Students' Motivation to Learn, Academic Achievement, and Academic Advising

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which, to a substantial extent, has been accepted for the qualification of any other degree or diploma of a university or other institution of higher learning, except where due acknowledgement is made in the acknowledgements.

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ABSTRACT

Numerous models of academic advising address the complex nature of student retention and attrition. Most tend to ignore the subtleties of implementing motivational and self-regulatory changes associated with academic advising. This present study investigates the learning experiences of university students and their use of academic advising. The research incorporates an educational model as its primary investigative lens, namely Hirsch's (2001) multiple intervention model. The study further examined critical areas of learning and advising, specifically motivation, self-regulation, academic difficulty, and academic achievement.

This research was conducted at a New Zealand university and comprised of three studies. In the first study, 14 participants were interviewed about their academic problems, readiness for study and use of learning and study strategies. In the second, a total of 317 participants completed a demographic survey and two questionnaires measuring aspects of motivation and self-regulation. In the third study, 147 participants completed follow-up self-report questionnaires. The mixed-paradigm analyses were twofold. Study 1 utilised a meaning-centred approach to classifying and understanding the interview responses. Studies 2 and 3 incorporated multivariate and categorical statistical procedures.

Interview narratives from Study 1 suggested that students experiencing academic difficulty tended to voice more problems, to be less ready for study and to be more avoidance oriented than students not experiencing academic difficulty.

In Study 2 students indicating low motivation levels for study had more self-perceived problems in the areas of concentration, self-monitoring, use of educational materials and developing time management than students with higher motivation levels. In addition, students with academic difficulty appeared to have more problems with motivation and use of study material than students with no evidence of academic difficulty. Students' motivation levels tended to vary over time indicating that students may perceive their rationale for study as an unfixed or

malleable entity. Student attitude at the beginning of the academic semester significantly predicted grade outcome. Motivation and self-regulation response measures obtained immediately prior to the examination period, however, were unable to predict end-of-semester grade averages.

In Study 3 completion of short group-based study skills programmes appears to have a link with end of semester grade average, but there were no significant shifts in measures of motivation and self-regulation. Students accessing one-to-one academic advising services were usually students with higher levels of motivation for study. The use of one-to-one academic counselling, however, was not determined by academic difficulty.

Overall, the studies contribute a systematic and integrative process of investigating the area of academic advising. The research highlights the importance of goal orientations and students' initial perceptions about the value of their course of study in relation to academic achievement and in reference to the seeking of academic assistance from academic advising services. The findings suggest that although Hirsch's (2001) model provides a valuable framework to investigate ways students study and learn, it requires additional refinement especially in areas of categorisation and application before it can be confidently endorsed. The findings also indicate that academic advisory services provide a valuable service for students in terms of academic achievement, but further research is required in the areas of cultivating motivation and self-regulation changes, and especially in the area of affect development. Finally, the study confirms the worth of mixed-paradigm research and the need for more in depth research in the multifaceted world of academic advising.

CHAPTER 1: INTRODUCTION

Investigating the learning experiences of students who experience academic difficulty and promoting academic advising as an intervention is a complex process given the wide range of interweaving variables. The need for research in the area of academic advising has been identified and acknowledged (for more details see, Beatty, 1991; Frost, 2000; Grites, 2001; Kadar, 2001; Lowe & Toney, 2000-2001; Yarbrough, 2002). The following research aims to apply Hirsch's (2001) multiple intervention model, a process of diagnosis and intervention, to investigate the area of student learning and academic advising. More specifically, the present research aims to use Hirsch's model to explore the influences and contributions of motivation and self-regulation to tertiary academic performance.

Hirsch's (2001) model was developed following a concern that students and higher education institutions have a reciprocal relationship that has an implied psychological contract as well as overt legal ramifications. According to Hirsch, the moral and legal obligations of the institution are to provide excellent resources in the form of administration, teaching and learning, while the responsibility of students is to adhere to the rules and regulations of institutions and to apply themselves to learning requirements with appropriate effort and proficiency. One key aspect of the learning resource requirement, specifically academic advising, is the focus of the present research. The following introduction outlines learning considerations for tertiary students, academic advising, and Hirsch's multiple intervention model, culminating in a central proposition for the research.

Learning Considerations for

Tertiary Students Experiencing Academic Difficulties

Models of education attempting to explain academic learning experiences of higher education students and attrition difficulties began in the 1970s and 1980s (Bean, 1980; Evans, 1999; Martinez, 2003; Patrick, 2001; Spady, 1971; Terenzini & Pascarella, 1980; Tinto, 1975, 1982, 1987, 1988). Tinto (1988) described the transition phase into university as a rite of passage that defines a change in students' social and academic frames of reference. Tinto suggested that separation from old communities, transition into institutions and learning the values and norms of institutions mark the passage of students' journeys through their higher educational experience. As part of this transitioning experience, students not completing their course of study are of real concern to educators. The education costs are a lack of return on investment in terms of time and money related to teaching and resources, and there is an inevitable cumulative effect on existing students and the reputation of the university (Bennett, 2003).

According to Hirsch (2001), collecting substantial information about students' academic and non-academic backgrounds enables academic advisors to establish students' levels of motivation and readiness to study and involves interview and psychometric procedures. From the interview data, academic advisors are able to gather contextual and demographic information such as age, linguistic and cultural background, gender, socioeconomic status, institutional assistance, and financial hardship (Bennett, 2003; Elkins, Braxton, & James, 2000; Evans, 1999; Tinto, 1997). In addition, during interviews academic advisors typically gather useful information that will enable them to have insight into students' motivation for learning and readiness for their chosen course of study. To elucidate the interview findings, academic advisors are able to gather a psychometric profile of students' scholastic capabilities and their knowledge and use of self-regulatory strategies. Hirsch suggests academic advisors consider five key areas of learning, specifically emotional and motivational readiness for higher

education, level of academic preparation, study skills competence, use of learning styles, and disability conditions that may adversely affect learning.

First, emotional and motivational readiness for higher education is a pivotal theme embedded in Hirsch's (2001) model, as it acknowledges the importance of the interplay between cognition and affect in learning. This area of learning is determined by both intrapersonal and interpersonal factors (Bong & Skaalvik, 2003; Choi, 2005; Leonard, Beauvais, & Scholl, 1999; Markus & Wurf, 1987). Intrapersonal factors connote the processing capabilities of self, affect regulation, and motivational origins, which promote self-orientations related to issues such as self-efficacy, self-worth, self-regulation, self-determination, and self-evaluation (Eccles & Wigfield, 2002; Markus & Wurf, 1987; Pintrich, 2003; Pintrich & Schunk, 2002). Interpersonal factors are related to aspects of social perception, choice of tasks, and the utilisation of learning strategies and communication skills (Markus & Wurf, 1987). Higher education presents an environment and culture that requires both academic and social adaptation and the establishment of a feeling of membership (Bong & Skaalvik, 2003; Corbin, 1998; Martinot & Monteil, 2000; McGrath & Braunstein, 1997; Omoteso, 2006; Smith, 2005; Tinto, 1988, 1993; Van Den Hurk, 2006). Overriding influences impacting on this adaptation process include family, friends and the wider community (Bennett, 2003; Evans, 1999; Thijssen, Maes, & Vernooij, 2002; Tinto, 1993).

Second, academic preparation for higher education study can relate to prior educational experience in terms of acquired level of academic literacy, scholastic achievement, nature of previous educational experience, thoughtful selection of study at higher education levels, and type of secondary school attended (Brookshire & Palocsay, 2005; Dunn, 1983; Evans, 1999; Hayes, 1994; Hughes, Lauder, & Strathdee, 1991, 1996a, 1996b; Kingan & Alfred, 1993; Schwartz & Washington, 1999; Staehr, Martin, & Byrne, 2000; West, 1985). There is, therefore, a complex interplay between numerous combinations of factors that can determine the extent of preparation for tertiary study. Nonetheless, a major factor that has predicted success at higher education is the level of scholastic achievement prior to entry, such as the Scholastic Assessment Test in the United States (Downey, Collins, & Browning, 2002; Lemann, 1995). Hirsch's (2001) notion of

academic preparation is focused on the acquisition of the knowledge required to succeed in higher education institutions. As such he does not concentrate on the notion of innate intelligence, probably because this area of assessment has been the source of numerous intellectual debates (e.g., Cernovsky, 1997; Gould, 1996; Kamin, 1974), which have implications in terms of cultural and racial connotations (Gould, 1996).

Third, study skills competence is a further area of educational development and research. This area of academic study has been described in terms of students' approaches to learning (surface; deep; strategic), self-regulated learning, and cognitive strategies (illusory optimism; defensive pessimism; self-handicapping) (Heikkilä & Lonka, 2006). Deep approaches to learning focus on integration of learning, compared to surface approaches that are outcome driven and strategic approaches that work at either deep or surface levels of learning depending upon the circumstances (Heikkilä & Lonka, 2006; Honkimaki, Tynjälä, & Valkonen, 2004). Self-regulated learning has been extensively reviewed (Boekaerts & Corno, 2005; Pintrich, 1995, 2004; Pintrich & Schunk, 2002; Zimmerman, 2000, 2002; Zimmerman & Kitsantas, 2005). Pintrich (1995) suggested there are three main characteristics of self-regulated learners, as follows: (1) self-regulated learners exhibit some kind of control over their behaviours, motivation and affect, and cognition; (2) self-regulated learners are goal-oriented; and (3) self-regulation requires individual ownership of behaviour, motivation and affect, and cognition. Finally, the cognitive strategies described by Heikkilä & Lonka (2006) appear to be linked to the interplay between affect and cognition in relation to positive views (illusory optimism), negative perspectives (defensive pessimism) and fear of failure or success (self-handicapping). According to Hirsch (2001), in developing study skills students are able to gain a source of empowerment that will benefit them in their lifelong learning process, and to this end the area of metacognitive learning is a powerful skill as it implies that learners are able to evaluate the thinking and decision-making processes that can contribute to their learning after leaving higher education to enter into the workforce.

Fourth, the notion of learning styles is a contentious area of educational theory. According to Hirsch (2001), students may prefer different sense modalities

and processing mechanisms. The proponents of this idea suggest that if students are aware of their learning style (sensory or process-oriented) then they will likely adapt to the learning environment in a manner that optimises their performance. This argument has been used to address cultural differences in learning (Suskie, 2002). Opponents suggest that learning styles can create stereotyping and fixed entity formation, thus neglecting the dynamic interaction between time and context (Stellwagen, 2001; Suskie, 2002; Zywno, 2003; Zywno & Waalen, 2002).

Fifth, disability issues have been widely researched in terms of their impact on learning. Hirsch (2001) focuses on the areas of learning disability, attention-related problems, and mental health issues. The impact of learning disability on scholarship is well-documented (Brinkerhoff, McGuire, & Shaw, 2002; Chapman, 1992; Chapman & Tunmer, 2003; Hallahan, Kauffman, & Lloyd, 1996; Henning, 2005; Jordan, 1996; Manalo, Bunnell, & Stillman, 2000; SPELD New Zealand, 2007; Tunmer & Chapman, 1996) and refers to specific difficulties related to reading, writing, oral skills, mathematics, executive function, and social skills. Students who have attention-related disabilities have similar difficulties with learning (Brinkerhoff et al., 2002; Hallahan et al., 1996; Jordan, 1996). Attention-related problems can be characterised by any combination of hyperactivity, short attention span, impatience, poor organisation, distractibility, oversensitivity, impulsiveness and disruptive behaviour (Jordan, 1996). In addition, mental health issues especially in the areas of stress, isolation, anxiety and depression have been linked to academic performance issues (Andrews & Wilding, 2004; Evans, 1999; Monk, 2004).

These five learning considerations developed by Hirsch (2001) create a framework for research into academic advising as they can be used as indicators for identifying student learning areas that may be of concern. The two areas of central interest to the present research are emotion and motivation, and study skills. In the next section the role and development of academic advising is discussed.

Academic Advising

Academic advising is usually a specialised facet of teaching praxis that involves both individualised and group-based teaching. Essentially, academic advising tends to be an extension of faculty teaching and research, and is often seen as the assistive end of university teaching praxis. Models describing academic advising can utilise wide-angle approaches by reviewing critical pathways students take as they journey through higher education from pre-admission to departure (Grites, 2001; Tinto, 1975, 1987, 1993). Models can also focus on specific aspects of the academic advising role such as the learning development processes related to motivation and self-regulation (Covington, 2000a, 2000b; Covington & Müeller, 2001; Eccles & Wigfield, 2002; Hirsch, 2001; Karabenick & Collins-Eaglin, 1995; Pintrich, 1995; Pintrich & De Groot, 1990; Schunk & Ertmer, 2000). There appears however to be a lack of integrated models that synthesise aspects of motivation, self-regulation, academic advising, and academic achievement.

Frost (2000) suggests that academic advising originated from a general university teaching praxis whereby teachers intuitively advised students about their academic progress and vocational aspirations. Subsequently, the rationale behind academic advising was linked to three main educational philosophies developed in US universities; the notions of utility, liberal culture and research (Frost, 2000). In the 1930s and 1940s, to bridge the gap between undergraduates and faculty especially in the research focused universities, the notion of academic guidance was formed (Raskin, 1979). As such, the academic advisor's role became synonymous with the idea of academic adjustment for students, particularly involving those students who experience academic difficulty and other adjustment difficulties. Moreover, the current view of academic advisors relates to faculty members and experts involved in developing academic advising systems with the ultimate aim of increasing the likelihood of student retention (Lowe & Toney, 2000-2001). Retention, in this sense, is related to pass rates and completion of course of study, and is the converse of attrition and drop out (Scott, 2003).

The 1970s saw the beginning of a formalised approach to academic advising in the United States and the National Academic Advising Association (NACADA) was formed (Beatty, 1991). This organisation aims to promote and support "quality academic advising in institutions of higher education to enhance the educational development of students" (National Academic Advising Association, 2005, para. 1).

In New Zealand, the concept of academic advising related to academic assistance provisions offered through student services outside of the faculties was being applied in the 1980s in Auckland polytechnics and the University of Auckland (F. Day, personal communication, 19 March, 2006). This role was seen as an extension of government-funded programmes such as Training Opportunities Programmes (Ministry of Education, 2006; Pasikale, 1996). At the Auckland University of Technology (now known officially as the AUT University), advisory roles emerged from pure counselling positions and later developed into separate accommodation, career, and academic advisory roles according to Shaw (2002). The University of Auckland created a team-based system for advising students on academic matters; its Student Learning Centre was developed by David Simpson in 1985 to "teach academic survival skills to at-risk (of not succeeding) or targeted first year students" (Simpson, 1991, p. 8). The development of academic advising was not isolated to Auckland and appeared throughout the main centres in New Zealand in response to an identified need for greater assistance for at-risk students in their transition into higher education. It had a particular focus on areas of assimilation and adaptation to the university culture of learning and living (Fraser & Hendren, 2002; Ministry of Education, 2004). The Association of the Tertiary Learning Advisors of Aotearoa New Zealand (ATLAANZ) originated from discussion at the Tertiary Learning Centres Network of Aotearoa/ New Zealand conference in 1998, and was incorporated in 2003 (ATLAANZ, 2006). The association aims to develop scholarly interaction, promote professional development, and develop research in the area of academic advising (ATLAANZ, 2006).

Thus, the aim of academic advising is to promote effective academic learning and develop performance skills in students, especially for those who

encounter academic difficulties. The academic advisory centres are akin to the philosophies of learning communities (Dodge & Kendall, 2004;   Johnson & Romanoff, 1999) in that they serve to create congruence between students and learning environments (Jacoby, Rue, & Allen, 1984).

Hirsch's (2001) Multiple Intervention Model and

Relevance for the Present Research

Hirsch (2001) presents an educational model that purports to assist academics to support students in higher education. The case scenarios presented by Hirsch suggest that this model is effective in terms of producing positive academic outcomes for students who otherwise would have been at risk of failure. Hirsch's ideas have been favourably reviewed in terms of content and suggested intervention methods (Fallon, 2002; Rankin, 2002) and this highlights the model's value for higher education. In an email, Hirsch confirmed (personal communication, September 5, 2003) that he had not completed any systematic outcome research based on the model.   However, he estimates that in his experience between "60-70%" of students working with counsellors using this model show some academic improvement. Thus, there is anecdotal evidence to suggest that the model has intuitive appeal and is effective in creating a formalised process aimed at assisting students with academic difficulties in the higher education setting. However, Hirsch has used carefully selected case examples in evidence and there is a lack of empirical research concerning the model's veracity. It would be difficult to discern based on this evidence whether or not an intervention effect could be attributed to the model or personal factors such as individual attention or academic advisor personality.

Hirsch's (2001) proposed multiple intervention model aims to provide a holistic approach for diagnosing academic problems and developing intervention systems. Interventions can be framed as individualised educational plans or study skills programmes. Hirsch also emphasises the need for these programmes to be

accessible to students and highlights cost-effective diagnostic and intervention academic advising systems. The model involves a sequential and systematic approach that begins by eliciting students' descriptions of their problems. The next part of the model requires a holistic assessment by an academic advisor of the issues for each student being interviewed in terms of their learning practices and is substantiated by the diagnostic data gathered from questionnaires and other psychometric measures. From this basis, students are assessed in terms of their readiness or motivation to work towards change. The model implies that students' levels of motivation are powerful determinants of change and willingness to learn. The underlying assumption is that students who are motivated and interested in their studies will likely seek assistance if and when they encounter academic difficulties, and conversely that students not motivated to study will be less likely to seek assistance.

In Hirsch's (2001) model, three levels of motivation are suggested, thus promoting the idea of a three-stage theory of educational motivation. According to Hirsch, students who are categorized as motivation Level 1 are under-motivated. Hirsch considers several options for student of this type, the first being to challenge students' behaviours with the aim of increasing their motivation and second, if they cannot change, to consider an exit or change-of-course option. Level 2 students are more ambivalent with regards to their interest in academic advising, and are also encouraged to increase their level of motivation to Level 3. Finally, Level 3 students are highly motivated to succeed in their quest for academic proficiency and are likely to have clear ideas as to why they chose their academic programme.

In the present research, motivation Level 1 students are considered to be uninterested in, or coerced into, their study. Motivation Level 2 students are ambivalent about their studies or saw them as second choice options. Motivation Level 3 students are considered to be those students interested in their courses of study and saw these as their first choice options. This extends Hirsch's (2001) original definitions concerning students' attitudes to change in an academic advising context by applying his motivation level concept to students' motivations for engaging in prescribed learning programmes. As such, the present research

aims to investigate the interaction between students' motivation and self-regulatory strategies, students' motivation for study, and the effectiveness of academic advising programmes in promoting change.

In Hirsch's (2001) model the diagnostic processes provide academic advisors with information that can be used to form a picture of students' levels of motivation, their readiness for study, their capability, and their use of study strategies. This information is valuable as it directs the intervention phases. Hirsch has described three types of intervention systems which are connected to his idea of motivation levels. Intervention Level 1 is applied to students categorised as motivation Level 1 and allows academic advisors to confront students to explore alternatives to continuance of study or to consider increasing their motivation level. Intervention Level 2 is applied to students classified as motivation Level 2 and recommends that academic advisors discuss the notion of ambivalence and the consequences of remaining ambivalent, with the intention of encouraging students to motivation Level 3. Intervention Level 3 is therefore recommended for highly motivated students who may be experiencing problems but are motivated to change. The present research has incorporated the study skills components of Hirsch's intervention Level 3 strategies only. The rationale is that these strategies are similar to the study skills programmes being taught at the university where this research was being conducted, and therefore Hirsch's intervention concepts can be evaluated in terms of their applicability to university environments other than the one Hirsch is working in.

Using the motivational and self-regulatory components of Hirsch's (2001) model as a framework, the present research developed three studies. Study 1 is a qualitative investigation, while Study 2 focuses more on bringing together qualitative and quantitative information, thus producing a triangulated approach to educational diagnosis (Cohen, Manion, & Morrison, 2000; Siragusa & Dixon, 2006). Study 3 is an action phase primarily aimed at investigating intervention options. Hirsch's model and its development for this research will be reviewed in more detail in Chapter 2.

Developing a Central Proposition

The present research embraces several areas of educational reflection, namely students' motivation to learn, academic achievement, and academic advising, investigated within the frame of Hirsch's (2001) multiple intervention model. The multifaceted nature of Hirsch's model makes it potentially useful as a comprehensive mechanism for exploratory purposes. Therefore, the present research has used this model as a holistic framework for investigating students' academic problems, their readiness for study and their explanations of how they study, and their perceptions about their motivational and self-regulatory strategies. In addition, the model is applied to examining the areas of students' attitudes and perceptions towards enrolment choices, the stability of such perceptions, and links between academic achievement and both motivation and self-regulation. Furthermore, the framework creates a means to examine the potential and existing benefits of accessing academic advising resources in enhancing study skills proficiency and ameliorating problems associated with academic difficulties and motivation. The evidence provided by this study contributes to the body of knowledge by evaluating several areas related to student learning.

First, Hirsch's (2001) multiple intervention model has clearly described hypothesised motivational linkages that are based on professional experiences and reflections. These conceptual linkages connect Hirsch's concept of motivation with the literature pertaining to motivation, self-regulation and self-concept theory (Eccles & Wigfield, 2002; Markus & Wurf, 1987; Pintrich, 2003).

Second, Hirsch's (2001) model presents a systematic process for reviewing areas related to academic difficulty, academic achievement and retention, which are areas of concern for educationalists (Lowe & Toney, 2000-2001; Raab & Adam, 2005; Schwartz & Washington, 1999; Scott, 2003; Spiers, 2000; Staehr et al., 2000; Swail, Redd, & Perna, 2003).

Third, the model provides a professional framework for a particular area of academic advising, specifically psychology and auxiliary student academic assistance. The model presents and demonstrates methods for identifying areas of difficulty that can inform intervention programmes. These processes can potentially be developed for one-to-one academic counselling and study skills programmes involving groups. Accordingly, the system is flexible enough to be adapted to most university academic advisory services. Such services are an integral part of student learning in higher education (Beatty, 1991; Frost, 2000; Grites, 2000, 2001; Holmes, 2004; Kadar, 2001; Lowe & Toney, 2000-2001; National Academic Advising Association, 2005; Spiers, 2000; Yarbrough, 2002).

Hirsch's (2001) model was considered a suitable research framework for the area of academic advising because of its value in describing and explaining differences between students with a high motivation to learn and their less motivated peers. Moreover, the model can be used to examine differences between academically troubled students and those students who are succeeding at university. Consequently, the central proposition of the present research is that Hirsch's multiple intervention model can be effectively used as a research framework to investigate the learning needs of students, specifically in the areas of motivation and academic difficulty. The underlying assumptions related to this central proposition are that cost-effective educational interventions in the form of academic advising will likely be more effective for highly motivated students who are ready for study and that these interventions will likely improve students' achievement and retention, heighten motivation, and develop self-regulatory strategies. More specific propositions that are used to direct the methodology of the present research are presented in Chapter 2.

The present research goes beyond conceptual, intuitive and professional speculations by moving towards applied research. The present study is confirmatory as it attempts to evaluate the applied value of a complex professionally-based model that could potentially be an authoritative framework for specialized practice and research, specifically in the areas of academic advising and student learning.

CHAPTER 2: A RESEARCH FRAMEWORK FOR ACADEMIC ADVISING

University students often encounter difficulties in their study and academic advising is a resource for assisting students in their academic journey. The question that naturally arises is to how best to make use of this resource and provide the assistance needed by the students who experience these academic difficulties. Hirsch (2001) developed a model from his professional experience that addresses this issue. His model presents an opportunity and template for other professionals and educationalists working in this area. In addition, it provides a useful framework in which to research the area of academic advising.

Nonetheless, the present research is not exclusively engaged in testing the potential applications of Hirsch's (2001) model. The research aims, in addition, to use this theoretical and practice-based model to explore the different facets of student learning development and advising. In one respect, this model parallels the methods that are currently being employed to advise students on their learning practices at universities. Further, the approaches considered by Hirsch also resonate with the typically improvised interview-type interactions and class-based teaching in terms of cultivating and facilitating learning. Hirsch's model enables these often ad hoc and disintegrative systems of practice to be structured in a more coherent and integrative manner. The model also provides a holistic method for investigating the dynamic interplay between qualitative evaluation and quantitative measurement, and the implications this process has for intervention.

More specifically, the present research has utilised Hirsch's multiple intervention model as a research framework for the area of academic advising and has focused on the motivational thread that moves through the model. In practical terms, the research includes three studies that aim to investigate the motivational and self-regulatory aspects of student learning. This chapter explains each study in terms of the concepts and experiences of Hirsch's work and the relevant literature. The primary purpose of this discussion is to investigate the consistency, depth, and applicability of Hirsch's ideas and to establish its credibility as a research framework. The discussion then leads finally to the outline of three specific sets of propositions that direct the methodology of the project.

Study 1: Students' Descriptions and Problem Assessment

Study 1 utilises the first two components of Hirsch's (2001) multiple intervention model, namely students' descriptions of problems and holistic problem assessment undertaken with students. In particular, it aims to elicit useful information from students with regards to their problem descriptions, readiness for study and explanations of study and learning practices. The interview phase begins by recording students' problem descriptions and determining their readiness for learning. This involves attending to self-disclosures related to areas of social networking, affect, behaviour and cognition. Above all, the concept of motivation is paramount to Hirsch's intervention system and his determination of students' willingness to learn. According to Hirsch, in the interview phase academic advisors can begin to formulate an idea about students' motivation levels. Motivation Level 1 students are generally defined as undermotivated, Level 2 as ambivalent, and Level 3 as highly motivated. More detailed discussion on this classification system is presented in the review of Study 2.

In the next phase of the interview process, academic advisors can initiate a more holistic form of problem assessment by asking students about areas not directly addressed by students. This process may explore areas that are academic and non-academic. Academic areas encompass students' explanations of their learning and study practices. Non-academic factors can involve social and affective areas.

Hirsch's (2001) interview stage also aims to recognise students' flash points: that is, points at which academic advisors and students synchronise and motivation and action come together, enabling intervention to ensue. Hirsch further suggests that effective academic advisors need to develop students' insights into their problems and to recognise flash points so that optimal change agencies can be implemented. This identification process involves both students and academic advisors, and endeavours to promote the probability of fusing motivation and action. A major aspect of Hirsch's interview process is the establishing of areas of discrepancy between academic performance and students' goals. This information can be useful in directing different interventions dependent upon students' levels of motivation and readiness for study.

Interviewing is characterised as a type of conversation with a purpose (Wengraf, 2001), and is valuable for academic advisors in terms of developing their professional practice (Holmes, 2004; Spiers, 2000; Truman State University, n.d.). While interviews are crucial to psychological and educational assessment, nevertheless they also have problems associated with reliability and validity. The behaviour of the interviewer often hinders reliability; interviewers can vary in terms of "appearance, approach, and style and, consequently the impressions that they make on the interviewees" (Aiken & Groth-Marnat, 2005, p. 363). In the case of Hirsch (2001), the reader is often left wondering about the use of his methods by other practitioners, the reason being that his case scenarios are explicitly and implicitly linked with Hirsch – the person, researcher, educationalist, and psychologist – who is defined by his own environments. Hirsch's case scenarios certainly demonstrate the usefulness of this approach but are authenticated by their own unique characteristics and may be difficult to generalise to other practitioners and contexts.

Additionally, it has been posited by Wengraf (2001) that the validity of narrative-biographical data can be questioned in terms of the authenticity and accuracy of self-representations. The narrative process is reliant upon the verbal flow of the interviewee and this may be constrained due to factors such as memory, unwillingness to self-disclose, digression in disclosure, miscommunication and misunderstandings. Hence, students' problem descriptions and their ability to explain learning strategies are likely to be incomplete; the expertise of the academic advisor must therefore be relied upon to elucidate and clarify students' commentaries (Hirsch, 2001). Accordingly, the aim of the interviewer is to capture as much of the true self as possible with reference to the questions being addressed. As Hirsch (2001) stresses, the interview process is a collaborative exercise between interviewee and interviewer whereby the interviewer's aim is to develop a sense of enquiry while the aim of the interviewee may be more complex. The very nature of the interview suggests an intricate process of social interaction which is further complicated by contextual variables such as location, relationships, and assumptions (Mills, 2001).

Hirsch (2001) further emphasises the multifaceted nature of interviews and the potential for producing information in the form of non-verbal and verbal information, which penetrates intrapersonal and interpersonal areas of affect, cognition, and behaviour. Interviews as a type of interaction are reciprocal in that both interviewers and interviewees have the opportunity to learn something of value (Aiken & Groth-Marnat, 2005; Anastasi & Urbina, 1997; Gregory, 2004). However, interviews can have certain inherent drawbacks arising, for example, from interviewee's lack of willingness to disclose useful information. Moreover, interviewees' reasons for participation may be unduly determined by the need for ego-involvement, an opportunity for learning through reflection or a need to express a particular viewpoint (Hiller & DiLuzio, 2004). Lastly, Scriven (1988) points out that students may have biased views with respect to subject content, value of student learning, quality of assessments, use of valid and ethical means of grading, and professionalism of the teacher.

