. However, is there some underlying trait which could be called confidence? How does all this affect confidence in an educational setting?

Brown and Dutton (1995) discovered that low self-esteem students have more severe emotional reactions to failure than those who have high self-esteem. Self-esteem differences of this sort emerge for emotions that directly implicate the self such as, pride or humiliation, but not for emotions that do not directly implicate the self such as happiness or unhappiness. They assume that low self-esteem people over-generalise the negative implication of failure.

4.2 Some General Ideas about Attitudes

The concept of attitude occupies a very central place in psychology. However, the concept itself has not always enjoyed a clear meaning and various authors have used terms in somewhat different ways. Bain (1928) defined attitudes as "the relatively stable overt behaviour that affects his status". Thomas and Znanecki (1927) described an attitude as "a process of individual consciousness which determines real or possible activity of the individual in the social world". Many early researchers (e.g. Voelker, 1935) have discussed the fixed nature of attitudes, ignoring the possibility of rapid change of attitudes. Thus, it is argued that stability is made to appear an essential feature of all attitudes.

However, Reid (2006, p.5) argues that attitudes can be *both* stable *and* open to change.

> *"It has been established that attitudes tend to be consistent and stable with time. Nonetheless, despite this stability, they are open to some change and development, although deeply held attitudes are highly internalised and are resistant to modification."*

Furthermore, many researchers (e.g. Park and Burgess, 1921; Reuter and Hart, 1933; Thomas and Znaniecki, 1927) have expressed concern that definitions concerning attitudes have been viewing the attitude as a psychological element: a basic unit for use in scientific causal analysis, to be employed in causal analysis in much the same fashion as chemical and physical elements are used in unravelling chemical and physical causations. However, attitudes cannot be the only factor influencing behaviour.

Allport's early definition of an attitude has stood the test of time. He describe an attitude as, 'a mental and neural state of readiness to respond, organised through experience, exerting a directive and/or dynamic influence on behaviour' (Allport, 1935). Further refinements were made by Krech and Crutchfield (1948), Doob (1947), Katz and Sarnoff (1964) and Osgood *et al.* (1957) looked at these together. It is now clear that attitudes involve more than the cognitive and that idea of the 'evaluative dimension' proposed by Rhine (1958) has assumed greater importance in later work.

Holding an attitude toward something or someone means some form of evaluation and this leads to the picture of an attitude as a:

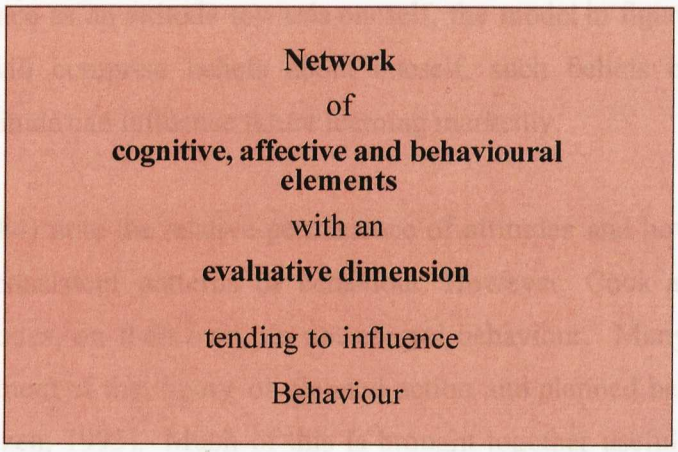


Figure 4.1 Attitude Definition (after Reid, 1978)

The definition shown in figure 4.1 brings together many of the key features of attitudes which have been accepted by most researchers. Nonetheless, there is sometimes confusion with language and figure 4.2 seeks to clarify some of the key words used by many authors.

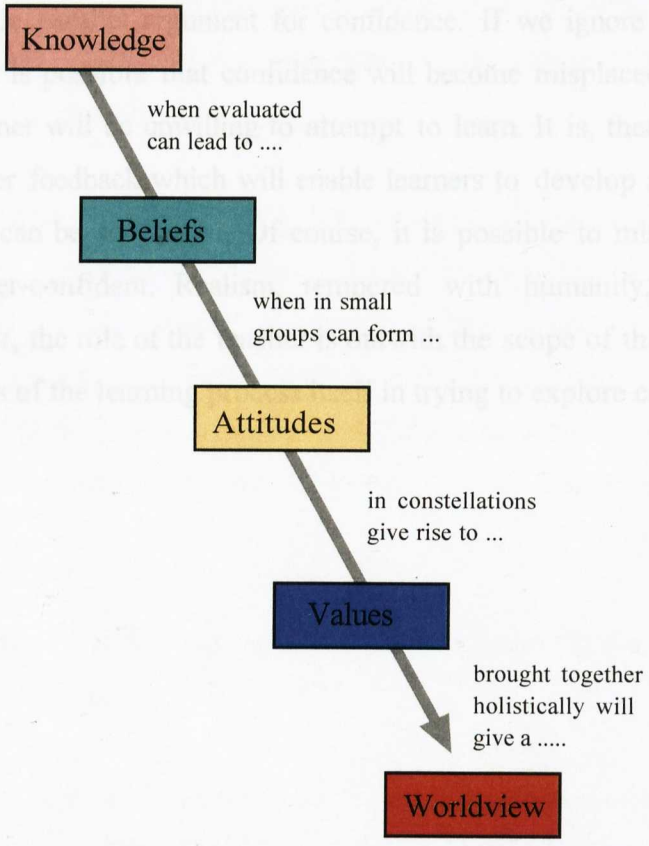


Figure 4.2 Possible analyses of attitude-related ideas

Looking at confidence as an attitude towards oneself, the model in figure 4.2 suggest that such confidence will comprise beliefs about oneself, such beliefs being founded on knowledge. The attitude can influence future learning markedly.

Roediger *et al.* (1984) note the relative permanence of attitudes and how this can lead to certain relatively consistent patterns of behaviour. However, Cook and Selltiz (1964) observed that attitudes, on their own, do not control behaviour. Many years later, this led to the development of the theory of planned action and planned behaviour (Ajzen & Fishbein, 1980; Ajzen, 1995). Much of this is brought together usefully in the book by Chaiken and Eagly (1993).

Attitudes influence behaviour and attitudes related to educational experience can influence subsequent behaviour quite markedly. This can have important consequences for future learning. Reid (2003, p.33) notes that *"If we ignore attitudes in our thinking about teaching and learning, that will not stop the students developing attitudes."*

There is a possible parallel argument for confidence. If we ignore the issue of learner confidence then it is possible that confidence will become misplaced or may become so poor that the learner will be unwilling to attempt to learn. It is, therefore, important for the teacher to offer feedback which will enable learners to develop attitudes where they believe that they can be successful. Of course, it is possible to mislead the learners so they become over-confident. Realism, tempered with humanity, might be thought desirable. However, the role of the teacher is outwith the scope of this study which seeks to focus on aspects of the learning process itself in trying to explore confidence.

4.3 Attitudes and Achievement

It is very interesting to understand how students' achievement is affected and influenced by their beliefs and attitudes during their educational journey. Many have found a relationship between attitudes to learning achievement (e.g Eisenhardt, 1977; Schibeci and Riley, 1983; and Frazer, 1982). Schibeci (1984) argued that the student who achieves a good level in any subject because he or she has positive feelings means that the student has a positive stimulus for further study. Such a positive stimulus towards further learning may have arisen from positive attitudes based on previous learning. Future achievement may well lead to further positive attitudes. This was described as a "*two-way relationship between attitude and achievement*" (Schibeci, 1984).

While it is very apparent that positive attitudes and success are correlated, it is much more difficult to establish which causes the other. Indeed, they might simply influence each other or happen to be present together in many individuals. Thus, good academic achievement might contribute to positive attitudes while positive attitudes might lead to further good achievement. On the other hand, in the same way as tall people tend to have big feet, then it may simply be that academic success and positive attitudes towards learning go together in general.

Some have argued (e.g. Schibeci, 1984) that students' feelings and emotions are more central and essential than their achievement. This is because much of what they learn will be forgotten whilst attitudes related to learning are more likely to be longer lasting but positive attitudes towards learning are likely to make that learning more effective. On the other hand, Frazer (1982,p.81)) considers that, "*if teachers want to improve achievement they will be advised to concentrate on achievement "per se" instead of trying to improving attitude*".

Reid (2003) brings some of the ideas together when he states (in the context of learning in the physical sciences) that,

> "*Of course, we want our students to make intellectual sense of the world around them-that is the very nature of the subject matter of the physical science (and other science). Of course, it helps them to make contribution to the understanding of the world if they can also make sense of themselves and others.*"
>
> (Reid 2003, p.33)

This means that attitudes help us to understand ourselves and explore the aspects of self and needs. Also it aids us with expectations about others around and about all the things that represent the environment so we can predict events and reactions.

Reid (2003) notes that attitudes translate our evaluation of things to certain behaviours toward something or someone. These evaluations will indeed shape our way of thinking and behaviour. Due to attitudes being of complex combinations,attitudes have to have a target so the individual builds his or her own aims of behaving or thinking in a particular way.

Moving from attitudes in general towards attitudes towards oneself, Brown and Smart (1991) found out that failure makes the students who have high self-esteem to exaggerate the positive-ness of their social qualities. Low self-esteem students cannot compensate for failure in this way. High self-esteem students (those with more positive attitudes towards themselves) are able to limit the effect of any failure because they do not generalise the negative evaluation to all their abilities and life situations.

Thus, it is likely that confidence might not affect future achievement directly but it affects the way a person handles success and failure. This suggests that there may be some kind of underlying trait to be known as confidence but that, for some, there is an ability to generalise this therefore affecting all areas of life. Campbell (1972) ascertained that high self-esteem people have higher overall levels of persistence, higher examination marks and lower levels of negative judgment than those with low self-esteem.

4.4 Development of Attitudes

If how attitudes grow and develop is understood, it might throw light on understanding how confidence (seen at least in part as an attitude towards self) grows and develops. An understanding of how attitudes grow and develop depends on an appreciation that attitudes can involve the cognitive, the affective and the behavioural (Bagizzi & Burnkrant, 1979; McGuire, 1981). These three components may be present in varying degrees and proportions and can be described):

> *"(1) a knowledge about the object, the beliefs, ideas components (Cognitive);*
> *(2) a feeling about the object, like or dislike component (Affective); and*
> *(3) a tendency-towards-action the object component (Behavioural)."*
>
> (Reid, 2006,p.4)

Thus, attitudes can develop from a cognitive basis, affective basis or behavioural basis or any combination of the three.

The cognitive route takes place when people obtain information about an attitude object and form beliefs. Beliefs can be defined as "*Associations or linkages that people establish between the attitude objects and their various attributions*". Fishbein and Ajzen (1975, p.135). People can build cognitive attitudes directly or indirectly by going through experiences in their studies or normal life. Direct experience might be the involvement with an attitude object (for example, if subjects or study itself are considered as an attitude object then a student attending the classes or learning about the subject believes in what he/she is doing and his/her experience). Indirect experience can be experiencing an attitude object without engaging in direct relationship with any object (for example, a student could obtain information about university subjects from anywhere such as friends or family without experiencing any classes or subjects). It is clear that students can get an idea about the education they have not started yet by just watching TV programs, lectures; listening to parents or older peers.

The affective category is about how people feel or regard one of their objects in their life. It can be positive or negative so they evaluate things around them according to the way they feel about it.

Weinperg (1995) found a moderate correlation between attitude towards science and achievement in science. The correlation was stronger for low-and-high performance girls than for boys. Weinerg (1995) argues that, as attitude become more positive, achievement tends to increase especially with females. However, the effect of attitudes on achievement is not the only area where attitudes are important. It has been argued that attitudes arising from the educational process can affect student behaviour for a very long time even after leaving that period of education. The following example illustrates this:

> *An attitude towards the chemical industry may depend heavily on being informed about the nature, purpose and activity of chemical industry, as well as all kinds of feelings about its place in society and in generating useful products and, perhaps harmful pollution. Behaviour might well show later in willingness to work in such industry, to buy a house near such industry or even to support political parties which support or condemn particular aspects of the industry.*
>
> (Reid, 2006, p. 8)

Fishbein (1980) argued that behaviour and attitudes are strongly related. Behaviour is basically predicted by people's intentions and attitudes. According to him, behaviour is controlled by the attitudes towards this behaviour. Besides the fact that attitudes are really important in learning, there are also so many factors that can affect the attitudes or learning in indirect ways. Confidence has been studied and shown to have a strong effect on learning by much research (e.g .Perry, 1999).

4.5 Confidence in Learning

If confidence can be seen in terms of a constellation of attitudes towards oneself, then confidence in learning can perhaps be thought of in relation to how students see themselves in the context of their learning experiences. This will reflect how they have learned, the ways they find most congenial, their perception of the nature of learning and the way they perceive success.

This encompasses a wide range of areas. It involves student perception of the nature of knowledge, roles in acquiring knowledge and how knowledge is assessed. This is very much the area where Perry (1999) has made major contributions and these will be discussed later. However, it also involves elements for preferred ways of learning where these are seen as effective and efficient or, perhaps, simply more acceptable and enjoyable. This moves into the area of preferred cognitive styles and this will also be discussed. In both of these, previous experiences of success and failure will be highly instructive: these may lead to confidence or the absence of confidence in specific perceptions of learning, specific areas of learning and specific approaches to learning.

Many researchers have made great advances in developing our thinking about learning. Piaget (1963) described the way learning develops with age. In his detailed and highly perceptive observations of the way children learn, he established that learning is a developmental process: the child is not a miniature adult with regard to learning and the nature of learning is not that of simply pouring knowledge into the young learner. Learners construct and re-construct knowledge in attempts to make sense of their world. It is possible that successful re-construction is an element implicit in developing confidence. However this raises questions about how learners perceive success.

Success is so often seen in terms of examinations passed well. However, it is possible for some learners to go beyond this and see success in terms of a job well done, a maximal performance being achieved, or in terms of something thoroughly mastered or understood. Confidence may depend, to some extent, on how the learner perceives success and how they see themselves in the context of that success. Children might see themselves as academically unable to achieve much and yet still find success in other ways, thus developing some level of confidence.

Piaget perhaps over-emphasised the fixed, biologically based nature of development but this was balanced by Vygotsky's contribution where he found that limited advancement, in developmental terms, was possible, given a stimulating environment where the learner was being taken forward by those who were slightly more developed. Again, there is the question: is confidence related to that kind of stimulating and supportive environment where success can build on success?

Ausubel (1963) made many contributions from his research but he established the importance of what was already known, and how it came to be known, for future learning. This important insight was absorbed into the Johnstone information processing model as the feedback loop from long term memory to the perception filter. This lays the basis for the observations that episodic memory plays a major part in the development of confidence (Conway, 1990).

Ausubel (1963) grasped the vital importance of what was already known when faced with new learning situations. He described what he called advanced organizers which were learning experiences designed to enable the learner to create connection among the earlier and the inexperienced considerations. In this, organizing is like building bridges between new learning information and items and previous related ideas. He argued that learning is based upon the kinds of super ordinate, representational, and combinatorial processes that occur during the reception of information. He draws a general schema where people organize their learning processes:

"These organizers are introduced in advance of learning itself, and are also presented at a higher level of abstraction, generality, and inclusiveness; and since the substantive content of a given organizer or series of organizers is selected on the basis of its suitability for explaining, integrating, and interrelating the material they precede, this strategy simultaneously satisfies the substantive as well as the programming criteria for enhancing the organization strength of cognitive structure."

(Ausubel, 1963 , p. 81)

Previous learning is a powerful influence on future learning. Of course, previous learning may develop attitudes of self-confidence (or otherwise) and this may have very powerful effects on future learning. In contrast, Vygotsky emphasizes social interaction as playing a fundamental role in the development of cognition. He (1978, p. 57). states that,

> *"Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals."*

The potential for cognitive development depends upon what he called the *"zone of proximal development"* (Vygotsky, 1978) Thus, engaging in social behaviour offers a chance to achieve further development. Vygotsky argues that the person can achieve through interacting with peers more than he or she would achieve if the person is working on her/her was own. Is social interaction part of the development of confidence? Once that grows, then progress is enhanced.

Harter (1982) argues that even 8-year-old children are able to make direct judgments about their competence in different domains, but that, by this age, they are also able to construct a view of their general self-worth as a person, over and above this specific competence judgment.

Researchers classify self and tend to define it into two groups. Cassidy (1990) argues that self can be related to self-cognition and to self-affect. Terms related to self-cognition include self-concept, self-image, self-schema and self-understanding. Terms related to self-affect include self-esteem, self-worth, self-evaluation, and self-feeling. From her point of view, self-cognition is a descriptive reference to the self: a definition of character and qualities of the self, without necessarily being evaluated. But self-affect has terms related to the value of the self.

Personal needs and wants or feeling are gained from the social interactions that the student experiences throughout his/her life. Many researchers (e.g. Coopersmith, 1967; Bowlby, 1973; Main et al, 1985) found out that children's self-esteem or concept is highly related to their caregivers or educators. This, perhaps, links back to the insights offered by Vygotsky (1978).

Accordingly, students during their experiences in learning can go through different feelings about their achievements or competence which makes them feel more or less competent. Harter (1985) argues that when developmental level is taken in to account, incongruity between the real and ideal self increases with age. However, why there is gap between the real self-concept and what the person wishes? William James (1890-1980) assumes that self-feeling emphasises the affective felt component of self-esteem. He discussed the differences between what a person knows about himself and what he feels about himself. A person may know objectively that he is successful, competent and important to society but may feel worthless.

Rosenberg (1979) proposed an interactive hypothesis and one possible outcome of this hypothesis is that having a positive self-concept in some particular aspect will influence positively in overall self-esteem, but the extent of this positive affect depends on the aspect's important. When self-concept is more positive and the perceived importantce is greater, it will affect self-esteem to a greater extent. For example, one possible compromise is to recognise the poor ability in a particular area but to give it little importance in the determination of esteem (Marsh, 1986, p .125).

Coopersmith, (1967, p.6) indicates that an individual's self-appraisal might vary in different areas so that '*his overall appraisal of his abilities would presumably weight the areas according to their subjective importance enabling him to arrive at a general level of self-esteem'* but that '*objective evidence on the method of arriving on general appraisal is sparse'*.

Bowlby (1973) referred to both self-affect and self-cognition as a creation of what we call evaluations and feelings toward something or someone. Through everyday life in home or school life it provides a person with models of the working, properties, characteristics, and behaviour of oneself, others or the world. "*These models are similar to cognitive maps that permit successful navigation of an organism's environment.*

(Bowlby, 1973, p. 204).

In the context of the classroom, lecture theatre or laboratory, self-esteem and a balanced self perception in terms of a person's competence will be powerful factors influencing successful learning. Being confidently aware of abilities may tend to lead to powerful emotions which may influence positive attitudes towards the subject, towards the teacher and towards learning. The student who feels 'worthful' and who has sensitive teachers who respond to the learner's struggles where each student gets what he/she needs to learn will tend to achieve the best results and make use of her or his abilities. Indeed, self esteem and confidence will act as navigators in the process of learning so that potential can be maximised. The student's expectations of themselves and educators will be more positive so they will be more secure to respond and allow the learning process to work successfully. Wood et al, (1994, p. 713) notes that "*People with low self-esteem seem to focus on self-protection; rather than trying to achieve gains for their self-esteem, they try to avoid losses.*"

Cohen (1958) suggested that every one has defensive information which is in some way inconsistent with the high regard one wants to have. He asserted that subjects with high self-esteem typically respond to failure with forms of denial or avoidance. Avoidance prevents the processing of information that might activate good results and learning. This is what Cohen called "defensive information", which enables the avoidance of rehearsal, or examination of their own abilities. They will be not aware of their emotional fears of achieving successfully.

Finally, Harter and Pike(1984) believe that the student can have many conflicting contradictory models when they experience more than one way of teaching. However, even if the students have two models of teaching at the same time, one encouraging self-esteem and the other discouraging self-esteem, the student can still learn from the good experience.

4.6 The Work of Perry

Perry (1999) developed a scheme for intellectual and ethical development. This arose from his work where he interviewed students extensively over their degree course and observed the trends with time in their perceptions of study and related issues. He developed his analysis in terms of nine stages and found that there were four areas of importance: students perception of the nature of knowledge, their understandings of the role of their teachers and their own role in learning, and their perceptions of the nature and role of assessment.

Perry was very keen on helping students and teachers in understanding beliefs and thinking and was concerned about the importance of the students' beliefs and thinking in learning or solving problems. He (1999) argued that,

> *"A fundamental belief in students is more important than anything else. This fundamental belief is not a sentimental matter: it is a very demanding matter of realistically conceiving the student where he or she is, and at the same time, never losing sight of where he or she can be"*

Perry (1999) came up with nine positions that can be summarised in the next table.

Position	Description
1	The students see the world in polar terms of 'we right-good' 'other wrong-bad'. Right answers for every thing exit in the absolute, known to authority. Knowledge and goodness are perceived as quantitative accretions of discrete rightness to be collected by hard work and obedience.
2	The students perceives diversity of opinion and uncertainty, and account for them as unwarranted confusion in poorly qualified Authorities or as mere exercises set by authority "so we can learn to find the answer for ourselves".
3	The student supposes that the precise right answer is not completely adequate to gain full marks in the assessment. Exactly what is required is not clear and the student would like some precise guideline about what is expected.
4A	The student perceives legitimate uncertainty to be extensive and raises it to the statues of an unstructured epistemological realm of its own in which any authority's realm where right-wrong still prevails.
4B	The student discovers the qualitative contextual relativistic reasoning as a special case of what they want within the authority's realm.
5	The student perceives all knowledge and values as contextual and relativistic and subordinate dualistic right-wrong functions to the statues of a special case, in context.
6	The student apprehends the necessity of orienting himself in a relativistic world through some form of personal commitment (as distinct from unquestioned or unconsidered commitment to simple belief in certainly).
7	The student makes an initial commitment in some area.
8	The student experiences the implications of commitment and explores the subjective and stylistic issues of responsibility.
9	The student experiences the affirmation of identity among multiple responsibilities and realises commitment as an ongoing unfolding activity through which he expresses his life style.

Table 4.1 The Perry Scheme

Perry's scheme showing intellectual and ethical development in relation to learning has offered a system against which student intellectual development can be matched. However, it is complex and most students never reach the upper levels during their undergraduate years. In 1998, Johnstone came up with an adaptation of Perry's classifications. This made the classifications clearer and more applicable without any need to change Perry's core ideas. Johnstone reorganised the analysis into three levels: Level A represents positions 1 and 2, level B represents positions 3 and 4A and level C represents positions 4B and upwards. For each position, he explained the students' perceptions about the four areas related to learning which are the role of lecturers, the role of student, the view of knowledge and the view of exams.

	Student A	**Student B**	**Student C**
Student Role	Passive acceptor	Realises that some responsibility rests with the student. But what? And how?	Sees student as source of knowledge or is confident of finding it. Debater making own decisions.
Teacher Role	Authority giving facts and know-how	Authority where there are controversies, wants guidance as to which answer lecture favours	Authority among authorities. Values views of peers. Teacher as facilitator.
View of Knowledge	Factual; black and white. Clear objectives, non-controversial, exceptions unwelcome	Admits black-and-white approach not always appropriate. Feels insecure in the uncertainties this creates	Wants to explore context; seeks interconnections, enjoys creativity scholarly work.
View of exams	Regurgitation of facts. Exams are objective. Hard work rewarded	Quantity is more important than quality. Wants to demonstrate maximum knowledge	Quality is more important than quantity. Wants room to express own ideas, views.

Table 4.2 Perry Positions (after Johnstone, 1998)

Selepeng (2000) argued that students and teachers have been given by Perry's scheme a language to understand thinking, beliefs in relation to learning, and the way students view their life at college. Knefelkamp (1999) suggests that Perry assists educationalists to go deeper in the quality of students development itself. The Johnstone adaptation offers a simple language and this model has been used in several studies (Mackenzie *et al*, 2003; Selepeng, 2000; Alshibli, 2003)

It is not too difficult to see that an analysis of student's perceptions of learning and the role of themselves and others in that learning (following the Perry model) might have major significance in the development of confidence. Thus, for example, a student who sees knowledge in 'black and white' terms might lose confidence completely when faced with learning situations where the nature of knowledge was much less certain. Indeed,

positions A and C (in the Johnstone adaptation) might be seen to generate a high degree of certainty in the mind of a student and this might lead to a measure of confidence.

However, a student in position B might experience a high level of uncertainty leading to a loss in confidence, a point noted elsewhere (Selepeng, 2000).

4.7 Confidence and Attitudes

Researchers have asked many questions about the relationship between confidence and attitudes (McGuire, 1981), confidence and attributes (Bem, 1972) or confidence seen as a set of cognitive schemas (Markus, 1977). Markus notes that William James (1890-1980) has an argument about whether self-concept is an attitude, an attribution, or a set of schemas. It is both cognitive and affective. The person can be all of strong and weak once a perfect student and a terrible musician; and sporty and socially avoidant.

People can be different in different kinds of situations and stimulations. They may be confident in something and not in another thing. The question is what if the student has low self-confidece, particularly in education. Will this affect the student directly or not. Brown and Dutton (1995) found out that low self-esteem students have more sever emotional reactions to failure than high self-esteem people do. Self-esteem differences of this sort emerge for emotions that directly implicate the self such as pride or humiliation, but not for emotions that do not directly implicate the self such as happiness or unhappiness. They assume that low self-esteem people over generalise the negative implication of failure.

Brown and Smart (1991) found out that failure makes the students who have high self-esteem exaggerate the positivity of their social qualities while the opposite is true for low self-esteem students. Thus, students with high self-esteem are much better equipped to cope with failure: they did not focus so much on the failure and this enabled them to learn from the experience.

Failure with high self-esteem students still allows them to represent their personal qualities because they do not generalise the negative evaluation to all their abilities and life situations. Students with high self esteem can have more motivation to continue and keep trying even when they see themselves failing because they have a positive attitudes

towards themselves and toward their skills. They can find the reason why they failed and try to avoid this reason on the next occasion.

In this, confidence does not simply affect achievement directly but it affects the way that a person deals with stimuli and situations around them. Students can see failures as learning experiences; they can learn to appreciate why things went wrong, enabling confidence to develop in a realistic and balanced way.

4.8 Attitudes and Learning Styles

Any observant school teacher will be able to see that different members of a class seem to work in different ways. Some find reading and writing more helpful than others who like to draw pictures, develop diagrams, tables or graphs. In mathematics, some find the symbolism and abstractness of algebra and calculus interesting while others prefer geometry. Some pupils emphasise every detail while others seem to see things in a very broad way. The list is probably endless. Such differences have often been described as learning styles or cognitive styles. The discussion which follows does not attempt to offer a full coverage of the field but simply to develop the ideas which will relate to the experimental part of this project

The two main phrases (learning styles, cognitive styles) used in the literature seem different but a look at the definitions shows considerable harmony and the two phrases are often used interchangeably. The following are some typical descriptions:

> *"Individual's characteristic way of processing information, feeling, and behaving in learning situations"*
>
> (Smith, 1982, cited in Merriam and Caffarella, 1991, p.176)

> *"Complex manner in which, and conditions under which learner most efficiently and most effectively perceive, process, store and recall what they are attempting to learn"*
>
> (James and Gardener, 1995, p.704)

> *"a distinctive or characteristic manner or method of acting or performing"*
>
> (Sternberg and Grigorenko, 1997, p.704)

Overall, learning styles can be seen as ways by which individuals tend to handle learning, reflecting individual characteristics which seem fairly stable.

There are three possible origins of such styles. They could be biologically determined cognitive ways of working. This is consistent with the observed stability of such patterns, rather like responses to sound, light, motivation, and reflectivity as described by Ellis (1989). Of course, they could be developed by teaching and general experience. Cronett (1983) and Marshall (1991) found that teacher's style may have great effect on student's learning style and, of course, most teachers tend to use the way they learned or were taught. Thirdly, they could simply be the ways by which learners prefer to work.

It is highly likely that all three factors come into play: there is a measure of genetic predisposition along with approaches which are learned. Inevitably, individuals prefer to work in certain ways, perhaps because they have found such ways more helpful in the past.

Riding and Caine (1993) summarised the cognitive characteristics into two cognitive style dimensions: the holist-Analytic style which describes how the individual can process information in wholes or parts; and the Verbal-Imagery style which describes how the individual represents information during thinking in words or in mental images.

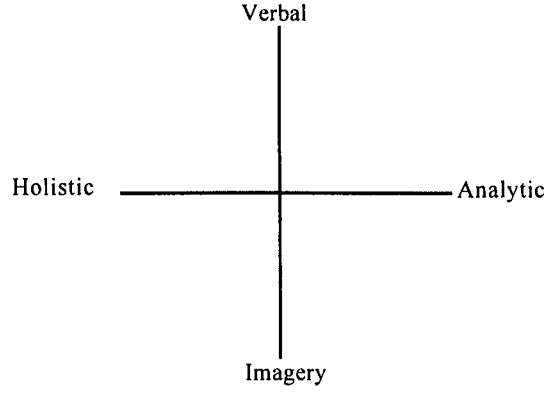


Figure 4.3 Learning Styles Dimensions

These two dimensions are considered as independent. A person's position on the holistic-analytic axis is unrelated to their position on the verbal-imagery axis. However, such an aproach makes many assumptions. Is it true that someone who is holistic, for example, is therefore not analytic? Putting these two on a linear scale implies that as one characteristic grows, the other decreases. That is an assumption.

According to Riding and Cheema (1991), cognitive style is a fairly static characteristic of an individual, whereas cognitive strategies are the ways that may be used to deal with particular circumstances and jobs. Styles are fixed and are relatively integral features of the individual. On the other hand strategies may be learned and developed. This, perhaps, separates out the genetic predisposition from the learned characteristics and preferred styles.

Typical literature focuses on things like:

Holistic - analytic (e.g. Riding and Caine, 1993)

Field independent - field dependent (e.g. Liu and Reed, 1994)

Convergent - divergent (e.g. Hartly and Greggs, 1997)

Visual-spatial and symbolic (e.g. Kirby, 1993)

The concept of learning styles is embedded in the categorisation of psychological forms. The learning styles theory is based on research indicating that, as the product of genetics, education, and current environmental demands, different individuals learn to both perceive and process information in different ways. Another way to think about these has been derived from the work of many researchers brought together by Kolb (1984) in the context of learning in terms of tow dimensions: Concrete perceivers are those who understand information through their experience: by doing, performing, sensing, and feeling. By contrast, the abstract perceivers obtain information through testing, observation, and thinking. Active processors consider an experience by using the new information directly. On the other hand, reflective processors consider an experience by thinking about it and reflecting on it.

Traditional schooling has a tendency to support abstract perceiving and reflective processing. Other types of learning are not supported or reflected in curriculum, teaching, and evaluation.

There are perhaps three areas where attention has to be paid to learning styles. The curriculum needs to be designed to meet the needs of all styles. The instruction approaches need to consider the general range of learning styles of the learners while assessment needs to use a variety of approaches so that no one style is advantaged or disadvantaged.

This has been summarised (http://www.funderstanding.com/learning-styles.cfm):

> *"Curriculum: Educators must stress on perception, reaction, sensing, and imaginations, together with the usual skills of investigation, reason, and sequential problem solving.*
> *Instruction : Teachers should plan their instruction techniques with consideration of all four learning styles, using different combinations of experience, reflection, conceptualisation, and experimentation. Instructors can establish a broad range of practical elements into the classroom, such as sound, music, visuals, movement, experience, and even talking.*
> *Assessment: Teachers should utilise a variety of assessment methods, concentrating on the improvement of "whole brain" ability and each of the different learning styles."*

Looking at this raises the immediate question: is this possible or realistic even to attempt? Can any teacher manage the diversity of learning approaches to reflect what might be present in any class. Overall, this is probably not a realistic way forward.