Hirsch (2001) has provided a template for the initial interview process. The structure of this template entails relationship-building, listening to students' descriptions of problem areas, exploration of academic and non-academic contributing factors, and assessment of motivation and readiness for change, followed by feedback on the problem issues and decisions regarding intervention. The following review focuses on Hirsch's ideas with regards to eliciting students' problem descriptions, their readiness for study, and their explanations of learning and study practices.

Study 1: Areas Under Investigation

Students' Problem Descriptions and Perceptions Regarding Readiness for Study

Eliciting information with regards to students' problem descriptions and readiness for study is directly linked to Hirsch's (2001) model. According to Hirsch, the first phase aims to empower students by allowing them to describe the problem as they perceive it. This notion of utilising student perception as an information source regarding academic performance and quality is well documented in the education literature (e.g., Anderman, 2002; Centra, 1993, 1994; Kvale, 1996; Treadwell & Grobler, 2001). Students are able to not only reveal insights about

themselves but can also articulate views on the quality of teaching services and peers (Brooks & Ammons, 2003; Centra, 1993; Ryan, Carlton, & Ali, 1999). Moreover, as a data-gathering methodology, interviews allow for opportunities in the form of personalization, probing, evaluation and dialogue (Stewart & Cash, 1997).

In the present research, this interview process focuses on students' problem descriptions and readiness for study, and aims to reveal information that can connect the data with theories related to self. Integral to the concept of self is how self-perception develops over time, and self is cultivated dynamically via interpersonal relationships. The process of interaction creates an internalised and integrated view that people sense as self (Markus & Wurf, 1987). The difficulty in developing a clear understanding of self emerges due to the conflicting sources of information about the self and the complexity of the changing social roles that people act out in society. Thus, there are strong within-person structures that exist in an ongoing dynamic relationship with powerful between-individual forces (Cervone, 2005). This interplay of within and between person processes becomes difficult for adolescents, in particular, who often have multiple interchanging views of self (Hymel & Moretti, 1999; Reeve & Jang, 2006). Moreover, Hirsch (2001) promotes the investigation of the interplay between affect, cognition and behaviour as being of prime importance in both his assessment and intervention recommendations. The theory of self-concept provides a useful framework for investigating this interplay and therefore verifying the use of Hirsch's framework.

The process of inquiring into how students describe their problems and readiness for study is a research-based approach to information gathering with clinical ramifications. The use of interview data in research methodology and a valuable information source is well-recognised (Cohen, Manion, & Morrison, 2000). Kvale (1996) states that research interviews aim to gather data about interviewees and their life experiences with respect to the research questions under scrutiny. Research interviews encompass not only personal change factors but have a deep investment in the development and enhancement of the body of knowledge (Hiller & DiLuzio, 2004; Kvale, 1996; Wengraf, 2001). In the case of Hirsch's (2001) approach, the academic advisor as interviewer obtains crucial information that will

benefit the student. The information enhances the quality of intervention by allowing the interviewer to directly observe the student revealing their academic narrative.

With respect to research interviews, several types of interviewing formats are discussed. These include structured, guided, and in-depth interviews (Lichtman, 2006). The approach used by Hirsch (2001) is the guided interview which takes on a semi-structured application. The present research follows Hirsch's lead in that its interview phase is a semi-structured procedure. Hirsch additionally advocates that academic advisors begin by asking students structured questions that can lead to further probing (Entwistle & Entwistle, 2003; Oolbekkink-Marchand, van Driel, & Verloop, 2006). Hirsch begins by asking students to define their problems and therefore aims to discover students' perspectives with regards to their academic difficulties. In Hirsch's system, the questions have two aims; first to allow students to describe and define their problems, and secondly, to investigate students' level of readiness and motivation for learning. Some recommended questions include, "What do you think you would have to change to improve your school performance?" and, "Does your motivation to go to college come more from inside yourself or from outside of yourself, such as from your parents or your community? If more from outside yourself, what or who is motivating you?" (Hirsch, 2001, p. 36). This information therefore creates a foundation on which intervention strategies can be devised.

In Hirsch's (2001) system, it is suggested that academic advisors use probe questions when students are not revealing detailed information about aspects of self-study. Academic information deemed useful in Hirsch's model relate to motivation, enrolment, lecture attendance, concentration issues, reading skills, test preparation and application, time management, usage of academic advisory services, and stress and anxiety factors. Non-academic information deemed useful relates to relationship issues, employment, financial problems, family issues, mental health, social/cultural concerns and evidence of substance abuse. As such, the interviewer may follow a line of questions that differs from student to student depending upon their responses to the probe questions (Lichtman, 2006). Hirsch draws attention to the need for academic advisors to be cognisant of student diversity in terms of emotional expression, and social and cultural background. The intention of this aspect of the

interview is to gather information, based on students' readiness for learning and motivation level, which will determine the type of intervention most suitable for their needs.

Hirsch's (2001) interview strategy begins with open-ended and broad questions and uses probes and amplification in response to students' answers. His open-ended questions aim to promote the notion of building rapport with students. Academic advisors consider aspects of empathy to include messages that convey support, and possibly self-disclosure. Hirsch's aim is to build a picture of the affective, cognitive and behavioural aspects of students' learning processes. Consistent with Hirsch, Patton (1990) considers certain organisational aspects related to interviewing, such as directness, the use of non-inflammatory wording and unambiguous language. Academic advisors create a milieu that promotes the transference of information using both non-verbal and verbal channels of communication. Hirsch implies that interviewers incorporate aspects of flexibility, non-restrictiveness, rapport-building, probing and elaboration, and investigate new territory or ideas (also, Sewell, n.d.).

Hirsch's (2001) system for gaining preliminary information about students is similar to that proposed by Lichtman (2006), who suggests the process is cyclical – in other words there are iterative progressions from gathering data to analysing the data to asking questions to gathering more data and so on. The progression tends to be reflexive and subjective, which allows for researchers to view themselves as well as the interviewees as part of the interaction. In a pure research paradigm, the first step entails collecting raw data and creating an initial coding system from one transcript that is then refined upon review of further transcripts. Following this, coded items are then categorised into common statements that lead to themes or concepts (Lichtman, 2006). With Hirsch's educational emphasis, design deliberations involve the choice and types of questions to be asked, as well as the answers that ultimately mould and refine the interview.

The answers from students create emerging themes categorising aspects of learning related to problem descriptions and readiness for study (Hirsch, 2001). The emerging analysis of information elicited about students' problem descriptions and readiness for study can be categorised according to motivation and self-regulation

theoretical frameworks (Entwistle & Entwistle, 2003; Urdan & Mestas, 2006). Readiness for study, motivation levels and academic difficulty provide a meaningful system for classifying data, with subsystems associated with motivation and self-regulating theories. In a research system these concepts can present a thematic conceptual matrix that allows for coherence when interpreting trends, ideas, and patterns (Berkowitz, 1997; Miles & Huberman, 1994; Urdan & Mestas, 2006; Wengraf, 2001).

A system of research that encompasses Hirsch's framework and creates an investigative template for Study 1 is a meaning-centred approach (Kvale, 1996). Kvale considers the analytical process with regards to meanings in association with condensation, categorisation, narrative structuring, interpretation and development utilising ad hoc methods. Meaning condensation involves a phenomenological process incorporating the whole interview, limiting to meaningful units, determining the theme of the meaningful units, linking to the purpose of the study, and creating essential meaningful themes. Meaning categorisation employs a coding system, while meaning structuring through narrative focuses on the meanings behind the story. Meaning interpretation implies a critical distance and requires hermeneutic systems of analysis. Lastly, ad hoc development entails the use of different approaches and systems of analyses as considered appropriate.

In the present research, interview questions were prepared to elicit responses from students about their problems, motivations, and readiness for study. The interviewees' responses were collated using Kvale's (1996) interview paradigm as a research schema.

Students' Explanations of Learning and Study Practices

The second aspect of Study 1 introduces the involvement of an academic counsellor or teacher to consider the issues presented by students. The consideration creates a more holistic and applied assessment of the issues than the phase investigating students' problem descriptions and perceptions regarding readiness for study (Hirsch, 2001). The initial interview stage of listening to students' perception about their problems and readiness for study is followed by a more interactive phase whereby academic advisors scrutinise students' explanations of learning and study

practices. The emphasis is on sifting through the issues that students bring to the academic advisory sessions by exploring relevant information that may be impacting on their performances. Two points are emphasised by Hirsch, namely, interviewers need to be authentic and empathetic, and secondly, interview questions need to be timely, utilising unambiguous language and instilling a sense of self-efficacy.

Interviews provide a useful structure for gaining insights into students and their issues in relation to academic life, students' approaches to learning, and the way they develop cognitive models about learning (Askell-Williams & Lawson, 2006). Consistent with the previous discussion, interviews about students' learning strategies allow academic advisors to probe deeper into the notion of the student self, and more specifically in terms of motivational and self-regulatory systems of study (Arnault, Sakamoto, & Moriwaki, 2005; Bonner & Holliday, 2006; Cervone, Shadel, Smith, & Fiori, 2006; Kanagawa, Cross, & Markus, 2001; Markus & Wurf, 1987; Zimmerman & Martinez-Pons, 1986). This investigation is useful as it examines the influence of motivation on learning as proposed by Hirsch (2001).

Goal theory has been used to explain motivational aspects of students' learning (Pintrich & Schunk, 2002) and has been researched alongside self-concept theory. Both theories appear instrumental in explaining academic achievement, and are useful in explaining the establishment of specific connections between perceptions about a task and the self (Barker, McInerney, & Dowson, 2004). Self-concept theory suggests that students will develop more positive academic self-concepts as a consequence of academic achievement hence a focus on self-ability, while goal theory suggests self-perceptions about the process of task completion are influential determinants of academic achievement. Hirsch (2001) suggests that students and academic advisors work together to enact and enable change by setting realistic and timely goals. The advisors contribute to the educational intervention by proposing study and learning strategies that students can feasibly implement. This development of academic self-concept has been shown to be related to academic achievement (Barker et al., 2004; Bong & Skaalvik, 2003; Hoge, Smit, & Crist, 1995; Marsh, 1990; McInerney, Dowson, & Yeung, 2005).

A further consideration in relation to motivation is the notion of commitment, which is linked to students' level of understanding and willingness to enact the

suggestions. Setting goals and monitoring students' levels of self-regulation are important steps to generalising the information discussed in advising sessions to learning environments (Hirsch, 2001). To be effective, students understand and recognise what it means to be a student, then enact behavioural commitments in terms of defining the self and forming a student identity, which creates integration with cultural expectations and self-definitions of student (Collier & Callero, 2005). As such, part of the learning through interactive interviews is an understanding of self and the requirements of the learning environment, which is followed by the implementation of achievable action (Hirsch, 2001).

Correspondingly, examination of self is useful as it provides clues to how students interact with the university environment in conjunction with their behaviour patterns within that environment. This triadic process has been presented as a system for explaining how students develop self-regulation in the academic environment (Zimmerman, 1989, 2000). Moreover, the way students make choices on how to regulate their behaviour within the academic environment may depend on how they match their own attributes with significant others around them (Martinot & Monteil, 2000). This matching process creates critical thinking about personal history and future possibilities of self (Marshall, 2001). The future development of self relies on the processing of information related to perceived abilities (traits) and skill levels. This processing of information necessitates the need for accurate self-relevant data that can maintain a consistency of self but also create the platform for self-enhancement (Wentura & Greve, 2005). Establishing accuracy of data is a role that academic advisors in conjunction with students aim to accomplish through interactive interviewing (Hirsch, 2001).

Nonetheless, students may be resistant to change due to low levels of motivation or a lack of readiness for study (Hirsch, 2001). Subsequently, the self may create a protection system (self-immunisation) that maintains its stability against contradicting information that may damage a self-concept about a particular trait or skill. This process creates a period of authentication or abandonment of particular ideas related to sets of facts about trait or skill behaviours (Greve & Wentura, 2003). Implicit theory of ability related to whether or not students have either fixed or malleable views of ability can also impact on receptivity and

flexibility; it has been positively related to the development of self-concept and negatively associated with self-handicapping. Students with more malleable views tend to have greater capabilities in terms of acquiring metacognitive and cognitive strategies (Ommundsen, Haugen, & Lund, 2005). As such, functional integration will likely be a catalyst for transformative action, whilst the converse is likely true for dysfunctional assimilation. Consistent with Hirsch's model, students defined as motivation Level 3 (high motivation) will likely have greater functionality in terms of embracing positive change agencies that will benefit their learning than their lower motivated peers.

In this portion of the interview phase, academic advisors are collecting valuable information about the students' learning practices and providing feedback and options in terms of solutions to perceived and actual problems. In this more applied stage, Hirsch's (2001) system appears to be utilising three types of interview, specifically informal conversational, guided approach and standardised open-ended (Cohen et al., 2000). Hirsch's process follows a plausible sequence, as it aims to identify, clarify and define problems which inevitably lead to the generation and prudent selection of solutions. These solutions are implemented as appropriate through an intervention stage. Lastly, this intervention stage requires monitoring and evaluation in terms of goal attainment, plan effectiveness and the need for further refinement (Jayanthi & Friend, 1992). The information gained through this process can be integrated into theory and research and then applied to one-to-one, small group and whole-class settings such as in the case of strategic content learning programmes that promote self-regulation (Butler, 2002).

In researching the area of study skills and in particular self-regulation, research interviews can be applied thoughtfully. Interviews are able to describe and explain the interplay between learning strategies and cultivating understandings (Entwistle & Entwistle, 2003). In reviewing assessments and interventions used in the area of self-regulation, Boekaerts and Corno (2005) state that:

> Semi-structured interviews allow researchers to select from the interview sheet those questions that act as context-sensitive prompts, encouraging students to reflect on their strategy use, thoughts, and

feelings as well as on their awareness of specific features of the classroom context. (p. 210)

In the holistic assessment interview, students will likely gain self-feedback from disclosures about their explanations of learning and study practices. These disclosures will also allow academic advisors the opportunity to provide their views and suggestions that can be used to develop a way of addressing students' concerns (Hirsch, 2001).

In the areas of motivation and self-regulation, qualitative researchers using interviews have used theoretical templates for analysing their data and in providing a diagnostic structure within which to assign students' explanations (Entwistle & Entwistle, 2003; Koh, 2006). Koh (2006), for example, used a theoretical model based on the ideas of students' self-efficacy and its influence on the learning process at the initial, during and final stages of a learning sequence (Schunk, 1991). In a similar vein, Hirsch's (2001) theoretical foundations create a useful framework for the meaning-centred process (Kvale, 1996). The ideas that are particularly powerful and knit themselves into a creative pattern relate to the ideas of internal and external sources of motivation, and approach and avoidant orientations to learning (Pintrich, 2003). According to Hirsch's formulation, an internal orientation to study is similar to the idea of intrinsic motivation or a sense of satisfaction whereas external orientation relates to extrinsic motivation or a focus on outcomes. In addition, approach orientations to learning imply a sense of moving towards solutions, while conversely avoidance connotes moving away from solutions. These concepts can be used as categories for classification purposes (Urdan & Mestas, 2006) that interlink with the meaning-centred methodology developed by Kvale (1996). In their first stage, Urdan and Mestas (2006) developed a unit of analysis based on the reasons students voiced in relation to performance goals. In their second stage, they identified goal-related statements from the interview records. The data were classified according to several criteria, based on areas of appearance or competition and according to the learning orientations of approach or avoidance.

Moreover, interviews bring a useful humanising effect to the research process and contribute data that can reveal deeper levels of understanding about studying and learning processes (Entwistle & Entwistle, 2003; Hirsch, 2001). Hirsch's (2001) interview phase allows researchers to investigate areas of students' learning processes related to students' sense of self and the manner in which self interacts within the intrapersonal and interpersonal learning environments, and with respect to this research specifically the areas of motivation and self-regulation. Hirsch has promoted this interactive interview phase as a means for gathering individualised data and explanations that can be used as an adjunct to psychometric evaluations.

In this part of the research, then, Study 1 investigates the learning and study strategies used by students by first enquiring about their practices and secondly asking them to respond to questions that are directly linked to Hirsch's (2001) recommended practices. The second instance responses can be collated and interpreted by using Hirsch's system as a framework for analysis.

Propositions for Study 1

The present study was designed to explore students' learning practices in line with Hirsch's (2001) use of students' interviews. The aim of this section is to develop a set of propositions that can be used to examine a qualitative set of strategies designed to gather meaningful data that can aid in the assessment of students' levels of motivation and readiness for study as well as any pertinent information that could assist in the development of intervention systems. The assumption is that students will differ in terms of their commentaries according to their self-defined levels of motivation and experiences of academic difficulty. To examine this assumption, several areas require investigation:

1. Students' problem descriptions.

2. Students' perceptions of their readiness for study.

3. Students' explanations with regards to their learning and study practices.

4. Students' commentaries linked directly with Hirsch's (2001) prescribed interventions systems.

Four propositions underpin these areas of investigation:

Proposition 1a

Students will describe their problems related to study differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are likely to describe more problems in terms of frequency than students in other categories.

Proposition 1b

Students will describe their readiness for study (in motivation and self-regulation terms) differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are more likely to voice less readiness for study than their peers.

Proposition 1c

Students will explain their strategies for learning and study (in motivation and self-regulation terms) differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are more likely to describe avoidance strategies (rather than approach) for study than their peers, and they are also likely to voice a different source of this orientation in terms of being more external than internal.

Proposition 1d

Students' commentaries linked directly with Hirsch's (2001) prescribed interventions systems will be voiced differently depending on academic outcomes and self-defined motivation levels. Students having academic difficulties and low self-defined motivation levels are more likely to describe avoidance (rather than approach) strategies for study than are their peers, and they are also more likely to voice a different source of this orientation in terms of being more external than internal.

Study 2: Defining Levels of Motivation and Readiness for Study

Hirsch's (2001) structured assessment phase using a psychometric instrumentation model is an extension of the interview phase aiming to establish students' levels of motivation and readiness for learning, and to gain further information that may be useful for academic development. Hirsch's assessment phase further emphasises prudent selection of and access to numerous psychometric instruments related to the areas of emotion and motivation, academic preparation, study skill competence, learning styles and disability. Consequently, this triangulation of information can be used to influence choice and implementation of educational interventions.

Hirsch's (2001) choice of instrumentation appears to be based on his expertise and experience, and the applied value of instruments and empirical endorsement. Hirsch's recommendations for psychometric evaluation are an integral part of the information gathering process with respect to determining students' learning experiences and capability. The purpose of assessments in academic advising relates to investigating whether or not students can acquire the essential skills that advisors endeavour to impart (Bliss, 2001), and this process involves clarification, assistance, and scrutiny (Grites, 2000). In more focused areas, psychologists working with students who clinically present with profound learning problems often use specialised tests, such as the Wechsler tests (Wechsler, 1997a, 1997b). These assessments are required to establish if the students have an identifiable learning disability requiring extensive assistance and accommodations (Henning, 2005). Assessments for academic advising also measure other specific academic areas such as language, reasoning and mathematics (Grites, 2000).

Hirsch's (2001) diagnostic philosophy centres on the notion of differential diagnosis, in which academic advisors create educational profiles of students. These profiles include learning and capability patterns with respect to key learning issues. The profiles can be preventive as well as interventionist. Part of the preventive strategy is to identify at-risk students and define retention indicators (Grites, 2000). Grites suggests measuring non-cognitive aspects of learning in addition to cognitive methods and recommends ongoing scrutiny of students' progress if they are defined as at-risk.

In his discussion on assessment, Hirsch (2001) acknowledges some of the problems associated with empirical assessment. First, cultural and gender biases are found in all types of testing (Aiken & Groth-Marnat, 2005; Anastasi & Urbina, 1997; Entwistle & McCune, 2004; Richardson, 2004). This is of particular importance in the multicultural context of New Zealand. The psychometric tests most often used in the New Zealand context are eminently suitable for New Zealanders who have an Anglo-European origin, but these tests are not easily applied to other cultural groupings such as those of Pacific Island origin or students whose first language is not English (Henning, 2005). This is a powerful argument for a mixed-model appraisal of learning difficulty, and Hirsch suggests that students need to be interviewed and assessed with respect to cultural diversity.

Second, an area of concern in assessment is the competency of assessors and assessments related to the concepts of validity and reliability. In making objective judgements about assessment findings, assessors often ignore the existence of student-related variables that can adversely affect student performance. In Hirsch's (2001) system, interviews are utilised to investigate the level of emotional well-being of the students at the time of any assessment. Students, however, may also be adversely or positively influenced by academic assessors and assessors may be influenced by students (Koretz, 2002; Pintrich & Schunk, 2002). This level of influence further strengthens the argument for mixed-model evaluation using both qualitative and quantitative mechanisms when assessing students' academic and non-academic experiences and potentials (Siragusa & Dixon, 2006). Finally, to combat the utilisation and generation of misleading information (Coverdale & Henning, 2000; Keith-Spiegel, Tabachnick, Whitley Jr., & Washburn, 1998; West, Ravenscroft, & Schrader, 2004), a strong justification exists for rigorous standards with regards to choices of assessments and the assessment of students' academic capabilities and use of learning strategies (American Psychological Association, 2003; Anastasi & Urbina, 1997; Henning, 2004; Ministry of Health, 2003; New Zealand Psychologists Board, 2002; New Zealand Teachers Council, 2003; NZQA, 2001; Stiggins, 2002; Wise, Leslie, & Linda, 1991).

To elucidate Hirsch's (2001) diagnostic processes the following review concentrates on three of his diagnostic features pertinent to the areas under

investigation, namely emotion and motivation, and study skill competence. Three areas of measurement suggested by Hirsch are acknowledged as they indicate the complexity of the problem of profiling students' academic capabilities and practices, but these measures are not reviewed as they are beyond the scope of the present research.

Emotional and Motivational Readiness for Study

In determining students' levels of motivation and emotion, Hirsch (2001) promotes the College Student Inventory (CSI), because it purports to provide a good appraisal of students' readiness for tertiary study. It measures academic motivation, social motivation, general coping skills, receptivity to support services, and initial impressions (Stratil, 1988; Washington State University, 1999). The CSI aims to appraise students' needs before they begin their course of study. In this manner the CSI can help educational advisors to implement, where necessary, appropriate intervention programs that can assist students in their educational endeavour and identify 'dropout proneness' (Brevard College, 2003; Florida Institute of Technology, n.d.; Stratil, 1988; Washington State University, 1999).

The CSI is intended for a similar purpose as the self-report personality tests that evolved as mechanisms for appraising constructs related to, "emotional, motivational, interpersonal, and attitudinal" (Anastasi & Urbina, 1997, p. 348) facets of human behaviour. The CSI is also an assessment procedure that has emerged due to interest in the notion of retention and attrition (Bagnardi & Perkel, 2005; Brevard College, 2003; Campbell, 2004; Hogan, 2004; Raab & Adam, 2005; Scott, 2003; Swail et al., 2003; Tinto, 1982). As a cautionary note, two recent reviews of the CSI found that it was useful as a screening mechanism but raised significant doubts with regards to its psychometric robustness and lack of representation in the academic literature (Campbell, 2004; Hogan, 2004). However, use of the CSI by some authors as part of their research projects suggests confidence in its reliability and validity (Bagnardi & Perkel, 2005; Basham & Lunenburg, 2001; McGrath & Braunstein, 1997; Tovar & Simon, 2006). Further, the use of the instrument by many higher education providers as part of their retention and selection processes also indicates strong face validity (Florida Institute of Technology, n.d.; Washington State University, 1999).

In his considerations relating to the measurement of emotion and motivation, Hirsch (2001) has not addressed the area of emotional intelligence (EI). The measure of EI has become a topical area of research and development (Boler, 1997; Cooper, 1997; Pekrun, Goetz, Titz, & Perry, 2002; Scheusner, 2002; Shutte & Malouff, 1999). It has been described with respect to identifying, expressing and understanding emotions, and the integration of emotions into thought. It incorporates the regulation of positive- and negative-based emotions in terms of self and others (Matthews, Zeidner, & Roberts, 2003), and has been used to explain creative thinking and the use of emotion by actualised individuals (Root-Bernstein, 2000). EI has also been seen as a construct in which demonstrable differences on intrapersonal and interpersonal continuums can be made between various groups (Petrides & Furnham, 2003).

In addition, Hirsch (2001) in his deliberation of the measurement of emotion and motivation has not recognised the numerous other instruments present in the literature that aim to appraise motivation, and furthermore appear to have more empirical coverage in the academic literature than the CSI. The list includes, but is not limited to, the following self-report instruments:

1. Learning and Study Strategies Inventory (Weinstein, Palmer, & Schulte, 1987; Weinstein, Palmer, & Shulte, 2002).

2. Student Adaptation to College Questionnaire (Baker & Siryk, 1989).

3. Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie, 1991).

4. Academic Motivation Scale (Vallerand et al., 1993).

5. Student Readiness Inventory (Le, Casillas, Robbins, & Langley, 2005).

6. Goal Orientation and Learning Strategies Survey (Barker et al., 2004; Dowson & McInerney, 2004).

7. Student Motivation Scale (Martin, 2003, 2004; Martin & Marsh, 2005).

8. Approaches and Study Skills Inventory for Students (Diseth, 2001).

Study Skills

Hirsch (2001) suggests that students study differently in different environments; they may have been successful using certain strategies at secondary school but find that the depth and comprehensive nature of information at university require different more rigorous strategies. After discussing his case example, Hirsch promotes his instrument of choice, namely the Learning and Study Strategies Inventory (LASSI, Weinstein, 1987). His rationale is that the LASSI provides a complement to the interview data, as it generates 10 relative subtest scores (to be discussed shortly) that can be compared with the general student population and thus used to identify areas that may be of concern to students and faculty staff.

The main focus of the present research is the consideration of students' levels of perceived motivation and self-regulation. As aforementioned, numerous instruments exist in the literature that aim to appraise motivation which appear to have empirical coverage in the academic literature, and they also have an emphasis on measuring self-regulation such as the LASSI. The LASSI and the Motivated Strategies for Learning Questionnaire (MSLQ, Pintrich et al., 1991) were selected as appropriate measures for the present research and are reviewed in more detail in the next subsections. The rationale behind this selection was that both instruments are widely used and empirically established (Braten & Olaussen, 1998, 2000; Duncan & McKeachie, 2005; Gable, 1998; Pintrich & Schunk, 2002; Pintrich, Smith, Garcia, & McKeachie, 1993). Moreover, it is proposed that the two instruments would together create a more complete analysis, as the LASSI is a non-specific measure of motivation and self-regulation, while the MSLQ has an applied focus (Duncan & McKeachie, 2005).

Learning and Study Strategies Inventory (*LASSI)*

Several studies have utilised the LASSI in their research, with no significant problems noted (Braten & Olaussen, 1998, 2000; Braten & Samuelstuen, 2004; Olaussen & Braten, 1998; Swing, 2003; Weinstein & Palmer, 1990; Weinstein et al., 1987). The publishers of LASSI have cited 1705 institutional global users of this instrument, indicating immense popularity (H & H Publishing Co, 2003b).

The LASSI was developed at the University of Texas at Austin by Weinstein, Schulte and Palmer (H & H Publishing Co, 2003a, 2003b, 2003c, n.d.; Weinstein et al., 1987). The LASSI is both diagnostic and prescriptive. It is diagnostic in that it provides students and academic advisors with information related to the strengths and weaknesses of students in relation to the norms and scores on 10 subscales, namely attitude, motivation, time management, anxiety, concentration, information processing, selecting main ideas, study aids, self-testing, and test strategies (H & H Publishing Co, 2003c). It is prescriptive in that it provides feedback on the progress a student may be making in terms of improving their knowledge base and their "skills, attitudes, motivations and beliefs" (Weinstein & Palmer, 2002, p. 4). According to the publishers, the inventory aims to collect information related to thoughts, behaviours, attitudes and beliefs that can be useful in the development of a successful education intervention strategy (H & H Publishing Co, 2003c).

Weinstein and Palmer (1990) stated that the areas of learning are further broken down into three components of strategic learning, namely skill, will and self-regulation. Each component is represented by a composite score computed from a selection of the 10 subscale measures. For the skill component score, the amalgamation comprises information processing, selection of main ideas, and test-taking strategies. The will component score encompasses measures related to anxiety, attitude, and motivation. The self-regulation component score consists of measures of concentration, self-testing, study aids, and time management. The three factors of skill, will, and self-regulation have recently been questioned, and studies suggest that the factors could be reformulated as categories in the form of effort-related activities (motivation, time management, and concentration), goal orientation (concentration, anxiety, test strategies, and selecting main ideas) and cognitive activities (selecting main ideas, information processing, study aids, and self-testing) (Cano, 2006; Olaussen & Braten, 1998; Olejnik & Nist, 1992; Prevatt, Petscher, Proctor, Hurst, & Adams, 2006).

The general version of the LASSI was considered to be an orientation instrument that can alert students who wish to study in a tertiary setting of any gaps in their preparation, such as attitudes and study practices (Blackwell, 1992). However, Blackwell added that there is little psychometric evidence to suggest that

the LASSI has adequate reliability and validity. Melancon (2002) suggested that the LASSI could be reasonably used in research, but also that there should be some caution with respect to its use, given that Melancon's review indicates that the LASSI does not adequately measure the 10 subscales it purports to. The remedy is that fewer, and more reliable scales, could be devised. A study by Flowers (2003) also showed a lack of test-retest reliability for the LASSI when applied to at-risk students, although this study did specify that the LASSI does have value for educators. Flowers also suggests that the LASSI can be used to measure effectiveness of study skills courses, to assist in academic counselling and to complement other measures with regards to learning. A further reviewer stated that the LASSI is of unknown value given the lack of validity and utility data (Hayes, 1994). Hayes (1994) on the other hand suggested that the LASSI does have strong face validity and a common sense approach.

In addition to the studies cited in the first paragraph of this section there are numerous researchers that have used the various versions of the LASSI in their scientific endeavours (Benz, Fabian, & Nelson, 1996; Braten & Samuelstuen, 2004; Erin & Corn, 1993; Hart & Speece, 1998; Heard, 2002; McMahon & Luca, 2001; Naveh-Benjamin, McKeachie, & Lin, 1987; Proctor, Prevatt, Adams, Reaser, & Petscher, 2006; Yip & Chung, 2005). Benz et al. (1996) used the LASSI as a pre- and post-measure to ascertain the success of a study skills seminar for students with a learning disability. In the Erin and Corn (1993) study, the LASSI was used to measure problem areas that students with visual impairment may encounter. Braten and Samuelstuen (2004) employed the LASSI as part of a battery of testing instruments. Hart and Speece (1998) used the LASSI to control for teaching conditions in their evaluation of a reading programme. In addition, Heard (2002) used the LASSI to determine areas linked to student persistence in a community college program. In Heard's study, levels of motivation and anxiety were deemed to be significant predictors in explaining student persistence in learning. McMahon and Luca (2001) utilised the LASSI to examine a model related to self-regulation. Both Proctor et al. (2006) and Yip and Chung (2005) used the LASSI as a means to differentiate between student achievement groups. Finally, in the Naveh-Benjamin et al. (1987) study a modified version of the LASSI was used to appraise the test-taking behaviours and processing skills of test-anxious students.

Motivated Strategies for Learning Questionnaire (MSLQ)

A comprehensive review of the MSLQ was compiled by Duncan and McKeachie (2005). According to these authors, the MSLQ was developed in line with a constructivist, social-cognitive framework, by considering the dynamic relationship between motivation and cognition. The MSLQ was seen as different from other self-report inventories like the LASSI, which according to Duncan and McKeachie considered learning strategies and attitudes towards study at a more general level, whereas the MSLQ attempted to contextualise its focus on students' motivation and cognition in the classroom (see also, Boekaerts & Corno, 2005). One of its desirable qualities is its flexibility; the scales can be used together or singly and the instrument can be used to fit the needs of educators and researchers (Duncan & McKeachie, 2005; Pintrich et al., 1991). For example, in an earlier study (Pintrich & De Groot, 1990), the MSLQ was reduced to 44 items to measure motivation and self-regulation related to classroom academic performance.

The MSLQ was developed and refined at the University of Michigan from the 1980s onwards by Pintrich and McKeachie (Duncan & McKeachie, 2005). The main focus of the instrument is to measure aspects of motivation related to intrinsic orientation, task value, control beliefs, and expectancy for success, as well as cognitive, metacognitive, and resource management strategies (Schunk, 2005). The MSLQ has good internal reliability and has been shown to be correlated with academic achievement (Lynch, 2006; Pintrich et al., 1993; Schunk, 2005). The MSLQ has been used as a research and teaching tool in many different disciplines and across many different classroom and cultural contexts. Duncan and McKeachie cited over 50 published articles utilising the MSLQ between 2000 and 2004, which is a testimony to its acceptance in the academic community as a psychometrically-sound instrument.

In addition to the Duncan and McKeachie (2005) citations of the MSLQ, numerous recent research projects have utilised the MSLQ. These up-to-date research areas include: (1) considering relationships between beliefs about learning and the use of study strategies (Dahl, Bals, & Turi, 2005); (2) the relationships between task structure and achievement, self-efficacy for learning and self-efficacy for performance, and achievement, task performance and perception of self-efficacy

(Lodewyk & Winne, 2005); (3) types of intelligence (fluid and crystallised) and their correlation with knowledge areas in finance (Ackerman & Beier, 2006); (4) the interaction between performance-approach goals, classroom goal context, personal goal orientations and classroom goal structures (Linnenbrink, 2005); and (5) validation of other inventories in this area, such as the Student Readiness Inventory (Le et al., 2005) and the Goal Orientation and Learning Strategies Survey (Dowson & McInerney, 2004).

An early psychometric evaluation of the MSLQ was completed by its authors (Pintrich et al., 1993). This validation study suggested that the MSLQ has good reliability and that the "six motivational subscales and nine learning strategies represent a coherent conceptually and empirically validated framework" (Pintrich et al., 1993, p. 812). The authors went on to say that the instrument has good predictive validity in terms of predicting academic performance. But not all studies have been as favourable. A recent study (Edwards, 2005) showed that the MSLQ was unable to predict course grade or computer self-assessment scores in a nursing programme. Two reviewers have cast words of caution with respect to the empirical robustness of the MSLQ. First, Benson (1998) suggests that all MSLQ response options should be anchored, that the reported reliability scores are weak and the validity data is limited. On the other hand, Benson does not report the theoretical work behind the MSLQ (Duncan & McKeachie, 2005). A second reviewer (Gable, 1998), acknowledges the theoretical foundation of the MSLQ, but considers the present MSLQ as a research edition only, until more robust reliability and validity data are available.

Study 2: Areas Under Investigation

In the following section, the linkages in Hirsch's (2001) multiple intervention model are used to explore students' perceptions about their motivational and self-regulatory strategies. In addition, the present research is considered alongside the current theories and methodologies presented in the literature. The first area of investigation relates to Hirsch's notion of classifying and defining levels of motivation. Secondly, Study 2 examines the temporal stability of this classification system. The final area of review relates to the prediction of academic achievement using motivation and self-regulation measures as prognostic indicators.

Hirsch's Three-Stage Theory

Hirsch (2001) uses psychometric information and interview data to classify students into three levels of motivation or readiness for change. In Hirsch's original formulation the object was to classify motivation in terms of therapeutic change options, but in the present research the classification is used to devise a notion of motivation towards choosing study options. The use of three levels of motivation is an interesting approach that conveys the idea of a stage theory of motivation that follows an intuitive continuum from students who are uninterested in learning to students who are highly motivated to complete their study.

Pintrich and Schunk (2002) propose that research in the area of motivation follows three paradigms, or metatheoretical models. The first model relates to a mechanistic approach and is based on a natural science system that aims to measure motivation in terms of behaviours and changes in those behaviours that can be quantified in a continuous fashion. Second, the organismic approach suggests that there are progressive changes in development but these changes are qualitatively different rather than quantitative. Finally, the contextual approach considers differences as interactive rather than progressive or sequential, and is often influenced by factors like historical events. Hirsch's (2001) stage theory appears to follow a mixture of these paradigms as there is an overriding continuous process but the differences between the stages are qualitative. Moreover there is also fluidity between the levels such that students can move amid the levels. The reason for this combined theoretical approach may be linked to the practical nature of Hirsch's work that appears to drive his rationale. The interactive component suggests a strong contextual emphasis with influential sub-paradigms in the form of organismic and mechanistic features.

Accordingly, classifying motivation into various dimensions is not an uncommon idea and can be found in comprehensive reviews of this area (Eccles & Wigfield, 2002; Pintrich, 2003; Pintrich & Schunk, 2002). Zimmerman (1994) states that students are often categorised according to self-regulatory characteristics that include: (1) self-starters who are persistent and achieving students; (2) confident problem solvers; and (3) those who are self-reactive to performance outcomes. Other cited classifications of motivation include: intrinsic versus extrinsic motivation,

levels of interest, goal approaches, mastery versus performance and approach versus avoidance (De La Fuente Arias, 2004; Petri & Govern, 2004; Pintrich & Schunk, 2002). At a practical level, Hirsch's (2001) model appears to have a system of categorisation consistent with the goal-orientation approaches that categorise students' goals in terms of academic and social goals (De La Fuente Arias, 2004).

In his review De La Fuente Arias (2004) presents three options for classification that are also used elsewhere (Bouffard & Couture, 2003). First, students are classified in terms of learning mastery or being task involved. This grouping is similar to Hirsch's (2001) third level of motivation, given that Level 3 students are more likely than lower level students to be interested in the learning process and are thus more persistent and more expected to utilise the cognitive and metacognitive resources that are available to them. Secondly, De La Fuente Arias classifies students with respect to performance goals or ability-focused goals. This category is similar to Hirsch's second level of motivation. Consequently, Level 2 students are more likely compared with Level 3 students to be less adaptive and engage in fewer strategies have poorer conduct and be more outcome oriented. The final option De La Fuente Arias presents relates to the idea of goals focused on the ego (work avoidance, ego or ego-involved goals). This option relates to the idea of performance avoidance or performance approach. Although this category is not entirely consistent with Hirsch's first level of motivation, it is likely that many Level 1 students are concerned with themselves and how others perceive them and may use avoidant learning techniques. Skaalvik (1997) has used the terms self-enhancing and self-defeating ego. Self-enhancing students wish to present superior skills to others, while self-defeating ego students aim to avoid looking unintelligent. Level 1 students are likely to be of the latter type.

As with Hirsch (2001), many researchers have formulated a classification system using a theoretical framework (Bouffard & Couture, 2003; De La Fuente Arias, 2004). A consideration of the theoretical classification is then analysed by way of multivariate statistics (Bouffard & Couture, 2003). Other researchers have used procedures to first consider the factor structures of the categories in question using cluster, discriminant or factor analyses (Valle et al., 2003b), and then proceeded with multivariate analysis of variance techniques to tease out levels of

significance between hypothetical constructs (Valle et al., 2003b). In the Valle et al. (2003b) study, the LASSI was used to evaluate three goal categories, namely learning, performance and reinforcement by employing both cluster and multiple analysis of variance procedures. The present research takes a similar approach, it utilises traditional multivariate procedures by analysing three motivation levels (adapted from Hirsch, 2001) and students' levels of academic difficulty against self-report measures taken from the LASSI and MSLQ.

Stability of Motivation over Time

Hirsch's (2001) levels of motivation is potentially a useful system to aid academic advisors in advising students about their selection and persistence in a course of study. They also allow academic advisors to monitor students' states of willingness to persist in their learning. Kingan and Alfred (1993) suggest that assessments can be used for tracking purposes such as guiding students into suitable courses according to their measured strengths and experiences, and to guide academic advisors to assist students in their preferred course of learning. If students' needs are identified then remediation programmes can be implemented that could maintain stability in terms of persistence with study (Kingan & Alfred, 1993).

In attribution theory, the stability dimension considers the notion of expectancies for success and failure. It relates to the idea of whether or not a trait or characteristic is fixed or malleable over time or within situations (Cole & Denzine, 2004; Eccles & Wigfield, 2002; Pintrich & Schunk, 2002; Sabee & Wilson, 2005; Takaku, 2006; Weiner, 1985; Withey, Gellatly, & Annett, 2005). Locus of control also contributes to stability. However, defining attributions as stable or unstable, and internal or external has created some debate and ambiguity (Pritchard & Smith, 2004). According to Weiner (1985) stability can be adversely affected by unstable internal causes such as mood, fatigue, and effort. Stability can however be maintained if the causes are considered stable and internal such as aptitude. In terms of external locus of control, students may have greater notions of stability if the objective is task-oriented, rather than having chance-oriented attributions which promote greater instability (Eccles & Wigfield, 2002; Pintrich & Schunk, 2002; Weiner, 1985). Attributing failure to aptitude can adversely shape expectancies for success, as this is a fixed trait that cannot be changed easily. Moreover, continually

attributing failure to a stable causative entity will likely engender a state of helplessness in students (Pintrich & Schunk, 2002).

According to Hirsch's model (2001), motivation level could be seen as an attribution entity, whereby motivation Level 1 (uninterested or coerced) may have both internal and external loci of control, and if the state of being uninterested is viewed as fixed then it would be difficult to move students to a motivation Level 3 category (highly interested or free will). Decisions about participating in change agency therefore depend on perceptions of control and choice (Standing, Guilfoyle, Lin, & Love, 2006; Zimmerman, 1994). The methodological approaches employed in this area of research vary from complex path analyses (de Jesus & Lens, 2005) to more traditional use of analysis of variance models (Johnson, Amoloza, & Booth, 1992; Sabee & Wilson, 2005; Tarrant, North, & Hargreaves, 2004).

In addition, attribution of stability can be global or specific. For example, students can see themselves as being very poor at studying in general or specifically in one subject (Cole & Denzine, 2004; Pintrich & Schunk, 2002). The notion of motivation levels proposed by Hirsch (2001) may also be specific in nature, whereby students may not be ready for their chosen course of study, both in a general way or in a more specific way such as in an area of statistics. The temporal stability of a perceived cause can also be somewhat dictated by level of performance (Petri & Govern, 2004). Generally change of perception about cause appears to be related to reasons such as engagement, expectancy and value, or cognitive and motivational integration (Byrne & Flood, 2005; Eccles et al., 1983; Eccles & Wigfield, 2002; Pintrich, 2003; Pintrich & Schunk, 2002).

Expectancy-value theory presents a useful frame of reference for explaining the way students view the stability of explanations over time (Leonard et al., 1999). Students make decisions with regards to learning based on probable outcome and perceived effort. The value of the result is being constantly reviewed in accordance with students' perceptions of reality based on what they ought to do, actually do and ideally should be doing (Markus & Wurf, 1987). Consistent with Hirsch's (2001) concept, students ideally should be highly motivated, but actually may feel coerced into their study, hence the value they see in study may be unclear, and the way they make inferences about the causation of academic problems may be confused.

Therefore, students with greater confusion about the actual cause of their problems may attribute failure to stable and fixed entity formations like aptitude. According to Cole and Denzine (2004), academic advisors would find it useful to gauge students' expectations of academic success and their cognitive and affective insights into the value of their chosen course of study.

In line with Hirsch's (2001) model, transformative action can be effective if students see motivational attributions as being malleable so that motivation Level 1 students are able to move to motivation Level 3. However, the converse can also be true as students can move from motivation Level 3 to motivation Level 1. Hirsch's system requires students to self-assess their learning patterns, and this is especially true for students with academic difficulties who have low motivation towards their study. On this basis, students and academic advisors may need to work together to develop realistic risk assessments to maximise positive outcomes (Standing et al., 2006). Additionally, attributions about behaviours, cognitions and affects can be influenced by associations with certain groups and this association can impact on the development of constructive outcomes (Tarrant et al., 2004). Therefore, students' choices of assistive agents when they experience academic difficulty are extremely important.

The object of this aspect of the present research is thus to investigate stability over time with regards to students' self-defined motivation levels.

Prediction of Academic Achievement

Grade average and retention provide useful measurable external criteria (Scott, 2003) to evaluate the motivational and self-regulatory assumptions implied in Hirsch's (2001) model. The main assumption is that students who have high levels of motivation and self-regulation will likely achieve elevated academic scores relative to their peers with lower levels. The rationale here is that students with higher levels of motivation and self-regulation will probably invest more time and commitment than students with lower levels (Bennett, 2003), and these high-achieving students will also presumably seek assistance if they are having difficulty which will further heighten their standard of academic achievement. Several theoretical models with regards to self theory, emotion, motivation and self-

regulation can significantly contribute to explanations with regards to academic achievement.

First, self theory involves the investigation of the area of entity versus incremental theories of intelligence, whereby students may believe that intelligence is fixed (entity) while others may believe that intelligence can be cultivated (incremental). The implication is that students with fixed views tend to score lower grades than more malleable students (Dweck & Molden, 2005).

Second, test anxiety encompasses phenomenological, physiological and behavioural responses to assessment procedures and can create adverse reactions leading to lower than expected academic performances (Pintrich & De Groot, 1990; Sansgiry, Bhosle, & Sail, 2006; Tremblay, Gardner, & Heipel, 2000; Zeidner & Matthews, 2005).

Third, self-efficacy has also been shown to be a powerful determinant of academic achievement (Gore Jr, 2006; Lynch, 2006; McKenzie & Schweitzer, 2001; Pintrich & De Groot, 1990; Robbins et al., 2004; Schunk & Pajares, 2005). Self-efficacy is related to the notion that students have beliefs about competence in terms of their action in specific circumstances (Bandura & Locke, 2003). Pintrich (2003) proposed that students are motivated when they have instilled adaptive self-efficacy constructs and competence perceptions. If students believe that they will do well and believe they have the right skills and knowledge then they tend to implement more effort and have a high likelihood of achieving their goals. Pintrich further stated that there is strong evidence to indicate that students with strong self-efficacy are more cognitively occupied in their studies, compared to students who are unsure of their abilities. In addition, self-efficacy theory suggests belief in accomplishing a task will heighten perception about competence and commitment to academic goals (Zimmerman, 1989). Moreover, the setting of personally oriented goals by students perceiving themselves to be successful has been shown to be linked with academic achievement (Wentzel, 1993).

Fourth, it is widely accepted that students who are able to successfully regulate their effort, and their metacognitive and cognitive strategies will likely do better than students who do not (Pintrich, 2003; Zimmerman & Kitsantas, 2005). This is despite

some contradictory evidence suggesting no association between metacognitive strategies and grade achievement (Zeegers, 2004). The key processes implied in predicting academic attainment include implementation of effective goal-setting techniques, utilisation of valuable task strategies, efficient management of time, and execution of self-management strategies related to self-evaluation, self-monitoring and utilisation of optimal environments (Zimmerman & Kitsantas, 2005). Other explanations of academic attainment have been linked to self-determination theory (Eccles & Wigfield, 2002; Ryan & Deci, 2000) and expectancy-value propositions, whereby expectancy of success is posed as a significant predictor of academic success (Goodenow, 1993). A further study showed that predictions may be subject-specific and therefore aspects of motivation and self-regulation may be more potent predictors of academic achievement in some subjects compared with others (Vanderstoep et al., 1996).

Furthermore, there is considerable research establishing that students' self-report measures of motivation and self-regulation may predict academic success (Eccles et al., 1983; Eccles & Wigfield, 2002; Lynch, 2006; Pintrich & De Groot, 1990; Ross, Green, Salisbury-Glennon, & Tollefson, 2006; Spitzer, 2000; Tremblay et al., 2000; Vanderstoep et al., 1996; Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990). Pertinent to the present research, the LASSI and MSLQ have both been used as instruments for investigating motivational and self-regulatory attributions with respect to academic achievement, most significantly in the studies described below.

Loomis (2000) used correlational and one-way analysis of variance approaches to investigate the relationships between the LASSI subtests and performance in a course on asynchronous learning networks. Five of the subtests were significantly related to end of course grades, and the LASSI subtest 'study aids' yielded the greatest number of significant correlations. Other studies have used multiple analyses of variance procedures to investigate the relationships between LASSI scale scores and other areas of learning such as academic achievement and use of learning goals (Valle et al., 2003b). Further research has applied the LASSI as a qualitative mechanism by using descriptive statistics to explain trends between the LASSI subtests and course grades (Peter, 2005). More sophisticated analyses, using

a large sample of 614 university students, was also found in the form of structural equation modelling in an attempt to bring together factors related to learning strategies (utilising the LASSI), academic achievements, academic self-concept, causal attributions, and academic goals (Valle et al., 2003a).

In relation to the MSLQ, Lynch (2006) evaluated the full version of the questionnaire and the ability of its subtests to predict course grades, by incorporating a stepwise multiple regression procedure. Lynch's results showed that the subtests self-efficacy and external goal orientation yielded significant results. Utilising the modified version of the MSLQ, Pintrich and De Groot (1990) used zero-order correlations to consider the associations between student performance indicators and motivational components and self-regulatory learning components, followed by a regressional analysis. In Pintrich and De Groot's study, the MSLQ measures of self-regulation, self-efficacy and test anxiety were significant predictors of students' performance indicators. Other studies, utilising the MSLQ, have used correlational procedures for teasing out useful potential associations and regression analyses to examine predictive links between motivation and self-regulation constructs and academic achievement (Chen, 2002; Cole & Denzine, 2004; Donald, 1999; Silagyi-Rebovich, Brooks, & Peterson, 1998). A further study used the MSLQ as part of a mixed-model approach by evaluating qualitative information and quantitative multivariate statistical analyses (Dabbagh & Kitsantas, 2005).

A potent but subtle variable to acknowledge in the measurement of motivation and self-regulation is proximity to the examination period (Pintrich & De Groot, 1990; Remedios, Ritchie, & Lieberman, 2005; Sansgiry et al., 2006; Wicker, Turner, Reed, McCann, & Do, 2004). This intriguing variable creates a potential masking and sequential effect whereby motivation may be heightened at the beginning of the semester but as the reality of the course begins to embed itself motivation lowers or heightens, and then at examination time motivation lowers or heightens again due to the high levels of anxiety. Psychological aspects such as denial may further hinder the process of gaining accurate self-report measures of motivation and self-regulation (Remedios et al., 2005).

It is also recognised that there are confounding problems that influence the prediction of grade using motivation and self-regulation as explanatory variables.

The main confounding factors to consider are age (Chiang, 2001; Dermitzaki & Efklides, 2001; Graham, 1990; Heckhausen & Dweck, 1998; Hoskins & Hooff, 2005; Pintrich & Schunk, 2002), ethnic identity and gender (Omoteso, 2006; Wigfield & Wagner, 2005), educational history, family and community background, and personal features and experiences (Corbin, 1998; Omoteso, 2006; Pomerantz, Grolnick, & Price, 2005; Terenzini & Pascarella, 1980; Tinto, 1988).

This component of the present research aims to apply Hirsch's (2001) implied assumption that students who perceive they have higher levels of motivation and access more competent self-regulatory strategies are likely to acquire higher grades than their peers. Consequently, the research employs regression methods based on Hirsch's ideas and self-report measures using the LASSI and MSLQ to predict academic achievement.

Propositions for Study 2

To apply Hirsch's (2001) ideas in relation to classifying motivation into three levels, a set of propositions are mooted. First, it is argued that the self-report measures of the LASSI and MSLQ will likely relate to self-defined motivation levels (developed from Hirsch, 2001) and the academic outcome (passed all papers; failed at least one paper) criteria. Second, student perceptions of motivation levels (Level 1; Level 2; Level 3) will likely be consistent across time. Third, measures of motivation and self-regulation will likely predict grade outcome and student retention. This contributed to the construction of three propositions:

Proposition 2a

Students with high self-defined motivation levels and not experiencing academic difficulties will likely have higher MSLQ and LASSI scores compared with other student combinations.

Proposition 2b

Students' self-defined motivation levels will likely be stable over time (as determined by their estimates at the beginning of the semester compared to the end of the semester).

Proposition 2c

Self-defined levels of motivation, and MSLQ and LASSI scores will likely predict end-of-semester grade averages and retention measures, that is, high motivation levels, and high MSLQ and LASSI scores predicting high end-of-semester grade averages and high retention measures.

Study 3: Impact of a Study Skills Programme and

Access to Academic Advisory Services

Study 3 aims to evaluate two features of educational intervention, namely the use of study skills programmes and individualised academic interventions. This incorporates Hirsch's (2001) intervention systems that aim to address students' participation in group-based or individualised change agencies cultivating motivational and self-regulatory aspects of learning. To achieve this, Study 3 focuses on evaluating a naturally occurring study skills programme at AUT University where this study took place and students' contact data with respect to one-to-one academic advising services (AUT University, 2006b). The following discussion considers the influence of study skills programmes and one-to-one academic advising in terms of the motivational and self-regulatory rationales that underscore their implementation.

Motivation and Academic Advising

Numerous books and articles have reviewed the scholarly literature with respect to the educational ramifications of motivation (Boekaerts, 2004; Covington, 2000a; Eccles & Wigfield, 2002; Pintrich, 2003; Zimmerman et al., 1992). Gollwitzer and Oettingen (2004) state that motivation as an academic concept was

developed in the 1940s from learning theory. From this foundation, motivation was then clearly presented in terms of needs-based ideas and later in terms of expectancy-value theories. Several motivation theories have been developed that can be used to explain how study skills programmes and academic advising services may impact on student learning. The areas considered in the present research are expectancy-value constructs, intrinsic motivation, goal-orientation theories, multiple goals, self-efficacy, control theories, self-worth, and the notion of relatedness.

Expectancy-Value Constructs

Expectancy-value theory suggests that students make judgements about their learning based on expectations with respect to success or failure, and also make inferences about the usefulness of course content (Palmer, 2005). Expectancy belief systems are cultivated from an appraisal of success or failure in terms of performing a particular task, and task value is related to the perceived value of what is being taught. Students will engage in study-related behaviour if educational goals are valued and unlikely to engage in non-valued educational goals (Byrne & Flood, 2005; Hijzen, Boekaerts, & Vedder, 2006; Liddell & Davidson, 2004; Schunk & Ertmer, 2000).

One of the difficulties with academic advising is convincing students about the instrumental value of education in terms of future career options, which requires congruence between education-related goals and personally relevant future goals (Miller & Brickman, 2004). Attainment value is linked to the idea that students find courses valuable if they are achieving highly in those areas of study (Palmer, 2005). Students will also see subjects as important if they view the utility value of the area of study, such as science subjects leading to entry into a medical course. Finally, if students enjoy doing tasks they will likely develop a sense of intrinsic value. Palmer further feels that perceived value is related to choice of course, while expectancy is connected with performance. Overall, students' perceptions with regards to the value of study skills programmes and academic advising services are likely related to their outcome expectancies in the form of academic performance and achievement.

Intrinsic Motivation

Theories in the area of intrinsic motivation are connected to the notion of self-determination, or students being able to decide on what kind of future they want (Deci, Vallerand, Pelletier, & Ryan, 1991; Eccles & Wigfield, 2002; Reeve, Nix, & Hamm, 2003). Other intrinsic motivation theories are related to the notions of 'flow' (Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003). These strong positive emotional states suggest that students can have greater control over their environments and this enhances intrinsic motivation (Shernoff et al., 2003).

In developing self-determination, generic study skills programmes aim to cultivate internal locus, volition and perceived choice, by allowing students to consider the choices they make with regards to study options and the responsibilities associated with such actions through the critical thinking process (Facione, 1998). This is linked to Hirsch's (2001) idea of perceived value. The idea aims to develop strong subjective feelings through critical and fruitful discussion that can heighten the state of engagement, so that students can develop a sense of affective and cognitive connection between their studies and personal goals.

Goal Orientation Theories

Goal orientations towards study are often considered in terms of two opposing perspectives, or a combination of two theories (Eccles & Wigfield, 2002; Pintrich, 2003). Eccles and Wigfield (2002) begin their review of this area of research by presenting the various duality theories. The first being ego-involved versus task-involved approaches; the first approach emphasises self-perceptions of competence, while the second favours the way in which students master tasks and enhance competence. Further theories presented dualities like the notion of mastery versus performance, performance-approach versus performance-avoidance, and within-person versus person-environment (Eccles & Wigfield, 2002; Pintrich, 2003).

Hirsch (2001) utilises the notions of intrinsic versus extrinsic in combination with avoidance versus approach strategies in describing how students deal with academic problems. The use of intrinsic and extrinsic dualities for explaining learning behaviour has been criticised (Covington, 2000b; Covington & Müeller, 2001) on the basis that many students engage in their studies for personal

satisfaction as well as being focused on academic achievement. Consequently, approach-avoidance systems of explanation are emphasised and these are well represented in the literature (Cury, Fonseca, Moller, & Elliot, 2006; Elliot & Covington, 2001; Elliot, Gable, & Mapes, 2006; Ryan & Deci, 2000; Sideridis, 2005; Skaalvik, 1997; Zweig & Webster, 2004). In brief, students who voluntarily enrol in study skills programmes and seek educational assistance to refine or remediate their academic expertise are engaging in an approach orientation to learning, and this can be contrasted with students who are experiencing academic problems but avoid utilising available interventions.

Multiple Goals

There is growing discussion with respect to the notion of multiple goals, namely academic and non-academic aspirations (Boekaerts & Corno, 2005). Achievement and goal orientations are able to explain why students approach and engage in certain tasks and not others. Achievement goal orientations are likely to impact on the implementation of self-regulation strategies such as attending study skills courses and utilising academic advising services which in turn influence attainment (Covington, 2000).

The generic study skills programmes under investigation (AUT University, 2007) aim to address multifaceted goal-setting practice through the discussion of surrounding issues such as time and stress management, planning assignments and critical thinking. This involves the promotion of a complex interplay between values and goals (Boekaerts, de Koning, & Vedder, 2006). In education, students are often presented with multiple goals, and as such students will perceive some of these goals as being valuable and others as not so valuable (Boekaerts et al., 2006; Hijzen et al., 2006). Students' choices about extracurricular activities such as engaging in study skills activities or proactively seeking academic assistance depend upon how they compare and prioritise these different goal options.

Self-Efficacy

The notion of self-efficacy is related to the idea that students have beliefs about competence in terms of their action in specific circumstances (Bandura & Locke, 2003). Pintrich (2003) proposed that students are motivated when they have

instilled adaptive self-efficacy constructs and competence perceptions. Pintrich further stated that there is strong evidence to indicate that students with strong self-efficacy are more cognitively occupied in their studies, compared to students who are unsure of their abilities.