The attempts illustrated above in reducing the whole area to two dimensions (Riding and Caine, 1993) or two areas (related to perception and processing), while understandable in the interests of simplicity, are in danger of simplification so that important detail becomes lost. By contrast, in this study, a small number of specific learning styles were the focus. These were chosen because previous work had suggested their importance in academic learning. The areas explored focused on:

Preferences

for the conceptual or abstract rather than factual or informational

for learning visually rather than by means of language

to focus on detail or a broad picture

to work fast or to work carefully and systematically

to work theoretically or by practical activity

to be creative or imaginative rather than stay with the accepted way

to learn as part of a group or individually

4.8.1 Other Learning Styles Important in Education

Two well known learning styles have led to considerable research related to learning and assessment. Witkin and Asch (1948a, 1948b) established that some individuals always learn to attend to different form of cues. For example, those who used visual cues were described as 'field-dependent' and those who used postural cues were called 'field - independent'. Later, Witkin and Goodenough (1981) described the key characteristics of the field-dependent and field-independent cognitive style as: the Field-Dependent (FD) individual who can inadequately part an item from its context and who readily admits the dominating field or context; the Field-Independent (FID) individual who can simply 'break up' prearranged perceptual field and split readily an items from its context.

There is very strong evidence that being field independent is a marked advantage in academic performance but this may simply reflect the kind of questions being asked in typical examinations. Danili and Reid (2006) have discussed this theme fully in relation to chemistry and the area of field dependency was not pursued further in this project.

Another major learning style is that of convergency and divergency. According to Child and Smithers (1973) convergent thinking requires close reasoning where divergent thinking requires flexibility and fluency. Hudson (1966,p.55) observed that, "*the converger is the boy (sic) who is substantially better at intelligence test than he is at the open-ended tests; the diverger is the reverse*". Also he pointed out that convergence-divergence is not a level of ability but is a measure of bias.

There are some general characteristics of convergent and divergent thinkers outlined by Bahar (1999,p.42): Converger thinkers: "*Higher performance in intelligence tests; good at*

the practical application of ideas; specialised in physical science and classics; prefer formal materials and logical arguments; ability to focus hypothetical-deductive reasoning on specific problems; better in abstract conceptualisation; hold conventional attitudes; like ambiguity and emotionally inhibited"; Divergen thinkers: "*Higher performance in open-ended tests; fine at generating ideas and seeing things from different perspectives; specialised in the arts; better in concrete experience; interested in people; hold unconventional attitudes; strong in imaginative ability and more likely to be witty*".

Again, it has been well established that those who are divergent have significant advantages in many forms of assessment, this being explored by Danili and Reid (2006). Convergency and divergency are again not pursued further here.

It is interesting to note that being field independent is clearly at the opposite end of the spectrum from being being field dependent. It has tended to be assumed that convergency is the opposite of divergency. However, this is not as clear: it is perfectly possible to imagine people who can demonstrate behaviour which is divergent and convergent. Thus, an individual can be someone who is ideal in a brainstorming activity, where ideas are generated but may equally well be able to bring things together to a coherent conclusion.

4.8.2 Learning Styles and Confidence

The fundamental issue is whether specific styles of learning tend to encourage the development of academic confidence, seen as an attitude towards oneself in the context of learning. If evidence supported this, then it would be important to explore to see if such learning styles are open to development. This is perhaps a more useful way forward than expecting teachers to teach in such a way that they encompass all learning styles so that all learners can benefit equally

4.9 Conclusions

This chapter has explored a little of the nature of attitudes and the language used to describe attitudes in relation to learning. It has been suggested that confidence might be seen, at least in part, as an attitude towards oneself. In the context of academic learning, this relates to attitudes towards the subjects being studied and the effect of such attitudes on learning itself.

The way a student sees himself or herself in relation to learning is a dimension which might have an important role in relation to confidence. The work of Perry has been described and an adaptation of the work has been introduced, this adaptation having been found useful by others.

There has been no discussion about the measurement of attitudes and this, with other aspects of measurement is the focus of the next chapter.

Chapter Five

Approaches to Measurement

5.1 Introduction

In chapter 2, it was suggested that self-esteem can be seen, at least in part, as an attitude *towards oneself.* Self-esteem will affect and influence the way that people judge themselves. This is related to attitudes in general which can be seeing as expressing our evaluation of something or someone (Reid, 2003). If seen this way, self-esteem will develop based on knowledge, feelings and/or behaviour.

The main aim of this study is to explore how confidence can relate to other aspects of the processes of learning. It is known that working memory capacity is an important factor influencing academic success (see chapter 3). The question arises: is there a relationship between working memory capacity and confidence in the sense that those with higher capacities are those who are more confident? However, there are many other aspects of learning: problem solving ability, learning styles, perceived purposes in learning, group working skills, evaluation of exams and preferred teaching styles.

The range of possibilities is high and this study will focus only on a few areas. Thus, for example, working memory has been shown to be a critically important factor in understanding (Danili and Reid, 2004; Hussein, 2006). Measuring working memory capacity is a straightforward process (see, for example, El-Banna, 1987) and measuring performance in examinations merely requires access to appropriate data. However, measuring confidence is far from straightforward and this will be discussed first.

5.2 Qualitative and Quantitative Measurement

These are often presented as two very different approaches but, in fact, they often overlap and interrelate. Gall *et al.* (1996) outlines some differences between qualitative and quantitative research. He argues that quantitative research assumes an objective social reality, taking an objective, detached stance toward research participants and their setting, studies populations or samples that represent populations, uses statistical methods to analyse data and prepares objective, impersonal reports of research findings. On the other

hand, qualitative research assumes that the participants exist in a constructed social reality. Social reality is continuously constructed in local situations, it becomes personally involved with research participants, study cases, concepts and theories, uses analytic induction to analyse data, generalizes case findings by searching for other similar cases and prepares interpretive reports that reflect researchers' constructions of the data.

However, this analysis is oversimplified. Much quantitative research cannot be nearly as objective as is suggested while, very frequently, it takes into account the many fine details of social context. Much qualitative research is much more detached than indicated and, very often, the two research paradigms overlap and link together to offer a more complete picture. Both approaches can offer valid insights but their validity may be seen in somewhat different ways (as Cohen et al, 2000, p.105):

> "*In qualitative data validity might be addressed through the honesty, depth, richness and scope of data achieved, the extent of triangulation and the disinterestedness or objectivity of the researcher. In quantitative data validity might be improved through careful sampling, appropriate instrumentation and appropriate statistical treatments of the data. In qualitative data the subjectivity of respondents their opinions, attitudes, and perspectives together contribute to a degree of bias. Validity therefore, should be seen as a matter of degree rather than as an absolute state.*"

The importance of validity will be discussed later.

Gall, Borg, and Gall et al (1996) argue that some researchers believe that qualitative research is best used to discover themes and relationships at case level, while quantitative research is best used to validate those themes and relationships in samples and populations. According to this view Gall, Borg, and Gall (1996) suggest that qualitative research plays a discovery role, while quantitative research plays a confirmatory role. The label interpretive research is sometimes used instead of qualitative research. So they define interpretive research as the study of immediate and local meanings of social actions for the actors involved in them,

However, even this analysis is open to criticism in that quantitative approaches can be used to explore and qualitative approaches can follow on to expand, clarify and offer the detailed richness to make sense of what the quantitative has suggested. Perhaps the best way forward is not to emphasise the two paradigms but to seek to explore the idea of confidence by an approach which is likely to offer valid insights in a practical and realistic way. This may involve both paradigms.

5.3 Measuring Confidence

Two principles seem important. Confidence can be seen as an expression of self-esteem and is clearly multidimensional in character. Therefore, reducing confidence to some single number or score will probably be inappropriate. Secondly, if self-esteem can be seen, at least in part, as an attitude *towards oneself*, then approaches in measuring attitudes may be fruitful.

In an education setting, attitude measurement is mainly conducted by surveys (often called questionnaires) or interviews (Reid, 2003). These two approaches will now be discussed.

5.4 The Use of Surveys

Following the breakthrough paper of Thurstone (1929) where he tried to demonstrate that "attitudes can be measured", Likert (1932) developed what has become one of the dominant methods of measuring attitudes. Participants are offered a series of statements relating to an attitude area and have to react to the statements by showing how far they agree or disagree with each (often five responses, ranging from "strongly agree" to "strongly disagree"). Responses are then summed to give an overall scale. Sometimes six point and seven point responses are offered. With seven points, the categories are: "very strongly agree", "strongly agree", "agree, "neutral", disagree, strongly disagree' and "very strongly disagree". With six points, the "neutral' is omitted.

Much later, Osgood (Osgood *et al*, 1957) was working with the semantics of words and ideas. They developed a method to plot a psychological distance between words by mapping a subject's connotations of the words. When analysing their data using factor analysis, they found that one of the factors could be labelled as attitudinal in nature. This led to the idea of the "semantic differential" as a tool for attitude measurement. Five, six or seven point scales could be used and, again, scoring and adding was often used for data analysis.

Osgood et al (1957, page 190) noted:

> "*Our work in semantic measurement appears to suggest such an identification: If attitude is, indeed, some portion of the internal mediational activity, it is, by inference from our theoretical model, part of the semantic structure of an individual, and may be correspondingly indexed. The factor analyses of meaning may then provide a basis for extracting an attitudinal component of meaning.*"

He used adjectives which had to be evaluative in nature. He (1957, page 190) explained,

> "*Despite different concepts and different criteria for selecting scales, high and restricted loadings on this factor were consistently obtained for scales like good-bad, fair-unfair and valuable-worthless, while scales which were intuitively non-evaluative in nature, like fast-slow, stable-changeable, and heavy-light, usually had small or negligible loadings on this factor. It seems reasonable to identify attitude, as it is ordinarily conceived in both lay and scientific language, with the evaluative dimension of the total semantic space, as this is isolated in the factorization of meaningful judgments.*"

Some recent examples drawn from Reid(2003,p.36) illustrate the Likert and Osgood techniques:

Think about your experiences in laboratory work in chemistry.

Tick the box which best reflects your opinion

		Strongly Agree	*Agree*	*Neutral*	*Disagree*	*Strongly Disagree*
(a)	I believe that the laboratory is a vital part in learning chemistry	☐	☐	☐	☐	☐
(b)	I prefer to have written instructions for experiments	☐	☐	☐	☐	☐
(c)	I was unsure about what was expected of me in writing up my experiment	☐	☐	☐	☐	☐
(d)	Laboratory work helps my understanding of chemistry topics	☐	☐	☐	☐	☐
(e)	Discussions in the laboratory enhance my understanding	☐	☐	☐	☐	☐
(f)	I only understood the experiment when I started to write about it afterwards	☐	☐	☐	☐	☐
(g)	I had few opportunities to plan my experiments	☐	☐	☐	☐	☐
(h)	I felt confident in carrying out the experiments in chemistry.	☐	☐	☐	☐	☐
(i)	I found writing up about experiments pointless	☐	☐	☐	☐	☐
(j)	The experimental procedure was clearly explained in the instructions given	☐	☐	☐	☐	☐

What are your opinions about University Physics?

Place a tick in one box between each phrase to show your opinions.

I feel I am coping well	☐ ☐ ☐ ☐ ☐ ☐	I feel I am not coping well
I am not enjoying the subject	☐ ☐ ☐ ☐ ☐ ☐	I am enjoying the subject
I have found the subject easy	☐ ☐ ☐ ☐ ☐ ☐	I have found the subject hard
I am growing intellectually	☐ ☐ ☐ ☐ ☐ ☐	I am not growing intellectually
I am not obtaining new skills	☐ ☐ ☐ ☐ ☐ ☐	I am obtaining new skills
I am enjoying practical work	☐ ☐ ☐ ☐ ☐ ☐	I am not enjoying practical work
I am getting worse at the subject	☐ ☐ ☐ ☐ ☐ ☐	I am getting better at the subject
It is definitely 'my' subject	☐ ☐ ☐ ☐ ☐ ☐	I am wasting my time in this subject

In exploring attitudes towards chemistry laboratories, the Likert method has been used while, in looking at university physics, the semantic differential method was chosen. When Osgood first developed his approach, adjectives were used. In the example above, short sentences are employed while adjectival phrases can also be used.

The Osgood approach has two advantages: respondents can answer at great speed, thus giving much data very quickly. Both ends of the scale are defined making interpretation easier. However, the Likert approach allows for the use of longer statements, offering some versatility. Recently, some have used longer statements with the semantic differential approach but this may have limitations with younger respondents (see Al-Shibli, 2003).

Osgood's (or the Semantic-Differential) method is a popular, valid and reliable technique for attitude measurements. It was designed as a seven-point rating scale with bipolar word-pairs placed at the opposite ends of the scale. One of the main advantages of this method its strongly evaluative character. The method enables the respondent to express the evaluation even if it is hard to be put in words. Also respondents can finish it in short time and even children can do it (Reid, 1978).

Hadden (1975) found that the Semantical Differential method has a coefficient of reliability of around 0.9 while Heise (1969) noted that,

> *"Osgood's method is eminently suitable in terms of type of sample, administration, easy design, high reliability and validity when compared to other methods"*

The real problem lies in the scoring method. Osgood et al (1957, p.191-192) wrote

> *"For purposes of scoring consistency, we have uniformly assigned the unfavorable poles of our evaluative scales (e.g., bad, unfair, worthless, etc.) the score '1' and the favorable poles (good, fair, valuable) the score '7'--this regardless of the presentation of the scales to subjects in the graphic differential, where they should be randomized in direction. We then merely sum over all evaluative ratings to obtain the attitude 'score....' Although on a single scale there are only three levels in intensity, 'slightly,' 'quite,' and 'extremely' in either directions, summing over several evaluative scales yields finer degrees of intensity. If six scales are used, for example, we have a range of possible scores from six (most unfavorable), through 24 (exactly neutral), to 42 (most favorable), there being 18 degrees of intensity of attitude score in each direction."*

Both Likert and Osgood used such scaling techniques to gain scores. However, such an approach is open to considerable criticism (see Reid, 2006).

The Likert method (Likert, 1932) eliminates the role of judges used by Thurstone (1929) and allows the respondent to place himself on the evaluative scale according to the degree of his preference towards the attitude object. The evaluative scale for each statement normally consisted of five positions, running from "strongly agree" to "strongly disagree" including the neutral one. Respondents are asked to tick one of the five positions provided, thus expressing the degree of agreement or disagreement with a statement. Such a method, it was believed, would provide more precise information about the attitude held.

The Likert method was originally designed to be used as a scale where a respondent's attitude is estimated by the value of the total score obtained (which is a sum of scores from the evaluation of different items of the scale). Thus, for example, 'strongly agree' with a positive statement about an attitude is scored as 5 points and 'strongly disagree' with the positive statements about an attitude object is scored as 1 point. If a statement is negative, then this system of scoring is reversed, 'strongly agree' giving 1 point and 'strongly disagree' 5 points. The semantic differential can also be scored in a similar way. However, this approach uses numbers which are ordinal in nature (they merely label the categories) and uses them as integers: this is not a satisfactory approach. Thus, with the method, on a five point scale, a response of "agree" might be worth 4 while a response of "disagree" might be worth 2. This is a meaningless use of number.

Reid (2006) introduces some basic principles in building measurements for assessing attitudes. He argues that

> "*Attitude development is very important in that it will influence future behaviour and such behaviour may have very significant consequences for the individual and society. The measurement of attitudes is extremely important and there is a need for valid approaches that are accurate and offer rich insights.*" *(Reid ,2006,p. 20)*

It is important to note that,

> "*Most attitudes related to science education are multifaceted and any attempt to reduce measurement to a final score for each individual will tend to give a meaningless number. Absolute measures of attitudes are impossible. Only comparisons can be made. There are numerous paper-and-pencil approaches:*

based on Likert, Osgood as well as rating questions and situational set questions, interviews and offer useful insights."

(Reid, 2006, p. 20)

It is important to recognise that attitude measurement can only give relative data and never absolute. It is equally important to appreciate that talking about attitudes in terms of a single number or score is largely meaningless and loses all the rich detail needed in understanding the complex matrix of beliefs which comprise an attitude.

Analysing the data obtained from questionnaires must bear this in mind. The data obtained are ordinal and not cardinal, the responses may deviate markedly from a normal distribution while individual error limits might be very high. The latter point suggests great caution in using the data from an individual student although gathering data from large numbers is likely to give highly reliable patterns (see Reid, 2003).

5.5 The Use of Interviews

Surveys can offer much useful information. However, by their very nature, they tend to be somewhat prescriptive and do not allow the respondents freedom nor are there opportunities for seeking clarification or engaging in dialogue. This is where interviews can offer useful insights.

Exploratory interviews can be used before developing surveys to define the agenda for the surveys. Equally, interviews can follow surveys in order to check validity and expand on what has been found. The latter approach was adopted in this study. Reid (2003), p.28) notes that,

*"We can learn a large amount by **talking** to our students about their learning. Interviewing is a powerful research tool. However, there are several possible pitfalls:*

(a) Interviews take time both for students and for staff: a useful interview make take anything from 15-30 minutes. Interviewing, say, 20 students, then takes anything from 4 to 8 hours of staff time.

(b) It is difficult to translate evidence from interviews into a neat summary: Summarising interviews from, say, 20 students into a meaningful whole is a time-consuming task and, because each is different in terms of the way the student use language and ideas, it is not always easy to be sure of common ideas.

(c) *It is possible to allow interviews merely to confirm our preconceived ideas: Even with great effort, it is difficult to avoid the fact that, if the member of staff is the interviewer, our ideas and thoughts may influence the way the interview is conducted and the way results are interpreted.*

(d) *Finally, if we are perceived as some kind of 'authority figure' in our departments, then it is possible for students to respond in ways which they perceive as putting themselves in a good light."*

(Reid, 2003, p.28)

There are numerous factors which are important in interviews (Reid, 2003): interviewer skills, relationship between interviewer and interviewee, purpose of interview, location, and note taking. Interviews can be highly structured, with the entire question decided before hand. This is more like a verbal questionnaire but has the advantage over a questionnaire of allowing some kind of check for misunderstanding and misinterpretation. In this study, the interviews were semi-structured where the researcher had planned questions but the student had the opportunity to react to the questions according to their own experiences and opinions, allowing issues important for the student to be explored.

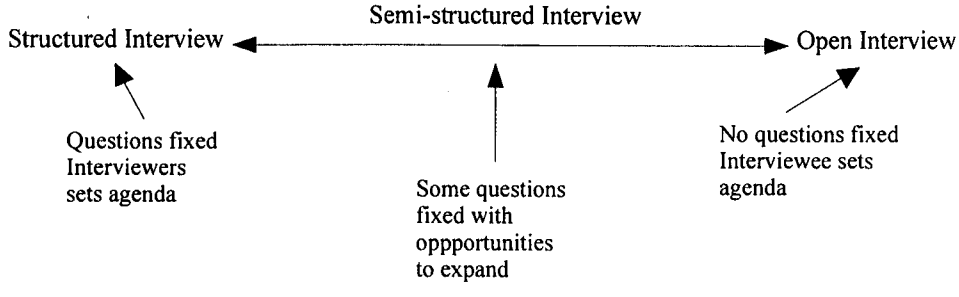


Figure 5.1 Types of Interviews

Data from interviews can be analysed in many ways. One useful way is to gather responses into suitable categories in order to see the broad patterns of views being expressed.

5.6 Reliabilty and Validity

Validity is a very important issue in all measurement. The fundamental question is what confidence the researcher can place on the measurement as a measure of the attribute under consideration. In this case, this is extremely difficult in that there is no certainty that the measurement instruments developed are actually measuring confidence. Ideally, it is necessary to relate the measurements to some other observation or measurement.

However, this is not easy. Nonetheless, some steps can be taken. The questionnaire questions can be considered by 'experts' – those who have some knowledge of the field and who know the nature of the population to be tested. Adjustments can be made in the light of their comments. Secondly, the patterns of results from the questionnaire can be compared qualitatively to the outcomes of the interviews.

In the context of attitude measurement, Reid (2003, pages 51-52) suggests the following

> "*Validity can be checked by: seeking opinions of a group of those who know the population, the attitudes being considered and the social context. Developing questions based on the population (for example, by means of discussion or previous questionnaires). Sample interviewing; comparing any conclusions drown from the attitudes measurements with other independent observations. Reliability can be checked by test and re-test procedures. Using large samples, careful pre-testing, checking that test conditions are socially acceptable; using enough questions, with cross checks (e.g. repeated questions, similar questions). Validity is much more important than reliability. It is possible to have a reliably invalid test. An unreliable test will always be invalid.*"

Validity is always the more important aspect to check carefully. Nonetheless, reliability has also to be considered. There are many forms of reliability but the essential one here is to know if the measurement, when repeated under similar conditions, will give similar patterns of responses. If a measurement is made under appropriate conditions with large samples, then high reliability is likely (see Reid, 2006). Appropriate conditions might involve issues like: adequate time, suitable surroundings, absence of disturbance, respondees not feeling that they have to respond in a way to 'satisfy' the researcher or their teacher.

In a recent paper, Bennett *et al.* (2001) have discussed many of the issues relating to attitude measurement. They argue that there are many points of debate in attitude measurement: lack of precision over key definitions of terms, poor design of instruments and individual response items within instruments, failure to address matters of reliability and validity appropriately, inappropriate analysis and interpretation of data, and lack of standardisation of instruments. Thier views are important and have been used to underpin the procedures employed in this study.

5.7 Other Measurements

Working memory capacity is well known to be a powerful influence on academic success: the findings of the Johnstone and El-Banna paper of 1986 have been supported by numerous other measurements (e.g. Johnstone, 1991; Johnstone *et al*, 1993, 1998; Sirhan and Reid, 2001; Danili and Reid, 2004). They used two methods to measure working memory capacity: the digit span test and the figural intersection test.

Since Miller's experiment (Miller, 1956) the fixed capacity of short-term memory (or, if processing involved, working memory) has been well demonstrated (e.g. Baddeley, 1987). This is the part of the brain where the individual thinks, understands and solves problems. The space is also used to hold information temporarily. While the capacity cannot be expanded, the efficiency of its use can be increased with more experience. It is possible to overload working memory and cause discomfort and confusion. It is unpleasant and exhausting to work at the limit for more than short periods and most people work well below their limit. This limited working space seems to be the rate determining step in enabling understanding to take place. The space has to hold information; it also has to be used for any processing. There is a trade-off between these two functions. If a student has a larger than average working memory capacity, then, perhaps, understanding is easier; and confidence might grow.

The digit span backwards test and figural intersection test are both well established and reliable measures of working memory capacity. The former has the advantage of its obvious face validity and is faster to apply (see El-Banna, 1987). It is used in this study.

5.8 Conclusions

In this study, confidence was seen as related to self-esteem and approaches to attitude measurement were employed. This involved questionnaires. Some of the questions adopted the Osgood et al, (1957) style while others followed Likert's (1932) approach. Rating questions were also used. In these, students were asked to place a number of options in order, thus indicating their priorities and how they evaluated.

Semi-structured interviews (whith a strong measure of closed questions) were undertaken to establish some kind of measure of the validity of the questionnaires. Working memory

capacity was measured using the digits span backwards test while examination and test data was also obtained. In every case, large samples were used in the data collection. The overall aim was to obtain a picture of the nature of confidence and to see how this was related to other attributes (which were also measured by survey) and to performance (as measured by formal examinations).

This chapter has sought to give an overview in general terms of the kinds of approaches adopted in this study. The detail of each measurement tool will be discussed as the various stages of the study are described.

Chapter Six

Exploring Academic Confidence

6.1 Introduction

The first experiment involved the development and use of a questionnaire. The aim was to explore a range of areas of life where confidence was thought to be important (table 6.1).

Area	Description	Typical Statement
Academic	How they see themselves in academic study	"I feel that I am just as smart as others of my age"
Athletic	Perception of co-ordination and sporting skills	"I feel that I am doing very well at all kinds of sports"
Attractiveness	How they think others see them	"I wish that more people my age liked me"
Popularity	How easy it is for others to like them	"I feel that I am easy to be liked"
Lifestyles	General satisfaction with lifestyle	"I do not really enjoy my present lifestyle"

Table 6.1 Areas of Confidence

The aim in using the questionnaire was to see how the responses to the different areas related to each other to gain an insight into whether academic confidence is part of some kind of generic skill or is confidence specific to different areas of life. The questionnaire was considered by a number of 'experts' and attempted by a few postgraduate students, the aim being to check its validity and to spot any ambiguities. Minor adjustments were made in the light of the comments received and the questionnaire was then translated into Arabic and the translation checked. It was then used in Saudi with 410 first year university students and 217 senior school students. The sample contained the sub-groups as shown in table 6.2.

Samples Used	
University	414
School	217
Total	**631**
Sub-Groups	
Male	241
Female	390
Private Education	128
State Education	503
Arts and Humanities	376
Physical Sciences	255

Table 6.2 Samples Used

Semi-structured interviews were carried out with a sample of students. This gave an opportunity to check if the questionnaire was valid. Culturally, it was not acceptable for male students to be interviewed in that the researcher was female. Thus, 50 female university students were involved in the interviews, these students all studying psychology (where access to students was much easier).

The standardised examination marks of all the students at both school and university were obtained and the responses to the items in the questionnaire were related to the examination performance. One main aim of this experiment was to explore the relationship between academic performance and self-esteem in all questionnaire dimensions with Saudi Arabian high school and university students.

The responses for each item in the questionnaire were coded and the patterns of frequencies for the whole group and for all the subgroups were found. The complete questionnaire (in English) is shown in the appendix A. The pattern of responses for each item in turn is now considered. The data are presented as percentages for clarity but all statistical calculations were conducted using the raw data.

The following statistical analyses were conducted. The response pattern for each question was correlated with their examination performance. This was carried out using Kendall's Tau-b, a statistic that offers a measure of correlation without assuming that the distributions were normally distributed. It also handles 'ties' well. The use of Kendall's Tau-b is summarised in the appendix G. The examination performance for school pupils was their composite mark while, for university students, their mark in their degree specialism was used. Marks were standardised as necessary.

The sample was divided into several subgroups and the patterns of distribution on each for various subgroups were compared using chi-square as a contingency test (see the appendix G). Correlation values and chi-square values are only shown where they are significant ($p < 0.05$). Where there are no differences between subgroups, only the total data are shown.

In the following sections, the question polarity (which was random in the original questionnaires) is made such that the positive statement is at the left-hand side. This is done simply for clarity.

6.2 I tem 1

I tem 1 focussed on academic studies.

(1) Think about ***your studies***

I understand things easily	☐	☐	☐	☐	☐	☐	I do not understand things easily
I do not have a good memory	☐	☐	☐	☐	☐	☐	I have a good memory
I get right answers	☐	☐	☐	☐	☐	☐	I do not get right answers
I learn quickly	☐	☐	☐	☐	☐	☐	I do not learn quickly
I am not doing well in my studies	☐	☐	☐	☐	☐	☐	I am doing well in my studies
I have few abilities	☐	☐	☐	☐	☐	☐	I have many abilities
I often forget what I learn	☐	☐	☐	☐	☐	☐	I rarely forget what I learn
I am not sure I shall pass my examinations	☐	☐	☐	☐	☐	☐	I am sure I shall pass my examinations
Getting right answers is not important to me	☐	☐	☐	☐	☐	☐	Getting right answers is important to me

Each item in this question is now considered in turn.

Statement			*Sample*	*Response*					
I understand things easily			University	29	51	15	2	2	3
			School	19	54	21	5	1	1
School pupils	r = 0.14	(p = 0.016)	***Sub-Groups***						
Males	r = 0.11	(p = 0.045)	Male	31	45	19	3	2	1
State Education	r = 0.10	(p = 0.007)	Female	23	55	17	3	1	3
Private Education	r = 0.27	(p < 0.001)	Private education	28	53	14	3	1	0
Arts/Sciences	χ^2 = 16.7 (df2)	(p < 0.01)	State education	25	52	18	3	2	4
			Arts and humanities	25	56	14	3	2	0
			Physical Sciences	25	47	22	4	2	0

Table 6.3 Question 1.1

Comments

Overall, all groups tended to express confidence. Pupils' confidence in their ability to understand is clearly linked to performance while this is less true for the university students. Of course, the latter will be much more confident anyway in that they have succeeded in entering university and have passed many examinations at school. The private and state sectors respond in a similar way but there is a much more marked relationship between responses and performance with those from the private sector. As might be expected, the science students are not nearly as confident in their ability to understand things easily, reflecting the well- known difficulties in conceptual understanding associated with the sciences (e.g. Johnstone and Kellet, 1980). However, it has to be noted that many of the correlation values are low.

Statement			Sample	Response					
I have a good memory			University	20	33	12	10	16	9
			School	25	30	13	14	12	5
Physical Sciences	r = 0.15	(p = 0.044)	***Sub-Groups***						
Male/female	χ^2 = 12.8 (df5)	(p < 0.01)	Male	27	25	12	13	15	9
Private/State	χ^2 = 17.3 (df4)	(p < 0.01)	Female	19	40	14	10	14	6
Humanities/ Sciences	χ^2 = 12.7 (df5)	(p < 0.05)	Private education	21	23	9	14	25	9
			State education	22	33	13	12	12	7
			Arts and humanities	22	36	12	9	13	7
			Physical Sciences	21	24	14	18	16	7

Table 6.4 Question 1:2

Comments

There was a wide range of views although few admit that they have extremely poor memories. In general, there is little relationship between learner confidence in their memory ability and their actual performance. The physical science sub-group is exceptional. Here, those who consider they have a good memory do, in fact, perform better. This may imply the over-dependence on the need to memorise at the expense of conceptual understanding in subject areas which are highly conceptual (see Kardash and Wallace, 2001).

Some of the sub-group differences are interesting. Males are more confident about their memory abilities. Surprisingly, although those taking physical sciences show a correlation with performance, it is the arts/humanities group which is more assured about memory skills. It is possible that performance in arts/humanities is more assured in its reliance on memory while the dependence on memory in the physical sciences is inconsistent with understanding.

Statement	Sample	Response					
I get right answers	University	21	43	23	6	4	1
	School	24	36	25	9	3	2

Table 6.5 Question 1:3

Comments

There is general pattern of confidence which might reflect the emphasis on getting 'right' answers in the Saudi education system.

Statement		*Sample*	*Response*					
I learn quickly		University	41	39	15	2	2	3
		School	32	44	15	7	1	1
School pupils	$r = 0.20$ ($p < 0.001$)	***Sub-Groups***						
Males	$r = 0.12$ ($p = 0.043$)	Male	36	38	17	4	2	1
State Education	$r = 0.10$ ($p = 0.007$)	Female	39	42	14	3	1	3
Physical science	$r = 0.14$ ($p = 0.008$)	Private education	40	40	12	4	0	1
Universities/School	$\chi^2 = 10.5$ (df3) ($p < 0.05$)	State education	38	41	16	3	2	4
Arts/Sciences	$\chi^2 = 9.2$ (df2) ($p < 0.01$)	Arts and humanities	40	42	13	2	2	1
		Physical Sciences	35	38	18	5	1	0

Table 6.6 Question 1:4

Comments

In general, pupils and students are fairly positive. For several groups, their confidence in learning quickly is related to their actual examination performance. However, there are some surprises. The confidence of university students is not related to their performance perhaps relating to the fact that they do not represent the whole society and are possibly mostly able to learn quickly irrespective of their confidence to do so. This fits with the observation that the students are more confident than the school pupil group. Arts show higher levels of confidence, perhaps again reflecting the known difficulties in the physical sciences: the need for conceptual understanding may lower confidence.

Statement		*Sample*	*Response*					
I am doing well in my studies		University	38	33	11	8	6	4
University	$r = 0.28$ ($p < 0.001$)	School	33	29	17	7	9	5
School	$r = 0.30$ ($p < 0.001$)	***Sub-Groups***						
Female	$r = 0.30$ ($p < 0.001$)	Male	25	31	16	12	8	7
Private	$r = 0.40$ ($p < 0.001$)	Female	45	32	11	5	6	1
State Education	$r = 0.30$ ($p < 0.001$)	Private Education	41	31	13	4	9	4
Art and humanities	$r = 0.20$ ($p < 0.001$)	State Education	35	33	13	9	7	3
Physical sciences	$r = 0.30$ ($p < 0.001$)	Arts and Humanities	39	34	11	6	7	3
Males/females	$\chi^2 = 37.6$ (df4) ($p < 0.001$)	Physical Sciences	32	29	16	10	8	4
Arts/Sciences	$\chi^2 = 10.9$ (df4) ($p < 0.05$)							

Table 6.7 Question 1:5

Comments

All groups (except males) show fairly high correlations of confidence with performance. The difference between males and females is confirmed by the very high chi-square value obtained. Overall, the confidence of the learners is related strongly to performance. Thus, what they think is true is, in fact, true. The lack of male confidence is, at first sight, not easy to explain and seems to run counter to expectations in that males typically tend to be more confident (Rogers *et al*, 1998). It is possible that, being educated separately at all stages has contributed to the outcomes here. It is also worth noting that, again, there is arts/science divide, with less confidence in doing well being shown by the science group.