The strong link between instilling self-efficacious behaviours and improvements in study performance is demonstrated in a number of sources (Bandura & Locke, 2003; Ford-Gilboe, Laschinger, & Laforet-Fliesser, 1997; Jackson, 2002; Margolis & McCabe, 2003; Pintrich & De Groot, 1990). Moreover, when considered in tandem the measures of students' self-efficacy and self-concept appear to be potent determinants of academic proficiency (Bong & Skaalvik, 2003; Choi, 2005; Marsh, 1990; Ommundsen et al., 2005; Seifert, 2004; Windhausen, 1998). At the same time, Pintrich also made the point that there is a balance between the beliefs that one can do well and the reality of what one can do well. Accordingly, in instilling self-efficacious behaviours educators need to be wary of students' over estimating their ability.

Through critical thinking and consideration of learning approaches, the generic study skills programme under investigation (AUT University, 2007) encourages self-enquiry by promoting positive integration between behaviour, affect and cognition. One approach is through deliberation on the characteristics of a critical thinker in terms of the affective, cognitive and behavioural components including the areas of clarity, orderliness, diligence, reasonableness, focus, persistence, and precision (Facione, 1998).

Control Theories

The concept of control has been discussed as a means to understanding motivation in learning (Eccles & Wigfield, 2002; Mccann & Turner, 2004; Pintrich, 2003; Pintrich & Schunk, 2002). Hirsch (2001) uses locus of control theory to frame his ideas with regards to developing empowerment for students and re-attributing failure to realistic explanations. This is consistent with the notion of a critical thinker and the reflective approach to learning as taught in study skills programmes (AUT University, 2007; Broadbear & Keyser, 2000; Kawashima, 2004; Paul & Elder, 2000). From an internal focus, people attribute success or failure in terms of the level

of control they have over events. In using an external locus of control the emphasis shifts to external influences that induce changes in situations or behaviours.

Re-attributing failure to learning characteristics that are malleable is an important issue for study skills educationalists (AUT University, 2007; Broadbear & Keyser, 2000; Kawashima, 2004) and is clearly linked to attribution theory (Cole & Denzine, 2004; Eccles & Wigfield, 2002; Pintrich & Schunk, 2002; Sabee & Wilson, 2005; Takaku, 2006; Weiner, 1985; Withey et al., 2005). The issue includes circumstances where students believe that aspects of learning are permanent and others flexible. This may cause problems for academic advisors attempting to change dysfunctional behaviours perceived as durable (Dweck & Molden, 2005).

Self-Worth.

Self-worth theory is related to the maintenance of a positive self-image, and one aspect for this promotion to be effective is to ensure academic competence. One key protagonist of this self-worth theory (Covington, 2000a), also suggests that students judge themselves by their level of achievement and this judgement is the basis of how they perceive their worth in society. Such judgements are often defined by their level of academic success as measured by their achieved grade. Hence, acknowledging past success is a useful mechanism in developing self-worth (Hirsch, 2001).

In addition, Hirsch's (2001) intervention strategies aim to develop a sense of self-worth and foster a sense of self-belief through encouraging students to recognise their personal and academic strengths. One approach to investigating personal and academic strengths in a classroom environment is through discussion on personal learning styles (AUT University, 2007; Felder, 1988, 1993; Felder & Soloman, 1999). The aim of this type of discussion is to allow students to consider different ways of learning so that they can maximise their full academic potential and thus promote a positive mind-state and create alternative study options.

Notion of Relatedness

Finally, the impact of relatedness on student motivation has been investigated by Furrer and Skinner (2003). Relatedness is an interpersonal concept

connected to the idea of a teacher promoting a sense of trust and caring in the students' learning environments. Students who feel a higher sense of relatedness are more emotionally and behaviourally engaged in the learning process; a consequence being that they feel they are in more control of their education. Furrer and Skinner found that students' "sense of relatedness plays an important role in their academic motivation and performance" (Furrer & Skinner, 2003, p. 158).

Feedback perceived as authentic establishes motivational maintenance, probably because memory can fade over time and therefore affective and cognitive encouragement will likely promote interest in learning and persistence (Muench, Tryon, Travaglini, & Morgenstern, 2006). Hirsch (2001) recognises that academic advisors can enable students to access academic assistance by developing positive linkages between faculty staff and students. For distance learning students, isolation is a problem that can develop into a loss of motivation and therefore it is especially important for students and teachers in these situations to cultivate a trusting relationship (Janes, 2006). The philosophies that underpin group-based study skills teaching and individualised educational sessions promote positive empowering relationships and rapport between students and academic advisors (Frost, 2000; Pasikale, 1996; Shaw, 2002).

Self-Regulation and Academic Advising

Self-regulation as a concept was developed from the discourse surrounding motivation theory and its application to education practice (Boekaerts, 2004). It allows educational practitioners and motivation theorists to link motivation with strategy use. Schunk and Ertmer (2000, p. 631) defined self-regulation (or self-regulated learning) as "self-generated thoughts, feelings, and actions, that are planned and systematically adapted or needed to affect one's learning and motivation." There are several models that aim to describe the process of self-regulation (Heikkilä & Lonka, 2006; McMahon & Luca, 2001; Montalvo & Torres, 2004; Pintrich & De Groot, 1990; Puustinen & Pulkkinen, 2001; Zimmerman & Kitsantas, 2005).

In earlier research, self-regulated learning was broken down into three major areas (Pintrich & De Groot, 1990). These include: (1) students' management and

control over their effort on academic tasks; (2) metacognitive strategies used by students such as planning, monitoring and modifying cognition; and (3) cognitive strategies used by students to learn, remember and comprehend information and knowledge. Other research (Puustinen & Pulkkinen, 2001; Zimmerman, 2000, 2002; Zimmerman & Kitsantas, 2005), describe self-regulation in terms of three cyclical phases, specifically forethought, performance, and self-reflection. The following discussion focuses on these self-regulatory areas.

Forethought Phase

According to Zimmerman & Kitsantas (2005), a forethought phase relates to task analysis and self-motivation beliefs. Task analysis is further broken down into goal setting and strategic planning, while self-motivation beliefs are considered in terms of self-efficacy, outcome expectations, task interest or value and goal orientation. This motivational and planning phase is clearly connected to themes discussed in the previous section. In the study skills programme being examined task analysis is viewed through several lenses that include critical thinking, planning an assignment planning and time management (AUT University, 2007).

In the study skills programme under investigation (AUT University, 2007), students are encouraged to discuss how they would develop their assignments by considering a large task in terms of unitary units that follow a sequential and linear logic. This process may begin with Step 1 'understanding the assignment' to Step 2 'select and focus the topic' culminating in Steps 11 and 12 'revise and rewrite', and 'put paper in final form' (University of Minnesota Libraries, 2006). Hirsch (2001) uses similar strategies related to scheduling, prioritising, goal-setting, estimation, awareness raising, and assertiveness.

In addition, forethought is likely to be the main antidote to procrastination and is linked to goal setting. Hirsch's (2001) goal-setting strategies include initially setting one realistic goal, reflecting on the goal-setting experience, setting another goal, and developing empowerment for the students. The strategies cultivate self-efficacy, and promote the opportunity for effective cognitive strategy formation (Eccles & Wigfield, 2002; Neck, Neck, Manz, & Godwin, 1999; Niemi, Nevgi, & Virtanen, 2003). Hirsch suggests furthermore that students need to

cultivate self-efficacy with regards to managing tasks and to integrate this cultivation with future goal setting (Lens, Simons, & Dewitte, 2001). In terms of cultivating self-motivation, students with mastery goals and high self-efficacy are more likely to develop effective systems for self-regulation and circumvent procrastination (Lens et al., 2001). Furthermore, to enact such tasks proficiently also requires self-motivational beliefs in the form of "high perceptions of self-efficacy, outcome expectations, intrinsic interest, and learning goal orientation" (Zimmerman & Kitsantas, 2005, p. 515).

Performance Phase

The performance phase is classified in terms of self-control and self-observation. Self-control is composed of self-instruction, imagery and environmental structuring, and self-observation is linked to metacognitive monitoring and self-recording (Zimmerman & Kitsantas, 2005). The first aspect of strategy use in terms of study skills involves the actual performance of the academic process and is addressed through the teaching of the essential ingredients linked to academic achievement, such as reading and writing proficiency (Braten & Samuelstuen, 2004; Gluck, Draisma, Fulcher, & Worthy, 2004; Heard, 2002), developing note-taking skills (Bonner & Holliday, 2006; Kobayashi, 2006), memory strategy formation (Higbee, 1996; Manalo et al., 2000), and enhancing techniques related to the preparation and taking of examinations (Derossis, Da Rosa, Schwartz, Hauge, & Bordage, 2004; Entwistle & Entwistle, 2003; Harackiewicz et al., 2002). These strategies are all linked to the study skills modules under investigation and Hirsch's (2001) Level 3 interventions associated with issues of concentration and attention, classroom behaviour, reading comprehension, memorization, and test-taking strategies. The interventions appear to be related to cognitive strategies that are used by students to learn, remember and comprehend information (Boekaerts & Corno, 2005; Boekaerts et al., 2006; Pintrich & Schunk, 2002).

Self-observational processes for students requires the selection of specific actions or cognitive processes and the development of discrimination between these actions or processes and outcomes (Zimmerman & Paulsen, 1995). This spills over into students' general strategies linked to time management. Self-monitoring can be taught by teaching students to collect baseline data and develop

structured approaches, thus leading to independent implementation and regulation of self-monitoring (Zimmerman & Paulsen, 1995). Self-recording is linked to monitoring task involvement and selection, and are taught in the study skills modules under investigation in relation to time and stress management. This management invariably influences the organisation of social and communication distractions which are commonplace in the university environment (Schulz, 1998). This is a useful process as it allows students to focus on what is important, to review effective and non-effective subsystems of study, and allows students to implement effective systems.

Self-Reflection Phase

Finally, the self-reflection phase is considered with respect to self-judgement and self-reaction. Self-judgement refers to self-evaluation and causal attribution, whereas self-reaction connotes a comparison between self-monitored outcomes and a set of standards (Zimmerman & Kitsantas, 2005). The self-judgement element uses a frame of reference akin to critical thinking with standards related to clarity, accuracy, relevance, and logic. This process will likely engender self-correcting behaviour and insight into the cognition and affect aspects of self (Broadbear & Keyser, 2000; Markus & Wurf, 1987). The idea of self-evaluation is the mainstay of study skills development, and is considered a mechanism for assisting students in obtaining independent and self-determined ways of learning to improve efficiency and effectiveness (Davey & Yuenong, 2005; Forrester, Motteram, Parkinson, & Slaouti, 2005; Honkimaki et al., 2004; Manalo, Wong-Toi, & Henning, 1996).

Self improvement is also associated with the notion of learning how to learn incorporating both metacognitive and cognitive strategies (Hall, Leat, Wall, Higgins, & Edwards, 2006). This type of learning is particularly important for students in their first year of study when self-regulation skills may be under-developed (Kaartinen-Koutaniemi & Katajavuori, 2006; Oolbekkink-Marchand et al., 2006). Additionally, self-evaluation is a useful solution to specific problems such as procrastination which is a maladaptive self-regulation strategy and involves failure to complete assigned tasks (Zeidner & Matthews, 2005). Self-evaluation enables integration of affect, cognition and behaviour, thus bringing into focus, for example, the way time and stress mismanagement can impact on the development of anxiety

and poor academic performance (Bozarth, Chapman, & LaMonica, 2004; Derossis et al., 2004; Dundes & Marx, 2006-2007; Zeidner & Matthews, 2005).

This reflective process may develop the mind in terms of enhancing knowledge about how the mind works. In this way a learner can operationalise more potent cognitive strategies in terms of processing information and in enhancing self-reaction strategies (Murray, 1991). Adaptive strategies, however, are likely to require a fairly high level of epistemological understanding for self-management to be a mindful process and therefore useful in dealing with stressful situations in a functional manner (Kuhn & Dean Jr, 2004). As such in the study skills course under investigation students are asked to reflect on their learning both within the classroom setting (through critical thinking, reviewing reading and writing strategies, and evaluating memory and exam strategies) and afterwards in a reflective homework exercise. In the latter, students review their learning and consider future options in terms of action steps.

Study 3: Areas Under Investigation

The Impact of a Study Skills Programme

In the previous discussion, the theoretical aspects and rationales underlying the utilisation of study skills programmes, which in turn embrace the notions of motivation and self-regulation, were established. The discussion suggests that the framework of the generic naturally-occurring programme under investigation has an intuitive, conceptually balanced, and coherent structure, given that its components resonate with the motivation and self-regulation literature and Hirsch's (2001) notion of intervention.

The literature review in the following section aims to connect research methodology with the focus of the present research. This aspect of the present research investigates the area of study skill development using a group-based interface. This utilises Hirsch's (2001, p.7) notion that university students would benefit from "interventions that combine study and learning skills development with cognitive and affective approaches to helping students overcome barriers to

success", and that such interventions need to be cost-effective and resource-efficient for students. At the university in which this study was conducted, there is a naturally occurring study skills programme that aims to incorporate this aspect of Hirsch's multiple intervention model (AUT University, 2007).

In the subsequent sections, the value of group-based study skills programmes are explored in relation to their impact on students' academic achievement and their self-perceptions regarding motivation and self-regulation.

First in terms of students' academic achievement, Hirsch (2001) implies that students who are highly motivated are more likely to access study skills programmes and are therefore more likely to gain greater short and long term academic benefits, especially scholastic success. Students experiencing academic difficulty and having low levels of motivation on the other hand are less likely to attend study skills courses. In the present research, grade average measures were considered as external criteria for appraising the effectiveness of a group-based study skills programme and the contribution of students' motivation to learn as framed in terms of Hirsch's idea of motivation levels.

The literature in this area supports the notion that attendance at a study skills programme is linked to academic achievement (Fraser & Hendren, 2002; Manalo et al., 1996; Onwuegbuzie, Slate, & Schwartz, 2001; Trotter & Roberts, 2006; Tuckman, 2003; Wai-yung & Lai-ling, 1984). In these studies attendees achieved higher grades than their non-attendee peers. The purpose of Tuckman's (2003) study was to appraise a programme designed to teach students cognitive and motivation strategies that can be used to improve academic performance in a higher education setting. Grade point average was used to determine the level of effectiveness of this programme. This programme incorporated a strategy training programme consisting of motivation and individualised training components similar to those recommended by Hirsch (2001). Tuckman's research employed a repeated measures multivariate statistical design, whereby the main independent variable was attendance at a study skills programme and the dependent variables grade and pass rates.

The findings of Tuckman's (2003) study showed that grade point average was significantly higher for students attending the programme than for those not

attending. Researchers that used similar methodology have comparable findings (Manalo et al., 1996; Wai-yung & Lai-ling, 1984). Other studies (Onwuegbuzie et al., 2001) have utilised regression and discriminant approaches by evaluating self-report measures on study habits taken at one instance in time and relating this to academic achievement, while others employed more descriptive approaches (Davey & Yuenong, 2005; Durkin & Main, 2002; Fraser & Hendren, 2002) or incorporated qualitative interviews (Trotter & Roberts, 2006). Further research strategies that could be incorporated when investigating intervention include observations of overt behaviour, think-aloud protocols, traces of mental events and processes, and situational manipulations (Boekaerts & Corno, 2005).

More wide-ranging studies have incorporated a meta-analysis approach to investigating the area of study skills programmes (Hattie, Biggs, & Purdie, 1996; Kobayashi, 2006; Robbins et al., 2004). Hattie et al. (1996) reviewed 51 studies to investigate the value of study skill courses outside the core curriculum. This critique suggested that the best results appeared when study skill programmes utilised metacognitive strategy formation alongside motivational and contextual relevance. The authors proposed that there is a powerful interplay between the core teaching and assessment context and the study skills course, and hence any change resulting from the core content teaching cannot be easily ruled out, especially given the powerful behavioural control systems in place related to assessment. Hattie et al. further found that students appeared to have a significant positive attitudinal shift after attending extra-curricular study skills programmes, but these shifts did not necessarily translate into academic achievement. In addition, Wingate (2006) considers study skills programmes divorced of subject content as being 'bolt-on', and hence prefers 'long-term' embedded approaches intertwined with course content, which are considered difficult to implement but more effective.

In a further meta-analysis (Robbins et al., 2004), study skills were a major consideration in determining academic achievement. This meta-analysis found that many psychosocial factors were significantly correlated with retention, and the strongest of these were academic goals, academic self-efficacy, and academically-related skills. Academic motivation was the strongest predictor of academic achievement. Other important factors were financial assistance and institutional

selectivity. Consistent with other researchers (Hattie et al., 1996; McKenzie & Schweitzer, 2001), Robbins et al. also suggested that motivational and social factors were likely to be involved in generating positive academic attainment. They raised the usefulness of goal theory which defines differences between mastery and performance learning is useful for explaining the complex interplay between the three variables of study skills, motivation and social factors.

The present research aims to consider Hirsch's (2001) assumption that study skills programmes will likely impact on academic achievement by employing a multivariate approach using grade as a dependent variable and study skills course completion and motivation level as the independent variables.

The second aspect of researching the impact of a study skills programme investigates students' self-defined perceptions regarding motivation and self-regulation. According to Hirsch (2001), students who are highly motivated are more likely to attend study skills workshops, and study skills programmes will likely have more impact on highly motivated students than those with lower levels of motivation. This component of the present study investigates students' perceptions about their motivation and self-regulatory changes over time. As such students' perceptions were taken before the study skills intervention and after the intervention prior to their main examination. This type of research will always encounter the problem of attrition (Armstrong & Ashworth, 2000; Morrison, Thomson, & Petticrew, 2003) and it is assumed that this would more likely affect students with low motivation than those with high motivation (Martinez, 2003).

The underlying assumption of Hirsch's (2001) model is that study skills programmes will impact on the way students' perceive their motivation and self-regulation. The Onwuegbuzie et al. (2001) study showed that there were significant relationships between learning study skills and student perceptions about anxiety, social cognition, and self-regulated learning. In a further study by Knox (2005), drawing on a descriptive analysis of the data suggested that a generic transition programme incorporating a study skills programme enhanced students' perceived sense of self-confidence and self-efficacy. The findings by Knox have been corroborated by a similar study, involving a qualitative appraisal of before-and-after questionnaire responses. These determined that students were more confident about

their writing skills after attending an eight week discipline-based study skills workshop (Durkin & Main, 2002). Similar research into the effectiveness of a study skills workshop revealed positive results for medical students in terms of their comments about the improvements in their learning and study strategies and the time they spent on homework tasks (Durak, Törün, Sayiner, & Kandiloglu, 2006). A study utilising a semi-structured interview approach (Christie, Cree, Hounsell, McCune, & Tett, 2006) also found that one of the major students' fears about studying in higher education was about their perceived level of study skills.

In a recent study aimed at inculcating self-regulatory behaviours in students (Maclellan & Soden, 2006), a programme was devised to facilitate the students' learning in the areas of motivation and thinking. The modules utilised a constructivist framework and employed techniques that would engender engagement and collaboration. The programme consisted of readings, lectures and discussion groups. Students were asked to engage in critiquing exercises to facilitate understanding. Cognitive and metacognitive strategies were employed to keep students on task and to think about their thinking. To evaluate the effectiveness of this programme Maclellan and Soden (2006) asked participants to fill in an unpublished self-regulation self-report questionnaire prior to and following the intervention. Using t-tests to compare the before-and-after self-rated scores this research showed increases in students perception with regards to goal setting, strategy implementation and monitoring.

In addition to students' perceptions about motivation and self-regulation, coping with examination situations is also a factor in study skills development and an area of secondary interest in this study. There is considerable literature concerned with the area of test anxiety (Akgun & Ciarrochi, 2003; Durkin & Main, 2002; Entwistle & Entwistle, 2003; Naveh-Benjamin et al., 1987; Remedios et al., 2005; Tsai & Tsai, 2003; Zeidner & Matthews, 2005). The impact of anxiety is likely to be caused by undue self-focus of attention and overattention on outcome expectancies: the consequences of test anxiety can lead to the blocking of knowledge and avoidant behaviours (Zeidner & Matthews, 2005). Naveh-Benjamin et al. (1987) suggest that students differ in terms of test anxiety related to how they process information under pressure. In a more recent study, Remedios et al. (2005) evaluated

before-and-after measures with regards to examination motivation whereby the dependant measures were responses to questionnaires appraising intrinsic motivation and the independent variables were engaging in a test situation (test; non-test) and academic subject (English; Mathematics; Science). Using a multivariate analysis of variance approach, Remedios et al. found that examinations were not instrumental in relation to reducing students' interest in their study-related behaviours. But the semi-structured interviews did suggest that students were experiencing undue feelings of anxiety. In turn this suggests that students' responses may be confounded by other variables such as a desire to rate intrinsic motivation higher prior to the examinations because of the intense investment of time and effort in studying for these examinations. This study further highlights the value of, and need for, more mixed-model research using both interviews and quantitative methods of investigation (Siragusa & Dixon, 2006).

Accordingly, highly motivated students are probably more inclined to learn ways to cope with stress related to test situations than their less motivated peers. In a recent study, Akgun and Ciarroch (2003) utilised a two-way analysis of variance procedure to investigate the notion of learned resourcefulness. In this study, response measures about learned resourcefulness were taken using a self-report questionnaire, grade scores were obtained and stress was evaluated using a stress questionnaire (for details see, Akgun & Ciarrochi, 2003). Students were categorised in terms of gender, academic stress (low; high) and resourcefulness (low; high). Students with high levels of learned resourcefulness (the antithesis of learned helplessness) were able to cope with the student-related stress far better than their less resourceful peers. It was suggested that highly resourceful students use various self-regulatory methods to limit anxiety, and the notion of learned resourcefulness could be a part of the repertoire used by motivation Level 3 students (Hirsch, 2001). These particular students seem to be more likely to seek assistance if they encounter academic difficulty and when preparing for examinations than students with lower levels of motivation.

Surprisingly, there is little research that directly links the areas of students' perceptions about motivation and self-regulation with the implementation of study skills programmes. This has therefore become one of the objectives of the present

research. The result is an appraisal of an underlying assumption of Hirsch's (2001) multiple intervention model. The appraised assumption is that highly motivated students' levels of self-perception with regards to motivation and self-regulation are likely to be enhanced following completion of study skills programmes compared to their less motivated peers.

Access to Academic Advisory Services

The final area of interest to the present study was to explore student learning in relation to individualised interventions by embracing an aspect of Hirsch's (2001) formulation. The present study provided an opportunity to investigate students' access strategies to one-to-one academic advising. Hirsch's model suggests that highly motivated students are more likely to access these services than other students. Hirsch goes further and suggests that if highly motivated students actually experience academic difficulty or expect to experience academic difficulty they are more likely to access academic advisory services than their less motivated peers with similar academic experiences. The following review considers two areas of investigation, namely the associations between motivation level, and intended and actual usage of academic services, and secondly, the interplay between students experiencing academic difficulty, motivation level and actual use of academic advisory services.

The first area of investigation considers the associations between motivation level, and intended and actual use of academic services. With this in mind, several theoretical frames of reference can be used to consider students' motivational rationale for accessing academic advising services. First, expectancy-value theory demonstrates the value students place on such services and the expectancies that they have in terms of the quality of the service (Eccles & Wigfield, 2002). As such, students will incorporate cognitive and affective mechanisms that drive their decision making behaviours and processes (Leonard et al., 1999; Markus & Wurf, 1987; Pintrich, 2003). Second, self-worth theory is a fruitful model as it suggests that students make decisions based on their self-evaluations on level of competency (Covington, 2000a; Rhodewalt & Vohs, 2005). As such, students may not choose to access academic advisory services as this may lower their sense of self-worth and be a form of admittance of a low level of competency, therefore a

form of avoidant behaviour. In Hirsch's (2001) view, students with high levels of motivation may have insight into what constitutes competency and are more likely to seek academic assistance if they have academic problems, because they see the seeking behaviour as being a competent action, implying a problem-solving approach to learning.

A further aim of the present study is to investigate motivation level and evaluate the assumption that students with higher levels of motivation will access academic advisory services more frequently than students with lower levels (Hirsch, 2001). Accessibility of and access to academic advisory services is considered an important factor in terms of social and academic integration with the educational institution (Higginson, 2000; Kern & Engels, 1996; San Francisco State University, 2006; Smith, 2005; White, 2000; Wilson, 2004; Winston Jr & Sandor, 2002; Zepke & Leach, 2005). Reviewing the literature in the area of integration and adaptation, Zepke and Leach (2005) suggest that the process of integration relies on whether or not students acknowledge the cultural capital of the university. The culture of the university is defined by its set of norms, values, beliefs, assumptions and practices, and if students are able to adapt to the culture of the university then they will be likely to integrate more successfully. A part of this adaptation is the use of the resources being offered at universities such academic advisory services (Quinn, Muldoon, & Hollingworth, 2002; Zepke & Leach, 2005).

Studies in this area of research have typically evaluated students' perceptions of the usefulness of academic advisory services through surveying methods (Grant-Vallone, Reid, Umali, & Pohlert, 2003-2004; Smith, 2004; Quinn et al., 2002), case studies (Stewart, Norwood, Ezell, & Waight, 2006), surveys and interviews (Suresh, 2006-2007), and focus groups (Smith, 2002). Hirsch's (2001) notion of motivation levels (Level 1; Level 2; Level 3) provides an opportunity for extending and modifying this area of research through an examination of the levels of association between motivation level and intended and actual use of academic advisory services.

A further part of this research area has focused on the interplay between students experiencing academic difficulty, motivation level and actual use of

academic advisory services. As an extension of the previous discussion, several conceptual frameworks can be used to explain students' decision-making processes when accessing academic advisory services, in relation to their perceived levels of motivation and experience of academic difficulty. The first concept relates to students' views about the value of these services, and their self-representations with regards to formulating this sense of value (Markus & Wurf, 1987). Second, the ideas posited about goal-orientations and students' use of learning strategies or goal-orientations will determine the likelihood of accessing these services, that is, whether they use approach or avoidant strategies to learn (Covington, 2000a; Covington & Müeller, 2001; Eccles & Wigfield, 2002; Elliot & Covington, 2001). The third concept is that students' expectancies and values will likely influence their beliefs about the utility of these services (Leonard et al., 1999; White, 2000). Fourth, the theory about the willingness of students to accept realistic information with regards to their levels of ability and skill is a useful frame of reference, as it explores what it means to be an effective student (Collier & Callero, 2005; Greve & Wentura, 2003; Ommundsen et al., 2005; Wentura & Greve, 2005).

Hirsch's (2001) notion of motivation levels allows the present research to address levels of association between academic difficulty, motivation level and actual use of academic advisory services. This is a modification on the prevailing approaches to this area of investigation as cited above that include survey instruments (Grant-Vallone et al., 2003-2004; Smith, 2004; Quinn et al., 2002), case studies (Stewart, Norwood, Ezell, & Waight, 2006), surveys and interviews (Suresh, 2006-2007), and focus groups (Smith, 2002).

Propositions for Study 3

Hirsch's (2001) multiple intervention model suggests that students who are classified as motivation Level 3 will likely show an increase in their end-of-semester grades and perceptions regarding their motivation and self-regulation following completion of a generic study skills course compared with their lower level peers (Levels 1 and 2). In addition, Hirsch's model implies that accessing academic advisory services (actual; intended) will be associated with self-defined levels of

motivation. Moreover, actual access of academic advisory services will be associated with self-defined levels of motivation and academic difficulty. This contributed to the construction of four propositions:

Proposition 3a

Students who have higher grade averages at the end of the semester will likely have higher self-defined motivation levels and have attended a study skills course.

Proposition 3b

Students who have attended a study skills course will likely enhance their self-perceptions in relation to motivation and self-regulation as determined by their MSLQ and LASSI measures more than non-attendees and this will be more pronounced for students with high motivation levels than lower level peers.

Proposition 3c

Students with high self-defined motivation levels will more likely intend to and actually access academic advisory services than their peers.

Proposition 3d

Students who have higher self-defined levels of motivation and academic difficulty are likely to have accessed academic advisory services more frequently than their peers.

Chapter Summary

In this chapter, Hirsch's (2001) multiple intervention model, student learning and university academic advising are discussed in conjunction with pertinent academic literature. The chapter has reframed Hirsch's model, by focussing on three areas of investigation that aim to apply the motivational and self-regulatory themes embedded in this model. Study 1 is the first area of investigation, and begins with a conceptual discourse with regards to the rationale of using interviews in the context of the practice and research of academic advising, followed by a more focused

discussion on the scope of the present research, namely students' descriptions of their problems and readiness for study, and students' explanations of their study and learning practices.

Similar expositions are made with regards to Studies 2 and 3 in the areas of assessment and intervention. The scope of the assessment component of the present research centres on the usefulness of Hirsch's three-stage theory, the stability of perceived levels of motivation over time and the prognostic potency of students' perceptions of motivational beliefs and self-regulatory strategies in predicting end-of-semester grades. The scope of the intervention component of the present research addresses the areas of the impact of group-based study skills programmes and access to individualised academic advising services.

Finally, the objectives of the research are formalised into three sets of propositions which aim to guide the methodology of the present inquiry.

CHAPTER 3: METHODS

The present research incorporates three studies that aim to apply key motivational and self-regulatory aspects of Hirsch's (2001) multiple intervention model to researching the areas of student learning and academic advising. Study 1 addresses the use of students' interview data; Study 2 aims to define levels of motivation and readiness for study; and Study 3 focuses on the impact of a study skills programme and students' access to academic advisory services.