Statement			Sample	Response					
I have many abilities			University	23	30	13	13	11	9
			School	28	29	18	11	7	5
University	$r = 0.10$	$(p = 0.018)$	***Sub-Groups***						
School	$r = 0.20$	$(p < 0.001)$	Male	21	28	15	11	12	12
Females	$r = 0.10$	$(p = 0.017)$	Female	27	32	15	12	9	5
Private	$r = 0.15$	$(p = 0.028)$	Private education	37	24	16	13	5	4
State Education	$r = 0.08$	$(p = 0.030)$	State education	22	31	14	13	11	8
Art and humanities	$r = 0.11$	$(p = 0.007)$	Arts and humanities	25	28	13	12	12	9
Physical Sciences	$r = 0.15$	$(p = 0.004)$	Physical Sciences	25	33	17	15	5	4
Males/Females	$\chi^2 = 11.5$ (df4)	$(p < 0.05)$							
Private/State	$\chi^2 = 17.7$ (df4)	$(p < 0.01$							

Table 6.8 Question 1:6

Comments

All groups except the males show a low correlation of their performance related to confidence as expressed by the view that they think they have many abilities. Again, the males are exceptions in that they show a lower level of confidence and this is not so easy to explain except in terms of the separate sex educational structure at all levels. It is worth noting that those from the state sector are much less confident in their abilities

Statement			Sample	Response					
I rarely forget what I learn			University	13	20	18	20	19	11
			School	17	18	13	27	14	11
Males/Females	$\chi^2 = 14.1$ (df5)	$(p < 0.05)$	***Sub-Groups***						
Private/State	$\chi^2 = 18.2$ (df5)	$(p < 0.01)$	Male	20	18	14	16	17	14
			Female	12	20	17	23	19	9
			Private education	7	20	20	32	11	9
			State education	16	18	15	20	20	11
			Arts and humanities	15	18	15	20	20	11
			Physical Sciences	14	19	16	25	15	10

Table 6.9 Question 1:7

Comments

There were no significant positive relationships with performance. Therefore, the confidence in memory skills was not related to performance. In the Saudi system, assessment is almost entirely of a recall nature. Thus, success does rely heavy on memory skills. Nonetheless, the learners' perceptions of their abilities does not relate to their actual abilities. This is somewhat surprising.

Males and females show a statistical difference in their responses but this is caused by the males being more polarised in their views with the females slightly more neutral. A similar pattern occurs with state and private education, the state pupils showing more polarisation of views. These data are not easy to interpret.

Statement	*Sample*	*Response*					
I am sure I shall pass my examinations	University	40	26	13	8	7	5
	School	39	22	11	11	11	7
University $r = 0.30$ $(p < 0.001)$							
School $r = 0.40$ $(p < 0.001)$							
Males $r = 0.17$ $(p = 0.002)$	***Sub-Groups***						
Females $r = 0.30$ $(p < 0.001)$	Male	25	28	13	14	12	7
Private Education $r = 0.20$ $(p < 0.001)$	Female	47	23	12	7	6	5
Art and humanities $r = 0.30$ $(p < 0.001)$	Private education	62	16	9	5	5	4
Physical Sciences $r = 0.30$ $(p < 0.001)$	State education	33	27	13	11	9	6
Males/Females $\chi^2 = 32.6$ (df5) $(p < 0.001)$	Arts and humanities	39	26	13	7	9	6
State/Private $\chi^2 = 39.6$ (df4) $(p < 0.001)$	Physical Sciences	40	23	11	13	7	6

Table 6.10 Question 1:8

Comments

For all groups, they express high confidence in their ability to pass examinations and, for all groups their confidence in their abilities to pass examinations relate to their examination performance. In other words, they are accurately self aware of their abilities. Females are much more confident than males, as might be expected due to their separate education where they do not feel they have to compete with the males. Of note is the very high level of confidence expressed by those in the private sector of education. This sector places greater value on social skills.

Statement	*Sample*	*Response*					
Getting the right answer is important to me	University	62	18	10	5	2	2
	School	64	19	7	2	3	4
University $r = 0.10$ $(p < 0.016)$							
School $r = 0.14$ $(p < 0.020)$	Sub-Groups						
Private Education $r = 0.25$ $(p < 0.001)$	Male	57	18	11	6	3	4
State Education $r = 0.08$ $(p < 0.036)$	Female	68	17	8	2	2	1
Art and Humanities $r = 0.09$ $(p < 0.026)$	Private education	62	21	8	4	1	4
Physical Sciences $r = 0.10$ $(p < 0.046)$	State education	64	17	10	4	3	2
	Arts and humanities	67	16	8	3	3	3
Males/Females $\chi^2 = 9.5$ (df5) $(p<0.05)$	Physical Sciences	57	20	10	6	3	2

Table 6.11 Question 1:9

Comments

For all groups, the importance of getting right answers is very marked. Also, every group shows a positive significant correlation between this viewpoint and their actual success. Interestingly, the pupils in private education showed the most marked correlation, perhaps reflecting a feature of this kind of schooling. There is a clear difference by gender, with the girls much more concerned about getting right answers.

6.3 Item 2

Think about ***your lifestyle***

I feel that most people like me	☐ ☐ ☐ ☐ ☐ ☐	I wish that more people liked me
I do very well at all kinds of sports	☐ ☐ ☐ ☐ ☐ ☐	I do not feel I am very good at sports
I find it hard to make friends	☐ ☐ ☐ ☐ ☐ ☐	I make friends easily
I like taking risks	☐ ☐ ☐ ☐ ☐ ☐	I do not like taking risks
I wish I could be a lot better at sport	☐ ☐ ☐ ☐ ☐ ☐	I feel I am good enough at sport
I have a lot of friends	☐ ☐ ☐ ☐ ☐ ☐	I do not have many friends

Statement	*Sample*	*Response*					
I feel that most people like me	University	37	25	14	6	5	12
	School	26	32	17	7	5	13

Table 6.12 Question 2:1

Comments

Data on this question show that there is no relationship between the student's confidence in the positive feelings of people and performance. In all groups, there are signs of polarisation. Despite appearing dissimilar, statistically the university and school groups are not different.

Statement		*Sample*	*Response*					
I do very well at all kinds of sports		University	22	16	13	23	17	8
		School	14	24	25	14	10	13
University	$r = -0.18$ $(p < 0.001)$	***Sub-Groups***						
State Education	$r = -0.17$ $(p < 0.001)$	Male	20	23	25	12	8	12
		Female	25	16	14	23	17	6
Males/females	$\chi^2 = 46.1$ (df5) $(p < 0.001)$	Private education	11	19	13	26	23	9
Arts/Sciences	$\chi^2 = 28.1$ (df5) $(p < 0.001)$	State education	21	13	13	24	19	11
		Arts and humanities	23	14	14	23	17	8
		Physical Sciences	15	23	25	12	13	12

Table 6.13 Question 2:2

Comments

With two groups, there is significant negative correlation, indicating that those who do well in examinations tend *not* to see themselves as good at sport. There are significant differences between males and females – it is not easy to see why this is so. Arts and Sciences students also differ: again the pattern is not easy to interpret.

Statement	*Sample*	*Response*					
I make friends easily	University	35	23	11	10	13	8
	School	38	24	11	12	10	6
State/Private χ^2 = 11.3 (df4) ($p < 0.05$)	***Sub-Groups***						
	Male	36	20	12	9	16	6
	Female	37	24	10	12	9	8
	Private education	38	32	7	11	3	9
	State education	36	21	11	11	13	7
	Arts and humanities	35	23	12	11	10	9
	Physical Sciences	38	23	9	11	13	5

Table 6.14 Question 2:3

Comments

There is clearly no relationship between their responses to this question and performance. Thus, expressed confidence in social relationships is unrelated to examination performance. Pupils in the private sector are more confident in their ability to make friends than those in the state sector, again perhaps reflecting an emphasis of private education or, perhaps, caused by the social expectation of pupils in the private sector who may come from families where relationships are emphasised more.

Statement	*Sample*	*Response*					
I like taking risks	University	23	21	15	9	8	25
	School	31	18	17	7	11	16
Females r = -0.11 (p =0.007)	***Sub-Groups***						
	Male	26	19	16	7	11	21
University/schools χ^2 = 11.2 (df5) ($p < 0.05$)	Female	25	22	15	9	7	23
State/private χ^2 = 16.0 (df5) ($p < 0.01$)	Private education	27	28	21	6	6	12
	State education	26	19	14	8	9	23
	Arts and humanities	23	19	16	7	9	24
	Physical Sciences	31	22	15	8	7	17

Table 6.15 Question 2:4

Comment

It is an interesting observation that there is a tendency for females who like taking risks *not* to do so well in examinations. This is difficult to interpret but may simply reflect that examinations do not involve risks. As might be expected, school pupils tend towards risk taking more than university students. This may be a function of age and maturity or it may relate to educational stage. However, this is a sad reflection on education if it brings about a tendency to conformity. Looking at the state-private comparison, private education contains more moderate risk takers and fewer who are strongly opposed to risk taking. However, the most obvious pattern is that of polarisation in all groups. Between a sixth and a quarter are strongly opposed to taking risks. This raises the question of why taking risks in intellectual thought and problem solving is so strongly opposed by this minority (see Reid and Yang, 2002b).

Statement	Sample	Response					
I feel I am good enough at sport	University	55	16	9	4	8	9
	School	54	12	7	7	7	11
State/private $\chi^2 = 22.2$ (df5) ($p < 0.01$)	***Sub-Groups***						
	Male	50	10	9	6	9	17
	Female	57	17	8	5	7	6
	Private education	47	14	9	11	11	9
	State education	57	14	9	4	6	10
	Arts and humanities	55	14	9	6	7	9
	Physical Sciences	56	14	8	4	7	11

Table 6.16 Question 2:5

Comments

The results of this question, like question 11, indicate no relationship between this perception and performance. Unlike question 11, however, there are no differences in perceptions between boys and girls and between science and arts. However, state pupils a little more confident in their abilities here.At first sight, this is difficult to explain. However, in such schools football is part of life and this is the local and preferred sport in Saudi culture.

Statement	Sample	Response					
I have a lot of friends	University	57	21	11	5	3	3
	School	60	20	8	4	5	4

Table 6.17 Question 2:6

Comments

There was a general confidence in social relationships as expressed by feeling of having many friends and this was unrelated to academic performance and showed no difference between sub-groups.

6.4 I tem 3

Think about ***your self***

I am happy with the way I look	☐☐☐☐☐☐	I am not happy with the way I look
I usually like the way I behave	☐☐☐☐☐☐	I often do not like the way I behave
I like a good argument	☐☐☐☐☐☐	I do not enjoy arguments
I usually do the right thing	☐☐☐☐☐☐	I often do the wrong thing
I am not popular with others my age	☐☐☐☐☐☐	I am popular with others my age
I feel I can succeed at most things I attempt	☐☐☐☐☐☐	I do not feel I can succeed at most things I attempt
I do not like challenges	☐☐☐☐☐☐	I like challenges

Statement	*Sample*	*Response*					
I am happy with the way I look	University	55	27	11	2	3	2
	School	51	30	12	4	1	2
University r = -0.14 (p <0.001)	***Sub-Groups***						
	Male	61	24	8	3	2	3
Arts and humanities r = -0.14 (p <0.01)	Female	50	31	14	3	3	1
	Private education	56	33	16	3	0	2
	State education	54	29	11	2	3	2
	Arts and humanities	56	27	10	2	3	2
	Physical Sciences	52	29	13	3	1	2

Table 6.18 Question 3.1

Comments

Overall, the vast majority of all groups claimed they were happy with their appearance. Surprisingly, perception of happiness with appearance tended to relate to *lower* performance with university students and those taking arts and humanities. As might be expected, in a male dominated society, males appear to see themselves more positively than females although the difference was not significant.

Statement	*Sample*	*Response*					
I usually like the way I behave	University	24	34	15	8	10	9
	School	21	38	17	8	9	7

Table 6.19 Question 3.2

Inner contentment with general behaviour showed no relationship with academic performance and no differences between subgroups. This is interesting, and perhaps surprising. It might have been expected that this inner confidence with behaviour patterns might relate to academic performance in that academic performance is one aspect of behaviour.

Statement	*Sample*	*Response*					
I like a good argument	University	46	22	11	4	5	12
	School	51	18	4	3	3	12
School/university $\chi^2 = 9.2$ (df3) ($p<0.05$)	***Sub-Groups***						
	Male	48	21	12	4	3	10
	Female	49	20	10	4	5	12
	Private education	47	21	10	4	4	16
	State education	49	20	11	4	4	11
	Arts and humanities	48	22	9	5	5	11
	Physical Sciences	48	18	15	4	2	12

Table 6.20 Question 3.3

Comments

There is remarkable consistency across all sub-groups although university students are less enthusiastic than school pupils. This is both surprising and, perhaps, sad. Surely a function of maturity and education must be to be able to look at issues critically and argue a case. The examination system in Saudi Arabia rewards recall of what is taught and critical comment is not encouraged. However, it has to be recognised that the question is open to multiple interpretations and, therefore, caution in interpretation has to be adopted.

Statement	*Sample*	*Response*					
I usually do the right thing	University	26	43	24	7	1	
	School	26	42	22	7	1	

Table 6.21 Question 3.4

Comments

The statement perhaps relates in some way to moral decision-making and it is clear that is unrelated to performance. However, it is possible that the statement could be related to the ability to take decisions about academic work, anything from the choice of subjects to be studied, the choice of how to work, or even the choice of methods in undertaking detailed work. If this is true, then it is surprising that no correlation with performance is observed. It is difficult to interpret this question easily in that multiple understandings are possible.

Statement	Sample	Response					
I am popular with other of my own age	University	29	21	13	12	13	11
	School	28	20	6	16	14	14
Males/females χ^2 = 32.4 (df5) ($p < 0.01$)	***Sub-Groups***						
State/private χ^2 = 10.5 (df4) ($p < 0.05$)	Male	28	18	9	14	15	15
	Female	29	22	12	12	13	11
	Private education	36	21	9	16	14	4
	State education	26	21	11	12	14	14
	Arts and humanities	28	20	11	13	13	14
	Physical Sciences	28	23	9	13	15	10

Table 6.22 Question 3.5

Comments

It might have been expected that social self-esteem might have related to confidence in academic study and, thus, to performance. However, no correlations are observed. Looking at gender, females are more confident with regard to perceived popularity than males (which is surprising) and, as expected, those from the private sector are more confident than those in the state sector.

Statement	Sample	Response					
I feel I can succeed at most things I attempt	University	41	35	15	4	2	3
	School	40	31	15	7	3	2

Table 6.23 Question 3.6

Comments

There are no correlations with performance suggesting that, although they have confidence about their ability to succeed at most things they attempt, this does not translate into any kind of confidence in academic performance, suggesting that confidence is not generic. Examination performance is to be seen as something very separate from other areas of life and confidence elsewhere does not seem to translate into performance in examinations.

Statement	*Sample*	*Response*					
I like challenges	University	39	20	11	8	10	12
	School	48	19	7	9	8	8
State Education $r = -0.11$ $p = 0.003$	***Sub-Groups***						
Science student $r = -0.11$ $p = 0.034$	Male	46	17	8	9	10	10
	Female	40	23	10	7	9	11
Arts/Sciences $\chi^2 = 12.4$ (df5) $p < 0.05$	Private education	48	18	10	7	9	7
	State education	42	20	9	8	8	11
	Arts and humanities	38	22	10	8	10	12
	Physical Sciences	51	16	9	9	6	8

Table 6.24 Question 3.7

Comments

Most of the groups and sub-groups did not have significant correlations between academic performance and responses to this question although state and science students have negative significance. At first sight, it might have been expected that those who like challenges more might have performed *better* in examinations. However, if the examinations did not reward such skills and offered greater rewards for memory skills and the unquestioning recall of knowledge, then the results make some kind of sense.

The arts and humanities group were least positive (although females were similar) while the science group were significantly different from the arts and humanities group liking challenges much more. Do the physical sciences courses encourage challenges more or does this pattern simply reflect the nature of the population who choose such subjects when compared to Arts students?

6.5 Item 4

Please tick one box on each line to show your opinion

	strongly *agree*	*agree*	*neutral*	*disagree*	*strongly disagree*
I feel I am very good at my studies	☐	☐	☐	☐	☐
I am not successful at sports	☐	☐	☐	☐	☐
I feel that I am just as clever as others my own age	☐	☐	☐	☐	☐
I am always doing things with many other people	☐	☐	☐	☐	☐
I do not have a good imagination	☐	☐	☐	☐	☐
I wish my physical appearance was different	☐	☐	☐	☐	☐
I wish that more people my age liked me	☐	☐	☐	☐	☐
I think that I have enough experience to deal with life	☐	☐	☐	☐	☐
I like tasks that allow me to do things my own way	☐	☐	☐	☐	☐
I usually know what needs to be done	☐	☐	☐	☐	☐
I do not take decisions quickly	☐	☐	☐	☐	☐
I like to do things in new ways even when I am not sure of the best way	☐	☐	☐	☐	☐
I enjoy taking part in a new sporting activity	☐	☐	☐	☐	☐
I do not feel comfortable in a social situation	☐	☐	☐	☐	☐
I enjoy the challenge of a new problem in my studies	☐	☐	☐	☐	☐
I am happy with my weight for my height	☐	☐	☐	☐	☐
I do not really enjoy my present lifestyle	☐	☐	☐	☐	☐
I am confident that I can finish my studies quickly	☐	☐	☐	☐	☐

Statement			***Sample***	***Response***				
I feel I am very good at my studies			University	24	47	26	3	3
			School	20	39	37	3	1
University	r = 0.31	(p < 0.001)	***Sub-Groups***					
School	r = 0.27	(p < 0.001)	Male	19	43	35	2	1
Males	r = 0.26	(p < 0.001)	Female	26	45	26	3	0
Females	r = 0.35	(p < 0.001)	Private education	28	48	21	1	1
Private	r = 0.42	(p < 0.001)	State education	21	44	31	3	1
State	r = 0.29	(p < 0.001)	Arts and humanities	24	46	27	3	0
Arts	r = 0.27	(p < 0.001)	Physical Sciences	20	43	34	2	1
Science	r = 0.25	(p < 0.001)						

Table 6.25 Question 4.1

Comments

Clearly, with all groups, their expressed confidence in being good at studies is reflected in their actual performance. The students are appropriately self-aware.

Statement		*Sample*	*Response*				
I am not successful at sports		University	12	16	33	25	13
		School	7	17	24	28	22
University	$r = 0.11$ $p < 0.001$	***Sub-Groups***					
State	$r = 0.13$ $p < 0.001$	Male	7	15	25	27	25
Art and humanities	$r = 0.12$ $p < 0.001$	Female	12	17	33	26	10
University/school	$\chi^2 = 15.1$ (df4) $p < 0.01$	Private education	8	22	26	26	18
Males/Females	$\chi^2 = 25.4$ (df4) $p < 0.001$	State education	11	16	31	26	15
Private/State	$\chi^2 = 18.0$ (df4) $p < 0.01$	Arts and humanities	11	19	32	24	12
Arts/Science	$\chi^2 = 16.7$ (df4) $p < 0.01$	Physical Sciences	9	12	27	29	22

Table 6.26 Question 4.2

Comments

Questions 2.2 and 2.5 showed little connection between sport and academic performance and the correlations obtained here are very low.

Although university students show small links between perceived sport success and actual academic success, they are less confident that they are successful at sport, when compared to school pupils. Perhaps, with maturity and experience, they are more realistically self-aware. As might be expected, males are more confident of sporting success than females while, surprisingly, those in private education are less confident, perhaps arising from greater experience and higher competition. The arts/science differences are less easy to explain.

Statement		*Sample*	*Response*				
I feel that I am just as clever as others my own age		University	35	38	16	8	2
		School	29	32	29	8	1
University	$r = -0.14$ $p < 0.001$	***Sub-Groups***					
Males	$r = -0.13$ $p < 0.024$	Male	27	33	26	10	3
Arts and humanity	$r = -0.21$ $p < 0.001$	Female	37	37	18	7	1
University/School	$\chi^2 = 14.8$ (df3) $(p < 0.01)$	Private education	37	36	17	7	1
Males/Females	$\chi^2 = 11.8$ (df3) $(p < 0.01)$	State education	31	37	21	8	3
		Arts and humanities	32	38	20	7	2
		Physical Sciences	31	36	21	9	2

Table 6.27 Question 4.3

Comments

The results show that female and private groups show more confidence in their ability (in terms of being as clever as others) than other groups. It is likely that this is a result of separate education. This can give an opportunity for girls to perform particularly well. The private schools in Saudi tend to encourage confidence in abilities to achieve academically.

Statement	*Sample*	*Response*				
I am always doing things with many other people	University	23	36	28	10	4
	School	17	40	24	14	5
University/School χ^2 = 9.1 (df3) ($p < 0.05$)	***Sub-Groups***					
	Male	21	40	23	11	4
	Female	20	36	29	10	5
	Private education	23	39	27	9	1
	State education	21	36	26	11	5
	Arts and humanities	22	36	25	11	5
	Physical Sciences	20	38	28	9	4

Table 6.28 Question 4.4

Comments

Although this question could refer to team working, it could also refer to social relationships. In either case, there is no relationship between this ability and performance. Again, it appears that social relationships and social dynamics are unrelated to performance in academic subjects. There are differences between university and school students but the pattern is not clear-cut.

Statement	*Sample*	*Response*				
I do not have a good imagination	University	6	12	22	27	31
	School	9	17	18	31	24

Table 6.29 Question 4.5

Comments

There are no relationships between perceived ability to imagine and performance. This is sad in that creativity and imagination are such important skills and should be encouraged within any educational system and programme. Of course, it may simply reflect that the examinations test rote recall of information and the routine handling of data. Here, there is little scope for creativity and imagination. However, it is particularly surprising that those in Arts show no evidence of any relationship. It is also surprising that Arts and Sciences do not differ statistically in the way they respond to this question. Traditionally, Arts subjects might be expected to offer more scope although this is largely a reflection on the way science is taught and tested in most countries.

Statement	*Sample*	*Response*				
I wish my physical appearance was different	University	15	21	21	18	24
	School	21	20	20	18	19
Private Education $r = 0.17$ $p < 0.014$	***Sub-Groups***					
	Male	18	17	22	20	23
	Female	16	23	20	17	22
	Private education	20	20	20	18	21
	State education	16	22	22	18	23
	Arts and humanities	15	23	19	18	24
	Physical Sciences	19	18	23	18	21

Table 6.30 Question 4.6

Comments

In only one subgroup do responses to this question relate to performance. In general, their expressed confidence relating to their appearance (which is a part of self esteem or self-confidence) does not relate to academic confidence

Statement	*Sample*	*Response*				
I wish that more people my age liked me	University	37	24	31	4	3
	School	37	31	21	4	6
State/private $\chi^2 = 11.8$ (df3) $p < 0.01$ Arts/Science $\chi^2 = 12.3$ (df3) $p < 0.01$	***Sub-Groups***					
	Male	39	26	23	3	7
	Female	37	26	30	4	3
	Private education	23	36	23	11	6
	State education	41	24	28	3	4
	Arts and humanities	42	22	27	5	4
	Physical Sciences	30	33	27	3	6

Table 6.31 Question 4.7

Comments

Although the statement reflects powerful feelings related to self-esteem, responses do not relate to performance in examinations. However, there is surprising a difference in responses between state and private education, suggesting a certain lack of self-confidence in social relationships in the state group. The difference between the arts and humanities and the science groups suggests a greater degree of social confidence with the latter; however, the chi-square value arises simply because of changes in the first two boxes.

Statement	Sample	Response				
I think that I have enough experience to deal with life	University	17	34	30	14	4
	School	18	31	31	13	3
Males/Females χ^2 = 13.1 (df3) $p < 0.01$	***Sub-Groups***					
	Male	23	36	28	8	3
	Female	15	32	31	16	4
	Private education	18	30	31	18	2
	State education	17	35	30	12	4
	Arts and humanities	21	33	30	12	4
	Physical Sciences	13	34	31	16	4

Table 6.32 Question 4.8

Comments

This expression of confidence is, surprisingly, unrelated to examination performance. All sub-groups show very similar patterns of responses although males and females are different, with the males more confident. However, the general pattern of results is interesting in that there is such a spread of perception. Almost one fifth are expressing a lack of confidence in this very general area.

Statement	Sample	Response				
I like tasks that allow me to do things my own way	University	59	27	11	1	8
	School	51	31	17	1	0
Males $r = -0.12$ $p = 0.045$ State Education $r = -0.08$ $p = 0.044$	***Sub-Groups***					
	Male	55	29	14	1	1
	Female	58	28	12	1	3
	Private education	53	31	12	2	0
	State education	57	28	14	1	1
	Arts and humanities	56	29	13	1	0
	Physical Sciences	55	27	15	2	1

Table 6.33 Question 4.9

Comments

There are very low negative correlations with academic performance in two sub-groups but the sub-groups respond similarly. While the majority responded positively to this statement, the idea that those who like freedom might well be willing to take cognitive risks, learn beyond the curriculum in their own ways and, thus, perhaps, perform better is not sustained.

Statement	Sample	Response				
I usually know what needs to be done	University	26	43	24	7	1
	School	26	42	22	7	1

Table 6.34 Question 4.10

Comments

The general confidence as expressed in this question is unrelated to academic performance.

Statement	*Sample*	*Response*				
I do not take decisions quickly	University	25	32	21	14	6
State Education r = -0.09 p = 0.014	School	15	33	32	11	5
Arts and humanities r = 0.12 p = 0.003						
	Sub-Groups					
University/School χ^2 = 14.0 (df4) p <0.01	Male	23	28	25	13	8
Private/State χ^2 = 9.7 (df4) p < 0.01	Female	22	35	24	12	4
	Private education	16	40	26	11	4
	State education	23	32	24	13	6
	Arts and humanities	23	32	24	11	6
	Physical Sciences	20	34	27	14	4

Table 6.35 Question 4.11

Comments

Two sub-groups show very low but significant correlations with academic performance but it is not obvious why these two have opposite signs. The university students are clearly more confident in this area. The differences between state and private are not simple and may simply reflect different social backgrounds and experiences.

Statement	*Sample*	*Response*				
I like to do things in new ways even when I am not sure of the best way.	University	25	32	24	15	3
	School	30	24	25	13	4

Table 6.36 Question 4.12

Comments

This question considers an aspect of risk taking which might reflect inner confidence and is unrelated to academic performance

Statement	*Sample*	*Response*				
I enjoy taking part in a new sporting activity	University	20	20	36	16	8
	School	35	26	23	10	6
State education r = 0.10 p = 0.005	*Sub-Groups*					
Arts and humanities r = 0.08 p = 0.037	Male	32	23	27	12	6
	Female	22	22	33	15	7
University/School χ^2 = 34.4 (df4) p < 0.001	Private education	33	16	28	19	4
Gender differences χ^2 = 18.6 (df4) p < 0.001	State education	23	24	31	13	8
Arts/Science χ^2 = 16.9 (df4) p < 0.001	Arts and humanities	23	21	33	14	8
	Physical Sciences	30	25	27	13	6

Table 6.37 Question 4.13

Comments

Responses tend to be spread across the five-point range. However, there are large differences when comparing school pupils and university students, with school pupils much more positive. There are other sub-group differences but these differences are much as might be expected. There is no significant (or very low) correlation of this perception with academic performance.

Statement	*Sample*	*Responses*				
I feel comfortable in a social situation	University	14	28	30	18	9
	School	20	28	27	17	7
School pupils $r = 0.14$ $p = 0.013$	***Sub-Groups***					
Science students $r = 0.12$ $p = 0.017$	Male	18	27	27	15	10
Private/State $\chi^2 = 17.9$ (df4) $p < 0.05$	Private Education	13	24	33	20	8
	State Education	18	29	28	16	8
	Arts and humanities	16	30	29	17	8
	Physical Sciences	18	25	39	16	9

Table 6.38 Question 4.14

Comments

Low, but significant, correlations are obtained for school pupils and science students, suggesting, for these groups, that their general sense of well being in a social setting is correlated with examination success. It is difficult to explain these observations and to explain why these two groups show such a relationship while the other groups do not.

Statement	*Sample*	*Response*				
I enjoy the challenge of a new problem in my studies	University	20	27	23	20	9
	School	20	23	29	18	9

Table 6.39 Question 4.15

Comments

It is perhaps rather surprising that responses to this question did not correlate significantly with academic performance. Does this suggest a lack of experience in an education system which values conformity and recall?

Statement	*Sample*	*Responses*					
I am happy with my weight for my height	University	26	20	18	21	13	
	School	26	18	22	18	16	

Table 6.40 Question 4.16

Comments

There was no relationship between students' confidence with regard to weight and height and their performance. This suggests that confidence in one's appearance is not related to performance, as might be expected.

Statement			*Sample*	*Responses*				
I do not really enjoy my present lifestyle			University	13	16	24	25	21
			School	13	21	25	18	22
School pupils	r = 0.18	p = 0.010	***Sub-Groups***					
Males	r = 0.14	p = 0.011	Male	14	15	24	21	23
Females	r = 0.12	p = 0.004	Female	12	18	24	24	21
Private education	r = 0.18	p = 0.011	Private Education	9	20	19	26	27
State	r = 0.08	p = 0.032	State Education	14	17	25	22	20
Science students	r = 0.15	p = 0.004	Arts and humanities	13	19	24	24	18
			Physical Sciences	12	16	24	21	27

Table 6.41 Question 4.17

Comments

Most of groups show positive correlations: those who do *not* enjoy their lifestyle tend to have higher marks in their examinations. Perhaps, a fulfilling lifestyle has been replaced by more study?

Statement			**Sample**	**Responses**				
I am confident that I can study quickly			University	31	40	19	8	1
			School	31	35	26	5	2
University	r = -0.16	p = 0.001	***Sub-Groups***					
School	r = -0.26	p = 0.001	Male	27	39	22	9	2
Males	r = -0.11	p = 0.043	Female	34	37	21	6	1
Females	r = -0.23	p = 0.001	Private Education	41	36	18	4	0
Arts and humanities	r = -0.16	p = 0.001	State Education	29	39	23	7	2
			Arts and humanities	33	40	20	5	1
			Physical Sciences	29	36	24	9	3

Table 6.42 Question 4.18

Comments

It is perhaps surprising that the students' confidence in their ability to finish their studies quickly has a negative correlation with performance. Thus, those who have confidence in their ability to study quickly tend to perform slightly less well in examinations. This suggests that, in the Saudi examination system, taking care while working is related to examination success.

6.6 Item 5

Think about your life as whole. Please tick against *three*, which you think are *most* important.

%	
45	My abilities
54	My academic achievement
23	My popularity
24	Expertise
19	My attractiveness
10	My sporting skill
18	My willingness to take risks
36	My sociability
18	My creative ability
52	My independent mind

Note: the total here adds to approximately 300, as each student can use three 'ticks'

Comment

This is a very revealing question. It is more likely that it shows the aspirations of the students. It is interesting, but puzzling why 'my independent mind' scores so highly, given Saudi society and culture, with its incredibly strong social cohesiveness and rejection of non-conformity. The choices might reflect an expressed aspiration or even frustration. As might be expected, abilities and academic achievement score well, showing the perceived value of education progress.

6.7 Item 6

Imagine you are faced with a new and demanding type of problem in your studies.
What is your likely reaction?

Tick as many as you wish.

		%
(a)	Worry about passing the examinations.	51
(b)	See it as a challenge;	38
(c)	Start to panic;	51
(d)	Seek help from books;	33
(e)	I have managed in the past - I'll manage now;	51
(f)	Think of changing my course;	11
(g)	Enjoy it because it is new;	37
(h)	Seek help from others.	59

Comment

It is difficult to interpret the responses although it is not encouraging to see the relatively low number of responses for 'see it as a challenge' and 'enjoy because it is new'. However, perhaps this merely expresses reality. The power of examinations is again evident.

6.8 Factor Analysis

The questionnaire was designed to explore as many aspects of the concept of confidence as was possible. The responses to the questions were not expected to correlate highly with each other and it appears that only confidence related to academic matters shows any relationship with academic performance, suggesting that confidence is not generic. To check this, the responses to those questions where five or six responses were sought were examined using Principal Component Analysis.