The present research aims to utilise the three investigations as an integrative model of enquiry. The first study addresses the need to gather personalised information to access and collate the individualised student learning experience in terms of their thoughts, feelings, and behaviours. This information creates an intimate and experiential setting that can then be explored through more expansive group-based exploration, which forms the basis of Study 2. Study 2 provides useful information that can be generalised to the university student population as it gathers data from a large sample and uses standardised and empirically sound instruments for collecting students' details in reference to their motivational and self-regulatory beliefs. Study 2, therefore, creates the groundwork for intervention, which is the foundation of Study 3. This final study examines two aspects of educational intervention available to academic advisors, namely group-based study skills programmes and individualised one-to-one consultations. The three studies thus complement each other and form a holistic picture of the academic advising process. In the following sections, the methodology for each study is described in terms of purpose, participants, procedure, measures and data analysis.

Study 1: Students' Interview Data

Purpose

The objective of the first study was to gather interview data from a student sample. Collection, collation and interpretation of students' commentaries were condensed in terms of four components that included:

1. students' problem descriptions.

2. students' perceptions of their readiness for study.

3. students' explanations with regards to their learning and study practices.

4. students' commentaries linked directly with Hirsch's (2001) prescribed interventions systems.

Participants

Fourteen participants (10 female, 4 male) voluntarily participated in Study 1, which was conducted at AUT University, Auckland, New Zealand. The participants were recruited from a larger sample of students who had contributed to a survey study for the present research in 2006. The average age of the sample was 27.79 years ($SD = 9.07$). Students from several ethnic groups (5 European, 1 New Zealand Māori, 2 Pacific Islanders, 6 Asian) contributed to the study. They were drawn from various faculties (5 Applied Humanities, 5 Business, 2 Design and Creative Technologies, 2 Health and Environmental Sciences). More detailed information about this sample can be found in Tables 19a and 19b in Appendix B.

The participants who agreed to take part in the study were considered to be a diverse mix of students in terms of ages, academic qualifications, ethnicity and gender that qualitatively reflected the student population. Five Asian female students who volunteered for the study were not interviewed as it was deemed that their ethnic and gender groupings were adequately represented. No students identifying as motivation Level 1 registered for this phase of the study.

Procedure

Research Paradigm

This part of the present research set out to collect interview data with the aim of clarifying some of the underlying issues presented by students. The interview system employed a meaning-centred approach whereby interviewer and interviewee were involved in a collaborative exercise allowing participants to gain meaningful knowledge and understanding whilst providing meaningful and informative data for the interviewer (Burman, 1994; Kvale, 1996). The meaning-centred approach is based on Kvale's notion of the interview as a dialogue between two people about an issue of mutual interest with a view to unearthing meanings and perceptions related to known themes. There is, thus, a strong phenomenological aspect to this interview research process, given the intent is to understand human phenomena and to provide descriptions about students' experiences using their narratives of their experience as reference material (Bentz & Shapiro, 1998).

Timing

This study was conducted during the first semester in 2006. At the beginning of the semester students were asked to fill in a demographic survey (Appendix A), the Learning and Study Strategies Inventory (LASSI, Weinstein et al., 2002), and a shortened version of the Motivated Strategies for Learning Questionnaire (MSLQ, Pintrich & De Groot, 1990). This was followed up at the end of the semester with an invitation to complete the same version of the LASSI and MSLQ, for a second time, and an invitation to participate in an interview about study habits. Interviews were conducted by the researcher in collaboration with interviewees at the end of the first semester in 2006 before the final examination period.

Ethical Considerations

Ethics approval for the collection and use of data was obtained from the Auckland University of Technology Ethics Committee (21 October 2004 AUTEC Reference number 04/188 [see Appendix A]). The key ethical considerations included, but were not limited to, informed and voluntary consent, respect for rights of privacy and confidentiality, minimisation of risk, truthfulness (including limitation of deception), social and cultural sensitivity (including commitment to the principles of New Zealand's founding document, the Treaty of Waitangi/Te Tiriti O Waitangi (for details see, New Zealand Ministry for Culture and Heritage, n.d.), research adequacy, avoidance of conflict of interest, respect for vulnerability of some participants, and respect for property (including University property and intellectual property rights) (AUT University Ethics Committee, n.d., para 5).

To protect participants' privacy and confidentiality of information, the researcher changed some identifiable features that could have led to detection but retained the veracity of the responses. The researcher used a code number and did not identify participants' specific demographic or student-related details such as country of origin or programme of study that could lead to detection of the participant's identity.

Sampling

The aim of the study was to use a criterion sampling method. All participants had completed a quantitative survey about their perceptions with regards to motivation and self-regulation. As such, references to their responses in these questionnaires can be made (Patton, 1990; Wengraf, 2001). In terms of their responses to the questionnaires, this sample was representative of the larger sample of students who had contributed to a survey for the present study in 2006 (for details see, Table 20 in Appendix B).

However, it is acknowledged that this may also be seen as convenience sampling and as such the responses, as stand-alone research evidence, were considered with caution as it is possible that this sampling system could contaminate interpretation of the depth of the research experience (Polkinghorne, 2005).

Measures

The researcher employed one-to-one (or dyadic) interviews as the main system for collecting data (Berkowitz, 1997; Burman, 1994; Lichtman, 2006; Polkinghorne, 2005; Urdan & Mestas, 2006). Participants were encouraged to talk openly about their perceptions regarding their study experiences. The duration of the face-to-face interviews ranged from 30 minutes to one hour. A tape recorder was used to record the full dialogue and extensive notes were taken so that the essence of the discussion could be recorded. Using semi-structured interview techniques, the researcher communicated with participants within the framework of the prepared interview questions in line with the techniques and ideas posed by Hirsch (2001).

Four domains of investigation were used to classify the elicitation of responses related to motivation and self-regulation. These consisted of students' problem descriptions, students' perceptions of their readiness for study, students' explanations with regards to their learning and study practices, and students' commentaries that were directly linked with Hirsch's (2001) prescribed interventions systems. While there is some explicit and implicit overlap between the four domains, they evidence sufficient uniqueness. The researcher's rationale behind each probe is presented in parentheses after the question.

Students' problem descriptions. Four probe questions were used to guide this area of investigation, namely,

(i) "Do you have any problems with your academic study?" [GENERAL],

(ii) "Are you undergoing any distress with regard to your chosen study? If so, can you tell me about this?" [EMOTION],

(iii) "What areas of study do you think you have problems with?" [CONTENT], and

(iv) "Are you having problems with learning? If so, what makes it hard for you to learn?" [PROCESS].

Students' perceived readiness for study. Four probe questions were used to guide this area of investigation, namely,

(i) "Can you tell me about your readiness or motivation for your chosen course of study? How ready do you believe you were for university study?" [GENERAL],

(ii) "Was it your choice to study in your programme? If not, who convinced you that it would be a good idea to study in this programme?" [SELF OR OTHER'S CHOICE],

(iii) "Can you tell me about your motivational level? Do you feel very motivated in/with your study?" [MOTIVATION], and

(iv) "Did you have any job experiences related to your course of study? If so, what were these?" [PRIOR WORK EXPERIENCE].

Students' explanations with regards to their learning and study practices. Eleven probe questions were used to guide this area of investigation, namely,

(i) "Would you like to know how to change your study patterns?" [MOTIVATION AND SELF-REGULATION - WILLINGNESS TO CHANGE],

(ii) "Do you feel there is anything you can do about your study behaviour? Are there any circumstances beyond your control affecting your study?" [MOTIVATION AND SELF-REGULATION - LEVEL OF CONTROL],

(iii) "How do you feel when you are studying for your tests and examinations?" [MOTIVATION AND EMOTION - ANXIETY],

(iv) "Can you tell me about your emotional well-being?" [EMOTION],

(v) "Can you describe your general willingness to do your study?" [MOTIVATION - WILLINGNESS TO STUDY],

(vi) "Do you enjoy your study? Do you see it challenging? Are you interested in mastering the subject? Are you curious about learning?" [MOTIVATION - LEVEL OF INTEREST]

(vii) "How do you study for tests and examinations?" [SELF-REGULATION - TESTS AND EXAMINATIONS],

(viii) "How often do you study? (every night?) How many hours did you study this week?" [SELF-REGULATION - STUDY TIME INVESTMENT],

(ix) "Where would you see your study strengths?" [SELF-REGULATION – PERCEIVED STRENGTHS],

(x) "Can you describe your learning strategies?", "Can you describe the ways in which you manage your learning process?" [SELF-REGULATION - PROCESS], and

(xi) "Do you think about your successes or failures in your study? Do you constantly look to improve your performance? Do please explain?" [SELF-REGULATION - CRITICAL REFLECTION].

Students' commentaries linked directly with Hirsch's (2001) prescribed interventions systems. Four main probe questions were used to guide this area of investigation. Two probe questions (ii and iv) included three further extensions to connect the probe questions explicitly to Hirsch's ideas. The questions consisted of

(i) "What strategies have you used in the past to improve your motivation?" [MOTIVATION - PROCESS],

(ii) "Have you considered or used any of the following motivation strategies? [extensions included looking at your perceived value of your study, developing a sense of control and confidence with regards to your study, and maintaining motivation over time] If so, can you please explain?" [MOTIVATION - PROCESS],

(iii) "What strategies have you used in the past to improve your study skills?" [SELF-REGULATION - PROCESS],

(iv) "Have you considered or used any of the following study strategies? [extensions included time and stress management strategies, avoiding procrastination, and study skill development, e.g., concentration and attention, classroom behaviour, reading, memory, or test-taking strategies] If so, can you please explain?" [SELF-REGULATION - PROCESS].

Data Analysis

Data analysis focused on identifying content themes and patterns in the notes, which were checked against audio commentaries from the interviews. Data were collated with respect to the patterns that emerged in the interviews (Burman, 1994; Lichtman, 2006). This process was reflexive, cyclical and iterative in terms of refining the data into meaningful thematic units and exposing particular themes (Lichtman, 2006). Kvale's (1996) iterative process was employed, by first condensing the interview data into meaningful themes, following this by a categorisation process that required narrative structuring, leading on to interpretation and the use of ad hoc methods.

In this study, Hirsch's (2001) central themes were used as a deductive map for the interview commentaries, so that connection between the interview data and Hirsch's ideas could be established. As such, to create meaning from the commentaries, data were condensed and coded as themes emerged in line with Hirsch's central themes. Given that no motivation Level 1 students volunteered for this part of the study, a 2 (high motivation; low motivation) x 2 (no academic difficulty; academic difficulty) matrix was created to provide a meaningful categorisation process that guided the interpretation, which was then considered in terms of sublevel orders of comparison (see Table 1 below). Defining sample statements for the combinations were presented to allow for connections to the qualitative narrative. In addition, response indices (RI = number of meaningful comments/number of students) were generated to allow for comparison between combination options.

Table 1

Domains of Interest with the Different Comparison Combinations

Domain of interest	First-order comparison	Second-order comparison	Third-order comparison
Students' problem descriptions	Motivation level; Academic difficulty	Self-regulation; Motivation	
Students' perceptions of their readiness for study	Motivation level; Academic difficulty	Ready for study; Not ready for study	
Students' explanations about their learning and study practices	Motivation level; Academic difficulty	Approach; Avoidance	External; Internal
Students' commentaries linked to Hirsch's (2001) prescribed interventions systems	Motivation level; Academic difficulty	Approach; Avoidance	External; Internal

Study 1 principally aimed to attend to the subjective experiences of students studying at a university with respect to their learning. A meaning-centred approach was implemented to reflect the interview findings of this study in terms of the ideas from Hirsch's (2001) multiple intervention model. In addition, motivational and self-regulatory aspects of students' perceptions could be viewed from personal narratives and understandings.

Study 2: Defining Levels of Motivation and Readiness for Study

Purpose

The objective of the second study was to link students' self-defined motivation levels and evidence of academic difficulty with self-report measures obtained from student responses to the LASSI and MSLQ. In addition, the stability of students' perceptions of motivation levels over time was scrutinized. Furthermore, the phase appraised the value of students' perceived motivation and self-regulation scores as predictors of end-of-semester grade averages and retention measures.

Participants

Three hundred and seventeen participants (241 female, 76 male) voluntarily participated in the study, which was conducted at AUT University, Auckland, New Zealand. The average age of the sample was 24.76 years ($SD =$ 9.244). Two hundred and two participants (63.7%) were in their first year of study. The sample consisted of university students in the faculties of the Applied Humanities, Business, Design and Creative Technologies, and Health and Environmental Sciences. More detailed information is presented in the sampling subsection below.

Procedure

Research Paradigm

Study 2 has three components. First, self-defined motivation level and measures of academic difficulty are compared with indices of motivation and self-regulation. Second, stability of self-defined motivation is considered over time. Third, both the self-defined motivation levels and self-report questionnaire measures are compared with grade average and retention measures.

Self-defined motivation level and measures of academic difficulty (at the beginning of the semester only) are measured as categorical subject variables that is, as subject groupings that simulate independent variables. While the self-

report computations of motivation and self-regulation are continuous variables used in the first analysis as dependent measures and in the third as predictor variables. In the second analysis, self-defined motivation level is compared on two occasions (at the beginning and end of the semester) to assess the level of association between each category across the two time periods. In the third analysis, the three categories of self-defined motivation levels are transformed into two dichotomous variables to enable their use as predictor variables in this correlational analysis, together with the self-report measures from the MSLQ and LASSI (at the beginning of the semester only) to predict grade average and retention measures at the end of the semester.

These analyses do not involve any variables explicitly manipulated by the researcher, thus the paradigm fits the natural experimental research paradigm (Shadish, Cook, & Campbell, 2001). Shadish et al. propose that natural experiments lack random assignment and rely on self-selection. The two groups were naturally selected into self-defined motivation levels (Level 1; Level 2; Level 3) and academic difficulty[1] (passed all papers; failed at least one paper; data unavailable). Hence, selection was based upon students' natural selection processes. This design paradigm was chosen as it incorporated natural selection processes, thus promoting both theoretical and practical implications for the area of academic advising.

Timing

Study 2 was conducted over a one and half year period at three different times (Semester 1 of 2005; Semester 2 of 2005; Semester 1 of 2006). At the beginning of each semester students were asked to fill in a demographic survey (Appendix A), the LASSI (Weinstein et al., 2002) and a shortened version of the MSLQ (Pintrich & De Groot, 1990). This was followed up at the end of the

semester with a further invitation to complete the same versions of the LASSI

and the MSLQ. At the beginning of the semester students were asked to fill in

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[1] 'Data unavailable' refers to students who enrolled in the course but withdrew afterwards, or that their grades were not made available until the end of the following semester.

the questionnaires in face-to-face classroom environments and collection of data occurred during class time. At the end of the semester (in Week 10), questionnaires were mailed to all participants with a self-addressed envelope, and a reminder was sent to those students who did not reply on the first occasion after two weeks. The researcher collected participants' completed questionnaires.

Ethical Considerations

As previously mentioned, ethics approval for the collection and use of data was obtained from the Auckland University of Technology Ethics Committee (21 October 2004 AUTEC Reference number 04/188 [see, Appendix A]).

Sampling

The sample comprised of self-selected volunteers chosen from several faculties at the university and their relative contribution to the sample included: (1) Applied Humanities [62%]; (2) Business [20%]; (3) Design and Creative Technologies [8%]; and (4) Health and Environmental Sciences [10%]. The Faculty of Applied Humanities oversees education, social sciences, hospitality and tourism, languages, and public policy. The Faculty of Business manages business administration, international business, marketing, advertising, computing business applications, management, employment relations law, economics, accounting and finance. The Faculty of Design and Creative Technologies manages art and design, communication studies, computer and information studies, engineering, and mathematical sciences. Finally, the Faculty of Health and Environmental Sciences includes applied sciences, health care practice, public health and psychological studies, rehabilitation and occupation studies, sport and recreation, biotechnology, and earth and oceanic studies (AUT University, 2006a). The students in this sample were also spread across four levels of study: (1) pre-degree certificate [29%]; (2) pre-degree diploma [8%]; (3) degree [58%]; and (4) postgraduate courses [4%].

Table 2 below illustrates the comparability between this study's sample group and the university student population (AUT University, 2006a). Even though the aim of this study was not to create an ideal sample in terms of

representativeness (Shadish et al., 2001), it is useful to have a sample that is not a bizarre group and thus interpretations about underlying relations observed in this sample can be generalised to university students in general.

Table 2

Comparison of Percentage Breakdown for Demographic Factors Between this Study's Sample and the University Population

Demographic variable	Sublevel	Sample (n=317)	University (N= 22976)
Gender	Male	24	37
	Female	76	63
Age groups	> 24 years	67	58
	25 - 39 years	23	28
	< 40 years	10	14
Ethnic groups	European	32	46
	Māori	3	9
	Pacific Island	12	9
	Asian	36	25
	Other	17	11

Measures

In line with the ethics approval for the collection and use of data [see, Appendix A], data were obtained (with students' permission) from students directly or through ARION Support Services (AUT University's student information service).

Dependent (continuous) measures. For this phase, four dependent measures were identified. Self-report measures from the MSLQ and LASSI were obtained, and grade average and retention computations compiled.

The LASSI and MSLQ both aimed to evaluate participants' self-perceptions about their level of involvement in motivational and self-regulatory strategies. The psychometric properties of the LASSI and MSLQ have been reviewed in chapter 1. Essentially, high computed scores for the LASSI or MSLQ components suggest that the participants are able to effectively study in relation to the motivation or self-regulation domain being appraised, and low scores indicate the converse.

The LASSI (for more details see Weinstein & Palmer, 2002; Weinstein et al., 2002) has 80 items; the instrument appraises students' self-perceptions about their use of learning and study strategies associated with 10 subscales and three components. Each LASSI item measures responses on a five-point counterbalanced response format ranging from 'Not at all typical of me' to 'Very much typical of me'. The 10 subscales include anxiety, attitude, concentration, information processing, motivation, self-testing, selecting main ideas, study aids, time management and test strategies. These 10 subscales can be represented as three components of will (anxiety, attitude, and motivation), skill (information processing, selecting main ideas, and test strategies) and self-regulation (concentration, self-testing, study aids, and time management). Some sample items are presented below (for full details see, Weinstein et al., 2002). The Weinstein et al. subscale associated with the item is presented in parentheses after the sample item.

Sample items for the will component include:

- "I get discouraged because of low grades" [ANXIETY].

- "I am able to study subjects I do not find interesting" [ATTITUDE].

- "I set high standards for myself in school" [MOTIVATION].

Sample items for the skill component include:

- "I try to find relationships between what I am learning and what I already know" [INFORMATION PROCESSING].

- "During a demonstration in class, I can identify the important information I need to remember" [SELECTING MAIN IDEAS].

- "I review my answers during essay tests to make sure I have made and supported my main points" [TEST STRATEGIES].

Sample items for the self-regulation component include:

- "I concentrate fully when studying" [CONCENTRATION].

- "I stop periodically while reading and mentally go over or review what was said" [SELF-TESTING].

- "I go to the learning development centre for help when I am having difficulty learning the material in a course" [STUDY AIDS].

- "I spread out my study times so I do not have to cram for a test" [TIME MANAGEMENT].

A refined version of the MSLQ version (Pintrich & De Groot, 1990) was incorporated into this study. This version has 44 items and five subscales that include self-efficacy, intrinsic value, test anxiety, cognitive strategy use, and self-regulation. These five subscales were classified into two components: motivational beliefs (first three subscales) and self-regulated learning strategies (the last two subscales). This shortened version was preferred to the 81-item version (Pintrich et al., 1991) as it encapsulated the areas of interest related to the present study. Other studies have used similar shortened versions (Ackerman & Beier, 2006), and the refinement complies with the administration instructions of the authors (Pintrich et al., 1991), who suggest that the MSLQ can be used either in its entirety or in part as considered appropriate by the researcher or teacher.

Each MSLQ item measures responses on a five-point counterbalanced response format (a Likert scale) ranging from 'Never true of me' to 'Always true of me'. Each of the five options were anchored to comply with reviewers' comments of the MSLQ (Benson, 1998; Gable, 1998). The 5-Likert option was preferred to the 7-Likert option as it was comparable with the LASSI response

options and this preference is consistent with other studies (Linnenbrink, 2005). Some sample items are presented below (for full details see, Pintrich & De Groot, 1990). The Pintrich and De Groot subscale associated with the item is presented in parentheses after the sample item.

Sample items for the motivational beliefs component include:

- "Compared with other students in this class I expect to do well" [SELF EFFICACY].

- "I prefer class work that is challenging so I can learn new things" [INTRINSIC VALUE].

- "I am so nervous during a test that I cannot remember facts I have learned" [TEST ANXIETY].

Sample items for the self-regulated learning strategies component include:

- "When I study for a test, I try to put together the information from class and from the book" [COGNITIVE STRATEGY USE].

- "I ask myself questions to make sure I know the material I have been studying" [SELF-REGULATION].

Reversals of reverse scored items were computed (Pintrich & De Groot, 1990; Pintrich et al., 1991; Weinstein & Palmer, 2002). In addition, data entry was checked for accuracy by evaluating descriptive statistics, such as range, maximum-minimum points, means and standard deviations. Moreover, data were reviewed to negate the possibility of habitual responding (e.g., checking column ticking for subjects using one Likert scale option only).

Grade averages and retention computations were also formulated. For grade averages, letter grades were converted to a numerical scale, which is common practice for these types of analyses[2] (Edwards, 2005).

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[2] The conversions were as follows, A+ = 11, A = 10, A- = 9, B+ = 8, B = 7, B- = 6, C+ = 5, C = 4, C- = 3, D = 2, E = 1, did not complete = 0.

Retention computations were developed by utilising the New Zealand Ministry Education formula (Scott, 2003), thus creating an estimate of success in completing the papers taken for that semester. In this study, retention (%) = (number of passes in a given semester/number of papers taken in a given semester) x 100.

In summing up, the dependent (continuous) measures were the questionnaire response scores for the two elements of the MSLQ and the three components for the LASSI (on repeated occasions, namely, the beginning and end of each semester), and the grade average and the retention computations.

Covariate measures. A check was made to see if the demographic variables, gender, ethnicity, age, and education level would influentially impact on the analyses given the documented relationship with motivation and these variables (Dermitzaki & Efklides, 2001; Lavery, 1999; Omoteso, 2006; Pintrich & Schunk, 2002), and in particular age (Chiang, 2001; Dermitzaki & Efklides, 2001; Graham, 1990; Heckhausen & Dweck, 1998; Hoskins & Hooff, 2005; Pintrich & Schunk, 2002). After investigating the demographic information provided by the participants (presented in the Results chapter), age was considered a significant variable that might impact on the results and hence was chosen as a concomitant variable (or covariate) for the initial multivariate analyses (Ferguson & Takane, 1989; Johnson & Wichern, 1998).

Independent (categorical subject) variables. Two independent measures were acknowledged.

The first categorical variable was the classification of students into the three motivation levels (Level 1; Level 2; Level 3). This classification was computed by using students' response data based on Question 13 from the background information sheet (see Appendix A). Motivation Level 1 students were classified according to the response options, 'Coerced into it by significant others (e.g., parents, friends)' and 'Did not know what else to do, or had nothing better to do'. Motivation Level 2 students were grouped with respect to response options, 'Needed a qualification for work', 'Was not given entry into the degree programme', and 'Considered the present course as a second choice

option'. Motivation Level 3 students were categorised from the response option, 'Was interested in the course of study, and considered it as a first choice option'. Students were asked to check one preferred option only.

The second categorical variable involved collapsing the retention variable into a simple categorical measure of academic difficulty (passed all papers; failed at least one paper; data unavailable). Thus, academic difficulty was defined by successful completion of papers at the end of each semester; if students failed one or more papers this was evidence of academic difficulty, however if students passed all their papers this was evidence of no actual academic difficulty. Moreover, due to withdrawals from the course and being enrolled in a full academic year course (when data were collected at the half-year stage), some students were classified as data unavailable. Similar definitions (failure or partial failure of a programme of study) with regards to academic difficulty have been recently used in the literature (Cleland, Arnold, & Chesser, 2005; Rousseau & Drapeau, 2003; Sayer, Saintonge, Evans, & Wood, 2002), and this definition appears to be linked with the notion of successful completion of study or qualification and other retention variables (Scott, 2003). Other definitions relate to aspects of grade achievement (Cleland et al., 2005; Yang & Sharpe, 2002), teacher evaluation (Crooks & Peters, 2005), parent appraisal (Crooks & Peters, 2005), and self-evaluation (Cleland et al., 2005).

In summary, there were two independent variables used in this study; motivation level (Level 1; Level 2; Level 3) and evidence of academic difficulty (passed all papers; failed at least one paper; data unavailable).

Data Analysis

For Study 2, three sets of analyses were computed.

First, to appraise Hirsch's three-stage theory, a 3 (motivation level) x 3 (academic difficulty) MANCOVA (multiple analysis of covariance) in conjunction with the MSLQ and LASSI component measures was performed on the data set with age as the covariate. The next step was the implementation of two follow-up one-way MANOVAs (multiple analysis of variance) for

motivation level and academic difficulty separately in conjunction with the MSLQ and LASSI component measures. Post-hoc analyses were then performed to appraise statistical differences between the motivation levels (Level 1; Level 2; Level 3) and academic difficulty categories (passed all papers; failed at least one paper; data unavailable). Finally, two one way (motivation level and academic difficulty) MANOVAs in conjunction with the 10 LASSI subtest measures were performed. In the Statistical Package for the Social Sciences or SPSS (Field, 2005), the multivariate analyses of variance (MANOVA) and covariance (MANCOVA) analyses routinely yield 4 test results (Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root). Unless otherwise stated, the test that was used routinely in this study was Wilks' Lambda (Johnson & Wichern, 1998).

Second, a categorical analysis was performed on the stability of motivation level over time, using a 3 (motivation level at beginning of semester) x 3 (motivation level at end of semester) chi-square approach.

Third, two multiple regression analyses were performed in terms of investigating whether or not the transformed motivation level calculations, and MSLQ and LASSI component measures (obtained at the beginning of the semester) were able to predict the grade average and retention computations (obtained at the end of the semester). To discount temporal effects similar analyses were performed on the post-measures immediately prior to the examination period.

Primarily, the statistical components of Study 2 aimed to extend the qualitative data to investigate student learning, academic achievement and academic advising using a quantitative approach, and apply the essential characteristics of Hirsch's (2001) multiple intervention model. Additionally, motivational and self-regulatory psychometric components of his model were evaluated.

Study 3: Considering the Impact of a Study Skills Programme and Access
to Academic Advisory Services

Purpose

The third phase had two objectives. First, it sought to evaluate the impact of a generic study skills programme. The initial analyses examined students who persisted in the study as compared to those students who did not complete the study with respect to their responses to the LASSI and MSLQ. The next area investigated students' end-of-semester grade averages and student responses to the LASSI and MSLQ were used as dependent measures. In addition, the levels of association between the pre and post self-defined motivation levels, and study skills course completion were inspected. Second, students' intentions to access academic advisory services and their actual use were investigated.

Participants

Study 3 used the same sample participants as in Study 2.

Procedure

Research Paradigm

This phase of the research study aimed to investigate relationships between categorical and continuous variables. As noted by Shadish et al. (2001) natural experiments lack random assignment and rely on self-selection. The comparison groups were naturally selected in terms of participating in a generic study skills course (completion; multiple course completion; non-completion), and intended and actual usage of the academic advisory services (use; non-use). Moreover, investigations carried out on those students who completed the two sessions (beginning and end of semester) as compared to those who only participated in the beginning semester session. Selection was therefore based

upon student choice. These variables were not explicitly manipulated by the researcher; the paradigm therefore fits the natural experimental research paradigm (Shadish et al., 2001) and thus offers both theoretical and practical implications for the area of academic advising.

Timing

The same timing was applied to this phase as for Study 2 with respect to distribution and collection of questionnaire responses. In addition, during the first session, at the beginning of the semester, students were informed of a free generic study skills course (and other more specific academic courses) that they could voluntarily enrol in during the semester. The study skills course option will be discussed in more detail shortly.

Ethical Considerations and Sampling

This study considered the same ethical considerations as outlined for Study 2. In addition, the sampling procedures also followed those outlined for Study 3.

Measures

As for Study 2, data were obtained from students directly or through ARION Support Services.

Continuous measures. As for Study 2, MSLQ and LASSI component scores, and grade average and retention computations were used.

Covariate measures. For Study 3, no covariate measures were used in the analyses.

Categorical subject variables. As with Study 2, self-defined motivation levels (Level 1; Level 2; Level 3) and academic difficulty (passed all papers; failed at least one paper; data unavailable) were incorporated in the analyses.

In addition, successful completion of a generic study skills course variable (completion; multiple course completion; non-completion) was used. Students can attend these courses voluntarily and all students are notified about

these courses by means of: the post (in their enrolment packs), student mentors, their lecturers, other faculty personnel, and/or infomercials. Students were reminded at the first data collection session about the free availability of these courses. These courses are of several types and act as intervention mechanisms or change agents. The generic study skills course aims to develop study skills, memory, reading, and writing. Its core elements include critical thinking, learning theories, reading academic texts, taking and making useful notes, memory techniques, time management, planning assignments, plagiarism and referencing, writing practice, and test and examination skills (AUT University, 2007). Other short courses specialise in areas such as writing, oral presentation, group work, mathematics and software skills (AUT University, 2006b). The courses were of 8-hour duration with formative and summative tasks.