Principal Component Analysis is one method by which a search can be made to see if there are any underlying factors which might explain the response patterns. This was carried out using SPSS. Varimax rotation was used. The following scree plot was obtained:

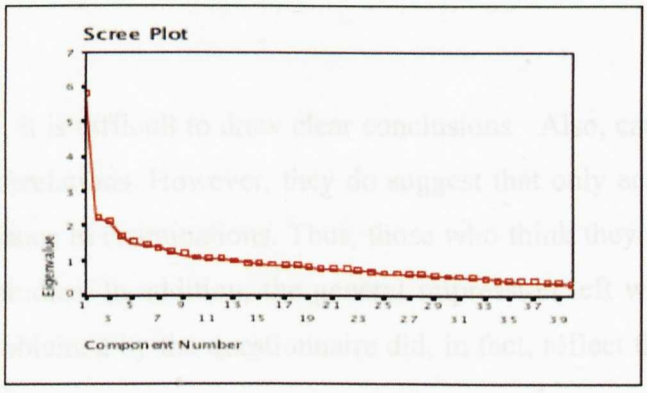


Figure 6.1 Scree Plot from Principal Components Analysis

The aim is to be able to explain at least 70% of the variance in the data using a small number of factors. There are 40 questions involved and, from the scree plot, there are 12 factors with an eigenvalue above 1 (a typical cut off point). However, they only explain 55% of the variance. This confirms that there are no underlying factors, which will adequately explain the data. The questions are, indeed, seeking to explore different aspects of the concept of confidence. More details are to be found in appendix F along with the rotated loadings table. This approach was not pursued further.

6.9 Interviews

The interview was fairly well structured with seven basic questions being asked, allowing opportunities for follow up questions and general discussion. A sample of 50 psychology students (all female) was interviewed. The aim was to check if the questionnaire was valid and also to obtain extra insights. Their verbal responses to the seven basic questions were correlated with academic performance in psychology (table 6.43).

Topic	Correlation	Significance
Do you think you are good at your studies	0.41	$p < 0.001$
Do you think you have many abilities	0.14	ns
Do you think you will pass your exams	0.22	ns
Do you feel you succeed most things you attempt to do	0.18	ns
Are you one of the people who think you know what you need to do	0.04	ns
Do you enjoy solving difficulties in your study life	0.19	ns
Do you think you will finish your study on time	0.20	ns

Table 6.43 Correlations with Performance

Comments

With a small sample, it is difficult to draw clear conclusions. Also, caution must be used in interpreting the correlations. However, they do suggest that only academic confidence is related to performance in examinations. Thus, those who think they are good at studies tend to be good at studies. In addition, the general impression left with the interviewer was that the picture obtained by the questionnaire did, in fact, reflect the general findings from the questionnaire.

It was possible to gain some kind of overall impression of the general approach of each interviewee. Notes were taken throughout and these were studied to seek to classify each student in relation to confidence. The pattern is shown in table 6.44

Description	Frequency
Unrealistic	4
Seems ambitious	5
Sociable	2
Realistic	7
Confident	21
Needs help to improve confidence	3
Shy	8
Total	**50**

Table 6.44 Student Confidence

Comments

The above table reflects the subjective impression left on the researcher from the interviews. Clearly, nearly half came across as confident. However, it has to be recognised that, in Saudi culture, there is a strong tendency to present oneself in the way, which is thought to be what is expected or desired. Thus, it is highly possible that the students presented themselves deliberately as confident.

Overall, not too much can be drawn from the interviews although they gave a generally consistent pattern when compared with much of the questionnaire data. It is perhaps possible that the questionnaires offer a more accurate picture in that, in the interviews, individuals could be identified.

6.10 Conclusions

This experiment was designed to offer some kind of overview of academic performance in relation to wider aspects of confidence and self-esteem. The key observation is that academic performance tends to be only correlated with academic confidence. Thus, confidence is probably not a general attribute and this is consistent with other studies (e.g. Harter, 1985). There were four aspects of confidence considered and the outcomes suggest that each is a separate aspect of confidence

The interview tends to confirm the outcomes from the survey. Again, academic confidence alone seems to be related to academic performance. Any relationships tend to be low except when aspects of confidence related to specific aspects of learning are considered.

Chapter Seven

Academic Confidence, Working Memory and Attitudes to Learning

7.1 Introduction

Chapter 6 presented the results of the first experiment, which examined the relationship between four aspects of confidence (academic confidence, athletic confidence, social confidence and self-confidence in appearance) and academic performance. The experiment revealed that studens' academic confidence was only correlated with their academic performance. In contrast, few significant correlations were found between students' academic performance and other aspects of confidence. This suggests that confidence is not really a generic attribute. Thus, academic confidence is a confidence that is *specific* and is directed towards academic activity specifically. These findings are consistent with other studies (e.g. Harter, 1984).

Often, a person is described as 'confident'. The results here suggest that confidence is specifically directed and is not a general attribute. Perhaps a person is perceived as confident but this only reflects a small range of contexts, perhaps mainly social. Alternatively, confidence can sometimes be presented when, in fact, there is little real confidence within the person.

It has to be noted that correlation does not imply causality. Thus, the results from the previous chapter do not demonstrate that academic success generates academic confidence nor that academic confidence generates academic success although both might be true.

This chapter describes measurements, which tried to explore some further possible factors that might be related to confidence. In this experiment, the first survey of confidence was repeated with a new sample of students. Working memory capacity is well known as a rate-controlling factor in many different aspects of learning and assessment (see, for example, Johnstone, 1997). This is particularly true when the learner is seeking to gain understanding. Assuming that academic confidence is a specific attribute which is related to academic performance, looking at working memory capacity becomes important: is the capacity of the student working memory a factor which might enable confidence to grow?

Another area that might relate to confidence might is attitudes towards learning. This has been studied in depth by Perry (1999) when he followed students at Harvard University as they progressed in their thinking about learning during their four years of academic study. His work was carried out by means of extended interviews. Others have developed questionnaires to follow the development of such attitudes (e.g. Mackenzie *et al.*, 2003; Selepeng, 2000; Al-Shibli, 2003).

In this experiment, the Digit Span Backwards test was employed to measure the working memory capacity, while measurements related to the work of Perry (1999) were carried out by means of a questionnaire. Because the same questionnaire relating to confidence was used, there was the opportunity to assess its reliability in terms of test-retest reliability, using equivalent samples from two successive year groups. Because of difficulties in gaining access to men, the sample in this experiment was made up only of women who were studying in the humanities area of the university. Two hundred and thirty seven female students from the humanities section of the university took part in the experiment.

Several statistical calculations were carried out on the data obtained: correlation was explored using Kendall's Tau-b while comparisons of distributions of responses were compared using chi-square as a contingency test. Both statistics handle ordinal data well and Kendall's Tau-b can cope with 'ties'. Neither chi-square nor Kendall's Tau-b assume any specific distribution.

7.2 Reliability Assessment

This experiment involved 237 ladies following humanities courses. The previous experiment contained a sub-group of 96 ladies also following the same humanities courses. Their responses to the confidence questionnaire were compared, allowing an opportunity to consider question reliability.

Samples Used		
Experiment 1	Humanities ladies	96
Experiment 2	Total Sample	237
	Total	**333**

Table 7.1 Samples Used

The distribution patterns of the two samples are now compared (sample I, N=96 and sample II, N=237), using chi-square as a contingency test. Correlations with examination performance are shown. For clarity, data are shown as percentages.

7.2.1 Students' views on their academic studies

(1) Think about ***your studies***

I understand things easily	☐☐☐☐☐☐	I do not understand things easily
I do not have a good memory	☐☐☐☐☐☐	I have a good memory
I get right answers	☐☐☐☐☐☐	I do not get right answers
I learn quickly	☐☐☐☐☐☐	I do not learn quickly
I am not doing well in my studies	☐☐☐☐☐☐	I am doing well in my studies
I have few abilities	☐☐☐☐☐☐	I have many abilities
I often forget what I learn	☐☐☐☐☐☐	I rarely forget what I learn
I am not sure I shall pass my examinations	☐☐☐☐☐☐	I am sure I shall pass my examinations
Getting right answers is not important to me	☐☐☐☐☐☐	Getting right answers is important to me

Question	Sample	Response Pattern						r	X^2
I understand things easily	Sample I	31	53	13	1	1	1	0.10	2.0 (df2)
	Sample II	24	54	14	3	3	1	0.05	n.s.
I have a good memory	Sample I	27	34	10	6	18	4	0.00	0.8 (df4)
	Sample II	24	37	9	8	17	6	0.11	n.s.
I get the right answer	Sample I	30	41	18	5	3	1	-0.04	4.0 (df4)
	Sample II	22	48	18	4	6	2	0.07	n.s.
I learn quickly	Sample I	44	37	17	0	1	1	0.05	3.7(df5)
	Sample II	33	44	14	6	2	1	0.09	n.s.
I am doing well in my study	Sample I	49	31	7	4	5	2	0.35	5.3 (df3)
	Sample II	38	38	5	7	9	3	0.22	n.s.
I have many abilities	Sample I	21	26	13	19	10	1	0.20	6.9 (df5)
	Sample II	21	28	15	9	15	12	0.15	n.s.
I rarely forget what I learn	Sample I	17	14	10	20	29	10	0.09	5.7(df5)
	Sample II	17	23	8	14	24	13	0.05	n.s.
I am sure I will pass my examinations	Sample I	41	28	9	7	9	5	0.31	3.2(df2)
	Sample II	27	32	10	9	16	6	0.21	n.s.
Getting right answers is important to me	Sample I	72	14	6	2	3	3	0.15	0.2(df2)
	Sample II	68	18	6	2	3	2	0.14	n.s.

Table 7.2 Question 1 Data and Statistics

Comments

The first thing to notice is that, in every question, there is no significant difference in response patterns (all chi-square values are insignificant). Given that the two populations are similar (female humanities students in consecutive years), this supports question reliability.

Secondly, the correlation values tend to be similar. This might be expected if the questions themselves are reliable and valid. The correlation values tend to be much higher when the question relates specifically to academic issues (as noted in chapter 6).

7.2.2 Students' views on their Lifestyle

(2) Think **about *your lifestyle***

I feel that most people like me	☐ ☐ ☐ ☐ ☐ ☐	I wish that more people liked me
I do very well at all kinds of sports	☐ ☐ ☐ ☐ ☐ ☐	I do not feel I am very good at sports
I find it hard to make friends	☐ ☐ ☐ ☐ ☐ ☐	I make friends easily
I like taking risks	☐ ☐ ☐ ☐ ☐ ☐	I do not like taking risks
I wish I could be a lot better at sport	☐ ☐ ☐ ☐ ☐ ☐	I feel I am good enough at sport
I have a lot of friends	☐ ☐ ☐ ☐ ☐ ☐	I do not have many friends

Question	Sample	Response Pattern						r	χ^2
I feel that most people like me	Sample I	44	22	13	3	2	17	0.06	5.0 (df2)
	Sample II	32	30	7	2	5	24	-0.06	n.s.
I do very well at all kinds of sports	Sample I	4	12	17	14	15	40	-0.11	2.5 (df4)
	Sample II	5	18	17	12	16	33	-0.06	n.s.
I make friends easily	Sample I	35	21	8	16	7	13	0.07	2.5 (df4)
	Sample II	36	22	9	10	15	8	0.00	n.s.
I like taking risks	Sample I	26	15	15	9	4	31	-0.02	5.2 (df4)
	Sample II	25	23	8	8	9	27	-0.09	n.s.
I feel I am good enough at sport	Sample I	3	4	2	5	19	67	0.23	0.9 (df2)
	Sample II	12	8	2	7	14	57	-0.02	n.s.
I have a lot of friends	Sample I	62	21	6	4	4	3	0.15	1.3 (df2)
	Sample II	58	18	9	5	6	3	-0.02	n.s.

Table 7.3 Question 2 Data and Statistics

Comments

Again, in every question, there is no significant difference in response patterns (all chi-square values are insignificant). It is possible that the fifth part shows a different pattern of responses but chi-square is unable to confirm this because of the need for data grouping. This might account for the difference in correlation values.

Of the 10 correlations, almost all have very low values. This confirms that lifestyle confidence is not related to academic success.

7.2.3 Students' views on Self-esteem

(3) Think about ***yourself***

I am happy with the way I look	☐☐☐☐☐☐	I am not happy with the way I look
I usually like the way I behave	☐☐☐☐☐☐	I often do not like the way I behave
I like a good argument	☐☐☐☐☐☐	I do not enjoy arguments
I usually do the right thing	☐☐☐☐☐☐	I often do the wrong thing
I am not popular with others my age	☐☐☐☐☐☐	I am popular with others my age
I feel I can succeed at most things I attempt	☐☐☐☐☐☐	I do not feel I can succeed at most things I attempt
I do not like challenges	☐☐☐☐☐☐	I like challenges

Question	Sample	Response Pattern						r	X^2
I am happy with the way I look	Sample I	55	25	11	2	5	1	-0.04	1.7 (df3)
	Sample II	61	23	8	3	2	2	0.03	n.s.
I usually like the way I behave	Sample I	21	34	14	8	8	15	-0.05	6.6 (df5)
	Sample II	20	36	6	6	13	18	0.06	n.s.
I like a good argument	Sample I	51	18	6	4	7	14	-0.04	4.0 (df5)
	Sample II	41	27	6	4	9	13	0.12	n.s.
I usually do the right thing	Sample I	22	40	17	9	7	5	0.03	2.1 (df5)
	Sample II	22	38	15	7	11	8	0.14	n.s.
I am popular with others my age	Sample I	13	21	8	9	14	17	0.01	3.4 (df5)
	Sample II	32	20	7	8	20	11	0.07	n.s.
I feel I can succeed at most things I attempt	Sample I	44	35	12	2	2	4	0.20	3.5 (df3)
	Sample II	35	46	9	4	3	2	0.11	n.s.
I like challenges	Sample I	37	22	7	9	10	15	0.04	2.3 (df5)
	Sample II	31	22	10	7	14	16	0.09	n.s.

Table 7.4 Question 3 Data and Statistics

Comments

Again, in every question, there is no significant difference in response patterns (all chi-square values are insignificant). The correlation values are similar for the two samples.

7.2.4 Students' views on Various aspects of confidence

(4) Please tick one box on each line to show your opinion

	Strongly Agree	*agree*	*neutral*	*disagree*	*strongly disagree*
I feel I am very good at my studies	☐	☐	☐	☐	☐
I am not successful at sports	☐	☐	☐	☐	☐
I feel that I am just as clever as others my own age	☐	☐	☐	☐	☐
I am always doing things with many other people	☐	☐	☐	☐	☐
I do not have a good imagination	☐	☐	☐	☐	☐
I wish my physical appearance was different	☐	☐	☐	☐	☐
I wish that more people my age liked me	☐	☐	☐	☐	☐
I think that I have enough experience to deal with life	☐	☐	☐	☐	☐
I like tasks that allow me to do things my own way	☐	☐	☐	☐	☐
I usually know what needs to be done	☐	☐	☐	☐	☐
I do not take decisions quickly	☐	☐	☐	☐	☐
I like to do things in new ways even when I am not sure of the best way	☐	☐	☐	☐	☐
I enjoy taking part in a new sporting activity	☐	☐	☐	☐	☐
I do not feel comfortable in a social situation	☐	☐	☐	☐	☐
I enjoy the challenge of a new problem in my studies	☐	☐	☐	☐	☐
I am happy with my weight for my height	☐	☐	☐	☐	☐
I do not really enjoy my present lifestyle	☐	☐	☐	☐	☐
I am confident that I can finish my studies quickly	☐	☐	☐	☐	☐

Question	Sample	Response Pattern					r	χ^2
I feel I am very good at my studies	Sample I	28	46	22	4	0	0.43	3.7 (df2)
	Sample II	20	25	33	2	1	0.28	n.s.
I am not successful at sports	Sample I	19	19	34	18	18	0.11	4.1 (df4)
	Sample II	13	22	41	19	5	-0.03	n.s.
I feel that I am just as clever as others my own age	Sample I	32	45	15	6	2	0.10	0.6 (df4)
	Sample II	32	43	17	7	1	0.02	n.s.
I am always doing things with many other people	Sample I	21	34	30	10	2	-0.12	2.2 (df4)
	Sample II	22	38	24	15	2	0.01	n.s.
I do not have a good imagination	Sample I	5	12	16	33	34	-0.05	3.7(df3)
	Sample II	8	11	22	34	25	-0.07	n.s.
I wish my physical appearance was different	Sample I	12	24	23	18	23	-0.05	4.4 (df4)
	Sample II	15	15	24	19	27	-0.04	n.s.
I wish that more people my age liked me	Sample I	42	19	34	2	3	0.02	5.9 (df2)
	Sample II	30	29	30	8	3	0.10	n.s.
I think that I have enough experience to deal with life	Sample I	19	34	27	15	4	-0.05	2.7 (df3)
	Sample II	12	37	32	16	3	-0.06	n.s.
I like tasks that allow me to do things my own way	Sample I	57	32	9	0	1	-0.05	2.9 (df4)
	Sample II	51	36	10	2	1	0.07	n.s.
I usually know what needs to be done	Sample I	26	43	22	8	1	0.05	5.3 (df4)
	Sample II	18	49	25	1	0	0.11	n.s.
I do not take decisions quickly	Sample I	27	33	18	15	4	0.05	1.5 (df4)
	Sample II	22	37	18	18	5	-0.03	n.s.
I like to do things in new ways even when I am not sure of the best way	Sample I	23	27	25	21	4	-0.17	4.8 (df3)
	Sample II	14	27	31	21	7	-0.05	n.s.
I enjoy taking part in a new sporting activity	Sample I	18	18	35	17	9	-0.13	1.3 (df4)
	Sample II	15	22	37	17	12	-0.02	n.s.
I do not feel comfortable in a social situation	Sample I	15	27	30	19	7	-0.14	0.9 (df3)
	Sample II	15	22	37	17	9	-0.07	n.s.
I enjoy the challenge of a new problem in my studies	Sample I	18	25	24	25	8	-0.05	2.0 (df4)
	Sample II	14	21	26	28	11	0.13	n.s.
I am happy with my weight for my height	Sample I	24	25	20	18	12	0.07	3.9 (df5)
	Sample II	34	19	21	17	9	-0.08	n.s.
I do not really enjoy my present lifestyle	Sample I	17	19	22	25	16	-0.16	3.3 (df4)
	Sample II	13	17	32	24	15	-0.10	n.s.
I am confident that I can finish my studies quickly	Sample I	42	38	14	6	0	0.20	9.4 (df2)
	Sample II	25	46	19	9	1	0.23	$p < 0.01$

Table 7.5 Question 4 Data and Statistics

Comments

Again, in every question except the final one, there is no significant difference in response patterns (all chi-square values are insignificant, except the last one). Most of correlation values tend to be very low although higher values are obtained when the question relates *specifically* to academic studies.

7.2.5 The Overall Picture

The first general observation is that the distribution of responses for the two samples in almost all the questions are statistically similar, suggesting good test-retest reliability. The patterns of responses for each question for each sample were correlated with academic performance and the correlation values are very similar for both samples for most questions. This again, supports good reliability. This is consistent with the observations made by Reid about reliability of questionnaires (2003)

7.3 Working Memory Space and Performance

The working memory space was measured by the digit span backwards test. The working memory capacities for the students were correlated with their examination performance, using Pearson correlation. The correlation coefficient, although positive, was not significant ($r = 0.05$, n.s.).

Working memory capacity will only correlate with examination performance if one or both of two conditions are met:

(a) During teaching, the approach used made demands on the working memory so that those with high working memories had an advantage;
(b) The assessment contained questions that made demands on the working memory so that those with high working memory had an advantage.

If the emphasis in an examination system is to focus on recall and there is minimal emphasis on assessing understanding (both true in Saudi Arabia), then it is unlikely that those with high working memory will have much advantage in examinations. Such a pattern was found in the work of Reid & Skyrabina (2002) who deliberately structured a school test in mathematics so that solving the questions (which were difficult) did *not* place any stress on the working memory. She found no significant correlation of working memory with performance.

7.4 Working Memory and Confidence

The responses for each question relating to confidence were correlated (using Kendall's Tau-b) with working memory capacity. In most cases, no significant correlation was obtained. Only the data for the three questions where a significant correlation was found are shown. It might have been expected that having a higher working memory would lead to greater academic success which might lead to confidence. This does not appear to be true.

I do not have a good imagination	8	11	22	34	25			r = -0.11 (p = 0.031)
I enjoy the challenge of new problems in my studies	14	21	26	28	11			r = 0.11 (p = 0.024)
All one has to do to pass a subject is to memories things	9	4	6	3	16	62	Understanding subjects is a part of study.	r = -0.13 (p = 0.046)

Table 7.7 Correlations with Working Memory Capacity

The striking observation is that, of 40 questions, only three show any statistically significant correlation with working memory. Indeed, the three significant values are themselves very low, their significance reflecting the large sample size.

The first question in table 7.7 suggests that those who believe they have a good imagination are those who tend to have higher working memory capacities. This is reasonable in that those with more working memory space might be able to 'play with ideas' more successfully.

The second question shows that those who enjoy the challenge of new problems also tend to have higher working memory capacities. Having a higher working memory gives these students an advantage.

The third question shows the importance of working memory in understanding, a conclusion that is well established (see, for example, Johnstone, 1997). The questions suggest that the students who *think* that passing is related to understanding tend to have higher working memory capacities. Thinking is, of course, not the same as actually having the ability to understand and, perhaps, this explains the relatively low correlation obtained.

However, the main observation is that the vast majority of the questions relating to all aspects of confidence do ***not*** show significant correlations with working memory capacity. While it seemed reasonable to suggest that possessing a higher than average working memory capacity might encourage confidence, the results do not support this hypothesis. Of course, it might simply reflect the emphasis in Saudi examinations where recall is stressed. However, it does suggest that academic confidence (as well as other aspects of confidence) does ***not*** depend on working memory capacity, at least within the Saudi education system with female arts students.

7.5 Perry Questionnaire

The results of the Perry questionnaire are now discussed. Again, 237 humanities female students were involved and the data are presented as percentages for clarity. The aim of this questionnaire was not to look particularly at the student responses but to see if their responses related in any way to their examination performance. Thus, is there any evidence that students who were more developed in their attitudes to learning (more Perry 'C' character) performed better in their examinations?

The Perry questionnaire had 18 questions, some in Semantic Differential format, others in Likert format and considered four aspects:

- Lecturers' role
- Students' role
- The nature of scientific Knowledge
- Assessment

The two formats of questions are considered separately. The correlation values were obtained using Kendall's Tau-b correlation and are only shown where significant.

7.5.1 Semantic Differential Questions

In order to pass my courses I need to study just what the lecturer told me	42	13	3	4	11	26	I do not have to rely totally on the lecturer. Part of my learning is to work things out myself	
I cannot be wrong if I accept what the lecturer says. If I question anything, I might end up failing	5	2	7	18	33	35	I do not believe in just accepting what the lecturer says without question .Success involves thinking for myself	r = 0.14 (p = 0.005)
I believe it is the job of the lecturer to supply all the knowledge I need	20	10	3	3	13	50	The duty of the lecturer is not to teach me everything but to help me to think for myself	
I think lecturers should avoid teaching material that they know pupils will find difficult	48	16	6	6	11	12	Lecturers should aim to provide challenges to their students by introducing difficult topics	r = -0.12 (p = 0.012)
It is good to work with other students because by listening to their points of view I can correct my ideas	55	25	6	2	6	6	I prefer not to work with other students because then I stand less chance of picking up wrong ideas.	
All one has to do to pass a subject is to memorise things	9	4	6	3	16	62	Understanding subjects is the part of study.	r = -0.11 (p = 0.004)
I do not believe that all scientific knowledge represents the (absolute truth)	14	11	7	5	14	49	We cannot call anything scientific if it is not absolutely true	
I do not like short questions as they do not give me chance to explain what I know and understand	19	6	7	6	13	49	I prefer to learn the facts and then be tested on them in short questions	
In exams, I prefer questions which are based on what the lecturer taught	70	13	2	3	5	7	In exams, I like questions that give me the scope to go beyond what is taught and show my ability to think	
I believe that what should matter in exams is the quality of my answers not how much I write	62	13	4	2	7	11	In exams, I expect to be rewarded for giving as much information as possible	r = 0.17 (p = 0.001)

Table 7.7 Semantic Differential Questions and Performance

Comments

In only four of the ten questions is there a significant correlation between the student responses and their academic performance and the correlation values are low, probably reflecting the emphasis in the Saudi examination system. Students who perform better tend to reject the idea of questioning what they are being taught. The better performing students want to avoid difficult things and depend on memorising. However, they tend to be more interested in quality than quantity in answering.

Another observation is that the response patterns show considerable polarisation in many questions, indicating that, while the majority hold views towards one extreme position, there is a sizeable minority holding opposite views strongly. It is beyond the scope of this study to pursue this interesting observation further.

7.5.2 Likert Questions

	SA	A	N	D	SD	
Sometimes there seems to be so many ways of looking at subjects that I feel confused about what is right and wrong	23	47	22	8	1	
Sometimes I find I learn more about a subject by discussing it with other students than I do by sitting and revising at home	38	31	9	15	7	r = -0.12 (p = 0.001)
There is no point in teaching me things that will not be in the exam	37	19	14	24	6	
If I had the choice of written comments or a specific mark at the end of piece of subject course work I would choose the comments	23	34	20	15	9	
It is a waste of time to work on problems which have no possibilities of producing a clear-cut answer	44	29	14	11	2	
I feel uncomfortable when I am left to express an opinion not knowing the view of the lecturer	16	31	17	27	10	r = -0.09 (p = 0.006)
A good thing about learning within this subject is the fact that everything is so clear-cut: either right or wrong	25	28	23	20	4	
I like exams which give me an opportunity to show I have ideas of my own	31	32	14	15	8	

Table 7.8 Likert Questions and Performance

Comments

Again, most of the response patterns show no significant relationship with performance and, in the two questions which do, the correlations are very low. There is a slight tendency for the better performing students to wish to work on their own rather than in groups while the other question is difficult to interpret.

7.6 Confidence and Attitudes to Learning

The questionnaire that explored confidence contained 40 questions while the questionnaire that explored attitudes to learning (following Perry, 1999) contained 18 questions. Each question from the first questionnaire was correlated against each question from the second questionnaire, using Kendall's Tau-b. This gave 720 correlation values but very few were statistically significant. These few are shown in table 7.13.

	Questions Pairs	Correlations
Confidence	(1) I feel I am very good at my studies	r = 0.12
Perry	(2) I cannot be wrong if I accept what the lecturer says. If I question anything, I might end up failing	p = 0.003
Confidence	(4) I am always doing things with many other people	r = -0.19
Perry	(1) In order to pass my courses I need to study just what the lecturer told me	p = 0.001
Confidence	(5) I do not have a good imagination	r = 0.16
Perry	(4) I think lecturers should avoid teaching material that they know students will find difficult	p = 0.003
Confidence	(5) I do not have a good imagination	r = -0.13
Perry	(16) I feel uncomfortable when I am left to express an opinion not knowing the view of lecturer	p = 0.002
Confidence	(8) I think that I have enough experience to deal with life	r = 0.14
Perry	(13) There is no point in teaching me things that will not be in the exam	p = 0.001
Confidence	(9) I like tasks that allow me to do things my own way	r = 0.11
Perry	(1) In order to pass my courses I need to study just what the lecturer told me	p = 0.005
Confidence	(10) I usually know what needs to be done	r =-0.15
Perry	(8) I do not like short questions as they do not give me chance to explain what I know and understand	p = 0.001
Confidence	(11) I do not take decisions quickly	r = - 0.11
Perry	(8) I do not like short questions as they do not give me the chance to explain what I know and understand	p = 0.005
Confidence	(11) I do not take decisions quickly	r = - 0.12
Perry	(11) Sometimes there seems to be so many ways of looking at subjects that I feel confused about what is right and wrong	p = 0.003
Confidence	(12) I like to do things in new ways even when I am not sure of the best way	r = - 0.11
Perry	(14) If I had the choice of written comments or a specific mark at the end of a piece of subject course work I would choose the comments	p = 0.003
Confidence	(13) I enjoy taking part in a new sporting activity	r = 0.12
Perry	(18) I like exams which give me an opportunity to show I have ideas of my own	p = 0.003
Confidence	(16) I am happy with my weight for my height	r = - 0.13
Perry	(14) If I had the choice of written comments or a specific mark at the end of a piece of subject course work I would choose the comments	p = 0.002

7.9 Confidence and Attitudes to Learning

Comments

The first thing to note is that the significant correlations tend to be low and that there are only 12 significant correlations out of a potential 720 correlation values. Thus, overall, attitudes towards learning do not seem to have a major relationship with confidence. At first sight, this is somewhat surprising.

However, a closer look at the 12 significant correlations shows that seven relate to examinations or assessment. This offers a strong hint that student perception of these does have some connection with academic confidence. Perhaps, success develops increased confidence while fear of failure may have the opposite effect.

7.7 Conclusions

The first survey (chapter 6) indicated that, while academic confidence is related to academic performance, other aspects of confidence tend to show little relationship with academic performance.

The survey described in this chapter supports the reliability of the questions used but perhaps somewhat surprisingly, does not find a relationship between working memory capacity and academic confidence. However, the sample was drawn from Arts and Humanities students whose courses do not rely on problem- solving skills in their study. Much of the work on the relationship between working memory capacity and performance tends to focus on the mathematics-science areas of the curriculum where holding many ideas at the same time is often a key to success.

Attitudes to learning (following the Perry model, 1999) also tend not correlate significantly with academic performance although there is a hint that assessment may be important. This needed further exploration. However, overall, confidence in academic matters does not seem to be related to attitudes to learning.

The next part of the study focuses on aspects of learning style, purpose of learning, evaluation of exams, group-working skills and academic self-perception.

Chapter Eight

Learning Styles and Assessment

8.1 Introduction

Chapter 7 described the previous experiment where the main aim was to explore any relationship between confidence and working memory capacity (known to be a major factor in performance) and attitudes towards learning. In addition, there was an opportunity to gain evidence about the reliability of the confidence questionnaire. The results suggest that neither working memory capacity nor attitudes towards learning (following the ideas of Perry, 1999) relate to confidence or, specifically, to academic confidence.

This chapter describes the next stage of this enquiry: any relationship between perceived learning style, purpose of learning, and evaluation of exams, group-working skills and academic self-perception. The questionnaire consisted of 59 items, collated as 8 questions. The questionnaire had the following structure:

Question 1	Views of their learning styles	9 semantic differential items
Question 2	Views of their learning styles	8 semantic differential items
Question 3	Students' views of tests and examinations	5 semantic differential items
Question 4	Students' views of group working	11 semantic differential items
Question 5	Students' views of forms of assessment	1 rating item
Question 6	Students' views of reasons to study at university	1 rating item
Question 7	Views of academic confidence	10 items
Question 8	Views of best ways to prepare for examinations	1 rating item

Question 7 was exactly the same question, which had been used in experiments 1 and 2 as a way to measure student confidence. Therefore, one important aspect of the analysis was to consider how student responses to each part of question 7 related to student responses to each part of the other questions. This was carried out using Kendall's Tau-b. Again, access to male students proved impossible. Thus, 317 female university students were involved, covering a wide range of university subject areas. These were divided as shown in table 8.1.

Samples Used	
Science	122
Humanities	195
Total	**317**

Table 8.1 Samples Used

The responses are shown as percentages for clarity although statistical calculations were based on frequency data. The correlations between question 7 and questions 1 to 6 are shown in a series of tables but again for clarity, only correlations above 0.1 are shown. For the sample size, very low correlation values are statistically significant. Where the significance is less than 1% ($p < 0.01$), the box in the table is coloured yellow while for significance of less than 0.1% ($p < 0.001$), the table box is coloured green. Thus, in looking at the data, patterns of colours are considered.

Firstly question 7 is presented and then the responses to other questions are related to the responses to question 7.