Furthermore, intended use of academic advisory student services and the actual use of academic advisory student services (use; non-use) were used in the second set of analyses.

In review, there were six independent variables used in Study 3: motivation level, evidence of academic difficulty, task persistence, completion of a generic study skills course, intended use of academic advisory student services, and actual use of academic advisory student services.

Data Analysis

For Study 3, three sets of analyses were computed.

First, level of persistence was investigated using a one-way (task completion; non-completion) MANOVA approach with respect to the LASSI and MSLQ component scores. As such, the effect of student attrition was evaluated. Following this initial appraisal, further analysis utilised a 3 (completion of a study skills course) x 3 (motivation level) ANOVA (analysis of variance) in terms of grade average computations. Next, a one-way (completion of a study skills course) repeated measures MANOVA in terms of the MSLQ and LASSI component measures (taken at the beginning and end of the semesters) was implemented. Post-hoc analyses were performed to appraise statistical differences between the completion at the study skills course

categories (completion; multiple course completion; non-completion). Moreover, follow-up analyses were performed on the 10 LASSI subtests in the form of a one-way (study skills course completion) repeated measures MANOVA. Finally, a categorical analysis was performed to evaluate the levels of association between motivation levels (pre and post) and completion of a study skills course. A log-linear approach was initiated using a 3 (pre-motivation level) x 3 (post-motivation level) x 3 (completion of a study skills course) model.

Second, a categorical analysis was performed to evaluate the levels of association between motivation level and access to academic advisory services (intended; actual). A log-linear approach was initiated using a 3 (motivation level) x 2 (intended use of academic services) x 2 (actual use of academic services) model.

Third, a similar categorical analysis was performed to evaluate the levels of association between motivation level, academic difficulty and actual access to academic advisory services. A log-linear approach was initiated using a 3 (motivation level) x 2 (academic difficulty) x 2 (actual use of academic services) model[3].

In essence, the statistical components of Study 3 aimed to extend studies one and two, and to access and interpret participants' learning and study ventures within the measured framework of motivation and self-regulation. The focus of Study 3 was to consider the impact of academic advisory services (study skills courses and one-to-one assistance) on students' perceptions about their learning and study practices, and ultimately evaluate the impact these interventions had on students' academic success in terms of grade achievement and retention.

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[3] The academic difficulty group level defined as unavailable data (see page 83 for details) was omitted from this analysis.

Summary of Methods

This chapter has outlined the methods that were implemented to test the propositions presented in chapter 1. The methods are a directive picture with regards to how the qualitative and quantitative components of the research were applied. The chapter presented the methodology for each phase. The key areas of description included purpose, participants, procedure, measures and data analysis. Procedure was segmented in terms of research paradigm, timing, ethical considerations, and sampling. The main assumptions of Hirsch's (2001) multiple intervention model are that students will differ in terms of academic difficulty and self-defined motivational level. This assumption further implies that students will likely have different learning and study approaches and be influenced by educational interventions that aim to promote motivation and self-regulation.

The methods associated with Study 1 centre round the idea that students with different self-defined motivation levels and experiences of academic difficulty will narrate their learning experiences differently. The four areas investigated were directed by four propositions with regards to students' descriptions of their study problems, students' readiness for study, students' general use of learning and study strategies, and students' insight and understandings with regards to the strategies posed (Hirsch, 2001).

The methods linked to Study 2 aimed to investigate three propositions related to the research usefulness of Hirsch's (2001) concept of three motivation levels. The first proposition was investigated by comparing students' self-defined motivation levels with psychometric measures in the form of MSLQ and LASSI scores. The second aspect under consideration was the stability of students' perceptions with regards to defining their motivation level for study. Finally, external criteria in the form of grade achievement and retention measures were used to appraise this study's adaptation of Hirsch's notion of a three-stage motivation classification system.

The methods used to evaluate Study 3 were guided by four propositions that aimed to evaluate the effectiveness of academic advisory services and to consider students' learning strategies. According to the first two propositions, the areas explored related to the impact of a naturally occurring study skills programme on grade achievement and self-report measures (LASSI and MSLQ) related to motivation and self-regulation. The remaining two propositions addressed issues related to motivation level, academic difficulty, and actual access and intended access of face-to-face academic advisory services by students.

CHAPTER 4: RESULTS

The previous chapter outlined the methods employed in this exploratory investigation into the learning experiences of university students and the manner in which they use academic advising services. Hirsch's (2001) multiple intervention model was used as a framework to underscore the results. Interview and survey data were collected with a focus on the areas of motivation and self-regulation. The interview data were compiled primarily to examine Study 1, and the survey data were acquired to principally evaluate Studies 2 and 3. Study 1 data were analysed using a meaning-centred approach, while Studies 2 and 3 used several multivariate and categorical statistical methods as outlined in the former chapter. The results are considered in line with the propositions introduced in chapter 2 and as such, the results are presented in three sections.

Study 1: Students' Interview Data

In Study 1, four domains of interest were scrutinized:

1. students' problem descriptions.

2. students' perceptions of their readiness for study.

3. students' explanations with regards to their learning and study practices.

4. students' commentaries linked directly with Hirsch's (2001) prescribed interventions systems.

Students[4] were classified into first-, second- and third-order comparisons (see Methods chapter for clarification).

Students' Problem Descriptions

In general, the emerging themes in Table 21 (see Appendix B) across all quadrants indicate that student participants were able to articulate problems in areas of motivation and self-regulation. The most problematic area articulated was time management with 13 occurrences (e.g., sample statement: "Time management, I didn't put aside time to study. Get distracted by other things"), and the second was writing difficulties with 9 occurrences (e.g., sample statement: "My essay, practically my essay gets muddled up, paragraphs not connected to each other, doesn't make sense").

The original student commentaries were analysed and the main themes were noted. These themes were collated and then considered in terms of students' ability to describe their problems. A total of 87 condensed meaningful themes was considered (see Table 3 below, as condensed from Table 21 in Appendix B). The range of response indices was 0.5 to 7.0.

The following trends were inferred from the data. First, the results indicated students commented on self-regulation problems more (higher responses indices) than motivation ones. Second, students who experience academic difficulty (motivation Levels 2 and 3) generated more self-regulation themes than those students who do not experience academic difficulty. Third, motivation Level 2 students who experience academic difficulty generated the most motivation-related problems.

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[4] No students classified as motivation Level 1 volunteered for this phase of the study.

Table 3

Defining Sample Statements and Response Indices (RI, in Parentheses) for Problem Descriptions

Motivation level	Learning associations	Academic difficulty	
		Yes	No
2	Self-regulation	Practically my essays are muddled up, paragraphs not connected to each other, doesn't make sense	Yes, time management , I didn't put aside time to do study.
		(*RI* = 5.3)	(*RI* = 4.3)
	Motivation	Thinking I might fail. Scared to start studies and assignments.	Lack of interest in what I am doing.
		(*RI* = 2.0)	(*RI* = .8)
3	Self-regulation	Yes [problems with], essay writing, language communication.	Freeze up when I have tests. Okay on on-course assessment.
		(*RI* = 7.0)	(*RI* = 4.4)
	Motivation	Got assignment due next Tuesday but thinking of dropping off paper.	There is always some degree of stress that exists around my activity, how I manage it. I apply stress management rules and do my best.
		(*RI* = .5)	(*RI* = 1.6)

Students' Perceived Readiness for Study

A total of 99 condensed meaningful themes was generated (see Table 22, in Appendix B). In general, the most frequently cited theme related to the notion of work–related issues with 15 explicit occurrences (e.g., sample statement: "Worked for 7 years in China exporting to African countries. Marketing. Have a goal. Have a desire (very important), I know what I want. I am fully ready to study").

From Table 4 below (as condensed from Table 22 in Appendix B), the range of response indices was 0.6 to 5.6. The following trends were inferred from the data. First, the results indicated more comments related to being ready for study than related to not ready, were made. Second, motivation Level 2 students who experience academic difficulty produced more not ready comments ($n = 14$, $RI = 4.7$) than other combinations, suggesting a negative loading of comments.

Table 4

Defining Sample Statements and Response Indices (RI, in Parentheses) for Perceived Readiness for Study

Motivation level	Readiness for study	Academic difficulty	
		Yes	No
2	Ready	I was excited to come to 'uni'[versity]. Looking for the course and so far it is going good.	I know what I want. I am fully ready to study.
		(*RI* = 3.3)	(*RI* = 5.3)
	Not ready	Actually I wasn't ready. In the beginning my expectation was different. I found it different to back home.	Not very ready, didn't know what to expect. Came from school. Nothing given at school.
		(*RI* = 4.7)	(*RI* = 2.0)
3	Ready	Opportunity to be back in NZ. Challenge to come to university. Motivated to being a nurse.	It has taken a few years to get to where I am now. I am interested in study.
		(*RI* = 6.5)	(*RI* = 5.6)
	Not ready	I feel very low motivation.	Wasn't ready. Hadn't studied for 7 years. Didn't feel I was up-to-date.
		(*RI* = 1.0)	(*RI* = .6)

Students' Explanations of Learning and Study Practices

On the whole, the 344 total responses (see Tables 23 and 24 in Appendix B) tend to be diverse and non-specific ranging from strong external sources of orientation, such as incorporating assistance from classmates to internal dilemmas associated with anxiety and self-doubt. The results indicated students were generating more approach-related ($n = 295$) than avoidance-related themes ($n = 49$). Moreover, more internal-oriented themes ($n = 297$) were voiced than external ones ($n = 47$). Furthermore, students produced more self-regulating statements ($n = 198$) than motivation ($n = 146$) ones.

From Table 5 below (as condensed from Tables 23 and 24 in Appendix B), the range of response indices was 0.4 to 21.4. The subsequent trends were suggested by the data. First, motivation Level 3 students who do not experience academic difficulty yielded the highest response index of 21.4 for the combination of approach and internal, and the lowest response index for the combination avoidance and external. Second, students who experience academic difficulty (motivation Levels 2 and 3) generated the highest response indices for avoidance and internal themes. Response indices for external source of orientation ranged from 0.4 to 3.5 indicating homogeneity in terms of emerging narratives.

Table 5

Defining Sample Statements and Response Indices (RI, in Parentheses) for Explanations of Learning and Study Practices

Motivation level	Attributions	Academic difficulty	
		Yes	No
2	Approach	Internal	Internal
		More determination, say I will pass and get through.	Techniques for better time management.
		(*RI* = 16.7)	(*RI* = 18.3)
		External	External
		If struggle ask others for advice.	I talk with classmates.
		(*RI* = 3.0)	(*RI* = 3.5)
	Avoidance	Internal	Internal
		Nervous, scared.	Sometimes, if I don't do well I feel sad.
		(*RI* = 4.3)	(*RI* = 2.0)
		External	External
		If the general manager is around I easily get nervous.	Influence of work and being married. Personal time. Hard to balance.
		(*RI* = 1.0)	(*RI* = .8)
3	Approach	Internal	Internal
		Answer trial questions and compare with peers [and] past exam papers.	Feel excited [and] challenged and I like it.
		(*RI* = 14.0)	(*RI* = 21.4)
		External	External
		Study with friend.	Not me that is the problem. Maybe how the lecturer teaches the stuff.
		(*RI* = 3.0)	(*RI* = 1.6)
	Avoidance	Internal	Internal
		Depressed and cried. Anxious for clinical paper.	Anxious [and] unsure about covering the right thing?
		(*RI* = 3.5)	(*RI* = 2.2)
		External	External
		I haven't got the space to study.	Due to lecturer instruction or I did not understand.
		(*RI* = 1.0)	(*RI* = .4)

Students' Commentaries Linked Directly with Hirsch's (2001)

Prescribed Interventions Systems

The results were very similar to the previous explanations of learning and study practices. On the whole, the 248 responses (see Tables 25 and 26 in Appendix B) tended to range widely across strong external sources of orientation, such as incorporating support systems related to family and church to internal dilemmas associated with overcoming challenges. The results indicated students were generating more approach-related ($n = 219$) rather than avoidance-related themes ($n = 29$). Moreover, more internal-oriented themes ($n = 198$) were voiced than external ones ($n = 50$). In addition, students produced more self-regulatory ($n = 137$) than motivation ($n = 111$) statements.

From Table 6 below (as condensed from Tables 25 and 26 in Appendix B), the range of response indices was 0.0 to 15.8. The subsequent trends were suggested from the data. First, avoidance themes that were externally sourced were evident in the commentaries from all participant group options. Second, students who do not experience academic difficulty (motivation Level 3) yielded the highest response index of 15.8 for the combination of approach and internal. Third, students who experience academic difficulty (motivation Levels 2 and 3) generated the highest response indices for avoidance and internal themes. Response indices for the approach and external combinations ranged from 2.5 to 4.3 indicating homogeneity in terms of emerging narratives. No avoidance-external themes were identified.

Table 6

Defining Sample Statements and Response Indices (RI, in Parentheses) for Commentaries Linked Directly with Hirsch's (2001) Prescribed Interventions Systems

Motivation level	Attributions	Academic difficulty	
		Yes	No
2	Approach	Internal	Internal
		A challenge to make it up.	Personality development. My goal of my life. In my spare time I read about motivation.
		(RI = 6.7)	(RI = 14.3)
		External	External
		Mainly family support and church.	People around me. Close family and friends.
		(RI = 3.3)	(RI = 4.3)
	Avoidance	Internal	Internal
		Not good enough to get good grades.	When I am at home I am lazy. Times set aside but don't use it effectively. Procrastinate it [and] play my guitar.
		(RI = 3.3)	(RI = 1.3)
		External	External
		[No comments]	[No comments]
		(RI = .0)	(RI = .0)
3	Approach	Internal	Internal
		Used exercise books as journals come [*sic*] notebooks where I will put diagrams - like mind map.	Acronyms, mind maps, putting in more time.
		(RI = 6.5)	(RI = 15.8)
		External	External
		Talking to lecturers [and] nurses who have specialised in health and well-being.	Looking at the big picture. I want to present good grades to future employer.
		(RI = 2.5)	(RI = 3.6)
	Avoidance	Internal	Internal
		I have not actively addressed motivation.	Not confident. Life experience has shown that things can change suddenly [and] beyond my control.
		(RI = 5.0)	(RI = .8)
		External	External
		[No comments]	[No comments]
		(RI = .0)	(RI = .0)

Study 2: Defining Levels of Motivation and Readiness for Study

Demographic Variables by Motivation Level and Academic Difficulty

The data were checked to see if any of the demographic variables would unduly influence the statistical analyses. The variables gender, ethnicity and year of study (first year; other years) were checked for their distribution across the three motivation levels (Level 1; Level 2; Level 3) and the three levels of academic difficulty (passed all papers, failed at least one paper; no data available).

The chi-square analyses of independence across the three motivation levels yielded non-significant results for gender, χ^2(2, N = 317) = .491, p = .782, ethnicity, χ^2(8, N = 317) = 11.048, p = .199, and year of study, χ^2(4, N = 317) = 4.079, p = .395. Two one-way analyses of variance (ANOVA) were used to appraise the continuous variables age and educational level. The one-way ANOVAs for age and educational level across the three motivation levels yielded a significant result for age, F(2) = 5.364, p = .005, and a non-significant result for education level, F(2) = 2.693, p = .069. The mean ages for each motivation level varied: Level 1 (M = 20.83 years, SD = 3.881), Level 2 (M = 23.80 years, SD = 9.313), and Level 3 (M = 26.27 years, SD = 9.630), indicating higher levels of motivation with increasing age.

The chi-square analyses of independence across the three levels of academic difficulty yielded non-significant results for gender, χ^2(2, N = 317) = .647, p = .724, and significant results for ethnicity, χ^2(10, N = 317) = 29.648, p = .001 and year of study, χ^2(4, N = 317) = 193.028, p < .000. The one-way ANOVAs for age and educational level across the three levels of academic difficulty yielded a significant result for age, F(2) = 4.052, p = .018, and a significant result for education level, F(2) = 3.466, p = .032. The mean ages for each level of academic difficulty varied: no academic difficulty (M = 25.79, SD = 9.564), academic difficulty (M = 22.59, SD = 8.122), and data unavailable (M = 26.13, SD =

11.135), indicating students not experiencing academic difficulty were generally older. In addition, the percentages for ethnic group experiencing academic difficulty were European (22.4%), New Zealand Māori (40.0%), Pasifika (60.5%), Asian (23.7%), other (33.3%), and multiple (33.3 %), indicating Pasifika and Māori students reported academic difficulty more frequently than other ethnic groups.

Age yielded a significant influence for both motivation level and academic difficulty and was, therefore, used as a covariate in the initial analyses to clearly distinguish between effects for these categorical subject variables and age.

Hirsch's Three-Stage Theory

Comparison of Motivation and Academic Measures

The participant scores for the first phase of data collection (pre-intervention) were analysed. These constituted a natural experimental design utilising a 3 (motivation level) x 3 (academic difficulty) design.

A preliminary descriptive set of statistics of the two categorical subject variables is shown in Table 7 below. In terms of motivation level, these statistics indicate that very few Level 1 students ($n = 23$) responded to the questionnaires, compared to Level 2 students ($n = 142$) and Level 3 students ($n = 152$). Moreover, with respect to academic difficulty, most of the students ($n = 207$) in this sample succeeded in passing all their papers (100% pass rate), whereas a smaller number failed at least one paper ($n = 95$).

Table 7

Categorical Frequencies for Motivation Level and Academic Difficulty

Variable	Level	n
Motivation level	1	23
	2	142
	3	152
Academic difficulty	No data available	15
	One or more papers failed	95
	All papers passed	207

A multiple analysis of covariance (MANCOVA) across five MSLQ and LASSI measures with age as a covariate was implemented. Using Wilks' Lambda as the test statistic (see Table 8 below), this yielded a significant between-subjects main effect for motivation level, $F(10, 608) = 2.258$, $p = .014$, and a near significant result for academic difficulty, $F(10, 608) = 1.727$, $p = .071$, with respect to the measures taken. No significant interaction effect was obtained for motivation level by academic difficulty, $F(15, 840) = 1.043$, $p = .408$.

Table 8

Multivariate Results for the 3 x 3 MANCOVA for Motivation Level and Academic Difficulty over the Five MSLQ and LASSI Measures, Using Age as a Covariate

Effect	Value	F	Hypothesis df	Error df	P
Intercept	0.104	521.692[a]	5	304	0.000
Covariate (Age)	0.960	2.544[a]	5	304	0.028
Motivation level (ML)	0.930	2.258[a]	10	608	0.014
Academic difficulty (AD)	0.946	1.727[a]	10	608	0.071
ML*AD	0.950	1.043	15	839.612	0.408

a. Exact statistic

The significant and near results obtained in this analysis confidently indicated that there is a motivation level effect and a possible academic difficulty

effect that are quite distinct from any age-related effect. This justifies removing the covariate of age in future analyses of these variables, as they have been shown not to be simple confounds of age. Excluding the age-related aspects of motivation and academic difficulty does dilute these variables and risks obscuring their effect. Therefore, two one-way MANOVAs were performed for motivation level and academic difficulty with respect to the MSLQ and LASSI measures (with age omitted).

Motivation Level

A follow-up test of between-subjects effects was completed (see Table 27 in Appendix C) to ascertain levels of significance for motivation level with respect to the motivation measures from the MSLQ and LASSI. Table 24 shows that there are significant differences with respect to:

1. LASSI will component, $F(2) = 4.997$, $p = .007$.

2. LASSI self-regulation component, $F(2) = 7.720$, p = .001.

This prompted a Bonferroni post-hoc analysis in terms of inspecting the LASSI components, will and self-regulation. Two significant outcomes were noted:

1. LASSI will component between Levels 1 and 2 ($p = .018$), and Levels 1 and 3 ($p = .005$).

2. LASSI self-regulation component between Levels 1 and 2 ($p = .046$) and levels 1 and 3 ($p = .001$).

The means shown in Table 9 below indicated the trend for both LASSI components will and self-regulation. The trends indicate significant increases in both will and self-regulation as motivation increases through Levels 1, 2, and 3. However, it must also be acknowledged that the MSLQ and LASSI skill measures did not yield significant results.

Table 9

Means for the Significant LASSI Factors' Will and Self-Regulation for each Motivation Level

	Motivation level					
	1		2		3	
Dependent variable	Mean	*SD*	Mean	*SD*	Mean	*SD*
LASSI: Will component	3.158	.466	3.477	.499	3.520	.528
LASSI: Self-regulation component	2.873	.597	3.145	.490	3.279	.486

Analysis of LASSI subtest investigations. A further follow-up set of analyses was completed by utilising a one-way (motivation level) MANOVA for motivation level across the 10 LASSI subtest dependent measures. This set of analyses yielded the following significant effects:

1. Concentration, $F(2) = 3.290$, $p = .039$.

2. Motivation, $F(2) = 7.295$, $p = .001$.

3. Self Testing, $F(2) = 3.562$, $p = .030$.

4. Study Aids, $F(2) = 5.668$, $p = .004$.

5. Time Management, $F(2) = 9.474$, $p < .000$.

This prompted further post-hoc analysis in terms of the significant results with respect to the above LASSI subtests in respect of motivation level. A Bonferroni post-hoc analysis in terms of LASSI subtests (see Table 10 below for means of the 10 subtests) of concentration, motivation, self testing, study aids, and time management yielded several significant differences between the motivation levels. There were significant differences ($p < .05$) with respect to:

1. Concentration subtest between Level 1 ($M = 2.920$, $SD = .765$) and Level 3 ($M = 3.307$, $SD = .648$).

2. Motivation subtest between Level 1 ($M = 3.134$, $SD = .667$) and both levels 2 ($M = 3.552$, $SD = .653$) and 3 ($M = 3.692$, $SD = .686$).

3. Self-Testing subtest between Level 1 ($M = 2.821$, $SD = .742$) and Level 3 ($M = 3.224$, $SD = .728$).

4. Study Aids subtest between Levels 2 ($M = 3.236$, $SD = .576$) and 3 ($M = 3.450$, $SD = .611$).

5. Time Management between Level 1 ($M = 2.583$, $SD = .585$) and both Levels 2 ($M = 2.996$, $SD = .596$) and 3 ($M = 3.134$, $SD = .567$).

The above significant results indicate higher mean scores with higher levels of motivation. More specifically, as motivation increases from Level 1 to Levels 2 and 3, there are significant increases in LASSI motivation and time management scales. However, an increase from motivation Level 1 to Level 3 is required to produce a significant increase in concentration and self-testing, and similarly for Levels 2 to 3 for study aids. In addition, it is important to note that several LASSI measures did not yield significant results such as anxiety, attitude, information processing, selecting main ideas, and test strategies.

Table 10

LASSI Subtests Means for each Motivation Level

	Motivation level					
	1		2		3	
LASSI subtests	Mean	*SD*	Mean	*SD*	Mean	*SD*
Anxiety	2.674	.732	2.990	.866	2.925	.850
Attitude	3.667	.547	3.888	.489	3.942	.612
Concentration	2.920	.765	3.262	.687	3.307	.648
Information processing	3.402	.768	3.458	.675	3.621	.654
Motivation	3.134	.667	3.552	.653	3.692	.686
Self testing	2.821	.742	3.084	.738	3.224	.728
Selecting main ideas	3.220	.581	3.164	.671	3.245	.704
Study aids	3.166	.634	3.236	.576	3.450	.611
Time management	2.583	.585	2.996	.596	3.134	.567
Test strategies	3.1762	.587	3.205	.704	3.293	.660

Academic Difficulty

A follow-up test of between-subjects effects was completed (see Table 28 in Appendix C) to ascertain levels of significance for academic difficulty with respect to the motivation measures from the MSLQ and LASSI. Table 25 shows that there were significant differences with respect to:

1. The MSLQ motivational beliefs component, $F(2) = 7.496$, $p = .008$.

2. LASSI skill component, $F(2) = 3.058$, $p = .048$.

3. LASSI will component, $F(2) = 3.106$, $p = .046$.

4. LASSI self-regulation component, $F(2) = 3.614$, p $= .027$.

This prompted a post-hoc analysis in terms of the significant results with respect to the LASSI components. A Bonferroni post-hoc analysis in terms of MSLQ and LASSI components of motivational beliefs, skill, will and self-regulation yielded two near-significant differences and one significant difference between the academic difficulty levels of having passed all papers and having failed at least one paper[5]. These included:

1. LASSI component skill ($p = .092$).

2. LASSI component will ($p = .077$).

3. LASSI component self-regulation ($p = .023$).

When the data unavailable group were not noted, no close difference was shown for the MSLQ component, motivational beliefs. The academic difficulty means between those students having passed all papers as compared to having failed at least one paper, shown in Table 11 below, indicate the trends for the LASSI components of skill, will and self-regulation.

The data indicate that academic difficulty is associated with lower scores on skill, will, and self-regulation. However, no significant results were noted for the MSLQ measures.

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[5] The data unavailable group (see page 83 for definition details) were not noted in the post-hoc analysis.

Table 11

Means for the Significant MSLQ Component Motivational Beliefs and LASSI Components' Skill, Will and Self-Regulation for Presence or Absence of Academic Difficulty

Dependent variable	Academic difficulty	Mean	*SD*
MSLQ: Motivational Beliefs	One or more papers failed	3.414	.505
	All papers passed	3.530	.560
LASSI: Skill component	One or more papers failed	3.222	.540
	All papers passed	3.365	.530
LASSI: Will component	One or more papers failed	3.369	.550
	All papers passed	3.512	.495
LASSI: Self-regulation component	One or more papers failed	3.073	.552
	All papers passed	3.240	.479

Analysis of LASSI subtest investigations. A further follow-up set of analyses was completed by incorporating a one-way (academic difficulty) MANOVA for academic difficulty across the 10 LASSI subtest dependent measures. This set of results yielded significant effects for:

1. Motivation, $F(2) = 4.925$, $p = .008$.

2. Study Aids, $F(2) = 3.531$, $p = .030$.

Motivation is a subtest of the LASSI will component while study aids is a subtest of the LASSI self-regulation component. These findings prompted a further post-hoc analysis in terms of the significant results with respect to the above LASSI subtests. A Bonferroni post-hoc analysis in terms of LASSI subtests of motivation and study aids yielded several significant differences between the

academic difficulty levels of having passed all papers as compared to having failed at least one paper. There were significant differences ($p < .05$) with respect to:

1. Motivation subtest, having passed all papers ($M = 3.653$, $SD = .641$) compared with having failed at least one paper ($M = 3.414$, $SD = .751$).

2. Study Aids subtest, having passed all papers ($M = 3.393$, $SD = .567$) compared with having failed at least one paper ($M = 3.196$, $SD = .644$).

Consequently, from these significant results higher scores were obtained for students passing all papers compared to students experiencing academic difficulty. Nonetheless, it is pertinent to recognise that 8 of the LASSI subtests did not generate a significant result.

Stability of Motivation Level over Time

Table 12 (below) presents frequency data to investigate levels of association between motivation level at Time 1 (pre) and Time 2 (post). The trend shows a high level of instability across time as students' progress through the semester. A 3 (pre-motivation level) x 3 (post-motivation level) observed matrix shown in Table 12 below was evaluated against an expected matrix (no change over time) with frequencies represented in the diagonals only (i.e., $cell_{11} = 5$, $cell_{22} = 36$ and $cell_{33} = 45$). A chi-square test of the cell observed and expected frequencies yielded a significant result to suggest instability over time, $\chi^2(7, N = 86) = 44.418$, $p < .000$. Interestingly, the changes appear equally likely in each direction.

Table 12

Frequency Counts for Pre- and Post-Motivation Levels

Pre-Motivation level	Post-Motivation level – end of semester		
Beginning of semester	1	2	3
1	0	3	2
2	4	20	12
3	0	12	33

Predicting Grade Average and Retention

Two sets of multiple regression analyses considered the pre-measures of the MSLQ and LASSI components and the levels of motivation (independent variables) in predicting grade average and retention (dependent variables). For motivation level, two dummy variables were coded, coding Level 3 as 1 and all else 0 (high motivation) and Level 1 as 1 and all else 0 (low motivation).

Analysis of grade and explanatory measures. First, the two MSLQ component measures, the three LASSI component measures, and the motivation level dummy variables (high; low) were regressed on grade average. The multiple regression results (see Table 29 in Appendix C) indicated a significant result for the regression statistic, $F(7) = 3.280$, $p = .002$. An investigation of the individual variables yielded a significant predictive result for pre-LASSI will component ($\beta = .293$, $p = .002$), with no other significant results. A further follow-up regression analysis on the LASSI individual subtests revealed that the attitude subtest produced a significant result ($\beta = .199$, $p = .004$), but no other significant results were noted; consequently, 9 of the LASSI subtests were unable to produce a significant result.

Analysis of retention and explanatory measures. Next, the two MSLQ component measures, the three LASSI component measures, and the motivation level dummy variables (high; low) were regressed on retention. The multiple regression results (see Table 29 in Appendix C) indicated a significant result for the regression statistic, $F(7) = 2.338$, $p = .025$. An investigation of the individual variables yielded a significant result for the motivation level dummy variable high level of motivation ($\beta = .161$, $p = .008$). No other significant results were shown; therefore, none of the LASSI or MSLQ measures produced a significant result.