(7) Think about your studies

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
I feel I am very good at my studies	23	32	18	17	40
I do not enjoy the challenge of a new problem in my studies	10	21	39	22	8
I am confident that I can finish my studies quickly	24	43	25	8	1
I understand things easily	17	41	33	7	2
I do not learn quickly	1	11	20	46	22
I am not doing well in my studies	3	12	28	39	20
I am sure I shall pass my examinations	27	45	22	4	1
I like taking risks in my studying	23	27	24	19	7
I feel I can succeed at most things I attempt	27	52	19	2	0
Examination success depends on having a good memory	42	35	12	10	2

8.2 Learning Styles

(1) *Think about your Studies*

I like learning facts and information	42	15	5	5	9	25	I like learning concepts and ideas
I remember best what I see	67	9	7	2	4	11	I remember best what I hear
I find it easier to learn facts	29	14	8	9	13	27	I find it easier to learn concepts
I like thinking in terms of pictures	55	15	7	4	6	14	I like thinking in terms of words
I emphasise the details in my studies	47	12	8	4	11	18	I emphasise the broad picture in my studies
I like abstract ideas	18	12	10	8	16	36	I like facts and data
Once I understand the parts I understand the whole thing	42	13	4	6	10	26	Once I understand the whole thing, I understand the parts
I like to work systematically and methodically	46	16	5	7	7	19	I prefer to work fast and finish quickly
With long calculations I check all the steps carefully	48	15	9	10	8	11	with long calculations, I do not check all the steps carefully

Table 8.2 Question 1

Discussion

Looking at the question overall, in five of the ten questions, there is a strong degree of polarization of views. Of particular interest is the divergence of views over facts, information and the more abstract and conceptual. It is also clear that there is a strong desire from many to visualise and see things as pictures, a much underemphasized aspect of traditional education.

Looking at the responses, there is a possibility that the Arts and Science students were responding differently. The data for these two groups is shown in tables 8.2 and 8.3.

I like learning facts and information	41	9	6	6	8	31	I like learning concepts and ideas
I remember best what I see	62	11	7	3	4	13	I remember best what I hear
I find it easier to learn facts	23	11	8	8	15	35	I find it easier to learn concepts
I like thinking in terms of pictures	59	11	7	3	6	14	I like thinking in terms of words
I emphasise the details in my studies	12	11	6	7	9	54	I emphasise the broad picture in my studies
I like abstract ideas	22	14	9	7	13	35	I like facts and data
Once I understand the parts I understand the whole thing	27	9	7	3	12	43	Once I understand the whole thing, I understand the parts
I like to work systematically and methodically	48	15	4	5	7	22	I prefer to work fast and finish quickly
With long calculations I check all the steps carefully	51	7	11	7	11	51	with long calculations, I do not check all the steps carefully

Table 8.3 Science Students Data

I like learning facts and information	43	24	4	4	10	15	I like learning concepts and ideas
I remember best what I see	75	7	7	1	3	7	I remember best what I hear
I find it easier to learn facts	38	20	7	10	11	15	I find it easier to learn concepts
I like thinking in terms of pictures	48	21	7	6	6	12	I like thinking in terms of words
I emphasise the details in my studies	35	17	9	2	10	27	I emphasise the broad picture in my studies
I like abstract ideas	12	8	11	10	21	38	I like facts and data
Once I understand the parts I understand the whole thing	40	16	6	5	9	25	Once I understand the whole thing, I understand the parts
I like to work systematically and methodically	43	19	7	10	7	15	I prefer to work fast and finish quickly
With long calculations I check all the steps carefully	43	21	12	8	11	7	with long calculations, I do not check all the steps carefully

Table 8.4 Arts Students Data

The data for Arts students and Science students were compared using chi-square as a test of contingency. The results are shown in table 8.5.

Question		df	p	Comment
Prefer learning facts	19.6	4	< 0.001	In the three questions where there are significant differences, the science students tend to agree more with the left hand side. It is sad that science has been reduced to the learning of facts but it is to be expected that visualisation is a benefit
Remember best what in seen	59.6	3	< 0.001	
Easier to learn facts	22.7	5	< 0.001	
Prefer thinking in pictures	0.7	2	n.s.	
Emphasise details	0.7	2	n.s.	
Like abstract ideas	10.4	5	n.s.	
Understanding from parts	0.3	2	n.s.	
Work systematically	5.0	2	n.s.	
Check all calculation steps	0.4	2	n.s	

Table 8.5 Arts-Science Comparison

Student responses to each item of question 1 were correlated with student responses to each item of question 7 (academic confidence) using Kendall's Tau-b (Table 8.2).

	7a	7b	7c	7d	7e	7f	7g	7h	7i	7j
1a										
1b										
1c										
1d									-0.12	
1e		0.10						-0.12		
1f			-0.10		0.10		-0.10			
1g										
1h	0.16					-0.16	0.10	0.10	0.14	
1i	0.18		0.10	0.11		-0.17	0.13		0.11	

Key

Clear box $p < 0.05$
Yellow box $p < 0.01$
Green box $p < 0.001$
Positive correlations: red print
Negative correlations: blue print

Table 8.6 Correlations of questions 7 and 1

Discussion

The first feature of the results is how few correlations are significant and how low these values tend to be. Of 90 correlations, only 17 have a value above 0.1 and the highest is 0.18. The positives and negatives merely reflect the polarity of questions. All this suggests that perceived favoured ways of learning (which might be described as preferred learning styles) are *not* particularly related to academic confidence.

Looking at the four highest values (all significant at $p < 0.001$), perceptions of being very good at studies (7a) or doing well at studies (7f) are clearly related to speed of working (1h and 1i). Indeed, questions 1h and 1i show most of the significant correlations (11 of 17). Perceived speed of working is a consistent low correlate of several aspects of academic confidence. It is possible that students feel confident if they see themselves as completing tasks quickly, without the need for checking. Questions 1a (concepts versus facts), 1b (hearing versus seeing), 1c (concepts versus facts), and 1g (facts versus abstract ideas) all show no significant correlations. Three of these are considering similar things: concepts and factual information. Thus, academic confidence is *not* seen as relating to whether students prefer to learn conceptual ideas or prefer factual information.

8.3 More Learning Styles

(1) Think about the way you learn

I understand things better after I try them out	54	10	5	3	6	21	I understand things better after I thought them
I prefer when things have practical implications	73	13	4	1	4	6	I prefer when things are theoretical
I consider it higher praise to call someone sensible	22	10	10	12	15	31	I consider it praise to call someone imaginative
For entertainment, I would rather watch television	41	16	14	5	8	16	For entertainment, I would rather read a book
I enjoy repetitive tasks	9	7	11	8	13	54	I do not enjoy repetitive tasks
I like to thing of many ways of achieving a task	31	21	8	5	10	26	I like to master one way of achieving a task
I enjoy being creative	84	10	3	1	10	1	I do not enjoy being creative
I enjoy challenging activities	60	17	10	4	3	6	I do not enjoy challenging activities

Table 8.7 Question 2

Discussion

As with question 1, there is considerable polarisation of views, However, in three of the questions, there is a very marked tendency to have strong views in one direction: students enjoy being creative and facing challenging tasks while they also want their studies to have practical implications.

	7a	7b	7c	7d	7e	7f	7g	7h	7i	7j
2a										0.11
2b	0.11		0.15	0.15		-0.14	0.17		0.12	
2c										
2d	-0.12					0.11		-0.12	-0.13	
2e										
2f								-0.13		
2g		-0.11		0.13		-0.16	0.13	0.11		
2h	0.11	-0.13	0.10	0.15		-0.18	0.16	0.22	0.18	

Key

Clear box $p < 0.05$

Yellow box $p < 0.01$

Green box $p < 0.001$

Positive correlations: red print

Negative correlations: blue print

Table 8.8 Correlations of questions 7 and2

Discussion

As before, the majority of questions show no significant correlation (55 of 80) and values tend to be low (maximum 0.22). However, there are some strong patterns with certain questions featuring frequently in significant correlation values.

Question 7f (doing well) and 7h (risk taking) both show four significant correlations. 7e (learning quickly) shows no correlations. Questions 2b (theoretical/practical), 2d (book/television), 2g (creativity), 2h (challenge) all show several correlations. The suggestion that those who like practical implications rather than theoretical may be reflection of the desire to understand rather than memorise.

8.4 An Interim Summary

Responses to these two questions may offer a valuable insight into how these students wish to learn. There are very strong messages for educators in higher education in Saudi Arabia. Although not necessarily directly related to academic confidence, the outcomes from the two questions are summarized here.

There are two marked features of the 17 sub-questions, which make up question 1 and 2. Firstly, in 12 of these questions, there is marked polarisation: defined as a considerable proportion holding strong views at *both* ends of the spectrum. This is very marked with respect to 'facts-information-data' compared to 'concepts-ideas-abstractions' but is also evidence with regard to pictures ('what I see') compared to 'hear-words'. However, there are other interesting polarised views: 'doing' with 'thinking'; being 'sensible' with being 'imaginative'; 'single solutions' with 'multiple solutions' (which is rather like convergent and divergent).

In three of the parts of question 2, there are significant differences between the science students and the arts students. The science students are more disposed to facts and information rather than concepts and abstract ideas. This suggests that the way science is taught has reduced it to a process of memorising facts and information. The real nature of science is built around concepts. There is a strong message for those involved in teaching in the sciences for they may be in danger of allowing the fundamental nature of science to be lost.

In question two, the majority want 'doing' rather than 'thinking'; 'practical' rather than 'theoretical'; being 'creative' and being 'challenged'. Here again, this probably reflects a genuine aspiration on the part of the students.

This offers suggestions for ways forward for Saudi educators. Learning appears to be far too passive, based extensively on thinking without adequate relationship to practical applications. The students seem to want freedom. Perhaps, they are being intellectually stifled, with few opportunities to challenge, to create new ideas, understandings and interpretations. All of this may merely reflect a rejection of an education system which places too much emphasis on the transmission of information and the recall of it in examinations.

8.5 Tests and Examinations

(3) Think about tests, examinations and assessment

I prefer at the end of course to get comments	31	10	8	8	10	33	I prefer at the end of a course a specific mark
I like exams which give me chance to show my own ideas	57	12	12	6	7	10	I like exams which test the facts
I hate calculations	29	10	9	12	10	30	I enjoy calculations
Examinations test recalled knowledge	25	12	6	11	14	33	Examinations only test the way I think
I like examinations which ask me to explain	26	10	9	5	5	10	I like examinations which ask me to recall

Discussion

In some of the questions, there is again some degree of polarisation: different students hold strong and opposing views. In thinking of examinations in general, large proportions want a test of explanation, thinking, and opportunities to show what they know. It is quite likely here that students are expressing these desires in the light of their normal experience where there is a great emphasis on rote recall.

	7a	7b	7c	7d	7e	7f	7g	7h	7i	7j
3a			0.11				0.16	0.16		
3b										
3c			-0.11		0.12		-0.11			
3d	-0.14					0.14	0.12			
3e					0.10		0.10			

Key

Clear box $p < 0.05$
Yellow box $p < 0.01$
Green box $p < 0.001$
Positive correlations: red print
Negative correlations: blue print

Table 8.9 Correlations of questions 7 and3

Discussion

Again, there are few significant correlations (11 of 50). As might be expected, 7g (relating itself to examinations) shows four significant values. 3a (marks/comments), 3c (calculations) and 3d (thinking and recall) all show significant values. In addition, 3c (hate calculations) shows three significant values and 3e (explain examinations) shows two significant values.

8.6 Group Work

(4) Think about working in a group

I prefer to jump in and contribute ideas	54	16	9	5	5	10	I prefer to sit back and listen to ideas
I can learn better on my own	28	14	9	8	13	29	I can learn better in a group
I get to know fellow group members quickly	40	17	11	9	9	13	I do not get to know fellow group members quickly
Other group members tend to hold me back	5	4	9	13	27	42	Other group members tend to help me
I do not like leading a group discussion	31	16	10	8	14	22	I like leading a group discussion
Group work helps me understand things better	43	15	7	6	9	21	I understand things better on my own
I find the discussions helpful	62	21	10	3	2	3	I find the discussions unhelpful
I enjoy working with members of my group	53	23	12	5	4	3	I do not enjoy working with members of my group
Most ideas from others are not helpful	4	5	11	14	21	43	Most ideas from others are helpful
Most of the ideas come from one person	8	7	8	14	21	43	Ideas come from many people
Working as a group make it easier to understand things	54	20	10	6	7	5	Working as a group does not makes it easier to understand things

Discussion

Groupwork is not a typical part of Saudi education where didactic lecturing is the norm. This question, therefore, offers insights into how Saudi students think they would react to groupwork. It is an expression of aspiration and may not be based on much experience. Overall, the strong impression is left that Saudi students are very positively disposed to the possibility of working in groups.

	7a	7b	7c	7d	7e	7f	7g	7h	7i	7j
4a	0.17	-0.10		0.11			0.17	0.20	0.18	
4b										
4c			0.14	0.15	-0.11	-0.01	0.13			
4d							0.10			
4e	-0.11							-0.15		
4f										
4g			0.10	0.10			0.11	0.13	0.12	
4h							0.11		0.13	
4i										
4j							-0.10			
4k				0.10				0.10		

Key

Clear box $p < 0.05$

Yellow box $p < 0.01$

Green box $p < 0.001$

Positive correlations: red print

Negative correlations: blue print

Table 8.10 Correlations of questions 7 and4

Discussion

Only 24 of 110 show significant correlations. In addition, the significant correlations tend to concentrate into certain questions: 7d (understand easily), 7g (passing examinations) and 7h (risk taking) all show four or more significant correlations with aspects of groupwork. 4a (jump in and contribute ideas), 4c (group members tend to hold back) and 4g (find discussion helpful) all show several correlations with academic confidence. Overall, it appears that positive views about group work tend to be held by those who are academically confident. It is thus possible that those who are academically less confident may well find groupwork unhelpful and perhaps even daunting.

8.7 Forms of Assessment

(5) Here are several different forms of assessment
Use the letters to show which are your preferred

(A)	Multiple choice	9	5	4	3	9	9	14	45
(B)	Continuous assessment	12	9	12	14	16	14	11	10
(C)	Short answer questions	4	7	8	6	9	15	39	11
(D)	Long answer questions	14	15	16	12	11	14	8	9
(E)	Essays	14	23	19	16	10	8	4	4
(F)	Oral examination	13	15	17	20	16	10	5	8
(G)	Open book examination	10	15	12	12	10	18	12	9
(H)	Projects	23	11	10	14	17	10	5	8

Most preferred ☐☐☐☐☐☐☐☐ *least preferred*

Discussion

Perhaps the most marked feature is the rejection of multiple choice as a way of testing. It is well known that the method is highly flawed (e.g. Friel and Johnstone, 1979) and it seems that, perhaps, Saudi students consider it unfair in some way. It is interesting to note the general rejection of short answer questions, perhaps reflecting the previous observation that the students want opportunities to explain and demonstrate their ideas and understandings.

In many of the possibilities, the students' opinions are scattered widely: their views of continuous assessment, long answer questions, open book examinations and projects. This may simply reflect lack of experience and, therefore, some general uncertainty.

	7a	7b	7c	7d	7e	7f	7g	7h	7i	7j
5a										
5b										
5c			-0.10					-0.13		
5d										
5e										
5f	0.13			0.10		-0.12	0.12			
5g	0.11									
5h										

Key

Clear box $p < 0.05$
Yellow box $p < 0.01$
Green box $p < 0.001$
Positive correlations: red print
Negative correlations: blue print

Table 8.11 Correlations of questions 7 and 5

Discussion

There are almost no significant correlations and most relate to 5f, which explores oral examinations. This makes sense in that an oral examination may be seen as being closely related to confidence, not only in knowledge and understanding but also in terms of being able to talk, respond quickly and explain clearly.

8.8 Reasons for University Study

(6) Here are several reasons why study at university might be important
Tick the there reasons, which you think are most important

46	To develop abilities	39	to learn new skills
92	To pass examinations	81	to learn how to learn on my own
84	To gain a degree	69	to fulfill social expectations
35	To get a good job	5	to become equipped to help others

Discussion

Three reasons stand out markedly: examination passing, gaining a degree and learning how to learn on their own. The first two are inevitable and the third is encouraging. However, the least popular is becoming equipped to help others and the low rating here is somewhat disturbing.

	7a	7b	7c	7d	7e	7f	7g	7h	7i	7j
6a				0.13	-0.16	-0.14				
6b							-0.23			
6c					0.15		-0.18	-0.15		
6d		0.16	-0.16	-0.12	0.12					
6e	0.12	-0.15		0.12	-0.12		0.16			
6f							0.14			
6g										
6h			0.15							

Key

Clear box $p < 0.05$
Yellow box $p < 0.01$
Green box $p < 0.001$
Positive correlations: red print
Negative correlations: blue print

Table 8.12 Correlations of questions 7 and6

Discussion

Many parts of question 6 relate to purposes of study at university. Only 18 of 80 items show significant correlations, the significant correlations tending to concentrate into certain questions: 6a (to develop abilities), 7d (easily understanding), 7e (learn quickly) 7f (academic confidence), 6e (learn new skills) and 6c (get a good job)

8.9 Doing well in Examinations

(8) Think about examinations you have sat
Tick however many are true for you

I find the best way to do well in examinations is to:

Read the textbook carefully	39	Revise the night before	33
Learn from my lecture notes	27	Make sure understand what has been taught	36
Look at examination paper from the previous year	65	Memories all the important information	38
Work with my friends in class	81	Make summaries of the important points	29
Learn as much as I can off by heart	69	Others	10

Discussion

While most options attract, the importance of working with friends in class stands out whereas depending on lecture notes, understanding or memorising and even reading the textbook or revising the night before are less popular. Sadly, the place of examination papers from previous years (which may be needed simply to inform the student of the objectives and standards related to the course) and memorising stand out.

	7a	7b	7c	7d	7e	7f	7g	7h	7i	7j
8a										
8b										
8c										
8d										
8e		0.12			0.16					0.13
8f	0.17		0.16							
8g		-0.13		0.15		-0.16		0.15	0.13	
8h										
8i										
8j		-0.14								

Key

Clear box $p < 0.05$
Yellow box $p < 0.01$
Green box $p < 0.001$
Positive correlations: red print
Negative correlations: blue print

Table 8.13 Correlations of questions 7 and8

***Comments*:**

Again, of the hundred possible correlations, only 11 are significant and most of these show low values. The pattern shows questions 8(e) (learn as much as I can off by heart), 8(f) (revise the night before) and 8(g) (make sure understand what has been taught) hold most of the significant correlation values. Thus, those who are academically confident tend to select 'Learn as much as I can off by heart', 'Revise the night before' and 'Make sure understand what has been taught'. This may not entirely reflect very sound educational practice but it may reflect the reality of academic life.

8.10 Conclusions

Academic confidence does correlate with certain features of the learning process. Of course, the fact that these correlate does not necessarily imply that any of these will be a source of confidence. The above pattern gives a kind of picture of characteristics that might describe some confident students rather than give a set of criteria for developing a confident person. Nonetheless, the discussion below is a guide to a positive approach to teaching and learning.

If confidence is important in generating success what can be done to encourage this confidence.? Clearly, success leads to confidence and this leads to further success. This means that giving school pupils a sense of achievement and positive reinforcement that they can achieve is important.

School pupils should also be given encouragement to be methodical but it is more likely that a methodical person is confident but being methodical does not necessarily produce confidence. However, will opportunities for creativity and challenge, such as group working skills, appropriately offered, encourage that confidence which will enable students to learn better.

The suggestion that those who like implications, which are practical rather than theoretical, may simply be a reflection of the desire to understand rather than memorise. The key attribute might well be the need to understand. Course presentation and assessment can be changed to encourage this as an aim. However, students need to be encouraged more specifically to aim at understanding and this may need overt emphasis.

From all of this, it might be deduced that the key underpinning features for confidence lies in simple success (reflected in speed of learning, understanding, and examination success). This confidence makes it possible for students to enjoy the challenges of further learning, to take risks and to take risks in a social learning situation like group work. Perhaps the most remarkable thing is the lack of features, which correlate with measures of academic confidence.

If academic success tends to lead to academic confidence, then high marks will lead to confidence, which might well lead to choice of the subject for further study. However, not all can achieve high marks.

In a study looking at attitudes towards physics, Skryabina (2000) found that 90% of those taking the Scottish Standard Grade Physics in Scotland towards the end of the course expressed the wish to go on to the Higher Grade course. 55% did in fact go on, this being the majority of those who were successful enough to go on. Nonetheless, the 90% had the desire to go on and this must have some connection with confidence in their studies in physics. Therefore, examination confidence is not the only factor. The interest in practical implications is consistent with what Skryabina found in Physics where it was the applications-led nature of the Standard Grade course which developed positive attitudes and a confidence to want to go on with the subject.

Chapter Nine

Exploring the Curriculum

9.1 Introduction

In the last three chapters, attempts have been made to explore aspects of learning which relate to the expressed views of academic confidence, with Saudi students. Academic confidence does not seem to be an aspect of some notion of generic confidence and it does not relate to working memory capacity or attitudes to learning. However, the work described in chapter eight does show some aspects of preferred ways of working which do relate to expressed confidence.

Those students who see themselves as more creative, practical, wanting challenges and risks, tend to be those who also expressed a higher level of academic confidence. While different styles of examinations and ways of preparing for examinations do not relate to confidence, it is also clear that being successful in examinations is a related factor.

In this chapter, the focus is on the curriculum, subjects studied, how they were studied and how the students preferred to learn as well as more detail on the whole theme of testing and examinations which has been shown to be an important factor. In addition, how the students describe themselves in terms of confidence is explored further.

A new questionnaire (49 questions) was devised although it contained the one group of questions used in every survey so far which looked at academic confidence. Again, it was not possible to gain access to male students. However, 231 female university students participated in this part of the study, made up as shown in table 9.1.

Samples Used	
Sciences	101
English	98
Humanities	32
Total	**231**

Table 9.1 Samples Used

9.2 I tem 1

(1) Think about your studies

	Strongly Agree	*agree*	*neutral*	*disagree*	*strongly disagree*
I feel I am very good at my studies (a)	15	46	34	4	1
I do not enjoy the challenge of a new problem in my studies (b)	16	21	40	17	7
I am confident that I can finish my studies quickly (c)	26	46	16	10	2
I understand things easily (d)	17	44	32	7	1
I do not learn quickly (e)	4	6	20	43	28
I am not doing well in my studies (f)	4	7	24	38	26
I am sure I shall pass my examinations (g)	28	47	19	4	2
I like taking risks in my studying (h)	22	28	26	16	6
I feel I can succeed at most things I attempt (i)	38	43	14	4	0
Examination success depends on having a good memory (j)	52	29	10	7	3

This is the same set of questions used in each survey so far. They seek to reflect aspects of academic confidence and the aim in this experiment is to relate the response patterns in each of these questions to response patterns in other areas. As before, this is done using Kendall's Tau-b.

For clarity, all data are shown as percentages and only correlations above 0.1 are shown. Coloured coding indicates level of significance. The questions are lettered for identification.

9.3 I tem 2

(2) If you were asked to design a new school course (for ages 17-18) in your favourite school subject, which of the following characteristics would be most important to you?
Use the letters to show which are most important to you.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Most important *Least important*

(a)	Topics which make teachers enthusiastic	8	8	12	12	13	16	20	9
(b)	Material which can be easily understood	20	18	11	11	11	13	11	3
(c)	Topics related to school pupil interests	24	22	17	12	14	6	5	1
(d)	A course that allows group discussion	10	19	17	17	10	14	10	3
(e)	A course which aims at quality of learning rather than covering a large area	11	8	9	13	14	14	22	8
(f)	Topics related to school pupil lifestyle and interests	14	10	18	16	15	15	8	3
(g)	Material which can be easily memorized	6	9	12	14	16	16	16	11
(h)	Topics which will challenge pupil thinking	9	5	4	5	5	5	7	59

Comments

This question aimed to explore how they see a curriculum which is in line with what they want by allowing them the freedom to indicate the most desirable features. The order for each student will reflect the *relative* importance as seen by that student. The intention was

to see whether any specific aspects of the curriculum were particularly important in relation to perceived academic confidence.

In many of the aspects, their views are spread widely. However, it is of particular interest to note a very strong rejection of the idea of challenging pupil thinking and the tendency to want things to be understood. The latter is consistent with the a tendency to move away from memorisation. This is almost certainly a rejection of the over-emphasis on memorisation at the moment. However, the wish *not* to challenge pupil thinking is regrettable and may be a sad reflection on current approaches and, perhaps, fear of changing them. There is a tendency to want things related to applications but, sadly, there is some polarisation over the quantity-quality issue, with the dominant view being to aim for quantity. Overall, the picture is not too encouraging.

	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
2a	-0.16				0.11	0.11			-0.11	
2b				0.15						
2c										
2d										
2e										
2f										
2g		-0.14		0.11						
2h										

Key

Clear box	$p < 0.05$
Yellow box	$p < 0.01$
Green box	$p < 0.001$
Positive r:	red print
Negative r:	blue print

Table 9.2 Correlations of questions 1 and 2

Comments

The majority of questions show no significant correlation (73 of 80) and values tend to be low (maximum 0.16) for the other 7. Question 1a (academic confidence) shows the highest correlation with 2a (teachers enthusiastic) and 1d (easy understanding) has significant correlations with 2b (material easily understood) and 2g (material easily memorized). Both these correlations are positive. This is consistent with an unwillingness to for pupils to be challenged in their thinking: perhaps they fear challenge in that it will lower confidence.

However, 2a (teacher enthusiasm) shows the most frequent significant correlations with perceived academic confidence. This is consistent with the work of Skryabina (2000) in Physics where she found the vital importance of good teachers in enabling girls to develop positive attitudes towards physics. The strong overall impression is that preferred curriculum approaches are *not* very important in developing confidence although the influence of the subject teacher may be very important.

9.4 I tem 3

(3) How do you describe yourself?

	Strongly Agree	*agree*	*neutral*	*disagree*	*strongly disagree*
I am generally a confident person (a)	30	42	21	6	4
I feel more confident when I succeed (b)	80	18	1	1	0
I feel confident when I study (c)	42	38	17	3	0
I feel confident when I really understand what is being taught (d)	68	25	7	0	0
I feel confident when I face examinations (e)	21	34	31	12	4
I feel confident when taking part in a discussion group (f)	46	23	25	4	2

Comments

The aim of the question is to reveal how the students see themselves in specific aspects of the study process and then relate this to perceived academic confidence.

While most of the questions indicate a strong positive view of themselves, the question relating to examinations shows a wide range of student views. The whole process of testing and examinations may be one critical factor in developing confidence and this relates to the very high level of expressed confidence linked to success.

It is interesting also to note that the vast majority gain confidence when they understand. This relates right back to the work of early educational psychologists (like Piaget, 1963) who emphasised the importance of the young learner seeking to make sense of the world around him or her. It seems to be an innate human characteristic to seek meaning. Memorisation is not, perhaps, the natural way forward.

	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
3a	0.16		0.29	0.24			0.21	0.28	0.26	0.21
3b	0.17		0.20	0.17			0.22		0.25	0.15
3c	0.17		0.25	0.20			0.18	0.18	0.17	
3d			0.14	0.17			0.13		0.16	0.11
3e	0.19		0.27	0.26			0.26	0.28	0.21	
3f			0.16	0.21				0.14	0.20	

Key

Clear box	$p < 0.05$
Yellow box	$p < 0.01$
Green box	$p < 0.001$

Table 9.3 Correlations of questions 1 and 3

Comments

Many parts of question 3 relate to aspects of academic life and the number of significant correlations related to parts of question 1 is, therefore not surprising.

"I feel I am very good at my studies" (an indicator of overall academic confidence 1(a) is unsurprisingly related to 3(b, c and e) all of which relate to aspects of academic confidence. However it is also correlated significantly with general confidence although it is likely that the student saw this in terms of their studies, given the context of the survey.

1(c, d and i) show significant correlations with all parts of question 3. Speed of work, understanding easily and general academic success are obviously related to all aspects covered in question 3. By contrast, there is a total absence of significant correlations with 1(b) (enjoying academic challenge), 1(e) (learning quickly), and 1(f) (doing well in studies). These results are surprising although it has already been noted that challenge is not wanted by these students.

1(j) (good memory and success) shows few significant correlations while 1(g) (confidence in passing exams), and 1(h) (taking risks) correlate with many parts of question 3. Thus, it can be seen that there are significant relationships between academic confidence and most of the questions here.

9.5 I tem 4

(4) Think of how you were taught at school
Here is a list of some ways you might have experienced.
Place them in order, showing which was USED MOST.

☐ ☐ ☐ ☐ ☐ ☐ ☐
Most important *Least important*

(a)	My teachers taught by giving information as in a lecture	17	9	8	9	18	16	22
(b)	My teachers allowed us to work in groups and to discuss	19	23	17	17	11	7	5
(c)	My teachers used much visual material	25	21	16	21	7	4	6
(d)	My teachers tended to rely on the use of textbooks	9	11	9	6	19	21	25
(e)	My teachers encouraged me to work mostly on my own	2	5	9	5	16	33	29
(f)	My teachers held discussions with us as a class	7	20	27	18	14	10	5
(g)	My teachers were strongly influenced by the need for us to pass examinations	22	11	17	24	14	7	5

Comments

The aim in this question was to see if any specific approach to school teaching was particularly related to the development of academic confidence. The responses give a useful overall insight into the styles of teaching used. There is considerable spread of responses but the lack of emphasis on textbooks and the importance of examinations are worthy of note.

	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
4a										
4b										
4c									**0.15**	
4d										
4e									**-0.12**	
4f										
4g				**0.12**						

Key

Clear box	$p < 0.05$
Yellow box	$p < 0.01$
Green box	$p < 0.001$
Positive r	red print
Negative r	blue print

Table 9.4 Correlations of questions 1 and 4

Comments

The surprising thing is the almost total absence of significant correlations. The way the students were taught at school does not seem to be related in any way to their perceived academic confidence.

9.6 I tem 5

(5) Think about the way you like to learn.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Most important *Least important*

(a)	I like working with others	20	17	10	16	7	12	8	7	7
(b)	I like practical activities	13	18	21	11	14	11	4	6	1
(c)	I like doing things for myself	13	8	6	10	12	14	17	12	7
(d)	I prefer the teacher to provide everything	12	17	18	13	14	9	7	7	2
(e)	I rely on memorizing	2	3	6	7	7	5	10	18	42
(f)	I rely on understanding	14	14	10	11	12	8	12	11	8
(g)	I like practical implications to be emphasized	7	12	10	15	13	15	11	9	7
(h)	I enjoy intellectual challenges	13	7	13	10	12	13	13	9	9
(i)	I avoid difficult materials	7	7	7	7	7	11	17	18	17

Comments

The question focuses on preferred ways of learning and seeks to relate these to perceived academic confidence. In most questions, the views of students are spread widely. However, there is a tendency to like working with others, to like practical activities, for the teacher to provide everything, to rely on understanding, to want practical implications to be emphasised, and not to avoid difficult materials (difficult to interpret). The students are rejecting memorisation.

	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
5a										
5b										
5c							-0.12			
5d	-0.11					0.11				
5e					-0.11			0.16		
5f										
5g										
5h								-0.27	-0.16	
5i							0.14	0.12		

Key

Clear box $p < 0.05$
Yellow box $p < 0.01$
Green box $p < 0.001$

Table 9.5 Correlations of questions 1 and 5

Comments

There are very few significant correlations (only 9 of 100 possibilities). This suggests very strongly that the way students like to learn is unrelated to their perceived confidence. The above table reveals that those who like doing things for themselves (5c) think they learn quickly (1e) while those who prefer the teacher to provide everything (5d) also think they learn quickly (1e). Those who rely on memorizing (5e) tend to learn quickly (1e). and like taking risks in their studying (1h). Those who enjoy intellectual challenges (5h) They say they do not feel they can succeed at most things they attempt (1i) and do not like taking risks (1h). The latter relationship is most surprising but might reflect that a challenge in Saudi culture means facing uncertainty and probable failure. Students who avoid difficult materials (5i) like taking risks (1h) and feel they can pass their examinations (1g).

9.7 Item 6

(6) Here are six descriptions of examinations.
Tick THREE, which you prefer.

(a)	48	Quality of answers is more important than quantity
(b)	59	Short answers are required
(c)	73	Allows me to express my own ideas
(d)	13	Requires me to write down what I have been taught
(e)	75	Where understanding has to be shown
(f)	31	Where I am asked to show practical abilities

Comments

This question aimed to explore whether any specific preferred examination style related to perceived academic confidence. The most marked outcome is to observe their desire to express their own ideas and demonstrate understanding. This is consistent with previous questions.