Similar regression analyses for both grade average and retention were performed on post-measures immediately prior to the examination period. No significant results were indicated.

Study 3: Considering the Impact of a Study Skills Programme and

Access to Academic Advisory Services

Persistence of the Students

The following analyses focused on those students who persisted in the research project ($n = 147$) as compared to those students who did not finish the project to the end ($n = 170$). The aim was to see if this would have any bearing on interpretation. A one-way MANOVA was instigated to investigate the persistence of the students (task completion; non-completion) against the five pre-measures for the MSLQ and LASSI components. The one way MANOVA indicated a non-significant main effect across all the questionnaire measures, $F(311) = 1.566$, $p = .170$. No follow-up tests were therefore conducted.

Evaluation of a Study Skills Programme

Three sets of analyses were conducted.

Analysis of Completion of a Study Skills Programme, Motivation Level and Grade

A 3 (completion of study skills course) x 3 (motivation level) analysis of variance (ANOVA) was implemented with respect to grade average. The two between-subject factors were: (1) motivation level: Level 1 ($n = 23$), Level 2 ($n = 130$) and Level 3 ($n = 144$); and (2) study skills attendance: non-completion ($n = 187$), generic study skills course completion only ($n = 42$) and multiple course completion ($n = 68$). The 3 x 3 ANOVA indicated a significant main effect of study skills course completion, $F(2) = 7.181$, $p = .001$. No other significant effects were noted.

Table 13 below shows the means of grade average by study skills course completion and motivation level. No motivation Level 1 students completed the generic study skill course only option. The results indicate two trends, namely higher grade averages with higher motivation levels and higher grade averages

when students are completing study skill courses (both generic and multiple) compared to non-completion.

Given no motivation Level 1 students completed the generic study skill course only option, a follow-up 3 (completion of study skills course) x 2 (motivation level) analysis of variance (ANOVA) was implemented with respect to grade average, with motivation Level 1 omitted. The resulted yielded a similar pattern to the 3 x 3 ANOVA. More specifically, the 3 x 2 ANOVA indicated a significant main effect of study skills course completion, $F(2) = 19.849$, $p = .000$. No other significant effects were noted.

Table 13

Means of Grade Average by Study Skill Course Completion and Motivation Level

	Motivation level					
	1		2		3	
Study skills course completion	Mean	*SD*	Mean	*SD*	Mean	*SD*
Non-completion	4.36	2.53	4.50	2.98	5.14	2.64
Generic study skills course completion only	NA	NA	6.15	2.66	7.12	2.45
Multiple course completion	5.00	1.97	7.44	2.61	6.78	2.17

For both sets of ANOVA, the Bonferroni post-hoc analyses in terms of course grade average across the levels of study skills course completion yielded two significant results for the paired comparisons of:

1. non-completion ($M = 4.77$, $SD = 2.80$) versus completion of generic study skills course only ($M = 6.73$, $SD = 2.55$) ($p < .01$).

2. non-completion versus multiple course completion ($M = 6.90$, $SD = 2.39$) ($p < .01$).

These results confirm that the non-completion group differed significantly from the generic study skills completion only group and the multiple course

completion group, but no significant difference was noted between the latter two groups.

Analysis of Completion of a Study Skills Programme and Questionnaire Measures

A one-way (completion of a study skills course) repeated measures multiple analysis of variance (MANOVA) was used against the five questionnaire measures associated with the LASSI and MSLQ components. Given the likelihood of attrition, the between-subject factor study skills course completion was now: non-completion ($n = 74$), generic study skills course completion only ($n = 27$) and multiple course completion ($n = 46$). The dependent variables were the MSLQ and LASSI questionnaire measures at the pre and post stages.

Between-subject analyses. In the between-subjects analyses (see Table 30 in Appendix D), the results showed a significant main effect for the generic study skills course completion, $F(2) = 4.754$, $p = .010$ across the set of questionnaire measures. Bonferroni post-hoc analyses were performed to distinguish between the various levels of study skills course completion. This analysis produced one significant result for the paired comparisons of non-completion versus multiple course completion ($p = .010$). As such, the non-completion group ($M = 3.341$, $SD = .390$) differed significantly from the multiple course completion group ($M = 3.529$, $SD = .379$), but no significant difference was noted between completion of the generic study skills only group ($M = 3.348$, $SD = .388$) and the former two groups. This indicates higher questionnaire means for completion groups (generic course only and multiple courses) compared with the non-completion peers. It also suggests higher perceived scores for multiple course completion students compared with both generic course completion only and non-completion peers.

Repeated measures analysis. The one-way (completion of a study skills course) repeated-measures MANOVA used against the five questionnaire measures associated with the LASSI and MSLQ components indicated three significant effects (see Table 31 in Appendix D), but no significant time effect was determined:

1. a questionnaire (MSLQ and LASSI) component main effect, $F(4, 141) = 42.831$, $p < .000$.

2. a questionnaire by study skills course completion effect, $F(8, 282) = 2.327$, $p = .020$.

3. a questionnaire by time effect, $F(4, 141) = 3.781$, $p = .006$.

In reference to the first interaction effect, Table 32 (see Appendix D) shows the means scores and standard deviations for the MSLQ and LASSI questionnaire components with respect to study skills course completion. With reference to the questionnaire by study skills interaction effect, the mean scores indicated a meaningful difference for the LASSI self-regulation components whereby the general trend from most of the component scores showed a gradual decrease in scores from multiple course completion to generic course completion to non-completion groupings. The exception for this trend was for the LASSI component score for self-regulation (and a marginal trend for skill), which showed a decrease in scores from multiple completion to generic completion only and then an increase from generic completion to non-completion groupings.

In addition, Table 14 (as shown below) shows the mean scores and standard deviations for questionnaire components by the study skills course completion at each time period (pre and post). With respect to the interaction effect of questionnaire by time there were dissimilar patterns across time. Even though the results show trends indicating increases in mean scores over time (from pre-measures to post), three exceptions were noted; namely the LASSI self-regulation component decreased over time for multiple completion and non-completion, and the MSLQ motivational beliefs component decreased over time for non-completion only. Table 14 relates to the central theme of this analysis as the findings suggest that the completion of a study skills course may have an impact on the questionnaire measures, particularly for multiple course completions. It is further possible that those students completing multiple courses were higher on many measures to begin with, which may obscure effects of completion over time.

Table 14

Mean Scores for MSLQ and LASSI Component Measures as a Function of Completion of a Study Skills Course at Times 1 (Pre-Measures) and 2 (Post-Measures)

	Completion of a study skills course											
	Multiple course completion				Generic course completion only				Non-completion			
	Time 1		Time 2		Time 1		Time 2		Time 1		Time 2	
MSLQ and LASSI components	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
MSLQ: Motivational beliefs	3.637	.512	3.647	.514	3.473	.488	3.556	.491	3.487	.396	3.419	.468
MSLQ: Self-regulated learning	3.559	.421	3.631	.434	3.446	.354	3.461	.289	3.389	.393	3.387	.372
LASSI: Skill	3.433	.583	3.487	.542	3.278	.563	3.397	.505	3.375	.524	3.392	.520
LASSI: Will	3.684	.544	3.767	.544	3.524	.519	3.590	.523	3.469	.493	3.547	.522
LASSI: Self-regulation	3.469	.483	3.419	.478	3.084	.413	3.090	.463	3.174	.488	3.043	.498

LASSI subtest investigations. This prompted analyses in terms of the significant results with respect to the ten LASSI subtests. A one-way (study skills course completion) repeated measures MANOVA yielded a significant main effect for study skill course completion $F(2) = 15.965$, $p = .009$. There were also significant results for the LASSI main effect, $F(9, 144) = 45.414$, $p < .000$, and a significant LASSI by time effect, $F(9, 136) = 3.475$, $p = .001$. Inspection of the trends for each subtest (see Table 15 below) show that several subtest scores fluctuated over time for different study skills course completion options, specifically attitude, information processing, self-testing, study aids and time management; all other subtest scores increased over time for all study skills course completion options. There is, thus, no convincing evidence of a time effect.

Table 33 (see Appendix D) provides a guide to the consistently low and high scores. The lowest ranking scores were anxiety, time management, and self-

testing. This was somewhat verified by the Bonferroni post-hoc analysis the showed that students scored consistently lowly on the subtests anxiety, time management and self-testing ($p<.05$) compared to responses on other tests with the exception of selecting main ideas and study aids. In contrast, the attitude subtest had the highest ranking. This was verified by the Bonferroni results which indicated that students scored significantly higher in this subtest compared to all other subtests ($p < .05$). Even though it is acknowledged that each subtest is conceptually different and therefore direct comparisons are difficult, the findings are useful as they indicate that students perceive themselves as having relatively greater trouble with anxiety, time management and self-testing and perceive themselves as having relatively less difficulty with attitude.

A more detailed presentation of descriptive statistics in terms of the 10 LASSI subtests by the study skill completion options is presented below in Table 15. On the post-measures prior to examinations, several interesting trends for the three troublesome areas were noted:

1. Lower Anxiety scores for students who attended the multiple course option ($M = 3.145$, $SD = .793$) compared to other options of generic course completion only ($M = 3.232$, $SD = .931$) and non-completion ($M = 3.191$, $SD = .818$).

2. Higher time management scores for students who attended the multiple course option ($M = 3.384$, $SD = .608$) compared to other options, generic course completion only ($M = 2.954$, $SD = .552$), and non-completion ($M = 2.925$, $SD = .591$).

3. Higher self testing scores for students who attended the multiple course option ($M = 3.305$, $SD = .747$), generic course completion only ($M = 2.859$, $SD = .666$), and non-completion ($M = 32.943$, $SD = .686$).

There is a similar but less incisive trend across the post-measures prior to examinations for the least troublesome area, attitude. More specifically, the results showed higher attitude scores for students who completed the multiple course option ($M = 4.124$, $SD = .596$) compared to other options, generic course completion only ($M = 3.847$, $SD = .690$), and non-completion ($M = 3.824$, $SD =$

.628). The findings also indicate that students had high attitude scores in the first time period, indicating that this trend may not be influenced by course completion.

Overall the findings suggest that students had similar trends as multiple course completion tended to yield the higher subtest measures for Time 2 (post). However, students completing multiple course options had higher scores in the first place suggesting a natural but subtle drift upwards in scores for all course completion options over time.

Table 15

Mean Scores for LASSI Subtest Measures as a Function of Completion of a Study Skills Course at Times 1 (Pre-Measures) and 2 (Post-Measures)

	Completion of a study skills course											
	Multiple course completion				Generic course completion only				Non-completion			
	Time 1		Time 2		Time 1		Time 2		Time 1		Time 2	
LASSI subtests	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Anxiety	2.977	.797	3.145	.793	2.887	.969	3.232	.931	2.918	.847	3.191	.818
Attitude	4.088	.521	4.124	.596	3.915	.529	3.847	.690	3.819	.571	3.824	.628
Concentration	3.484	.658	3.525	.683	3.147	.716	3.310	.683	3.208	.678	3.225	.703
Information processing	3.597	.704	3.732	.588	3.469	.643	3.472	.544	3.514	.678	3.435	.659
Motivation	3.789	.656	4.033	.681	3.532	.755	3.690	.597	3.512	.665	3.627	.681
Self testing	3.292	.602	3.305	.747	3.126	.729	2.859	.666	3.074	.775	2.943	.686
Selecting main ideas	3.241	.672	3.285	.780	3.171	.742	3.375	.645	3.210	.670	3.361	.612
Study aids	3.553	.580	3.462	.631	3.182	.533	3.139	.500	3.278	.607	3.077	.550
Time management	3.255	.571	3.384	.608	2.834	.596	2.954	.552	2.988	.591	2.925	.591
Test strategies	3.388	.365	3.446	.739	3.162	.744	3.343	.679	3.217	.664	3.379	.668

Analysis of Completion of a Study Skills Programme and Self-Defined Motivation Level

The aim of this analysis was to investigate levels of association between self-defined motivation level (pre and post) and completion of the study-skills programmes.

Log-linear modelling was initiated using a 3 (pre-motivation level) x 3 (post motivation level) x 3 (completion of a study skills programmes) model. The likelihood ratio higher order analysis showed that there was no significant three way effect, $\chi^2(8, N = 86) = 1.292, p = .996$, and no significant two way effect, $\chi^2(20, N = 86) = 27.593, p = .119$. The Pearson higher order analysis showed that there was no significant three way effect, $\chi^2(8, N = 86) = 1.344, p = .995$, and no significant two way effect, $\chi^2(20, N = 86) = 26.222, p = .159$.

The lack of higher order effects shows that there are no significant contingencies between these three categorical variables such that they are independent. There were significant main effects within each variable which are not listed here as it is apparent that these are all highly significant.

Access to Academic Advisory Services

Analysis of Motivation Level, Actual and Intended Use of Academic Advisory Services

Table 34 (see Appendix D) presents frequency (and percentage) data. The aim of this analysis was to investigate levels of association between motivation level and actual and intended usage of student academic advisory services.

Log-linear modelling was initiated using a 2 (actual access to academic services) x 3 (motivation level) x 2 (intended use of academic services) model. The likelihood ratio higher order analysis showed that there was no significant three-way effect, $\chi^2(2, N = 305) = 2.717, p = .257$, but there was a significant two-way effect, $\chi^2(7, N = 305) = 14.664, p = .041$. The Pearson higher order analysis

showed that there was no significant three-way effect, $\chi^2(2, N = 305) = 2.395$, $p = .302$, but there was a near significant two-way effect, $\chi^2(7, N = 305) = 14.664$, $p = .104$.

An association table was generated to ascertain which two-way interactions were significant. A significant two-way interaction was shown for actual access to academic services by intended use of academic services, $\chi^2(1, N=305) = 8.340$, $p = .004$. No other significant interaction effects were shown. The three main effects showed the following significant main effects:

1. actual access to academic services, $\chi^2(1, N=305) = 30.088$, $p < .000$.

2. motivation level, $\chi^2(2, N=305) = 116.792$, $p < .000$.

3. intended use of academic services, $\chi^2(1, N=305) = 189.607$, $p < .000$.

Consequently, the result of primary interest was that motivation level was independent of the other two variables. As expected, actual access to academic services and intended use of academic services were dependent. An inspection of the contingency table (see Table 34, Appendix D) shows that actual access is about 15% for those who do not intend to, and about 63% for those who do intend to. While the result was not significant, there is some indication that access ratios are higher as motivation level increases. Those on the higher motivation levels are more likely to carry their intentions through to actual access than those on lower motivation levels. For example, for motivation Level 3, about 26% of those who did not intend to did access services (compared with an overall level of 15%), while for motivation Level 1, 24% of those who did intend to, actually accessed services (compared with an overall level of 63%).

Analysis of Motivation Level, Academic Difficulty and Actual Use of Academic Advisory Services

Table 35 (see Appendix D) presents frequency data to investigate levels of association between actual use of student academic advisory services, motivation level and measured academic difficulty. The tabulated data show that of those students who appeared to have academic difficulty 2 out of 8 (25%) Level 1

students accessed the student academic advisory service compared to 13 out of 49 (27%) Level 2 students and 12 from 38 (32%) Level 3 students.

Log-linear modelling was initiated using a 2 (actual access to academic services) x 3 (motivation level) x 2 (academic difficulty) model. The likelihood ratio higher order analysis showed that there was no significant three-way effect, $\chi^2(2, N = 301) = .409, p = .815$, or two-way effect, $\chi^2(7, N = 301) = 8.759, p = .270$. In addition, the Pearson higher order analysis showed that there was no significant three-way effect, $\chi^2(2, N = 301) = .428, p = .807$, and no significant two-way effect, $\chi^2(7, N = 301) = 8.871, p = .262$. Main effects were found to be significant for both the likelihood computation, $\chi^2(11, N = 301) = 195.180, p < .000$, and Pearson analysis, $\chi^2(11, N = 301) = 186.934, p < .000$.

All the three main effects generated significant results:

1. actual access to academic services, $\chi^2(1, N = 301) = 30.502, p < .000$.

2. motivation level, $\chi^2(2, N = 301) = 114.003, p < .000$.

3. academic difficulty, $\chi^2(1, N = 301) = 41.916, p < .000$.

As such, all variable were adjudged to be independent.

Summary of Results

The objectives of this chapter were to evaluate the study propositions presented in chapter 2 using the methods presented in chapter 3. The results of the three studies of research have been analysed. These encompassed the areas of students' interview data, defining and classifying motivation, and assessing the usefulness of academic advisory services.

For Study 1, the data associated with students' interview data revealed some interesting findings. First, the students' problem descriptions suggested that participants were able to articulate problems in areas of motivation and self-

regulation. The most problematic area was time management followed by writing difficulties. Moreover, students who experienced academic difficulty generated more problem-related themes than students who did not experience difficulty. Second, when students described their perceptions of their readiness for study, participants suggested that work-related themes were important indicators of level of preparation for study. In addition, students who experience academic difficulty suggested they were less ready for study than their academically able counterparts. Third, when students were asked about their learning and study practices, their commentaries suggested that students who experience academic difficulty were more avoidance-oriented in terms of their learning orientation and internal with respect to their source of orientation, while those who did not experience academic difficulty tended to be more approach-oriented and internal. Finally, when students were asked specific questions related to Hirsch's multiple intervention model, the resulting trends of source and learning orientations were a near replica of the aforementioned generic students learning and study commentaries.

For Study 2, several significant results were obtained. First, data were checked for covariance possibilities: age was considered the most potentially influential of the covariates considered, given that it was found to be significantly influential for both motivation level and academic difficulty. Second, the two sets of MANOVA results indicated significant results for motivation level with respect to the LASSI components will and self-regulation, and significant results were obtained for academic difficulty in the form of LASSI components skill, will, and self-regulation. The higher scores on these components indicated higher motivation levels and less chance of academic difficulty. Further follow-up analyses on the 10 LASSI subscales yielded significant differences for motivation level in terms of concentration, motivation, self-testing, study aids, and time management. Further significant differences were obtained for academic difficulty for the subscales motivation and study aids. Second, categorical analyses revealed instability in the way students self-defined their motivation level over time. Third, a predictor for grade average was the LASSI component will and in particular the subscale attitude. A predictor for retention was the high motivation level dummy variable. Regression analyses for both grade average and retention were performed on post-measures immediately

prior to the examination period, but no significant results were indicated. In many areas of the study numerous non-significant results were obtained which were contrary to expectation.

For Study 3, further significant results were acquired. First, the student group that completed the study were no different in terms of response variations on the LASSI and MSLQ than the group that completed only the first set of questionnaires. Second, a significant result was produced for grade average in terms of study skills course completion (generic and multiple) as compared to non-completion. Moreover, the one-way repeated measures MANOVA produced some interesting results. The first of these was no time effect and this was followed by two interaction effects which were between questionnaire responses and study skills completion, and between questionnaire responses and time. Moreover, a study skills course completion main effect was noted. A cursory investigation into the way the LASSI subscale changed over time suggested that the top three problematic areas were anxiety, time management and self-testing, in that order. A categorical analysis indicated no level of association between self-defined motivation levels (pre and post) and study skills course completion. Finally, categorical investigations into the way students accessed one-to-one academic advisory services suggested that neither motivation level nor academic difficulty were significant influential factors in terms of using academic advisory services. Nonetheless, the results showed that there was an interaction between the way students intended to access academic advisory services and their actual usage. Fewer students than expected accessed academic advisory services, but students not accessing academic services were consistent with expectations. Nonetheless, there were subtle trends suggesting that motivation Level 3 students were more likely to access academic advisory services than motivation Level 1 students. It is further acknowledged that many unexpected non-significant results were indicated.

The three investigations can be integrated into a meaningful whole on the basis that they produce findings that relate to one another and, together, suggest overarching themes. First, there tend to be motivational and self-regulatory themes that differentiate students having academic difficulty from those not experiencing such problems. This motivational theme appears to begin at the start of enrolment

when students choose their course option. Students with low levels of motivation in terms of choosing their course are more inclined to have problems with areas such as time management, use of study aids, concentration, motivation, and self-testing than students with higher levels of motivation. In addition, lower levels of student attitude appear to contribute to academic difficulty as measured by grade average at the end of the semester. However, students also seem to change their initial motivational statements with regards to how they select their course of study suggesting they can be influenced through direct experience with change agencies like academic services. Second, of further interest is that students having academic difficulty seem to develop awareness about their problems especially in areas of time management and writing but many of these students appear to be unwilling to seek assistance from academic services either in the form of completing study skills programmes or seeking one-to-one academic assistance. This may in part be due to students who experience academic difficulty exhibiting more troublesome behaviours in the form of increased anxiety and poor time management that are likely linked to problems related to developing self-regulation. Some of the emerging themes suggest that students who experience academic difficulty are avoidant as compared with their more academically adept peers who appear to be more approach-oriented with respect to solving potential or existing academic problems. Therefore, students' reluctance to access assistance may be traced back to their enrolment choice in the first instance. However, the findings further indicate students' motivations for selecting a course change, indicating that students are being exposed to experiences that influence their perceptions about the value of their current courses.

Hence, the findings of this research provide support for Propositions 1 to 3 as stated in chapter 2. The following discussion chapter begins to synchronize and revise these propositions and ideas, with the aim of contributing to a better understanding of students' learning praxis and academic advising intervention. The intent is to further evaluate various matters including students' motivations for study, students' development of self-regulatory systems of study, the effectiveness of academic advising, and the likely impact on academic achievement. In terms of method, Hirsch's (2001) multiple intervention model is used as a research

framework to integrate students' motivational and self-regulatory processes with the area of academic advising.

CHAPTER 5: DISCUSSION

This study was an exploratory investigation into the learning experiences of university students and their use or non-use of academic advising incorporating an educational model as its primary investigative lens, namely Hirsch's (2001) multiple intervention model. Hirsch proposes that his multiple intervention model for assisting students who experience academic difficulty is a useful process for academic advisors with respect to assessment and intervention. Hirsch's model is multifaceted hence this research has focused on two pivotal themes embedded within it, namely motivation and self-regulation. More specifically, the present research has applied Hirsch's model as a research framework to the areas of academic advising resources and students' motivational and self-regulatory strategies. Two variables are central to this area of research, in particular the concepts of academic difficulty and motivation level.

First, for ease of identification, academic difficulty was considered with respect to a measurable entity. Therefore, a binary computation of having passed all papers as compared to having failed at least one paper was chosen as the most appropriate measure of academic success (see, for example Cleland et al., 2005; Rousseau & Drapeau, 2003; Sayer et al., 2002; Scott, 2003). Moreover, the present study aimed to extend Hirsch's (2001) model to include those students not experiencing academic difficulty so that comparisons could be made between the two groups (academic difficulty; no academic difficulty).

Second, motivation was appraised by applying the three-stage system employed by Hirsch (2001), and mirroring this idea on several external criteria, namely self-report questionnaires that aim to evaluate the construct utilising the MSLQ and the LASSI (Pintrich & De Groot, 1990; Weinstein & Palmer, 2002). Further external measures chosen were grade averages and retention measures (Edwards, 2005; Scott, 2003). Motivation changes were also considered in terms of an intervention effect, by examining the potency of a naturally occurring generic study skills programme (AUT University, 2007). In addition, given the increased

interest in the notion of self-regulation (Kuhl & Fuhrmann, 1998; Lens et al., 2001; Pintrich & De Groot, 1990) and the utilisation of this concept in Hirsch's work, the study further incorporated measures of self-regulation in its design. Motivation and self-regulation were posed as separate empirical entities, but it is acknowledged that the two concepts have interrelating aspects of learning that imbricate each other (Pintrich, 2003).

To address the research applicability of the conceptual and pragmatic nature of Hirsch's (2001) model the following discussion begins with a deliberation on the three studies employed in the present investigation. Study 1 appraised the usefulness of interviews as a diagnostic and learning process, while the second study focussed on appraising Hirsch's notion of motivation levels. The third study aimed to evaluate the usefulness of an intervention systems that mirrored many of Hirsch's intervention strategies. Subsequent to this discussion of the findings, Hirsch's model is discussed in terms of its research application to the areas of students' motivation to learn, academic achievement, and academic advising.

Study 1: Students' Descriptions and Problem Assessment

The four propositions stated earlier for this study in Chapter 2 and associated research findings from Chapter 4 are presented below in Table 16. The primary objective of this part of the study was to evaluate the usefulness of the process of interviewing in terms of diagnosis and the promotion of reciprocal understanding. To accomplish this objective, four aspects of the interview process were examined, namely:

1. students' problem descriptions.

2. student's perceptions regarding their readiness for study.

3. students' explanations of learning and study practices.

4. students' commentaries linked directly with Hirsch's (2001) prescribed interventions systems.

Table 16

Propositions and Research Findings for Study 1

Propositions	Research findings (emerging themes)
Proposition 1a Students will describe their problems related to study differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are likely to describe more problems in terms of frequency than students in other categories.	Some evidence of support for Proposition 1a noted. • Students who experience academic difficulty (motivation Levels 2 and 3) generated more self-regulation themes than those students who do not experience academic difficulty. • Motivation Level 2 students who experience academic difficulty generated the most motivation-related problems.
Proposition 1b Students will describe their readiness for study (in motivation and self-regulation terms) differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are more likely to voice less readiness for study than their peers.	Some evidence of support for Proposition 1b noted. • More comments related to being ready for study than related to not ready, were made. • Motivation Level 2 students who experience academic difficulty produced more not ready comments than other combinations, suggesting a negative loading of comments.
Proposition 1c Students will explain their strategies for learning and study (in motivation and self-regulation terms) differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are more likely to describe avoidance strategies (rather than approach) for study than their peers, and they are also likely to voice a different source of this orientation in terms of being more external than internal.	Some evidence of support for Proposition 1c noted. • Motivation Level 3 students who do not experience academic difficulty yielded the highest response index for the combination of approach and internal, and the lowest response index for the combination avoidance and external. • Students who experience academic difficulty (motivation Levels 2 and 3) generated the highest response indices for avoidance and internal themes.
Proposition 1d Students' commentaries linked directly with Hirsch's (2001) prescribed interventions systems will be voiced differently depending on academic outcomes and self-defined motivation levels. Students having academic difficulties and low self-defined motivation levels are more likely to describe avoidance (rather than approach) strategies for study than are their peers, and they are also more likely to voice a different source of this orientation in terms of being more external than internal.	Some evidence of support for Proposition 1d noted. • Students who do not experience academic difficulty (motivation Level 3) yielded the highest response index for the combination of approach and internal. • Students who experience academic difficulty (motivation Levels 2 and 3) generated the highest response indices for avoidance and internal themes.

Students who had self-defined motivation levels of 2 and 3 volunteered for the study. Unfortunately, although not unexpectedly, the students who self-defined as motivation Level 1 (uninterested or coerced into their programme) did not volunteer for this aspect of the study.

Students' Problem Descriptions

The interview findings suggest that students having academic difficulty, regardless of whether or not they had high or medium self-defined motivation levels (Levels 2 and 3), voiced more problems associated with self-regulation and motivation than those students categorised as not having academic difficulty. These interview data tend to support the idea behind Proposition 1a (see Table 16), namely that "Students will describe their problems related to study differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are likely to describe more problems in terms of frequency than students in other categories." Nonetheless, given the uniqueness of each student, it is important to acknowledge the diverse nature of expression that points to the need to consider students as individual entities and thus emphasises the usefulness of individual education interventions (Hirsch, 2001).

Nevertheless the outcome of this part of the study is consistent with Hirsch's (2001) notion that students who experience academic difficulty are able to voice their problems and have some insight into their difficulties while studying. It also allows academic advisors the capacity to access ideas considered to be flash points, whereby the advisor and student arrive at a point at which motivation and action come together, enabling further intervention to ensue (Hirsch, 2001). It further creates the platform from which the interviewer can then frame the subsequent interview questions. Furthermore, those students who experience academic difficulty appear to generate more problem-associated comments than those without academic difficulty. Therefore, students having academic difficulty have some insight into their academic process and may have some relative concept with respect to their problems in comparison with the more academically successful

students (Brooks & Ammons, 2003). Therefore, with an appropriate intervention such as the one-to-one academic advising process suggested by Hirsch, students experiencing academic difficulty could very likely improve their academic proficiency.

More specifically and consistent with self-concept theory (Cervone et al., 2006; Kanagawa et al., 2001; Markus & Wurf, 1987), students appear to be able to access and voice self-relevant information that is both affective, motivational and regulatory in nature. The sources of the self-representations are difficult to discern as they may have several origins related to students' ability to self-monitor their own affective and mental states, or to their ability to react to or reflect on what others say or do. Thus, feedback comes in the form of "self-perception, social comparison, and reflected appraisals" (Markus & Wurf, 1987, p. 305). Given this study's sample and its cultural mix, strong cultural differences in the ways students present themselves may confound the picture (Covington, 2000a). For example, students with a western background tended to have strong sense of independence, while Asian students tended to be strongly relational and interdependent (Arnault et al., 2005; Kanagawa et al., 2001). In this study's sample, one female Asian student felt that a major part of her distress associated with her study came from the feeling of being pressured by her family   (e.g., "I am here with my uncles and aunties. The way I think about assignments / exam || fear || thinking I might fail").