	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
6a										
6b				0.16	0.12				-0.15	
6c					0.14			0.14		
6d			0.13							
6e					-0.11					
6f						0.14		0.16	0.14	

Key

Clear box $p < 0.05$
Yellow box $p < 0.01$
Green box $p < 0.001$

Table 9.6 Correlations of questions 1 and 6

Comments

Of the 60 possible correlations, only 10 correlate significantly suggesting the types and purposes of examinations are not related strongly to perceived academic confidence.

Preferring short answers (6b) correlates with understanding things easily (1d) because this kind of question relies on understanding, learning quickly (1e) and success at most things they attempted (1i). Short answer questions will probably appeal to those who learn quickly in that they can answer questions quickly. However, the other two correlations are more difficult to explain. Those who prefer to express their own ideas (6c) tend to have confidence to learn quickly (1e) and they tend to like taking risks in their studying (1h). This probably reflects a greater open-mindedness and this does require a measure of confidence. Those who prefer to write down what they have been taught (6d) are confident that they can finish their studies quickly (1c).

9.8 I tem 7

(7) Think about all your school subjects.
Write down the subject you preferred most.
In two sentences, say why it was your favourite.

Frequencies	Humanities	English	Sciences	Total
Koran	2	1		**3**
Hadith				
Religion		1		**1**
Religious Teaching	4			**4**
Arabic Grammer	2	1	2	**5**
Poetry	3			**3**
Rhetoric		2		**2**
Library				
History		1		**1**
Geography		1		**1**
English	17	24	12	**53**
Physics			9	**9**
Chemistry			14	**14**
Biology			14	**14**
Mathematics			25	**25**

Table 9.7 Question 7 Preferred Subjects

Comments

The data are expressed in table 9.7 as frequencies and, for some reason, a large number of the students failed to respond to this question. While it might be expected that those who opted for the sciences and mathematics tend to rate these highly, the responses of the arts-based students is rather surprising. It is very clear that, other than English, no arts subject is rated highly at all by large numbers.

Of course, the position of English as the highest choice might be because it is a worldwide language and gives access to much other knowledge. This is particularly important in the sciences. The other arts subjects are simply not seen as favourites and this might reflect perceived utility value.

The reasons for their choices of preferred subjects are shown in table 9.8.

	Humanities	English	Sciences	Total
Relate well to teacher	3	3	13	**19**
Understand subject well	4	5	29	**38**
Subject related to life	1	27	26	**54**
Like to discuss subject	3	3	0	**6**
Unique	1	3	0	**4**
Interest and ability related to subject	6	12	24	**42**
Risk	1	3	10	**14**
Help me think about myself	4	35	13	**52**
Easy	0	8	10	**18**
Up to date subject	0	0	1	**1**
Helped me to understand other cultures	5	9	7	**21**

Table 9.8 Question 7 Reasons for Preferred School Subjects

Comments

The reasons student put forward for preferring subjects were considered and grouped under the headings as in Table 9.8. Overall, seeing a subject as related to life shows highly. This is consistent with findings from Reid and Skryabina (2002) which showed the very strong importance of applications as a dominant influence in attracting students to physics and is a broader support for the idea of developing applications-led curricula (Reid, 1999).

Many students felt that their favoured subject helped them to think for themselves but this was mainly true for those studying English at university. Studying the literature in a foreign language has the potential for addressing all situations of life and enabling students to think widely. Understanding was an important reason and this was most marked for the sciences while the importance of the teacher was also seen as important with those studying the sciences, again consistent with the findings of Reid and Skryabina (2000) with regard to Physics.

It is possible to relate their preferred choice of subject to their responses in question 1 which related to aspects of academic confidence, using Kendalls' Tau-b correlation.

(1) Think about your studies

1a	I feel I am very good at my studies
1b	I do not enjoy the challenge of a new problem in my studies
1c	I am confident that I can finish my studies quickly
1d	I understand things easily
1e	I do not learn quickly
1f	I am not doing well in my studies
1g	I am sure I shall pass my examinations
1h	I like taking risks in my studying
1i	I feel I can succeed at most things I attempt
1j	Examination success depends on having a good memory

	N	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
Koran	**231**										
Hadith	**130**										
Religion	**130**										
Religious Teaching	**130**			**0.16**						**0.18**	
Arabic grammar	**231**		**0.19**						**-0.17**	**-0.20**	
Poetry	**231**		**-0.19**				**0.23**				
Speaking and Writing	**130**										
Library	**130**										
History	**130**										
Geography	**130**										
English	**231**	**0.21**				**-0.17**	**-0.17**				
Physics	**101**										
Chemistry	**101**										
Biology	**101**										
Mathematics	**101**										

Table 9.9Question 7 Correlations of preferred subjects with question 1 (all)

Table 9.9 shows only 10 significant correlations out of a possible 150. There is no obvious pattern which would suggest that a preferred subject is related to academic confidence.

9.9 High School Marks and Academic Confidence

It was possible to gain access to the school marks for their final examinations in various subjects for some of the students and to relate these to the outcomes from question 1 which explored academic confidence. For clarity, question 1 is shown again:

(1) Think about your studies

1a	I feel I am very good at my studies
1b	I do not enjoy the challenge of a new problem in my studies
1c	I am confident that I can finish my studies quickly
1d	I understand things easily
1e	I do not learn quickly
1f	I am not doing well in my studies
1g	I am sure I shall pass my examinations
1h	I like taking risks in my studying
1i	I feel I can succeed at most things I attempt
1j	Examination success depends on having a good memory

There were three sub-groups in the population (those studying Humanities, English and Sciences). Marks were obtained for the Science group and the Humanities plus English group. The correlations (Kendall's Tau-b) are shown in tables 9.9 and 9.10

	N	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
Koran	**102**					**-0.19**					
Hadith	**50**										
Religion	**50**										
Religious Teaching	**50**										
Arabic Grammar	**102**										
Poetry	**50**										
Speaking and Writing	**102**							**-0.19**	**-0.27**		
Library	**50**										
History	**50**										
Geography	**50**										
English	**102**								**-0.20**		
Physics	**52**										
Chemistry	**52**	**0.27**									
Biology	**52**										
Mathematics	**52**										

Table 9.10 Correlations of high school marks with question 1 (Science Students)

Comments

Of the 150 possible correlations, only 5 correlate significantly: 3 at $p < 0.05$ (yellow) and 2 at $p < 0.01$ (green). Overall, it seems that academic performance in separate subjects at school does not relate neatly to perceived academic confidence when expressed later at university. It is possible that their views of their confidence when at university have changed quite a bit from school days and, indeed, their school marks may not be very closely related to their success at university.

The five significant correlations make sense: performance in chemistry is related to the their view that they are doing well in their studies while Koran involves much memorisation and relates to speed of learning (probably seen as memorising). Both English and Arabic speaking and writing tend to show better examination results for those who do not wish to take risks and the latter is best for those who are not sure they will pass their examinations.

The surprise is that other subjects do not show significant correlations although, with much smaller samples for some of the subjects, correlations have to be fairly high for any significance to show.

It was also possible to obtain the students previous school marks (last examinations at school) for the humanities students and to relate these to their responses in question 1 (table 9.10).

	N	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j
Koran	130										
Hadith	130										
Religion	130										
Religious Teaching	130			0.16						0.18	
Arabic Grammar	130		0.19						-0.17	-0.20	
Poetry	130		-0.19				0.25				
Arabic grammar	130										
Library	130										
History	130										
Geography	130										
English	130										

Table 9.11 Correlations of high school marks with question 1 (Humanities Students)

In the performance in only three subjects is their any relationship with confidence as expressed in question 1. Religious teaching performance is related to speed of working (1c) and success (1c). Arabic Grammar is related to the students perceiving that they are not enjoying challenge (1b), not taking risks (1h) and lack of success (1i). This might reflect on the nature of the courses in Arabic Grammar!

Performance in poetry (largely memorising of poetry, with a little interpretation) is related to enjoying challenge (1b) and their feeling that they are not doing well in their studies (1f).

9.9 Some Comparisons

The same set of questions was used in all the surveys undertaken. It is interesting to look at the patterns of responses to see how these vary. This is shown in table 9.12.

Think about your studies — All data are shown as percentages.

Experiment 1 ***School and university (male and female)*** **N = 631**	*Strongly Agree*	*agree*	*neutral*	*disagree*	*strongly disagree*
I feel I am very good at my studies	22	45	30	3	1
I do not enjoy the challenge of a new problem in my studies	9	19	25	26	20
I am confident that I can finish my studies quickly	31	38	22	7	2
I understand things easily	25	52	17	3	2
I do not learn quickly	2	4	16	4	38
I am not doing well in my studies	4	7	8	13	68
I am sure I shall pass my examinations	39	25	12	10	14
I like taking risks in my studying	26	20	16	8	30
I feel I can succeed at most things I attempt	41	34	15	5	5
Examination success depends on having a good memory	*Question not used*				

Experiment 2 ***University - humanities (female)*** **N = 237**					
I feel I am very good at my studies	28	46	22	4	0
I do not enjoy the challenge of a new problem in my studies	8	25	24	25	18
I am confident that I can finish my studies quickly	42	38	14	6	0
I understand things easily	24	55	14	3	4
I do not learn quickly	3	6	14	44	33
I am not doing well in my studies	3	9	7	5	75
I am sure I shall pass my examinations	27	32	10	9	22
I like taking risks in my studying	26	15	15	9	34
I feel I can succeed at most things I attempt	44	35	12	2	6
Examination success depends on having a good memory	*Question not used*				

Experiment 3 ***University - science and humanities (female)*** **N = 317**					
I feel I am very good at my studies	19	43	35	3	0
I do not enjoy the challenge of a new problem in my studies	10	21	39	22	8
I am confident that I can finish my studies quickly	24	43	25	8	1
I understand things easily	17	41	33	7	2
I do not learn quickly	1	11	20	46	22
I am not doing well in my studies	3	12	28	39	20
I am sure I shall pass my examinations	27	45	22	4	1
I like taking risks in my studying	23	27	24	19	7
I feel I can succeed at most things I attempt	27	52	19	2	0
Examination success depends on having a good memory	42	35	12	10	2

Experiment 4 ***University - science and humanities (female)*** **N = 231**					
I feel I am very good at my studies	15	46	34	4	1
I do not enjoy the challenge of a new problem in my studies	16	21	40	17	7
I am confident that I can finish my studies quickly	26	46	16	10	2
I understand things easily	17	44	32	7	1
I do not learn quickly	4	6	20	43	28
I am not doing well in my studies	4	7	24	38	26
I am sure I shall pass my examinations	28	47	19	4	2
I like taking risks in my studying	22	28	26	16	6
I feel I can succeed at most things I attempt	38	43	14	4	0
Examination success depends on having a good memory	52	29	10	7	3

Table 9.12 Responses on the Four Surveys

The four samples are all different in composition and, therefore, statistical comparisons are not very meaningful in that interpretation is difficult. However, a look over the response patterns shows a considerable similarity between responses. Bringing all the data together, giving a sample of 1416, produces the following pattern (table 9.11):

	Strongly Agree	*agree*	*neutral*	*disagree*	*strongly disagree*
I feel I am very good at my studies	21	45	30	3	1
I do not enjoy the challenge of a new problem in my studies	10	21	30	23	15
I am confident that I can finish my studies quickly	30	40	20	8	1
I understand things easily	22	49	23	5	2
I do not learn quickly	2	6	17	26	32
I am not doing well in my studies	4	8	15	22	52
I am sure I shall pass my examinations	32	34	15	8	10
I like taking risks in my studying	25	22	19	12	22
I feel I can succeed at most things I attempt	38	40	15	4	3
Examination success depends on having a good memory	46	32	11	9	2

Table 9.13 Total Responses in the Four Surveys

This confirms that the students see themselves as having a fairly high degree of confidence although they see examination success largely in terms of good memory skills, reflecting the emphasis in Saudi Arabia. Of course, the whole sample is made up largely of university first year students. They have been successful in reaching university. A small part of the sample is drawn from senior school pupils who, with considerable experience of passing school examinations, might also be expected to show a good degree of academic confidence.

9.10 Conclusions

This experiment was designed to offer some kind of overview of the curriculum, subjects studied, how they were studied and how the students preferred to learn as well as more detail on the whole theme of testing and examinations which has been shown to be an important factor. In addition, how the students describe themselves in terms of confidence is explored further.

The strong overall impression is that preferred curriculum approaches are *not* very important in developing confidence although the influence of the subject teacher may be very important (see Reid and Skryabina, 2002). Also it seems to be an innate human characteristic to seek meaning. Memorisation is not, perhaps, the natural way forward. So most ways the students were taught at school do not seem to be related in any way to their perceived academic confidence.

There is a tendency to like practical activities and working with others, for the teacher to provide everything, to rely on understanding, to want practical implications to be emphasised, and not to avoid difficult materials. They preferred of examination styles where they can express their own ideas and demonstrate understanding.

The results from the questions offer a good picture of the preferences and aspirations of the sample. However, there are not many significant correlations between their responses and their responses to the questions which specifically related to confidence. It is particularly important to note the absence of relationships between their expressed academic confidence and among all aspects of the way they were taught, the way they say they like to learn and the types of examinations purposes.

Any attempt to find some kind of insight into a way of teaching and learning which generates increased confidence is not easy from the data. There are two possible reasons for this. Perhaps, different students prefer different ways and this hides any significant correlations overall. Perhaps, also, the students are so accustomed to a system, which offers information in quantity and offers rewards only to those who can recall it accurately, that this hides other possibilities for these students.

The one thing that stands out is that success seems to lead to confidence. These students are among those who have been more successful at school in terms of examinations. The fundamental question is how to offer success to those who are not so good at formal examinations based on recall. If success is so dependent on this and confidence is not related much to other aspects, then there is a real danger that the examination system will generate a population where most are unsuccessful and, therefore of lowering confidence. The system might be leading to a destruction of confidence. It does not seem to be the style of examination but the fact of success in examinations, which is an important determinant of confidence.

Chapter Ten

Conclusions

10.1 Introduction

In this chapter, the results of this study are summarised. This is followed by comments on the strengths and weaknesses of the whole work. Conclusions are associated with suggestions for further research in the light of present study.

Confidence is an elusive concept and one of great importance in an academic setting. It has been noted that confidence is a belief in your own ability to do tasks well. The importance cannot be underestimated in that, without the inner assurance of possible success, there is a real danger that effort will not be expended and success will become unattainable.

Much work (e.g. Roy *et al.* 2005; Harter, 1985) has demonstrated that positive self-esteem is essential for psychological health: for increasing the feeling of being successful in something and feeing happier about it. Harter (1985) suggests that people might think that goals set for them are not achievable but the problems are simply not about themselves as much as the way they believe in themselves. She argues that people may believe they are 'bad' when, in many situations, improvement is possible.

The importance of confidence: positive self-evaluation may cause behaviors which may lead to positive other-evaluations, which in turn may confirm or modify positive self-evaluation (Schneider, 1976). Thus, confidence is probably not a general attribute, this being consistent with other studies (eg. Harter, 1985). The four aspects of confidence considered here seemed to show that the effect of every aspect is different.

There are many problems in any exploration study relating to academic confidence. Definition of the concept is difficult and finding ways to assess such confidence is not easy. This study has relied on questionnaires and interviews, recognising that this is an attempt to gain insight into a latent construct. The approach has been built around the idea that confidence is, at least in major part, an expression of an attitude towards oneself. In this way, it is strongly related to self-esteem as applied to academic matters.

Questionnaires and interviews are widely used to explore attitudes in other areas of life and this was the approach adopted here.

10.2 The Main Findings

The work was built around four experiments (see table 10.1)

Experiment	Sample	Gender		Specialism	
		Male	*Female*	*Arts*	*Sciences*
1	631	241	390	376	255
2	237	-	237	237	-
3	317	-	317	195	122
4	231	-	231	130	101
Totals	**1416**	**241**	**1175**	**938**	**478**

Table 10.1 Samples Used

Experiment one was conducted by questionnaire and interview. The questionnaire involved 58 questions and these attempted to cover aspects of academic self, athletic self, social self and personal confidence. 217 senior school pupils were involved as well as 414 university students, reflecting a mix of subject disciplines. Examination performance data was also obtained and the aim was to relate this data to responses to all the questions to see how academic performance related to expressions of confidence. The general outcome was that only expressions of academic confidence gave any relationship with performance. Indeed each facet of confidence seemed to be fairly distinct and there was no evidence of any generic confidence. Factor Analysis confirmed this.

There was an opportunity to interview 50 participants. For cultural reasons, it was not possible to include men. The interview was built around 7 questions and involved 50 ladies, all studying within the area of psychology. Interviews were planned to validate the questionnaire and to gain extra insights. The responses to the seven questions and the ensuing discussions qualitatively confirmed the impressions left by the questionnaire outcomes although it seems likely that interviews an element of a tendency to give what is expected or seen as desirable. Their specific responses to the questions were correlated with their examination performance and, again, this suggested that only academic confidence related to academic performance.

The problem of gaining access to men became more acute and, unfortunately, all the subsequent experiments could only involve ladies. In the second experiment, the aim was to see whether academic confidence (measurement by questionnaire) related to working memory capacity or to student perceptions of learning (following Perry's work: Perry, 1999). It is well established that working memory capacity is a correlate of performance in many areas of the curriculum. However, it needs to be remembered that this is only true if either or both of the teaching and assessment make demands on the working memory. This has often been found to be true in the sciences and mathematics (e.g Danili and Reid, 2004; Alenezi, 2005) but recent work has shown it to be true in other areas (e.g Prasad, 2006, Hindal, 2006).

The correlation of working memory with performance may also only be true if the processes in the mind of the learner involve understanding. Thus, if learning simply means the memorisation of information, then it is possible that the capacity of working memory may be much less important. Equally, if the testing procedures simply involve the recall of memorised information, the same may also apply. However, it is unlikely that simple recall can ever be the complete basis for testing, especially in conceptual areas. Nonetheless, in Saudi Arabia, with its very strong emphasis on memorisation and recall, working memory may not play such a high role in learning and assessment.

Working memory capacity did not show significant correlation with performance However, the sample was drawn from arts and humanities where working memory limitations may not be so important. Of the forty questions relating to confidence, in only three was working memory capacity significantly correlated, the highest value being 0.13. Thus, in this sample, in this educational context, working memory capacity does not relate to confidence.

Perceptions of learning (as indicated by positions on the Perry scale) also showed few significant correlations. This suggests that, at least with ladies in Saudi Arabia, having a higher working memory capacity does not relate to academic confidence and, academic confidence is not related to the student views of their role as learners, the role of lecturers, their view of knowledge and their view of assessment.

In an attempt to find aspects of learning which might be related to academic confidence, experiments 1 and 2 suggest that academic confidence is not simply a facet of generic confidence and is unrelated to working memory capacity and view of learning. Experiment 3 then tried to explore if academic confidence was related to some aspects of learning styles, involving both sciences and arts students.

Learning styles is a complex area and only some specific aspects were considered: preferred ways of learning, purposes of learning, evaluation of exams, group-working skills. The strong impression is that the key underpinning confidence lies in simple success (reflected in speed of learning, understanding, and examination success). This confidence makes it possible for students to enjoy the challenges of further learning, to take risks and to take risks in a social learning situation like group work. Perhaps the most remarkable thing is the lack of features which correlate with measures of academic confidence. However, numerous other features of what appear to be student aspirations were evident.

The students seem to want freedom. Perhaps, they are being intellectually stifled, with few opportunities to challenge, to create new ideas, understandings and interpretations. All of this may merely reflect a rejection of an education system, which places too much emphasis on the transmission of information and the recall of it in examinations. The suggestion that those who like implications that are practical rather than theoretical may simply be a reflection of the desire to understand rather than memorise. The key attribute might well be the need to understand. The course presentation and assessment can be changed to encourage this as an aim. However, students need to be encouraged more specifically to aim at understanding and this may need overt emphasis. All of this might suggest that, when students are allowed and enabled to gain understanding and their learning is meaningful, there is an inner satisfaction and this, of itself might be a contributor towards the development of confidence.

Having found some patterns of correlation when academic confidence was related to aspects of learning styles, the final experiment aimed to explore this further with arts and science students. This looked at: course design, various academic views, teaching approaches which had been experienced, learning styles, preferred examination and testing styles, and preferred subjects.

The strong overall impression is that preferred curriculum approaches are *not* very important in developing confidence although the influence of the subject teacher may be very important. Thus, most ways the students were taught at school do not seem to be related in any way to their perceived academic confidence. They preferred examination styles that allowed then express their own ideas and demonstrate understanding. It is particularly important to note the absence of relationships between their expressed academic confidence and among all aspects of the way they were taught, the way they say they like to learn and the types of examinations purposes.

10.3 Overall Conclusions

The following specific conclusions are offered:

(a) Academic performance tends to be only correlated with academic confidence. Thus, confidence is probably not a general attribute, consistent with other studies (e.g. Harter, 1984). The four aspects of confidence seemed to show that the effect of every aspect is different. Academic confidence is thus largely unrelated to other areas of life.

(b) Working memory capacity is also unrelated to academic confidence. At first sight, this is unexpected in that working memory capacity is known to be so important in learning and assessment. However, this may simply reflect the memorisation-recall emphasis of Saudi education.

(c) There was no evidence that views of learning (following Perry) related to academic confidence.

(d) Some aspects of learning styles did relate to academic confidence while others did not. This gives a kind of picture of characteristics which might describe some confident students rather than give a set of criteria for developing confidence. School pupils should also be given encouragement to be methodical as it is more likely that a methodical person is confident but being methodical does not necessarily produce confidence. However, will opportunities to be creative and challenge, appropriately offered, encourage that confidence which will enable students to learn better?

10.4 Reflecting on the Study

The most difficult aspect of the study was trying to define precisely what was being explored and then devising ways to assess this which were valid. While teachers and lecturers may often have seen the importance of confidence when it comes to successful study and, indeed, many highly skilled school teachers may have spent much time and effort trying to encourage such confidence in their students, the idea of confidence is not easy. In this study, there was much debate with colleagues over definitions and descriptions and the questionnaires were considered critically by a number before they reached their final form. This, while very helpful, does not guarantee validity. Indeed, there is no certainty that students responded to reflect their actual views but their responses may have reflected a certain element of aspiration. However, the interviews seem to confirm that what was being seen in the early questionnaires reflected reality to a large extent.

Sample sizes were large, making it likely that there is high reliability in the measurements. The range of tests was considerable and probed the linking of ideas from many standpoints, with a fair measure of consistency of results. The opportunity arose for a test:re-test measure of reliability and this confirmed that reliability was high.

It is impossible to generalise the conclusions in that much of the work only involved female students and the culture of Saudi is very different from most cultures in the world. At times, there was also an over-dominance of arts students, reflecting in part what occurs in Saudi. Overall, generalisation must be made with considerable caution. As an extra, some of the surveys offered very clear insights into the weaknesses of the Saudi education system and student aspirations in some areas were very marked.

10.5 Suggestions for Further Work

As with all studies, this study has raised many further questions and issues for future work. For example, the work needs to the repeated to see if it is indeed generalisable to other cultures and, especially, to men as well as women.

However, the real issue behind this study was the need to explore how academic confidence can be encouraged and developed. If the results are generally true, then many aspects of life and the educational journey are not important in developing academic confidence. The real issue lies in the way humans develop their confidence. Is this relying on home background, educational systems or the curriculum? This needs to be explored.

Academic confidence does not seem to be an aspect of some kind of generic characteristic of humans. It does seem to relate to certain learning experiences and, especially to examination success. This raises an important issue, for not all can have examination success. Clearly, success leads to confidence and this may lead to further success. This means that giving school pupils a sense of achievement and positive reinforcement that they can achieve is important. If not all can achieve the kind of academic success, which is derived from examinations, then, perhaps, the dependence on examinations as the only (or certainly, main) evidence of academic success needs to be questioned. Giving the learner positive reinforcement and encouragement is also vital.

The samples used were biased in the dominance of female students and arts students. There is a need to repeat the measurements with a more balanced sample and also to extend it to other cultural settings.

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Appendices

Appendix A

Questionnaires in English

First and second questionnaire

Third questionnaire

Fourth questionnaire

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This is not a at test.
Your responses will help in future course planning

Your name: ..... Your university number: .....

Here is a way to describe a racing car

quick	☑ ☐ ☐ ☐ ☐ ☐	slow
important	☐ ☐ ☑ ☐ ☐ ☐	unimportant
safe	☐ ☐ ☐ ☐ ☑ ☐	dangerous

The positions of the ticks between the word pairs show that you consider it as very quick, slightly more important than unimportant and quite dangerous.

(1) Think about your studies

I understand things easily	☐ ☐ ☐ ☐ ☐ ☐	I do not understand things easily
I have a good memory	☐ ☐ ☐ ☐ ☐ ☐	I do not have a good memory
I get a right answers	☐ ☐ ☐ ☐ ☐ ☐	I do not get right answers
I learn quickly	☐ ☐ ☐ ☐ ☐ ☐	I do not learn quickly
I am doing well in my studies	☐ ☐ ☐ ☐ ☐ ☐	I am not doing well in my studies
I have many abilities	☐ ☐ ☐ ☐ ☐ ☐	I have few abilities
I often forget what I learn	☐ ☐ ☐ ☐ ☐ ☐	I rarely forget what I learn
I am sure I shall pass my examinations	☐ ☐ ☐ ☐ ☐ ☐	I am not sure I shall pass my examinations
Getting right answers is not important to me	☐ ☐ ☐ ☐ ☐ ☐	Getting right answers is not important to me

(2) Think about your lifestyle

I feel that most people like me	☐ ☐ ☐ ☐ ☐ ☐	I wish that more people liked me
I do very well at all kinds of sports	☐ ☐ ☐ ☐ ☐ ☐	I do not feel I am very good at sports
I find it hard to make friends	☐ ☐ ☐ ☐ ☐ ☐	I make friends easily
I like taking risks	☐ ☐ ☐ ☐ ☐ ☐	I do not like taking risks
I wish I could be a lot better at sport	☐ ☐ ☐ ☐ ☐ ☐	I feel I am good enough at sport
I have a lot of friends	☐ ☐ ☐ ☐ ☐ ☐	I do not have many friends

(3) Think about your self

I am happy with the way I look	☐ ☐ ☐ ☐ ☐ ☐	I not happy with the way I look
I usually like the way I behave	☐ ☐ ☐ ☐ ☐ ☐	I often do not like the way I behave
I like a good argument	☐ ☐ ☐ ☐ ☐ ☐	I do not enjoy arguments
I usually do the right thing	☐ ☐ ☐ ☐ ☐ ☐	I often do the wrong thing
I am popular with others my age	☐ ☐ ☐ ☐ ☐ ☐	I am not popular with others my age
I feel I can succeed at most things I attempt	☐ ☐ ☐ ☐ ☐ ☐	I do not feel I can succeed at most things I attempt
I do not like challenges	☐ ☐ ☐ ☐ ☐ ☐	I like challenges

(4) Please tick one box on each line to show your opinion

	strongly agree	agree	neutral	strongly disagree	disagree
I feel I am very good at my studies	☐	☐	☐	☐	☐
I am not successful at sports	☐	☐	☐	☐	☐
I feel that I am just as clever as others my own age	☐	☐	☐	☐	☐
I am always doing things with many other people	☐	☐	☐	☐	☐
I do not have a good imagination	☐	☐	☐	☐	☐
I wish my physical appearance was different	☐	☐	☐	☐	☐
I wished that more people my age liked me	☐	☐	☐	☐	☐
I think that I have enough experience to deal with life	☐	☐	☐	☐	☐
I like tasks that allow me to do things my own way	☐	☐	☐	☐	☐
I usually know what needs to be done	☐	☐	☐	☐	☐
I take decisions quickly	☐	☐	☐	☐	☐
I like to do things in new ways even when I am not sure of the best way	☐	☐	☐	☐	☐
I enjoy taking part in a new sporting activity	☐	☐	☐	☐	☐
I feel comfortable in a social situation	☐	☐	☐	☐	☐
I enjoy the challenge of a new problem in my studies	☐	☐	☐	☐	☐
I am happy with my weight for my height	☐	☐	☐	☐	☐
I do not really enjoy my present lifestyle	☐	☐	☐	☐	☐
I am confidant that I can finish my studies quickly	☐	☐	☐	☐	☐

(5) Think about your life as whole. Please tick against three which you think are most important.

- ☐ My abilities
- ☐ My academic achievement
- ☐ My popularity
- ☐ Expertise
- ☐ My attractiveness
- ☐ My sporting skill
- ☐ My willingness to take risks
- ☐ My sociability
- ☐ My creative ability
- ☐ My independent mind

(6) Imagine your are faced with a new and demanding type of problem in your studies.

What is your likely reaction ?

Tick as many as you wish.

- (a) Worry abut passing the examinations. ☐
- (b) See it as a challenge; ☐
- (c) Start to panic; ☐
- (d) Seek help from books; ☐
- (e) I have managed in the past - I'll manage now; ☐
- (f) Think of changing my course; ☐
- (g) Enjoy it because it is new; ☐
- (h) Seek help from others. ☐

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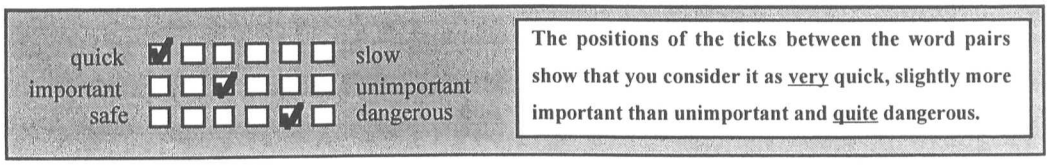
This is not a test.
Your responses will help in future course planning

Your name:..... Your university number:.....

Here is a way to describe a racing car



(1) Think about ***your studies***
Tick one box on each line

I like learning facts and information	☐☐☐☐☐☐	I like learning concepts and ideas
I remember best what I see	☐☐☐☐☐☐	I remember best what I hear
I find it easier to learn facts	☐☐☐☐☐☐	I find it easier to learn concepts
I like thinking in terms of pictures	☐☐☐☐☐☐	I like thinking in terms of words
I emphasise the broad picture my studies	☐☐☐☐☐☐	I emphasise the details in my studies
I like abstract ideas	☐☐☐☐☐☐	I like facts and data
Once I understand the parts I understand the whole thing	☐☐☐☐☐☐	Once I understand the whole thing, I understand the parts
I like to work systematically and methodically	☐☐☐☐☐☐	I prefer to work fast and finish quickly
With long calculations I check all the steps carefully	☐☐☐☐☐☐	With long calculations, I do not check all the steps carefully

(2) Think about **the way you learn**
Tick one box on each line

I understand things better after I try them through	☐☐☐☐☐☐	I understand things better after I think them out
I prefer when things have practical implications	☐☐☐☐☐☐	I prefer when things are theoretical
I consider it higher praise to call someone sensible	☐☐☐☐☐☐	I consider it praise to call someone imaginative
For entertainment, I would rather watch television	☐☐☐☐☐☐	For entertainment, I would rather read a book
I enjoy repetitive tasks	☐☐☐☐☐☐	I do not enjoy repetitive tasks
I like to master one way of a achieving a task	☐☐☐☐☐☐	I like to thing of many way of a achieving a task
I enjoy being creative	☐☐☐☐☐☐	I do not enjoy being creative
I enjoy challenging activities	☐☐☐☐☐☐	I do not enjoy challenging activities

(3) Think about ***tests, examinations and assessment***
Tick one box on each line

I prefer at the end of course to get comments	☐☐☐☐☐☐	prefer at the end of a course a specific mark
I like exams which give me chance to show my own ideas	☐☐☐☐☐☐	I like exams which test the facts
I hate calculations	☐☐☐☐☐☐	I enjoy calculations
Examinations test recalled knowledge	☐☐☐☐☐☐	Examinations only test the way I think
I like examinations which ask me to explain	☐☐☐☐☐☐	I like examinations which ask me to recall

(4) Think about ***working in a group***
Tick one box on each line

I prefer to jump in and contribute ideas	☐☐☐☐☐☐	I prefer to sit back and listen to ideas
I can learn better on my own	☐☐☐☐☐☐	I can learn better in a group
I get to know fellow group members quickly	☐☐☐☐☐☐	I do not get to know fellow group members quickly
Other group members tend to hold me back	☐☐☐☐☐☐	Other group members tend to help me
I do not like leading a group discussion	☐☐☐☐☐☐	I like leading a group discussion
Group work helps me understand things better	☐☐☐☐☐☐	I understand things better one my own
I find the discussions helpful	☐☐☐☐☐☐	I find the discussions un helpful
I enjoy working with members of my group	☐☐☐☐☐☐	Ido not enjoy working with members of my group
Most ideas from others are not helpful	☐☐☐☐☐☐	Most ideas from others are helpful
Most of the ideas come from one person	☐☐☐☐☐☐	Ideas come from many people
Wórking as a group make it easier to understand things	☐☐☐☐☐☐	Working as a group does not makes it easier to understand things

(5) Here are several different forms of assessment
Use the letters to show which are your preferred

(A) Multiple choice
(B) Continuous assessment
(C) Short answer questions
(D) Long answer questions
(E) Essays
(F) Oral examination
(G) Open book examination
(H) Projects

Most preferred ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ *Least preferred*

(6) Here are several reasons why study at university might be important
Tick the there reasons, which you think are most important

- ☐ To develop abilities
- ☐ To pass examinations
- ☐ To gain a degree
- ☐ To get a good job
- ☐ To learn new skills
- ☐ To learn how to learn on my own
- ☐ To fulfill social expectations
- ☐ To become equipped to help others

(7) Think about your studies
Tick one box on each line to show your opinion

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
I feel I am very good at my studies	☐	☐	☐	☐	☐
I do not enjoy the challenge of a new problem in my studies	☐	☐	☐	☐	☐
I am confident that I can finish my studies quickly	☐	☐	☐	☐	☐
I understand things easily	☐	☐	☐	☐	☐
I do not learn quickly	☐	☐	☐	☐	☐
I am not doing well in my studies	☐	☐	☐	☐	☐
I am sure I shall pass my examinations	☐	☐	☐	☐	☐
I like taking risks in my studying	☐	☐	☐	☐	☐
I feel I can succeed at most things I attempt	☐	☐	☐	☐	☐
Examination success depends in having agood memory	☐	☐	☐	☐	☐

(8) Think about examination you have sat
Tick however many are true for you

I find the best way to do well in examinations is to:

- ☐ Read the textbook carefully
- ☐ Learn from my lecture notes
- ☐ Look at examination paper from the previous year
- ☐ Work with my friends in class
- ☐ Learn as much as I can off by heart
- ☐ Revise the night before
- ☐ Make sure understand what has been taught
- ☐ Memories all the important information
- ☐ Make summaries of the important points
- ☐ Other: ,,

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Your responses will help in future course planning

Your name: ..... Your university number: .....

(1) Please tick one box on each line to show your opinion

	strongly agree	agree	neutral	strongly disagree	disagree
I feel I am very good at my studies	☐	☐	☐	☐	☐
I do not enjoy the challenge of a new problem in my studies	☐	☐	☐	☐	☐
I am confidant that I can finish my studies quickly	☐	☐	☐	☐	☐
I understand things easily	☐	☐	☐	☐	☐
I do not learn quickly	☐	☐	☐	☐	☐
I am not doing well in my studies	☐	☐	☐	☐	☐
I am sure I shall pass my examinations	☐	☐	☐	☐	☐
I like taking risks in my studying	☐	☐	☐	☐	☐
I feel I can succeed at most things I attempt	☐	☐	☐	☐	☐
Examination success depends in having a good memory	☐	☐	☐	☐	☐

(2) If you were asked to design a new school course (for ages 17-18) in your favorite school subject, which of the following characteristics would be most important to you ?
Use the letters to show which are most important to you.

(A) Topics which make teachers to be enthusiastic;
(B) Material which can be easily understood;
(C) Topics related to school pupil interests;
(D) A course that allows group discussion;
(E) A course which aims at quality of learning rather than covering a large area;
(F) Topics related to school pupil lifestyle;
(G) Material which can be easily memorized;
(H) Topics which will challenge pupil thinking

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Most important *Least important*

(3) How do you describe yourself ?

	strongly agree	agree	neutral	strongly disagree	disagree
I am generally a confident person	☐	☐	☐	☐	☐
I feel more confident when I succeed	☐	☐	☐	☐	☐
I feel confident when I study	☐	☐	☐	☐	☐
I feel confident when I really understand what is being taught	☐	☐	☐	☐	☐
I feel confident when I face examinations	☐	☐	☐	☐	☐
I feel confident when taking part in a discussion group	☐	☐	☐	☐	☐

(4) Think of how you were taught at school
Here is a list of some ways you might have experienced.
Place them in order, showing which was ***used most.***

(A) My teachers taught by giving information as in a lecture;
(B) My teachers allowed us to work in groups and to discuss;
(C) My teachers used much visual material (like diagrams, computer graphics, models);
(D) My teachers tended to rely on the use of textbooks;
(E) My teachers encouraged me to work mostly on my own;
(F) My teachers held discussions with us as a class;
(G) My teachers were strongly influenced by the need for us to pass examinations.

☐ ☐ ☐ ☐ ☐ ☐ ☐

Used most *Used least*

(5) Think about the way you like to learn
Tick as many as you wish

☐ I like working with others
☐ I like practical activities
☐ I like doing things for myself
☐ I prefer the teacher to provide everything
☐ I rely on memorizing
☐ I rely on understanding
☐ I like practical implications to be emphasised
☐ I enjoy intellectual challenges
☐ I avoid difficult materials

(6) Think about what the kind of examinations you prefer.
*Tick **three** which you prefer.*

☐ Quality of answers is more important than quantity
☐ Short answers are required
☐ Allows me to express my own ideas
☐ Requires me to write down what I have been taught
☐ Where understanding has to be shown
☐ Where I am asked to show practical abilities

(7) Think about all your school subjects.

Write down the subject you preferred most: .....

In two sentences, say why it was your favorite : .....

.....

.....

.....

Appendix B

Questionnaires in Arabic

مركز التربية والتعليم
جامعة جلاسجو
سكوتلاندا / بريطانيا

هذا ليس اختبارا

الاستبيان الذي بين يديك هو جزء من دراسة تهدف للتخطيط لدراسة مستقبلية ، وتجدر الإشارة هنا إلى أن إجاباتك سوف تعامل بسرية ولن تستخدم إلا لأغراض البحث العلمي ولن تؤثر على نتائجك في الدراسة

إسمك :..... **رقمك الجامعي :**.....

هنا طريقة شرح سباق السيارات :

إن وضع الإشارة بين الكلمات الزوجية يبين أنك استوعبتها بسرعة عالية وعرفت المهم عن الأقل أهمية والأقل خطورة	بطيء ☐☐☐☐☐☐ سريع	
	مهم ☐☐☐☐☐☐ مهم	
	خطير ☐☐☐☐☐☐ مأمونن	

(1) رأيك في دراستك

أفهم الأشياء بسهولة	☐	☐	☐	☐	☐	☐	أفهم الاشياء بسهولة
لا املك ذاكرة جيدة	☐	☐	☐	☐	☐	☐	أملك ذاكرة جيدة
لا أحصل على إجابات صحيحة	☐	☐	☐	☐	☐	☐	أحصل على إجابات صحيحة
لا أتعلم بسرعة	☐	☐	☐	☐	☐	☐	أتعلم بسرعة
لا أنجز جيدا في دراستي	☐	☐	☐	☐	☐	☐	أنجز جيدا في دراستي
لدي صعوبات قليلة	☐	☐	☐	☐	☐	☐	لدي العديد من الصعوبات
نادرا أنسى ما تعلمته	☐	☐	☐	☐	☐	☐	غالبا أنسى ما تعلمته
لست متأكدا من أني سأجتاز اختباراتي	☐	☐	☐	☐	☐	☐	متأكد من أني سأجتاز اختباراتي
إعطاء الإجابات الصحيحة ليس مهما لي	☐	☐	☐	☐	☐	☐	إعطاء الإجابات الصحيحة مهم لي

(2) رأيك في نمط حياتك

أتمنى لو أحبني أكثر الناس	☐	☐	☐	☐	☐	☐	اشعر أن أكثر الناس يحبونني
لا أشعر انني جيد في الرياضة	☐	☐	☐	☐	☐	☐	أنا جيد جدا في كل أنواع الرياضة
أكون صداقة بسهولة	☐	☐	☐	☐	☐	☐	وجدت أنه صعب اتخاذ صديق
لا أحب المغامرة	☐	☐	☐	☐	☐	☐	أحب المغامرة
أشعر أنني جيد بما فيه الكفاية في الرياضة	☐	☐	☐	☐	☐	☐	أتمنى لو استطعت أن أكون أفضل بكثير في الرياضة
ليس لدي أصدقاء كثيرون	☐	☐	☐	☐	☐	☐	لدي أصدقاء كثيرون

(3) رأيك في نفسك

لست سعيدا بطريقتي في الرؤيا	☐	☐	☐	☐	☐	☐	أنا سعيد بطريقتي في الرؤيا
غالبا لا أحب طريقتي في السلوك	☐	☐	☐	☐	☐	☐	عادة أحب طريقتي في السلوك
لا أستمتع بالنقاش	☐	☐	☐	☐	☐	☐	أحب النقاش الجيد
غالبا أفعل الأشياء الخطأ	☐	☐	☐	☐	☐	☐	عادة أفعل الأشياء الصحيحة
لست شائعا مع أقراني في العمر	☐	☐	☐	☐	☐	☐	أنا شائع مع أقراني في العمر
لا أشعر أنه بإمكاني النجاح في محاولة عمل معظم الأشياء	☐	☐	☐	☐	☐	☐	أشعر أنه بإمكاني النجاح في محاولة عمل معظم الأشياء
أحب التحدي	☐	☐	☐	☐	☐	☐	لا أحب التحدي

(4) ضع إشارة في المربع المناسب لك أمام العبارة التي ترى أنها تمثل رأيك أو اعتقادك

	اوافق بشدة	اوافق	طبيعي	لا اوافق بشدة	لا اوافق
أشعر أنني جيد جدا في دراستي	☐	☐	☐	☐	☐
أنا غير ناجح في الرياضة	☐	☐	☐	☐	☐
أشعر أنني في مستوى ذكاء أقراني في العمر	☐	☐	☐	☐	☐
دائما أفعل الأشياء مع الآخرين	☐	☐	☐	☐	☐
لا أملك خيالا جيدا	☐	☐	☐	☐	☐
أتمنى لو كان مظهري مختلفا	☐	☐	☐	☐	☐
أتمنى لو يحبني معظم أقراني في العمر	☐	☐	☐	☐	☐
أعتقد أن لدي الخبرة الكافية للتعامل مع الحياة	☐	☐	☐	☐	☐
أحب الأسس التي تجعلني أعمل الأشياء بطريقتي الخاصة	☐	☐	☐	☐	☐
عادة أعرف ما أحتاج عمله	☐	☐	☐	☐	☐
أتخذ القرار بسرعة	☐	☐	☐	☐	☐
أحب عمل الأشياء بطريقة جديدة حتى وإن كنت غير متأكد من أفضل الطرق	☐	☐	☐	☐	☐
أستمتع بأن يكون لي جزءا في الأنشطة الرياضية	☐	☐	☐	☐	☐
أشعر براحة في وضعي الاجتماعي	☐	☐	☐	☐	☐
أستمتع بالتحدي تجاه المشاكل الجديدة في دراستي	☐	☐	☐	☐	☐
أنا سعيد بوزني في مقابل طولي	☐	☐	☐	☐	☐
لا أستمتع بحياتي الماضية	☐	☐	☐	☐	☐
أنا واثق من أنني أستطيع إنهاء دراستي بسرعه	☐	☐	☐	☐	☐

(5) رأيك في حياتك ككل . فضلا ضع إشارة أمام أهم ثلاثة بالنسبة لك

- ☐ قدراتي
- ☐ حصيلتي التعليمية
- ☐ شهرتي
- ☐ خبرتي
- ☐ جاذبيتي
- ☐ مهاراتي الرياضية
- ☐ عدم رغبتي في المغامرة
- ☐ إجتماعيتي
- ☐ قدرتي الإبداعية
- ☐ إعتماديتي الفكرية

(6) تخيل أنك تواجه مشكلة صعبة وجديدة في دراستك.

ضع إشارة أمام رغبتك

كيف تحب أن تكون ردة فعلك ؟

- (a) قلق بخصوص اجتياز الاختبار. ☐
- (b) أنظر لها كتحدي ☐
- (c) أبدأ بالفزع ☐
- (d) أبحث عن المساعدة من الكتب ☐
- (e) سيطرت عليها سابقا وسوف أسيطر عليها الآن ☐
- (f) أفكر في تغيير التخصص ☐
- (g) أستمتع بها لكونها جديدة ☐
- (h) أبحث عن المساعدة الآخرين ☐

Third questionnaire in Arabic

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هذا ليس اختبار
إجابتك سوف تساعد في التخطيط لدراسة مستقبلية

اسمك:---------- رقمك الجامعي:---------- تخصصك:----------

سيتم في السؤال القادم عرض أزواج من العبارات مع وجود ستة مربعات بينها, يمكنك عن طريق وضع (√) في احد هذه المربعات الستة أن توضحي مع أي عبارة تتفقي و إلى أي مدي تتفقي معها، وذلك كما في المثال التالي:

سريعة	☐☐☐☐☐☒	بطيئة
مهمة	☐☐☐☒☐☐	غير مهمة
آمنة	☐☒☐☐☐☐	خطيرة

تدل العلامات الموجودة على أنك تعتقدين أن عربة السباق سريعة جدا جدا، وبالرغم من أنها ليست على درجة كبيرة من الأهمية إلا أنك تعتبرينها مهمة عن كونها غير مهمة، وكذلك أنها خطيرة بدرجة كبيرة

استخدمي نفس الطريقة في الإجابة على الأسئلة الأربعة الأولى

(1) فكري في دراستك

أفضل تعلم الحقائق العلمية والمعلومات	☐☐☐☐☐☐☐	أفضل تعلم المفاهيم والأفكار
أتذكر ما أراه أفضل	☐☐☐☐☐☐☐	أتذكر ما اسمعه أفضل
أجد أن تعلم الحقائق العلمية أسهل	☐☐☐☐☐☐☐	أجد أن تعلم المفاهيم أسهل
أفضل التمعن في الأجزاء المصورة	☐☐☐☐☐☐☐	أفضل التمعن في الأجزاء المكتوبة
أركز على الخطوط الرئيسية في دراستي	☐☐☐☐☐☐☐	أركز على التفاصيل في دراستي
أفضل الأفكار المجردة	☐☐☐☐☐☐☐	أفضل الحقائق العلمية والمعلومات
حالما أفهم الأجزاء أفهم الكل	☐☐☐☐☐☐☐	حالما أفهم الكل أفهم الأجزاء
أفضل العمل بنظام ومنهجية	☐☐☐☐☐☐☐	أفضل العمل بسرعة والانتهاء سريعا
أراجع العمليات الحسابية المطولة بحرص	☐☐☐☐☐☐☐	لا أراجع العمليات الحسابية بحرص

(2) فكري في الطريقة التي تتعلمين بها

أفهم الأشياء أفضل بعد أن أجربها	☐☐☐☐☐☐☐	أفهم الأشياء أفضل بعد أن أفكر فيها
أفضل العمل الذي يتضمن تطبيقات	☐☐☐☐☐☐☐	أفضل العمل النظري
وصف شخص بأنه عقلاني يعتبر إطراء	☐☐☐☐☐☐☐	وصف شخص بأنه مبدع يعتبر إطراء
للتسلية أشاهد التلفزيون	☐☐☐☐☐☐☐	للتسلية أقرء كتاب
أستمتع بأداء الواجبات المكررة	☐☐☐☐☐☐☐	لا استمتع بأداء الواجبات المكررة
أفضل أن أجيد طريقة واحدة لإنجاز واجباتي	☐☐☐☐☐☐☐	أفضل استخدام عدة طرق لإنجاز واجباتي
أسعد بأن أصبح مبدع	☐☐☐☐☐☐☐	لا أسعد بأن أصبح مبدع
استمتع بالنشاطات المتضمنة تحديات	☐☐☐☐☐☐☐	لا استمتع بالنشاطات المتضمنة تحديات

(3) فكري في الامتحانات والتقديرات

أفضل في نهاية الفصل الدراسي أن أتلقى ملاحظا ت	☐☐☐☐☐☐☐	أفضل في نهاية الفصل الدراسي أن احصل على درجات
فضل الاختبار الذي يعطيني فرصة لإظهار أفكاري	☐☐☐☐☐☐☐	أفضل الاختبار الذي يفحص الحقائق العلمية
أكره العمليات الحسابية	☐☐☐☐☐☐☐	أستمتع بالعمليات الحسابية
الاختبارات تفحص فقط قدرتي على التذكر	☐☐☐☐☐☐☐	الاختبارات تفحص الطريقة التي أفكر بها
أفضل الاختبارات التي تطلب مني أن اشرح	☐☐☐☐☐☐☐	أفضل الاختبارات التي تطلب مني التذكر

(4) فكري في العمل مع مجموعة

أفضل الاشتراك وتقديم الأفكار	☐	☐	☐	☐	☐	☐	☐	أفضل الجلوس في الخلف والاكتفاء بالاستماع
أستطيع التعلم أفضل بمفردي	☐	☐	☐	☐	☐	☐	☐	أستطيع التعلم أفضل مع مجموعة
أستطيع التعرف على المجموعة بسرعة	☐	☐	☐	☐	☐	☐	☐	لا أستطيع التعرف على المجموعة بسرعة
أفراد المجموعة يميلون إلى إعاقتي	☐	☐	☐	☐	☐	☐	☐	أفراد المجموعة يميلون إلى مساعدتي
لا أفضل إدارة المناقشات الجماعية	☐	☐	☐	☐	☐	☐	☐	أفضل إدارة المناقشات الجماعية
العمل الجماعي يساعدني على الفهم	☐	☐	☐	☐	☐	☐	☐	أفهم الأشياء أفضل بمفردي
أجد أن المناقشات مفيدة	☐	☐	☐	☐	☐	☐	☐	أجد أن المناقشات غير مفيدة
أستمتع بالعمل مع أعضاء مجموعتي	☐	☐	☐	☐	☐	☐	☐	لا استمتع بالعمل مع أعضاء مجموعتي
معظم الأفكار من الأعضاء الآخرين لا تفيد	☐	☐	☐	☐	☐	☐	☐	معظم الأفكار من الأعضاء الآخرين مفيدة
معظم الأفكار تأتي من شخص واحد	☐	☐	☐	☐	☐	☐	☐	الأفكار تأتي من عدة أشخاص
العمل كمجموعة تجعل فهم الأشياء أسهل	☐	☐	☐	☐	☐	☐	☐	العمل كمجموعة لا تجعل فهم الأشياء أسهل

(5) تجدي هنا بعض الأشكال المختلفة للتقييم

ضعي الأحرف داخل المربعات حسب الأفضلية بالنسبة لك

(أ)	الاختيار من متعدد
(ب)	التقييم المستمر
(ج)	الإجابات القصيرة
(د)	الأسئلة المقالية
(ه)	كتابة مقال
(و)	اختبار شفوي
(ز)	اختبار الكتاب المفتوح
(ح)	عمل بحث

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

أقل تفضيلاً أكثر تفضيلاً

(6) تجدي هنا بعض الأسباب التي من الممكن أن تكون مهمة للدراسة في الجامعة

ضعي إشارة على ثلاثة أسباب مما تعتقدي أنها أكثر أهمية

☐ لتطوير المؤهلات	☐ لتعلم مهارات جديدة
☐ لاجتياز الاختبارات	☐ لتعلم كيف أتعلم بمفردي
☐ للحصول على درجات	☐ لتحقيق مطلب اجتماعي
☐ للحصول على وظيفة جيده	☐ لأصبح مجهزة لمساعدة الآخرين

7) فكري في دراستك

	أوافق بشدة	أوافق	عادي	لا أوافق	لا أوافق بشدة
أشعر أنني جيدة جدا في دراستي	☐	☐	☐	☐	☐
لا أستمتع بالتحدي تجاه المشاكل الجديدة في دراستي	☐	☐	☐	☐	☐
أنا واثقة من أنني أستطيع إنهاء دراستي بسرعة	☐	☐	☐	☐	☐
أفهم الأشياء بسهولة	☐	☐	☐	☐	☐
لا أتعلم بسرعة	☐	☐	☐	☐	☐
لا أنجز جيدا في دراستي	☐	☐	☐	☐	☐
متأكدة من أنني سأجتاز اختباراتي	☐	☐	☐	☐	☐
أحب المغامرة في دراستي	☐	☐	☐	☐	☐
أشعر أنه بإمكاني النجاح في عمل معظم الأشياء	☐	☐	☐	☐	☐
النجاح في الاختبارات يتوقف على امتلاك ذاكرة جيدة	☐	☐	☐	☐	☐

8) **فكري في الاختبارات التي أديتها**
ضعي إشارة على كل ما ترينه صحيحاً
وجدت أن أفضل طريقه لتأدية الاختبارات بشكل جيد تكون بأن:

أقرأ الكتاب بحرص ☐	أراجع في الليلة السابقة للاختبار ☐
أدرس من دفتر محاضراتي ☐	أتأكد من فهم ما درست ☐
أراجع أوراق الاختبارات السابقة ☐	أحفظ المعلومات المهمة غيباً ☐
أعمل مع زملائي في الفصل ☐	أعمل ملخصات للنقاط المهمة ☐
أحفظ أكبر قدر ممكن عن ظهر قلب ☐	طرق أخرى ☐

شكراً على حسن تعاونك

Forth questionnaire in Arabic

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هذا ليس اختبار
إجابتك سوف تساعد في التخطيط لدراسة مستقبلية

اسمك:---------- رقمك الجامعي:---------- تخصصك:------

(1) فكري في دراستك

	أوافق بشدة	أوافق	عادي	لا أوافق	لا أوافق بشدة
أشعر أنني جيدة جدا في دراستي	☐	☐	☐	☐	☐
لا أستمتع بالتحدي تجاه المشاكل الجديدة في دراستي	☐	☐	☐	☐	☐
أنا واثقة من أنني أستطيع إنهاء دراستي بسرعة	☐	☐	☐	☐	☐
أفهم الأشياء بسهولة	☐	☐	☐	☐	☐
لا أتعلم بسرعة	☐	☐	☐	☐	☐
لا أنجز جيدا في دراستي	☐	☐	☐	☐	☐
متأكدة من أنني سأجتاز اختباراتي	☐	☐	☐	☐	☐
أحب المغامرة في دراستي	☐	☐	☐	☐	☐
أشعر أنه بإمكاني النجاح في عمل معظم الأشياء	☐	☐	☐	☐	☐
النجاح في الاختبارات يتوقف على امتلاك ذاكرة جيدة	☐	☐	☐	☐	☐

(2) لوطلب منك تصميم منهج دراسي للفئة العمرية (17-18) ماذا من الصيغ الآتيه تفضلين ؟

ضعي الحروف داخل المربعات حسب الأفضلية بالنسبة إليك

(أ) المواضيع التي تجعل المعلمات أكثر حماساً
(ب) مواد سهلة الفهم
(ج) مواضيع متعلقة باهتمامات الطالبات
(د) منهج يسمح بالمناقشات الجماعية
(ه) منهج يهتم بالكيف في التعليم وليس الكم
(و) مواضيع تتعلق بطريقة حياة الطالبات واهتما ماتهن
(ز) مواد سهلة الحفظ
(ح) مواضيع تستفز تفكير الطالبات

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

أكثر تفضيلاً اقل تفضيلاً

(3) كيف تصفي نفسك ؟

	أوافق بشدة	أوافق	عادي	لا أوافق	لا أوافق بشدة
شخصيه واثقة في العموم	☐	☐	☐	☐	☐
أشعر أني أكثر ثقة عندما أنجح	☐	☐	☐	☐	☐
عندما أدرس أشعر بالثقة	☐	☐	☐	☐	☐
أشعر بالثقة عندما أفهم ما أتعلمه	☐	☐	☐	☐	☐
أشعر بالثقة عندما أواجه الاختبارات	☐	☐	☐	☐	☐
أشعر بالثقة عندما أشارك في المناقشات الجماعية	☐	☐	☐	☐	☐

(4) ما هي طريقة التدريس التي تم تدريسها لك؟
فيما يلي بعض الطرق لتي ربما تكون معلمتك قد استخدمتها:

(أ) تدريس المعلومات عن طريق الإلقاء
(ب) العمل الجماعي والمناقشة
(ج) استعمال الوسائل التعليمية المرئية (مثل الرسوم البيانية, رسوم الكمبيوتر,المجسمات)
(د) الاكتفاء بتدريس الكتب الدراسية المنهجية
(ه) الاعتماد والاكتفاء على العمل الفردي
(و) تخصيص وقت للنقاش حول المادة
(ز) التشجيع والدعم النفسي لاجتياز الاختبارات

☐☐ ☐☐☐☐☐
أكثر تفضيلاً اقل تفضيلاً

(5) ما هي الطريقة المناسبة التي تفضلينها في التعليم؟
ضعي الحروف داخل المربعات حسب الأفضلية بالنسبة إليك:

(أ) أفضل العمل الجماعي
(ب) أفضل النشاطات التطبيقية
(ج) أفضل الاعتماد على نفسي
(د) أفضل أن تقوم المعلمة بتزويدي بكل المعلومات
(ه) أفضل الاعتماد على الحفظ دون الفهم
(و) أفضل الاعتماد على الفهم دون الحفظ
(ر) أفضل التطبيقات العلمية لأصبح بارزة
(ز) أستمتع بالتحديات الفكرية
(ف) أتفادى المواد الصعبة

☐☐ ☐☐☐☐☐☐☐
أكثر تفضيلاً اقل تفضيلاً

(6) فيما يلي ستة صيغ للإختبارات الممكنة :
اختاري ثلاثة مما تفضلين:

☐ مضمون ونوع الإجابات أكثر أهمية من كميتها
☐ الإجابات القصيرة تكون أفضل
☐ أن تسمح لي بأن أعبر عن أفكاري
☐ أن تفرض علي أن أكتب ما تعلمته
☐ الاهتمام بالفهم
☐ الاهتمام بإظهار القدرات التطبيقية

(7) نظرة عامه عن مواد الدراسة

اكتبي هنا اسم مادتك المفضلة.....

في جملتين فقط لا غير, لماذا هذه المادة مفضلة لديك :

.....
.....

Appendix C

Working Memory Test

Digit Span Test

is carried out in the following way:

Give each student a sheet with spaces for writing down answers
Instruct them to write their names, matriculation numbers or some other identifier.

Read them the following instructions:

"This is an unusual test. It will not count for your marks or grades in any way. We are trying to find out more about the way you can study and this test will give us useful information. You will not be identified in any way from it.

I am going to say some numbers. you must not write as I speak. When I stop speaking, you will be asked to write the numbers down the boxes on your sheet.

Are we ready? Let's begin.

You say the numbers ***exactly at a rate of one per second*** (use a stop watch or heart beat to keep your time right. You allow the same number of seconds for the students to write down the answers. Thus, if you gave the numbers: 5,3,8,6,2. You give them five seconds for writing them down. I follow the procedure:

"5,3,8,6,2 - say: 'write' - five seconds allowed for writing, then, say: 'next'"

Here are the numbers used by Elbanna in his early work:

5	8	2						
6	9	4						
6	4	3	9					
7	2	8	6					
4	2	7	3	1				
7	5	8	3	6				
6	1	9	4	7	3			
3	9	2	4	8	7			
5	9	1	7	4	2	8		
4	1	7	9	3	8	6		
5	9	1	9	2	6	4	7	
3	8	2	9	5	1	7	4	
2	7	5	8	6	2	5	8	4
7	1	3	9	4	2	5	6	8

When this is finished,.....allow a short break and then....

You now give a second set of instructions.
"Now I am going to give you another set of numbers. However, there is an added complication!
When I have finished saying the numbers, I want you to write them down in ***reverse*** order.
For example, if I say "7,1,9", you write it down as "9,1,7".
Now, no cheating!! You must not write the numbers down backwards.
You listen carefully, turn the numbers round in your head and then write them down normally.
Have you got this? Let's begin."

Here are the numbers:

2	4						
5	8						
6	2	9					
4	1	5					
3	2	7	9				
4	9	6	8				
1	5	2	8	6			
6	1	8	4	3			
5	3	9	4	1	8		
7	2	4	8	5	6		
8	1	2	9	3	6	5	
4	7	3	9	1	2	8	
9	4	3	7	6	2	5	8
7	2	8	1	9	6	5	3

7) This is the version used for adults (those over 16).

8) Marking: the main thing is to be consistent. Ideally, if a person achieves success at, say, 4,5,6 and 7 but fails at eight digits, then their working memory is 7. However, they can often fail an odd one (by simple slips) or suceed at one at, say, eight digits and fail at the other. I use the simple rule that, for a single failure followed by two correct answers, I ignore the failure. For those who fail at one and success at the other at one leve, just be consistent: I would give them that level.

Note also: check the number sequences above to check if any sequence of nuimbers has any pattern in your cultural setting (like a radio wavelength, a car registration code or whatever...)

(9) The student answer sheet:

The Numbers Test

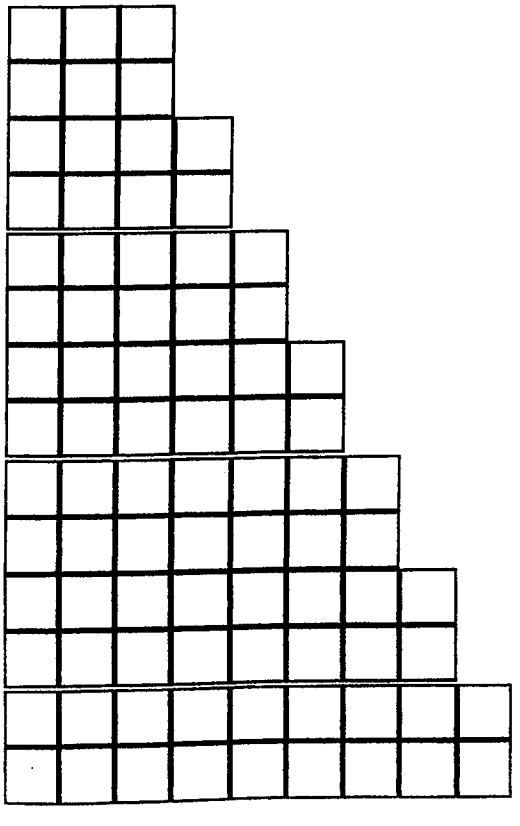
How Many Can You Remember

Your name: .....

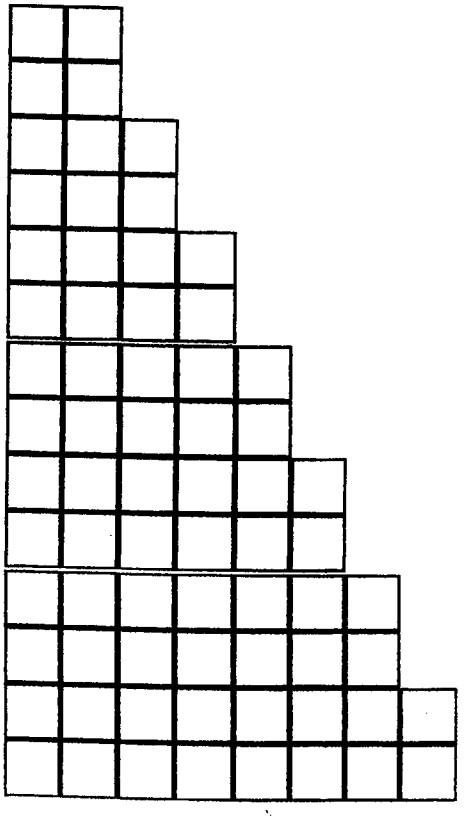
Do not write anything until told to do so

Write the numbers in the boxes below:

Numbers Test Forwards



Numbers Test Backwards



اختبار الأرقام

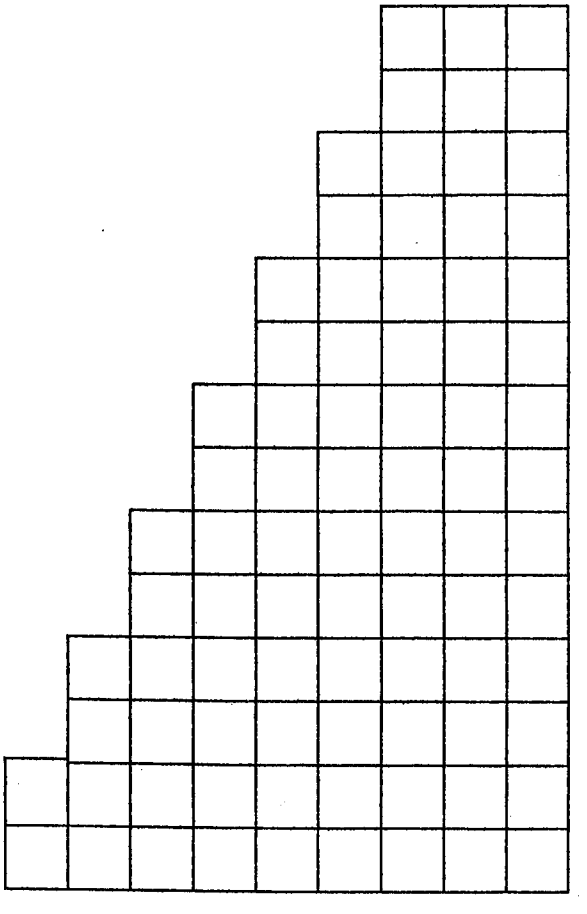
ما هو القدر الذي تستطيع أن تتذكره

إسمك ..... محمد .

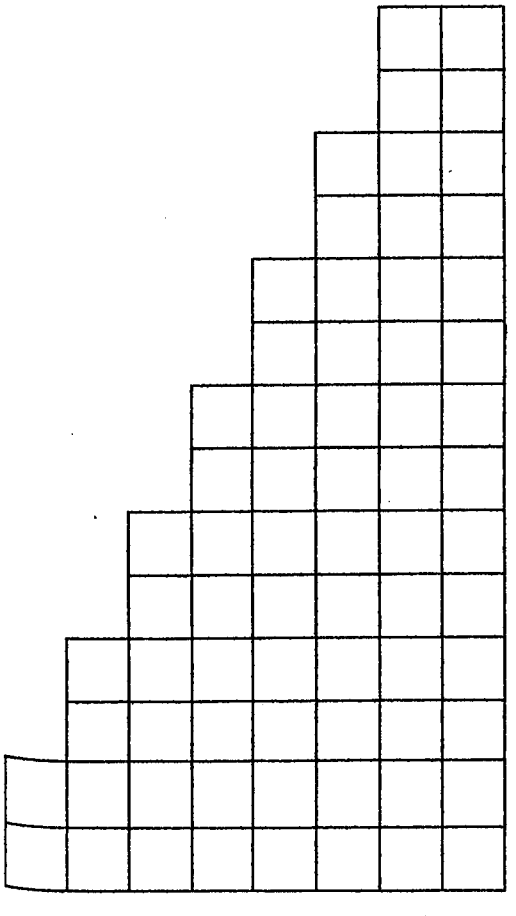
لا تكتب شيئا إلى أن أطلب منك

أكتب الأرقام في المربعات التالية :

اختبار الأرقام المتتالية (الأول فالتالي ..)



اختبار الأرقام المتراجعة (الأخير فالذي قبله ..)



Appendix D

Perry Questionnaire

Parry questionnaire second experiment

The Way I like to Learn Subjects

Name..... University number ..... Specialty.....

This questionnaire is part of a study which aims to find what your views are about teaching and learning subjects. Your response will be treated confidentially and will not affect your college results.

statement							statement
I like to hear radio while I am studying							I can not stand any background noise when I am studying

You are providing with pairs of opposing statements with six boxes between. By ticking ONE of the boxes you can show which statement you agree with and how strongly your agreement is.
Hear is an example:

If you tick the first left box, it means you agree strongly with left-hand statement. If you tick the second box, it means you favour the left-hand statement but less strongly. If you tick the third box, it means you slightly favour the left-hand statement. The other three boxes on the right would show agreement with the right-hand statement.

Part A
Tick the box which most closely reflects your views

	statement							statement
1	In order to pass my courses I need to study just what the lecturer told me							I do not have to rely totally on the lecturer. part of my learning is to work things out myself
2	I cannot be wrong if I accept what the lecturer says. If I question anything, I might end up failing							I do not believe in just accepting what the lecturer says without question success involves thinking for myself
3	I believe it is the job of the lecturer to supply with all the knowledge I need							The duty of the lecturer is not to teach me everything but to help me to think for myself
4	I think lecturers should avoid teaching material that they know pupils will find difficult							Lecturer should aim to provide challenges to their students by introducing difficult topics
5	It is good to work with other students because by listening to their points of view I can correct my ideas							I prefer not to work with other students because then I stand less chance of picking up wrong idea.
6	All one has to do to pass a subject is to memorise things							Understanding subjects is the part of study.
7	I do not believe that all scientific knowledge represents the (absolute truth)							We cannot call anything scientific if it is not absolutely true
8	I do not like short questions as they do not give me chance to explain what I know and understand							I prefer to learn the facts and then be tested on them in short question
9	In exams, I prefer questions which are based on what the lecturer taught							In exams, I like questions that give me the scope to go beyond what is taught and show my ability to think
10	I believe that what should matter in exams is the quality of my answers not how much I write							In exams, I expect to be rewarded for giving as much information as possible

Part B

Tick the box which most closely reflects your view

statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Some times there seems to be so many ways of looking at subjects that I feel confused about what is right and wrong					
Sometimes I find I learn more about a subject by discussing it with other students than I do by sitting and revising at home					
There is no point in teaching me things that will not be in the exam					
If I had the choice of written comments or a specific mark at the end of piece of subject course work I would choose the comments					
It is a waste of time to work on problems which have no possibilities of producing a clear-cut answer					
I feel uncomfortable when I am left to express an opinion not knowing of the view the lecturer feels					
A good thing about learning within this subject is the fact that every thing is so clear-cut: either right or wrong					
I like exams which give me an opportunity to show I have ideas of my own					

الطريقة التي أحب أن أدرس بها المواد

الاسم : .....

الرقم الجامعي : .....

الاستبيان الذي بين يديك هو جزء من دراسة تهدف إلى التعرف على وجهات نظرك عن تدريس المواد ، وتجدر الإشارة هنا إلى أن إجابتك سوف تعامل بسرية ولن تستخدم إلا لأغراض البحث العلمي ولن تؤثر على نتيجتك في الكلية إطلاقا .

سيتم في السؤال القادم عرض أزواج من العبارات المتعاكسة مع وجود ستة صناديق بينها ، يمكنك عن طريق وضع (✓) في أحد هذه الصناديق الستة أن توضح مع أي عبارة تتفق وإلى أي مدى تتفق معها ، وذلك كما في المثال التالي :

	العبارة							العبارة
1	أحب الاستماع للمذياع عندما أدرس							لا يمكنني أن أدرس مع وجود أي صوت

إذا وضعت علامة (✓) في المربع الأول من اليمين فإن ذلك يعني أنك تتفق بشدة مع العبارة التي في اليمين ، أما إذا اخترت الصندوق الثاني من اليمين فذلك يعني أنك تتفق أكثر مع العبارة التي في اليمين ولكن بدرجة أقل من المربع الأول ، واختيارك للصندوق الثالث من اليمين يعني أنك تميل للاتفاق بدرجة بسيطة مع العبارة التي في اليمين . أما بالنسبة للصناديق الثلاثة الأخرى في اليسار فإنها توضح مدى الاتفاق مع العبارة التي في اليسار بنفس الطريقة السابقة .

الجزء الأول :

الآن ، ضع علامة (✓) في الصندوق الذي يمثل وجهة نظرك

	العبارة							العبارة
1	كل ما أحتاجه لكي أنجح في مادة ما هو أن أدرس ما يقوله المحاضر							لا ينبغي أن أعتمد بالكامل على المحاضر ذلك أنه جزء من عملية التعلم هو استخراج بعض الأمور بنفسي
2	لا ينبغي علي تقبل كل ما يقوله المحاضر دون أسئلة ، ذلك أن النجاح يتضمن استخراج بعض الأمور بنفسي							لا يمكن أن أكون على خطأ إذا تقبلت ما يقوله المحاضر ، وإذا سألت عن أي شيء فإن ذلك قد يؤدي إلى رسوبي
3	من واجب المحاضر تزويدي بكل المعرفة التي أحتاجها							لا تنحصر مسئولية المحاضر في تدريسي كل شيء ، ولكن مساعدتي على التفكير بنفسي
4	ينبغي على المحاضرين تجنب جميع الموضوعات التي يعرفون أنها ستكون صعبة على الطلاب							ينبغي أن يهدف المحاضرون لوضع بعض التحدي لطلابهم عن طريق طرح بعض المواضيع الصعبة
5	من المفيد العمل مع الطلاب الآخرين حيث يمكنني أن أصحح بعض أفكاري بالاستماع لآرائهم							أفضل عدم العمل مع الطلاب الآخرين ذلك أن فرصة الحصول على بعض الأفكار الخاطئة تكون أقل
6	كل ما ينبغي عمله في المواد هو حفظ الأشياء							الفهم هو العامل الأساسي والمهم في فهم المواد
7	لا أعتقد أن جميع المعرفة العلمية تمثل الحقيقة المطلقة							لا يمكن أن نطلق على أي شيء أنه معرفة علمية إلا إذا كان صحيحا بصورة مطلقة
8	لا أحب الأسئلة القصيرة ذلك أنها لا تتيح لي فرصة شرح ما أعرف							أفضل أن أدرس الحقائق العلمية ثم أمتحن فيها بأسئلة قصيرة الإجابة
9	في الامتحانات أفضل الأسئلة التي توضع في ضوء ما شرحه المحاضر							في الامتحانات أفضل الأسئلة التي تذهب أبعد مما شرحه المحاضر وذلك لأبدي قدرتي على التفكير
10	العامل المهم في الامتحانات هو جودة الإجابة لا كمها							في الامتحانات أتوقع أن أكافأ على إعطاء أكبر قدر من المعلومات

الجزء الثاني :

ضع علامة (س) في الصندوق الذي يمثل مدى اتفاقك مع العبارات الآتية :

	العبـــــــــــــــــــــــــــــارة	موافق بشدة	موافق	غير متأكد	غير موافق	غير موافق بشدة
1	في بعض الأحيان تتعدد وجهات النظر حول المواد الأمر الذي يجعلني محتارا ما الصح وما الخطأ					
2	في بعض الأحيان أجد نفسي أتعلم أفضل عند مناقشة المادة مع الطلاب الآخرين عن مراجعة المادة بنفسي في البيت					
3	لا جدوى من التدريس الصفي إذا لم يحتوي على شيء سيأتي في الامتحان					
4	إذا كان علي أن أختار بين إعطائي درجة أو تقرير فيه ملاحظات عن أدائي في واجب المواد فسأختار التقرير					
5	من المضيعة للوقت العمل في مسألة لا يمكن أن تعطي حلا قاطعا واضحا					
6	أشعر بعدم الارتياح عندما يطلب مني أن أبدي رأيي في موضوع دون أن أعرف وجهة نظر المحاضر فيه					
7	الشيء الجيد في التعلم أن كل شيء قاطع إما صح أو خطأ					
8	أحب الامتحانات التي تعطيني فرصة عرض أفكاري الذاتية					

شاكرين لكم كريم تعاونكم

فاطمة عبدالله عريف

مركز مناهج وطرق تدريس العلوم

جامعة جلاسجو

سكوتلندا – المملكة المتحدة

Appendix E

Interviews Data

Interviews - an optional extra

Candidate: ..... **University Number**.....

Aim: To check validity of questionnaire

Plan: Short (~15 minutes) interviews of a small sample (~10) of students to check if their observed confidence seems to match what they said in their questionnaire.

Structure: Semi-structured: set of fixed questions plus some freedom

Opening explanation

How do you like university?

Is it what you expected?

Is it better or worse than school?

(1) Do you think you are doing well in your studies ? .....

(2) Would you describe yourself as a person with many abilities? .....

(3) What about your examinations - do you think you will pass all right? .....

(4) Do you feel that you can be successful in most things you attempt? .....

(5) Are you the kind of person who usually knows what needs to be done? .....

(7) Do you like the challenges of new things in your studies? .....

(8) When you are working, do you feel confidant
that you will finish your studies quickly? .....

Interviews comments:

.....

.....

.....

.....

.....

.....

Imagine you are faced with a new and demanding type of problem in your studies.

What is your likely reaction?

Choose as many as you wish.

a) Worry about passing the exam?
b) See it as challenge.
c) Start to panic?
d) Seek help from books?
e) I have managed in the past, so I will manage now.
f) Think of changing the coarse.
g) Enjoy it because it is new.
h) Seek help from others.

بسم الله الرحمن الرحيم

الاسم : الرقم :

أسئلة افتتاحية :

١- كيف تفضلي الجامعة ؟..... ....

٢- هل كما كنت تتوقعي؟ ....

٣- هل هي أفضل أم أسوأ من المدرسة ؟..... ....

١- هل تعتقدي بأنك جيدة في دراستك ؟ ....

٢- ممكن تصف نفسك كشخص يمتلك قدرات متعددة ؟ ....

٣- ماذا عن امتحاناتك – هل تعتقدي بأنك سوف تجتازيها ؟ ....

٤- هل تشعري بأنه يمكنك النجاح في أكثر ما تحاولي فعله ؟ ....

٥- هل أنت من الناس اللواتي يعرفون ما جيب عمله ؟ ....

٦- هل تستمتعي بالمصاعب الجديدة في دراستك ؟ ....

٧- هل أنت واثقة من أنك سوف تنهين دراستك بسرعة ؟..... .....

ملاحظات :

.....

.....

.....

.....

.....

.....

(6) لنتخيل أنك تواجه نوع جديد من المشاكل الملحة في دراستك ، كيف ستكون ردة فعلك عادة ؟

ضع إشارة على كل ما ترغب

(a) أقلق من فكرة اجتياز الاختبارات . ☐

(b) أرى أن الاختبار تحدي ☐

(c) أبدأ في التوتر ☐

(d) أبحث عن مساعدة في الكتب ☐

(e) لأني تخطيت مشكلة سواها في السابق سأتخطى هذه المشكلة الآن ☐

(f) أفكر في تغيير التخصص ☐

(g) أستمتع بمحاولة حلها لأنها مشكلة جديدة ☐

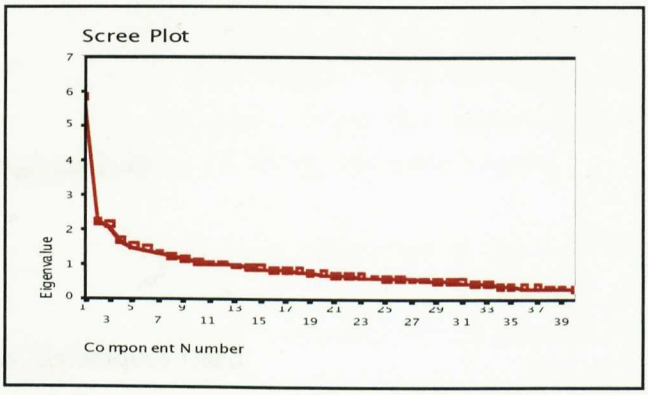
(h) أطلب مساعدة الآخرين ☐

Appendix F

Overall Data

Factor Analysis

Factor Analysis was carried out using Principal Components Analysis with Varimax Rotation, employing SPSS software. The scree plot suggested that there was no clear pattern of underlying factors, there being no sharp discontinuities. Extracting 12 factors (with eigenvalues over 1) accounted for only 55% of the variance, confirming that there was no clear pattern of underlying factors. Convergence was reached after 12 iterations. The loadings table is shown below. The questionnaire was designed to explore as many aspects of confidence as possible. There was no attempt to design the questionnaire to explore underlying factors. The analysis merely confirms that no underlying set of factors was apparent.



	Components											
	1	2	3	4	5	6	7	8	9	10	11	12
Q1A	-0.08	0.18	**0.63**	-0.02	-0.12	0.03	0.08	0.08	0.19	-0.04	0.01	-0.05
Q1B	**0.54**	0.04	-0.35	-0.12	-0.00	0.05	0.06	-0.04	0.14	-0.23	-0.06	-0.05
Q1C	-0.16	0.09	**0.66**	0.05	0.01	0.15	0.18	0.04	-0.07	0.12	-0.03	0.07
Q1D	-0.11	0.07	**0.70**	0.02	-0.10	-0.06	0.09	0.03	0.20	-0.06	0.09	-0.15
Q1E	**0.70**	-0.07	-0.08	0.07	0.04	-0.06	-0.14	0.13	0.02	0.09	-0.12	0.11
Q1F	**0.47**	-0.17	-0.09	-0.09	0.05	0.09	0.09	-0.30	-0.40	0.11	-0.10	0.17
Q1G	**0.43**	0.03	-0.17	-0.08	0.17	-0.10	-0.05	-0.12	-0.26	0.01	0.17	0.01
Q1H	0.39	-0.12	-0.25	0.01	0.12	-0.10	**-0.45**	0.04	-0.21	0.18	-0.06	-0.08
Q1I	**0.57**	0.02	0.00	-0.11	0.09	-0.05	-0.07	-0.12	-0.09	-0.01	-0.01	-0.37
Q2A	0.05	**0.45**	0.24	0.22	-0.18	0.13	-0.09	0.01	-0.16	-0.24	0.17	0.16
Q2B	-0.03	0.09	0.02	**0.80**	-0.06	0.03	0.01	0.12	-0.04	-0.06	-0.01	-0.16
Q2C	0.20	-0.02	-0.07	-0.05	**0.71**	0.08	0.02	-0.12	0.05	-0.01	-0.15	0.02
Q2D	0.12	0.02	0.07	0.09	-0.02	0.01	-0.02	**0.78**	0.08	-0.04	0.03	-0.03
Q2E	0.03	-0.01	-0.05	-0.16	0.06	-0.18	-0.01	0.09	0.05	0.06	-0.03	**0.69**
Q2F	-0.06	0.20	0.16	0.23	**-0.62**	0.06	-0.01	0.06	-0.06	0.14	0.14	0.14
Q3A	-0.00	0.24	0.28	0.08	-0.08	**0.52**	0.12	-0.07	-0.11	0.09	0.14	0.06
Q3B	0.11	**0.69**	0.17	0.08	-0.16	0.14	-0.12	-0.03	0.13	-0.12	0.05	-0.00
Q3C	-0.07	0.16	0.02	-0.08	-0.13	0.23	-0.25	0.24	0.41	0.20	-0.07	-0.04
Q3D	-0.01	**0.72**	0.16	-0.02	-0.01	0.12	0.08	0.02	0.11	-0.17	0.06	-0.02
Q3E	0.08	-0.03	0.04	0.02	**0.50**	0.01	-0.08	-0.01	-0.06	0.10	-0.36	0.23
Q3F	-0.20	0.38	**0.42**	0.00	-0.03	-0.02	0.26	0.32	0.01	-0.10	0.03	0.10
Q3G	0.14	0.01	-0.05	-0.14	0.09	-0.07	-0.12	**-0.71**	0.01	0.06	-0.06	-0.17
Q4A	**-0.44**	0.19	0.17	-0.11	-0.09	0.18	0.37	-0.12	-0.05	-0.11	0.08	-0.14
Q4B	0.09	-0.01	-0.09	**-0.80**	0.04	-0.09	0.06	-0.06	0.01	0.09	0.08	0.09
Q4C	-0.10	-0.00	0.14	-0.07	-0.09	0.01	0.21	0.04	0.05	-0.02	**0.66**	-0.05
Q4D	-0.01	0.09	-0.03	-0.02	-0.12	0.27	-0.09	0.04	-0.05	0.02	**0.66**	0.09
Q4E	0.02	-0.05	-0.22	-0.02	-0.07	0.00	-0.09	0.03	**-0.60**	0.04	0.02	-0.08
Q4F	0.01	-0.06	-0.07	0.01	0.03	**-0.73**	-0.14	-0.12	-0.08	0.23	-0.03	0.07
Q4G	0.02	-0.10	0.01	0.01	0.04	-0.04	0.03	-0.10	0.03	**0.77**	-0.01	0.13
Q4H	-0.11	**0.47**	0.02	0.01	-0.07	0.15	0.29	0.25	0.00	0.33	-0.09	-0.29
Q4I	-0.25	0.11	-0.07	0.06	0.01	0.05	0.11	-0.00	**0.46**	0.13	0.10	0.38
Q4J	-0.21	**0.55**	0.03	0.09	-0.03	0.03	0.25	0.03	0.09	0.18	-0.01	-0.03
Q4K	-0.25	0.39	-0.22	-0.07	0.13	-0.19	0.06	-0.15	-0.33	0.11	-0.07	0.10
Q4L	0.14	0.12	-0.18	0.20	0.10	-0.20	0.34	0.18	0.34	0.10	0.28	-0.18
Q4M	0.05	0.04	-0.07	**0.67**	-0.12	-0.03	0.23	0.09	0.20	0.21	-0.01	0.18
Q4N	-0.13	-0.03	-0.08	0.01	**0.63**	-0.18	-0.20	0.01	-0.07	0.23	0.21	0.08
Q4O	-0.07	0.11	0.12	0.01	-0.19	0.18	**0.54**	0.34	0.04	0.23	-0.01	0.04
Q4P	-0.12	0.08	-0.09	0.07	-0.01	**0.73**	-0.01	0.03	0.06	0.04	0.11	-0.15
Q4Q	0.20	-0.06	-0.01	-0.09	0.32	-0.21	-0.21	0.01	-0.00	0.38	0.02	-0.13
Q4R	-0.12	0.05	0.30	0.09	-0.03	0.06	**0.62**	-0.01	0.01	-0.07	0.12	0.02

Appendix G

Statistics Techniques Used

Correlation

It frequently happens that two measurements relate to each other: a high value in one is associated with a high value in the other. The extent to which any two measurements are related in this way is shown by calculating the correlation coefficient. There are three ways of calculating a correlation coefficient, depending on the type of measurement:

(a) With integer data (like examination marks), Pearson correlation is used. This assumes an approximately normal distribution.
(b) With ordered data (like examination grades), Spearman correlation is used. This does not assume a normal distribution.
(c) With ordered data where there are only a small number of categories, Kendall's Tau-b correlation used. This does not assume a normal distribution.

All these can can be calculated using SPSS. In this study, where questionnaire data are considered, Kendall's Tau-b is the appropriate statistic to use.

When the calculation is carried out using SPSS, the probability is also given. This shows the possibility that the correlation occurred simply by chance. The probability is quoted as two-tailed or one tailed. One tailed is only used is the direction of the association between the two variables is certain. In this study, two tailed is used throughout.

When two variables correlate, this does not necessarily imply any causality. For example, if the heights and weights of a population were measured, they would correlate highly but that does not imply that one causes the other.

The Use of Chi-Square

Chi-square is a simple non-parametric statistic which is useful to check if two response distributions differ from each other.

There are two main ways of using chi-square.

(a) Goodness of Fit

Here the frequencies of responses are compared to some expected set of frequencies. This is the sets of responses to a Likert questionnaire (from strongly agree to strongly disagree)

	SA	A	UD	DA	SDA	Total
Experimental	80	40	10	50	20	**200**
Control	72	28	15	41	34	**190**

This gives a chi-square value of 14.2.

The calculation is carried out simply by:

(a) Working out what the expected frequencies might be for a sample of 200, given the frequencies for the 190 in the control group. This gives (to nearest whole numbers):

	SA	A	UD	DA	SDA	Total
Experimental	80	40	10	50	20	**200**
Expected	76	29	16	43	36	**200**

(b) Chi-square is calculated by squaring the differences between vertical paris of boxes and expressing as a proportion of the expected frequencies:

$\chi 2 = 16/76 + 121/29 + 36/16 + 49/43 + 256/36 = 14.2$

(b) Contingency Test

This is the method used when there is no control group in the normal sense of that phrase. This is a very common situation and is exemplified when trying to compare men with women in their responses ot some question.

The method uses the same formula but the calculation is done in a very different way. When comparing men with women, it is **not** possible to assume that either group is the control group. The best measure of a control group is to take the entire population: men with women added together. The calculation is more cumbersome and more difficult to show. Imagine the same numbers.

	SA	A	UD	DA	SDA	Total
Medn	80	40	10	50	20	**200**
Women	72	28	15	41	34	**190**

The best of the control group is found by adding the two genders together.

	SA	A	UD	DA	SDA	Total
Men	80	40	10	50	20	**200**
Women	72	28	15	41	34	**190**
Totals	152	68	25	91	54	**390**

Each gender's responses are then compared to the totals (allowing for sample size as before) to give the chi-square value:

This gives a chi-square value of 7.8

There are tables of chi-square values and if the value exceeds the critical values in the tables, then the distributions of responses are significantly different. However, the more boxes there are, the higher will be the chi-square value. To allow for this, the idea of 'degrees of freedom' is used. The degrees of freedom is the number of boxes whose values have to be known to know them all, assuming that totals are known. It is found by multiplying the number of columns minus 1 by the number of rows minus one.

$$df = (c - 1) \times (r - 1)$$

Significances are shown as the following probability levels: $p < 0.05$, $p < 0.01$ or $p < 0.001$.

If any of the boxes holds a very low number, then it is found that the calculated chi-square value can be inflated. The simple rule used in this study is that adjacent boxes should be grouped if any value is less than 5% or 10. The degrees of freedom drop accordingly.

The results above would be quoted as:

$\chi 2 = 14.2$ (df4), $p < 0.01$

$\chi 2 = 7.8$ (df4), n.s.

Appendix H

Permission Letters

KINGDOM OF SAUDI ARABIA
Ministry of Higher Education
KING ABDULAZIZ UNIVERSITY
Girls Section
Vice Denship for Post-Graduate
and Scientific Research

مكتب وكيلة العميدة
Vice Dean's Office

مملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز
قسم الطالبات
وكالة الدراسات العليا والبحث العلمي

سعادة الأستاذ / عبد الله المحمدي

مدير إدارة التربية والتعليم

حفظه الله

السلام عليكم ورحمة الله وبركاته

نفيد سعادتكم أن السيدة أ/فاطمة عبد الله عريف طالبة مبتعثة من قبل جامعة الملك عبد العزيز إلى المملكة المتحدة للحصول على درجة الدكتوراه في مجال التربية وعلم النفس، ونظراً لحاجتها إلى الحصول على معلومات وبيانات تخدم في استكمال متطلبات بحث التخرج من مدارس البنين والبنات بمدينة جدة التالية:

أولا: المدارس الحكومية (بنات): (المدرسة الثانوية السابعة) و (المدرسة الثانوية السادسة عشر)

ثانيا: المدارس الخاصة (بنات): (مدارس المنارات الثانوية) (مدارس دار الفكر الثانوية) و (مدارس الحمراء الثانوية).

ثالثا: المدارس الحكومية (بنين): (مدرسة النهاوند الثانوية) (مدارس الثغر الثانوية) و (مدارس الشاطيء الثانوية)

رابعا: المدارس الخاصة (بنين) : (مدارس دار الفكر الثانوية) و (مدارس الأندلس الثانوية) .

(مرفق الاستبيان المطلوب تعبئته من قبل طلاب وطالبات المدارس)

لذا نأمل التكرم بالإيعاز لمن يلزم لاتخاذ اللازم نحو مخاطبة مديرات ومدراء المدارس المذكورة لتسهيل مهمتها ومهمة مندوبها لمدارس البنين خلال فترة زيارتها للمدارس وحتى انتهاءها من تعبئة استمارات استبيان البحث ، علما بأنها في حاجة عاجلة للحصول على تفضلكم بالرد بخصوصه حيث أن رحلتها العلمية للمملكة هي خلال الفترة من ١٤٢٥/١/٣٠ وحتى ١٤٢٥/٤/٣٠ ،،

شاكرين ومقدرين كريم دعمكم وتعاونكم ،،،

وتقبلوا خالص تحياتي وتقديري

وكيلة عميدة شطر الطالبات
للدراسات العليا والبحث العلمي

د. ندى بنت حسن التواتي

صورة لسعادة وكيلة كلية الآداب
ب. مكي

(٤)

بسم الله الرحمن الرحيم

المملكة العربية السعودية
وزارة التربية والتعليم
الإدارة العامة للتربية والتعليم بمنطقة مكة المكرمة
(تعليم جدة)
إدارة التطوير التربوي

وزارة التربية والتعليم
MINISTRY OF EDUCATION

الرقم:
التاريخ : ٢٤/ ٢ /١٤٢٥هـ
المشفوعات:
قسم : البحوث التربوية

م/ تسهيل مهمة باحثة

اسم الباحثة : فاطمة عبدالله عريف
عنوان البحث : " الثقة بالنفس وعلاقتها بالإنجاز الدراسي "
الجهة : جامعة الملك عبدالعزيز قسم الطالبات
مجتمع البحث : طلاب المرحلة الثانوية عدد (٦٠) طالب (الصف الثاني ثانوي)
أداة البحث : إستبانة

إلى : مدير مدرسة النهروان الثانوية المحترم
من : مدير التطوير التربوي

السلام عليكم ورحمة الله وبركاته ، وبعد:

بناءً على توجيه سعادة المدير العام بشأن السماح للباحثه الواردة اسمها أعلاه بإجراء بحثها على عينة من مجتمع الدراسة المشارإليه ، آمل من سعادتكم التكرم بتطبيق دراستها ، وإعاتها إلى قسم البحوث التربوية بإدارة التطوير التربوي بعد استكمالها والله يوفقكم .

وتقبلوا تحياتي ،،،،،،،،،،

أخوكم

محمد بن حسن مصري

KINGDOM OF SAUDI ARABIA
Ministry of Higher Education
KING ABDULAZIZ UNIVERSITY
Girls Section
Vice Denship for Post-Graduate
and Scientific Research

مكتب وكيلة العميدة
Vice Dean's Office

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز
قسم الطالبات
وكالة الدراسات العليا والبحث العلمي

بسم الله الرحمن الرحيم

سعادة مدير إدارة تعليم البنين

الأستاذ / عبد الله العويمل حفظه الله

السلام عليكم ورحمة الله وبركاته

نفيد سعادتكم أن السيدة / فاطمة بنت عبدا لله عريف ، طالبة مبتعثة من قبل جامعة الملك عبد العزيز إلى المملكة المتحدة للحصول على درجة الدكتوراه في مجال التربية وعلم النفس وهي الآن في مرحلة الإعداد لبحث التخرج تحت عنوان ((الثقة بالنفس وعلاقتها بالإنجاز الدراسي))

ونظراً لحاجتها في الحصول على معلومات وبيانات تخدمها في استكمال متطلبات بحثها من مدارس البنين ، لذا .. نأمل التكرم بالإيعاز لمن يلزم لاتخاذ اللازم نحو مخاطبة مدراء المدارس لتسهيل مهمة مندوبها لمدارس البنين .

شاكرين ومقدرين كريم دعمكم وتعاونكم ،،،

مع خالص التحية والتقدير

وكيلة عميدة شطر الطالبات
للدراسات العليا والبحث العلمي
٢/٥٩

د. نـــدى بنت حســـن التواتي

ب. مكي

الرقم: ١٤٩٠/٥/٥ التاريخ: ٢١/٣/١٤٢٥هـ المشفوعات:

المملكة العربية السعودية
وزارة التربية والتعليم - تعليم البنات
(٢٨٠)
الإدارة العامة للتربية والتعليم للبنات بمنطقة مكة المكرمة - جدة
وحدة الدراسات والبحوث التربوية

وزارة التربية والتعليم
MINISTRY OF EDUCATION

الرقم: ٢٧/١/١٧
التاريخ: ١٤/٢/١٤٢٥هـ
المرفقات: ....

المكرمة/مديرة المدرسة .... المحترمة

السلام عليكم ورحمة الله وبركاته، وبعد...

بناء على اعتماد مدير عام تعليم البنات بمنطقة مكة المكرمة /جدة لاستمارة فحص أداة البحث المقدمة من:

الباحث / ......فاطمة عبدالله عريف......................

برقم............١٥/١/٢٠٧م..................وتاريخ ١٤/ ٢ /١٤٢٥هـ

لموضوع بحثها:

......الثقة بالنفس وعلاقتها بالإنجاز الدراسي......................

....

....

لتطبيقه على عينة مكونة من:......٦٠ طالبة.......................

علية نأمل تسهيل مهمة الباحث.

شاكرين حسن تعاونكم، والله الموفق ،،،

مديرة إدارة الإشراف التربوي

١٤/٢

د. سامية بنت محمد بن لادن