Nonetheless, there appears to be a difference in this study's sample in terms of how students voice their problems related to their study. Students who experience academic difficulty are able to access their cognitive and affective self-representations of how they consider their study. The data tend to present the idea that the students are making comparisons that are both intrapersonal and interpersonal in nature. This comparative development implies a dynamic tension between the different concepts of self – actual, ideal, and ought (Markus & Wurf, 1987) – and that students experiencing academic difficulty may have greater tensions and accordingly a greater need to voice these tensions. Moreover, the students' interview data tend to support Markus and Wurf's (1987) idea of the working self. Students' comments may be a product of their process of accessing

their thoughts, beliefs and attitudes about study, and this level of access is linked to their memories and judgements about their present behaviour. Hence, students who experience academic difficulty may have stronger experiences of not coping than students who do not experience academic difficulty, and have a stronger need to make judgements about their study-related behaviour. These judgements are also related to the reciprocal influence that academic achievement has not only on the generic idea of the self-concept but on the development of an academic self-concept (Barker et al., 2004; Marsh, 1990; McInerney et al., 2005).

The multidimensional nature of the students' commentaries with regards to their problems further adds support for Hirsch's (2001) multiple intervention model as a research framework. This model incorporates wide ranging techniques that can be shaped and implemented addressing specific issues raised by students' individual case histories and presenting problems.

Students' Perceived Readiness for Study

When students were asked about how ready they were for study, several themes emerged. The results suggested the most frequently cited theme related to the notion of work–related issues. Further to this, the data indicated that the participants in this interview phase voiced more themes related to readiness for study than to lack of readiness for study. However, motivation Level 2 students who experience academic difficulty perceived themselves as the converse of this general trend, suggesting a strong negative loading of comments. As such, the interview data tend to show that students who experience academic difficulty were less ready for study than students in other categories, thus somewhat confirming Proposition 1b (see Table 16), namely that "Students will describe their readiness for study (in motivation and self-regulation terms) differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are more likely to voice less readiness for study than their peers." This finding has important implications with respect to beliefs about readiness for study and thus has a strong link with self-efficacy (Pintrich, 2003). There are convincing arguments suggesting that students who believe they will do well are more likely to do well in terms of academic

achievement and academic competence (Ford-Gilboe et al., 1997; Jackson, 2002; Margolis & McCabe, 2003; Opacic, 2003; Pintrich, 2003). These arguments could also be linked to the notion of belief in readiness for study.

In this stage of the interview, students were contributing to the study by providing information to the interviewer that may partially explain, in terms of motivation and self-regulation, why some students experience academic difficulty and some do not. Hirsch (2001) provides a seven-step process for interviewing. According to this process, Step 5 aims to assess students' levels of motivation and readiness for study with the view to resolving academic problems. It is interesting that the predominant theme arising from the interviews relates to work-related themes; students saw their readiness for study as an extension of their work-related goals (e.g., "Worked for 7 years in China exporting to African countries. Marketing. Have a goal. Have a desire (very important), I know what I want. I am fully ready to study"). This further dimension of study-related competence confirms the multidimensional approach proposed by Hirsch.

Thus, prior or existing knowledge allowed students to focus on their study, and this is likely related to the notion of self, whereby self-relevant information has strong motivational and regulatory aspects (Markus & Wurf, 1987) due to the availability of procedural knowledge or having some vocational frame of reference related to the course of study. This provides greater self-focus as the discrepancy between what students are doing at the present time and where they want to go in terms of career options is not great. The standard becomes the chosen vocational option and the current state is the learning practice. This implies purposefulness and a significant level of interest (Pintrich, 2003), as it appears those students who have a clear vocational link have an approach-goal-orientation that embraces both potent intrinsic and extrinsic mechanisms (Covington, 2000a, 2000b; Covington & Müeller, 2001).

Markus and Wurf (1987) also suggest that regulation is best optimised when students are concentrating on environmental aspects of action rather than personal characteristics. In this case, motivation Level 2 students who experience academic difficulty appear to have a high negative loading of thematic representations in

terms of not being ready for study and there appears to be a strong influence from prior experiences with study and evidence of critical reflection and hindsight (e.g., "Actually I wasn't ready. In beginning my expectation was different, I found it different to back home."). In contrast, other more successful students with the same motivation level appear to have a clearer focus on what they are doing, which may imply they are more optimistic and realistic with regards to the commencement of their study (e.g., "With life experience very ready. I know what areas to concentrate on and business relevance"). The second student appears to have a strong sense of self-completion as she has an apparent self-image with reference to her future self. As such, this student has a clear sense of what she really can be; henceforth she has voiced a lucid sense of self-efficacy. This student has a belief about readiness that implies competence and clearly relates this to her study option (Bandura & Locke, 2003). In turn, students who voice a lack of sureness about their study intention have less likelihood of achieving their goals than more focused students (Pintrich, 2003). Moreover, the data on readiness provides a clue to the strong influence that goal-setting and orientation may play in learning.

In the next section, the way in which students deliberate upon their learning and practice and how they involve themselves in the study process is examined in the light of the motivation and self-regulation literature.

Students' Explanations of Learning and Study Practices

This part of the interview process utilised some of Hirsch's (2001) theoretical frames of reference as meaningful coding and condensing mechanisms. The two main motivation constructs used to contrive meaning from the data were related to the notions of internal versus external sources of motivation, and orientations to learning in terms of approach versus avoidance. Both of these constructs are well documented in the literature (Covington & Müeller, 2001).

Hirsch's (2001) discussion suggests that students with an internal orientation to study undertake their academic work in terms of enjoying the challenge, or personal fulfilment, or of having the opportunity to learn, or of appreciating the

value of learning. This definition of internal orientation is akin to the notion of intrinsic motivation whereby students learn for the sake of learning because they find it enjoyable (Pintrich, 2003). The converse is characterised by an external orientation to study whereby students consider their learning in terms of payoffs or rewards (Hirsch, 2001). This is akin to the concept of extrinsic motivation or being outcome oriented (Pintrich, 2003). This dichotomy appears to suggest two opposing ends of the continuum. However Pintrich and Schunk (2002) suggest that the two motivational orientations can operate simultaneously and hence students can be high in both or in any of a multiple range of combinations involving multiple goal options intertwined with multiple pathways for learning (Valle et al., 2003b). Furthermore, given an extrinsic-reward-focused education environment, some authors (Covington & Müeller, 2001) suggest that it is pertinent to look at why some students do well and others do not, thus favouring a solely approach-avoidance framework.

Nonetheless, the interview responses tended to be difficult to categorise as different students had different systems of studying. Some students had strong external support systems in the form of family and friends, while others tended to struggle in their study journey and voiced feelings related to anxiety and self-doubt. However, as a whole, students tended to be more approach-oriented rather than avoidance-oriented when tackling their study and the source of their learning orientations tended to be internal rather than externally based. More specifically, students categorised as motivation Level 3 voiced more comments related to approach and internal thematic combinations than other groups, while students who experience academic difficulty (motivation Levels 2 and 3) generated more comments related to avoidance and internal themes. As a result, it appears that higher academic achievers develop and implement more comprehensive approach-related learning strategies (Covington, 2000a). This cautiously corroborates Proposition 1c (see Table 16), namely that "Students will explain their strategies for learning and study (in motivation and self-regulation terms) differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are more likely to describe avoidance strategies (rather than approach) for study than their peers, and

they are also likely to voice a different source of this orientation in terms of it being more external than internal." It was interesting that all groups tended to have similar frequencies of external themes, although there were differences in terms of thematic content. Some students sought assistance from God, parents and friends, and other students were pressured by family, living conditions and financial concerns.

In this stage of the interview, students were beginning to interact with the interviewer who provided probe questions aimed to elicit general information about students' learning and study strategies. This strategy of asking probe questions and then seeking elaboration was considered a further assessment strategy to gather more evidence. There was inevitable feedback in terms of asking students to elaborate on their answers, such as "where does this feeling about study come from?" which allowed students to delve deeper into their responses and created a sense of insight for the student (e.g., "If I learn something completely I will remember it for years || related to interest."). Hence, the interviewer remained at Step 5 of Hirsch's (2001) recommended seven-step structure for interviews. In addition, the interviewer was likely providing perceptions in return to the students (Step 6) as to the cause of their academic difficulties and/or providing insights with regards to how students could improve their study and learning strategies.

Hirsch (2001) briefly suggests that students who utilise approach strategies have positive reactions to problems and seek positive solutions, whereas students who employ avoidance strategies perceive problem-solving as being undesirable. Elliot et al. (2006) describe approach motivation in terms of producing behaviour towards positive stimuli, while the direction of behaviour in terms of avoidance motivation implies negative-stimuli orientation. Moreover, these constructs can be seen in terms of motives and goals and have been used to explain how students interact within both achievement and social domains. For example, fear of success (an avoidance motive) may be used to predict a negative outcome while hope for success (an approach motive) may predict a positive one (Elliot et al., 2006).

In the present interview data, some students sourced strong motivational direction from an external orientation such as pleasing family and friends, and in

some cases God (e.g., "Ever since I came to uni[versity]. Yes. My parents, God care about my future"). Moreover, other students cultivated avoidance strategies in the form of anxiety and self-doubt which can result in the formation of adverse self-worth and self-image representations (Covington, 2000a) (e.g., "A lot of anxiety when using my numeracy skills. Realised what I had to do ‖ may hinder where I want to go ‖ kind of scary"). Nonetheless, most of the comments voiced by students tended to be more approach oriented and internally sourced indicating the prevalence of self-determination and positive self-talk (e.g., "More determination, say I will pass and get through") such that students appear to determine their actions. This tends to emerge from an internally locused and volitional causality (Reeve et al., 2003).

Finally, there is a trend for students who at the beginning of the semester saw themselves as being in the right course of study (motivation Level 3) and passed all their enrolled papers (no academic difficulty), were utilising approach strategies and were internally oriented. In contrast, students who experience academic difficulty (motivation Levels 2 and 3) tended to employ more avoidance and internal themes. These findings tend to support the literature (Covington, 2000b; Covington & Müeller, 2001). What is interesting is the relatively low frequency of external attributions across all groupings, although there is some difference in terms of thematic content. This finding may support the notion that students are more internally-focussed on solving academic problems and thus that point of difference between academically successful and non-successful students centres on aspects of goal orientation (approach versus avoidance). Therefore, goal orientation appears to differentiate the two groups more than source of the motivation (internal versus external) (Covington & Müeller, 2001).

In terms of self-concept theory, students voice numerous strategies for dealing with their study ventures, suggesting that in this sample there is some discrepancy between aspects of students' self representations in terms of what the students' selves perceive themselves to be, compared to what they would like to be (Markus & Wurf, 1987). This discrepancy can be dealt with in using either an approach or avoidance motivation strategy. Moreover, the regulating aspect of

Markus and Wurf's (1987) model, the working self, appears to be active as evidenced by students' responses; they are able to make observations, judgements and appraisals about their study-related behaviour. Thus, there is a sense that the students have perceptions and ideas about their self-representations and that these representations are actioned depending upon intrapersonal and interpersonal factors. In this sample, students who have experienced academic difficulty have chosen a more avoidance-internal system for actioning their perceptions with regards to their self representations about what it means to be a student, while students who were interested in their study and experienced success in completing their papers voiced a more approach-internal strategy in terms of acting out their student-related self-representations.

Students' Commentaries Linked Directly with Hirsch's (2001)

Prescribed Interventions Systems

In this study, students voiced a diverse set of narratives when questions were more focused around Hirsch's (2001) ideas, and this created similar response patterns to the general comments about learning and study behaviour discussed in the previous section. The trends were very comparable to those observed in students' explanations of learning and study practices. Some students found solace in family and church (connectedness that is community- and relationally-based) while others felt they exercised strong self-originated motivation forces in the form of determination (a sense of self-connectedness). Also, students tended to more proactive (approach-oriented) rather than passive (avoidance-oriented) and this learning orientation appeared to be sourced internally rather than externally. More specifically, motivation Level 3 students who do not experience academic difficulty were more approach-oriented and internally sourced than other groups, and likely more persistent (Gardner, 2006) and self-efficacious (Kennett & Keefer, 2006) leading to academic achievement. In contrast, students who experience academic difficulty voiced more items related to avoidance and internal themes. The outcome of these results is almost a mirror copy of the previous section, and thus the results substantiate Proposition 1d (see Table 16), namely that "Students' commentaries linked directly with Hirsch's (2001) prescribed interventions

systems will be voiced differently depending on academic outcomes and self-defined motivation levels. Students with academic difficulties and low self-defined motivation levels are more likely to describe avoidance (rather than approach) strategies for study than are their peers, and they are also more likely to voice a different source of this orientation in terms of it being more external than internal."

As stated above, these results are almost a direct replica of the students' explanatory themes about their strategies as discussed in the prior sub-section. This suggests several implications. First, the results in this sub-section are confirmatory in nature and suggest that the data collected in this interview phase have a sense of reliability and that the resulting interpretations and the methods used to obtain the interview data possessed internal consistency (Aiken & Groth-Marnat, 2005). As such, confidence in the interpretations and meaningfulness of the data was enhanced. Second, the strategies used by Hirsch (2001) created a certain resonance with the students and their learning practices, thus implying a greater confidence in Hirsch's selection of strategies and his systems of intervention. Finally, the results of this study tended to support the notion of working self as posited by Markus and Wurf (1987) and as cited in more recent research (Cervone et al., 2006; Kanagawa et al., 2001; Smith, 2004). This concept implies that students have a dynamic system that moderates the notion of self, and this system varies depending upon the students' intrapersonal capabilities and regulation and their interpersonal experiences.

<center>Study 2: Defining Levels of Motivation and Readiness for Study</center>

The three propositions stated earlier for this study in Chapter 2 and associated research findings from Chapter 4 are presented below in Table 17. The primary purpose of this study was to assess the value of self-defining motivation levels into Levels 1, 2 and 3. To achieve the purpose of this phase, three separate statistical procedures were applied to the questionnaire data. First, to explicitly inspect the notion of Hirsch's three-stage theory as applied to the area of study, a multivariate analysis using the five LASSI and MSLQ measures with age as a covariate was implemented. This was followed by two multivariate follow-up procedures to inspect the level of influence of the dependent variables (LASSI and

MSLQ measures) and each independent variable (motivation level and academic difficulty) separately. Second, a categorical analysis was initiated to investigate stability of motivation level over time. Third, the usefulness of self-defined motivation level, and the LASSI and MSLQ component measures were assessed in terms of predicting course grade average and retention in programmes of study.

Table 17

Propositions and Research Findings for Study 2

Propositions	Findings
Proposition 2a Students with high self-defined motivation levels and not experiencing academic difficulties will likely have higher MSLQ and LASSI scores compared with other student combinations.	Some evidence of support for *Proposition 2a* noted. • A MANCOVA across five MSLQ and LASSI measures with age as a covariate yielded a significant between-subjects main effect for motivation level and a near significant result for academic difficulty with respect to the measures taken. No significant interaction effect was obtained for motivation level by academic difficulty. • A MANOVA for motivation level yielded a significant main effect for LASSI will and self-regulation (specifically concentration, motivation, self-testing, study aids and time management), but no other significant effects were obtained. • A one-way MANOVA for academic difficulty yielded a significant main effect for LASSI skill, will and self-regulation (specifically motivation and study aids), but no other significant effects were obtained.
Proposition 2b Students' self-defined motivation levels will likely be stable over time (as determined by their estimates at the beginning of the semester compared to the end of the semester).	Proposition 2b was not supported. • A chi-square test of the cell observed and expected frequencies yielded a significant result to suggest instability over time. In addition, the changes appear equally likely in each direction.
Proposition 2c Self-defined levels of motivation, and MSLQ and LASSI scores will likely predict end-of-semester grade averages and retention measures, that is, high motivation levels, and high MSLQ and LASSI scores predicting high end-of-semester grade averages and high retention measures.	Some evidence of support for Proposition 2c noted. • A significant predictive result for pre-LASSI will (specifically attitude) component. • A significant result for the motivation level dummy variable high level of motivation.

Hirsch's Three-Stage Theory

Four clear and significant ideas emerged from the results.

Student Participation

In terms of student participation in the study, very few Level 1 students (7%) responded to the questionnaires, compared to Level 2 students (45%) and Level 3 students (48%). This was not a surprising outcome, as it was expected that students with low motivation would be less likely to participate in a research project involving extra work. Thus, this result is consistent with the interview results of the present study suggesting that students with lower levels of motivation are more likely to be work avoidant in the way that they tackle their study and engage in extracurricular research activities such as research projects. Consequently, there is a possibility that this group may be more performance-avoidant than other motivation level groups (De La Fuente Arias, 2004), implying self-defeating thoughts leading to avoidant behaviour (Skaalvik, 1997).

As a further explanation might also be that most students at this university could be categorised as motivation Levels 2 and 3 categories, and hence the proportion of students responding to this study with a Level 1 classification (7%) may reasonably represent their grouping in the student population. On the other hand, other studies have shown participation of students with low self-esteem and motivation as being in the range of between 11 and 16 percent of the total sample (Bennett, 2003; Mistler-Jackson & Songer, 2000), and it is therefore acknowledged that the Level 1 group may be marginally underrepresented in this study. However, given the different methods in allocating motivation level between studies, this reflection may also be unwarranted. Future studies may need to investigate the prevalence of students with low motivation in universities and investigate causal linkages related to entry characteristics and choices of study.

Students Experiencing Academic Difficulty

Most of the students (65%) in this sample succeeded in passing all their papers (100% pass rate), whereas a smaller number failed at least one paper or failed to complete (30%). Some data (5%) were unavailable as some students completely withdrew from their course of study, or were midway through completing their modules. These pass rates appear to be lower than overall students' successful completion rates at this university in 2005 which were in the 80 per cent range (AUT University, 2006a), which is typical of student outcome measures cited elsewhere (Massey University News, 2005). In this research there is a large first year student contingent (64%) who often have a higher risk of failure and attrition than more advanced years (Evans, 1999; McGrath & Braunstein, 1997; Tinto, 1988, 1993). Moreover, these results may indicate that students in the courses from which this sample was taken are less ready for study than students in other courses, suggesting a greater need for early identification of at-risk students with a focus on prevention and intervention (Grites, 2001).

Lastly, the analysis of demographic variables with respect to academic difficulty revealed three significant results, namely differences that were noted for age, first year students and ethnicity groupings. This was not unexpected given the vast literature supporting these findings (Dermitzaki & Efklides, 2001; Hoskins & Hooff, 2005; Lavery, 1999; Lawrence, 2005; McKenzie & Schweitzer, 2001; Omoteso, 2006; Patrick, 2001; Pintrich & Schunk, 2002; Tinto, 1987; West, 1985). This was not considered the main focus of the present research, but is likely to provide scope for future investigations.

Motivation Level

The preliminary analyses investigating Hirsch's (2001) three-stage theory employed a multiple analysis of covariance procedure to evaluate the effect of motivation level and academic difficulty with respect to the five MSLQ and LASSI component measures with age as a covariate. The multivariate results yielded a significant between-subjects main effect for motivation level and a near-significant result for academic difficulty. No anticipated significant interaction

effect between the two variables was noted. Nonetheless, these results tentatively confirmed Proposition 2a (see Table 17), namely that "Students with high self-defined motivation levels and not experiencing academic difficulties will likely have higher MSLQ and LASSI scores compared with other student combinations." Further follow-up investigations made more complete confirmations of proposition 2a by showing that two components of the LASSI (will and self-regulation) yielded significant differences between motivation levels (Level 1; Level 2; Level 3). However, non-significant results were obtained for the MSLQ components and the LASSI skill component. These non-significant results were unexpected and may be attributed to problems associated with categorising motivation and academic difficulty. After reflection, further refinement of these measures is recommended for future research in this area.

In terms of the significant results obtained, the differences for motivation level were between all combinations of motivation levels (Level 1; Level 2; Level 3) for the LASSI will component, and for the Level 1 versus Levels 2 and 3 for the LASSI self-regulation component. Two main reflections on these outcomes have been highlighted. The initial reflection relates to Hirsch's (2001) theory of motivation level based on three stages. Next concerns the rigour of this investigative process.

The foundations of Hirsch's (2001) model lie in his notion that students can be categorised into three levels depending on their willingness to change or learn in an academic advising setting. Allocation of motivation level in the present research was largely dependent upon students' willingness to study in terms of their reasons for registering in their chosen course of study. Simply put, these levels were uninterested (Level 1), ambivalent (Level 2) and interested (Level 3). The corollary to Hirsch's thesis is that student receptivity and capacity to change (i.e., develop their learning praxis) depends upon their initial level of motivation for study.

The motivation level results indicate differences in terms of the LASSI components will and self-regulation. The will component score encompasses measures related to anxiety, attitude, and motivation. In addition, the self-regulated

component score consists of measures of concentration, self-testing, study aids, and time management. In this sense, the conceptual and professional notions of Hirsch's (2001) motivation levels has been partially corroborated by evaluating his psycho-educational concepts with similar constructs from the LASSI (Anastasi & Urbina, 1997). Accordingly, the way students define themselves on the LASSI is similar to the way students self-define their motivation level in line with Hirsch's three-stage theory. As such, the way students self-define their objective for study may be linked to the way students see themselves as strategic learners which may be at a will or self-regulatory level (Weinstein, Husman, & Dierking, 2000).

The classification of motivation into three levels used in this study could have been more clearly and accurately defined by devising more extensive measures of motivation and readiness for study, in conjunction with qualitative responses from significant others, and asking students more probing and expansive questions. Nonetheless, the interview results from Study 1 showed that students who had academic difficulty voiced more problem-related issues than students who did not experience outcome-related academic difficulty, and that there were differences in the way students voiced their readiness for study. As such, students appear to be able, to some extent, to accurately identify their motivation level towards their study. Moreover, the LASSI has been categorised as an instrument for assessing internal processes rather than external influences (McMahon & Luca, 2001). This is consistent with the interview results which suggest strong internal aspects of control over studying and learning. However, extrinsic motivation to learn may still exert strong influences linked to grade, family, friends and divine forces (Olaussen & Braten, 1998).

The results also indicate that this study's adaptation of Hirsch's (2001) categorisation system is more similar to LASSI's measurement orientation than to the MSLQ, which may highlight the differences between the two questionnaires. Duncan and McKeachie (2005) implied that questionnaires like the LASSI measured learning strategies and attitudes towards study at a non-specific level, whereas the MSLQ attempted to contextualise its focus on students' motivation and cognition in the classroom. This study's system of categorising motivation is thus likely to be akin to a non-specific model for diagnosis, a view which tends to

resonate with Hirsch's notion of accepting students' descriptions and problem definitions as a good place for investigating the wider issues related to learning and study.

Further investigations into the 10 LASSI subtests revealed that participant scores for motivation, concentration, self-testing, study aids, and time management differed significantly across motivation levels. These findings appear to be consistent with the view that LASSI factor structures follow a pattern akin to effort-related activities, goal orientation, and cognitive activities (Olaussen & Braten, 1998; Olejnik & Nist, 1992; Prevatt et al., 2006). This also provided insight into how students apply their learning strategies in that the effort-related activities of motivation, time management, and concentration appear to distinguish scores from students with low motivation compared to students with higher levels motivation. Moreover, engagement into cognitive activities also somewhat differentiates Hirsch's motivation levels. In addition, the empirical findings correspond well with the qualitative data that indicate academic problems may be attributed to the implementation of time management strategies and differences based on self-regulation activities. Nonetheless, the categorisation of motivation level in this research could have been improved if a pilot study had been implemented and a more extensive set of questions devised.

Academic Difficulty

The differences for academic difficulty revealed that the three LASSI components (skill, will, and self-regulation) yielded significant results between academic difficulty levels (academic difficulty; no academic difficulty). Additional investigations into the 10 LASSI subtests yielded differences for motivation and study aids when academic difficulty was considered. Thus, the importance of motivation confirms the emphasis Hirsch (2001) places on motivation in his model, and the importance of considering motivation when researching the area of student learning.

These findings are very much in keeping with other studies that show a relationship between perceived motivation, self-regulation and academic success (Lynch, 2006; Pintrich & De Groot, 1990; Spitzer, 2000; Tremblay et al., 2000;

Vanderstoep et al., 1996; Zimmerman & Martinez-Pons, 1990). Studies (Proctor et al., 2006; Yip & Chung, 2005) have shown that the scores on the LASSI have significant associations with academic success. Yip and Chung (2005) found differences between high achievers and low achievers in terms of 7 of the 10 subtests, namely selecting main ideas, attitude, study aids, motivation, time management, self-testing and test strategies when considering matriculation education. But they also found only two significant differences, concentration and motivation, when students applied their responses to university education. In Proctor et al.'s (2006) study, students with high grade point averages (>2.5) were compared with students with low grade point averages (<2.5). The findings showed that students with low grade point averages reported significantly low scores in comparison with the LASSI norms on 7 of the 10 subtests, namely anxiety, attitude, concentration, motivation, selecting main ideas, time management, and test strategies. In the present study, significant differences were found for motivation and study aids only. This is worrying as 8 of the LASSI subtest scores were unable to discern significant differences between the academic difficulty groups. This may in part be due to the way the academic groups were determined by using a pass 'all' versus fail 'one or more' criteria; a formulation that may not be subtle enough to detect possible anomalies. Further research may need to incorporate other systems of categorising academic difficulty such as utilising students' self-perceptions, teachers' external-perceptions and academic course work records.

The disparities between this study and the two former studies may be due to various reasons such as sample characteristics and procedural variations. In the Proctor et al. (2006) study, grade point averages were collated first and then the students were given the LASSI, and a similar procedure was used in the former study (Yip & Chung, 2005). In the present study, the LASSI responses were collected first and then the level of academic difficulty was determined about 14 weeks later. There are therefore strong sequential and time differences between the studies. Nonetheless, in the Yip and Chung (2005) study, when students were asked to reflect on their university learning the differences between the two groups of achievers (high; low) were related to issues of motivation and concentration

which led the authors to consider a change from an unfocused difference to a more focused intrinsic dispositional difference. In the present study, there is a strong motivation difference between the students with academic difficulties versus those without, supporting Yip and Chung's notion, but there was also a study aids difference indicating that the differences are likely to be more complex than the intrinsic-extrinsic explanation.

Stability of Motivation Level over Time

Proposition 2b (see Table 17), "Students' self-defined motivation levels will likely be stable over time (as determined by their estimates at the beginning of the semester compared to the end of the semester)" was developed following a review of Hirsch's (2001) ideas related to motivation level. In line with his model, in the present research students with low levels of motivation were given two main change options, namely, continuing to attend the university's course of study but bearing in mind options for constructive transitioning out of the university, or enhancing their motivation with regards to the chosen programme of study by increasing their readiness for change. The ideal scenario occurs when the student and the academic advisor work together to assess and intervene in a reciprocal, productive fashion to optimise academic achievement. Hirsch's model suggests that students' motivation will likely be stable over time if no change agency is positioned, or that if a change agency is positioned students may be able to change in terms of their motivation and readiness for study. The findings of this research suggest motivation level was a dynamic entity whereby students' ratings changed with regards to readiness for study**.** This change in rating went both ways, indicating that Hirsch's notion of changing a student's rationale for study is sound. However, this movement can go from high to low, low to high, fluctuate or remain stable. Change in perception with regards to study may be due to numerous factors related to the areas of expectancy, reasons for engagement, expectancy and value, and cognitive and motivational integration (Byrne & Flood, 2005; Eccles et al., 1983; Eccles & Wigfield, 2002; Pintrich, 2003; Pintrich & Schunk, 2002).

The diverse set of student responses in the interview section of this research indicate that explanations will lie in various combination of factors, both

cognitively and acognitively based (Leonard et al., 1999). The complex issues of ascribing explanations is posed by numerous authors who have reviewed the nature of the self-concept and its relation to motivation and self-regulation (e.g., Leonard et al., 1999; Markus & Wurf, 1987). Leonard et al. propose that expectancy-value theories can explain cognitive and calculative reasons for change in people. In expectancy-value theory, the self-concept weighs up the various alternatives in terms of probable outcome and perceived effort to achieve outcome. The value of the outcome is considered and defined by internal sets of standards and reviewed against a reference group. Hence, there is considerable jockeying between perceived self, ought self, and ideal self (Markus & Wurf, 1987). In the education context, the changes may be influenced internally by an intrapersonal review of standards and externally through advice from significant others such as teachers and academic advisors (Newman, 2002).

The setting of standards involves students' attributions about their justification for their choice of level of motivation, namely uninterested, ambivalent, or interested. The findings of this study suggest that students may be unsure about their reasons for engaging in study, which implies that many students see their self-defined motivation level at the beginning of the semester as a malleable characteristic that can change over time or situations (Cole & Denzine, 2004; Eccles & Wigfield, 2002; Pintrich & Schunk, 2002; Sabee & Wilson, 2005; Takaku, 2006; Weiner, 1985; Withey et al., 2005). Therefore, the way students attribute their readiness or motivation for study may be a useful area of investigation for academic advisors. The suggestion that students see their attributions of readiness or motivation for study as flexible attributes is a positive finding. It suggests that students can develop states of empowerment that can modify the way they view their study, which is consistent with Hirsch's (2001) approach associated with applying motivation levels that are synchronised with specific intervention strategies (Pintrich & Schunk, 2002).

Moreover, students are dynamic entities who can change from avoidant strategists to a shrewd approach-oriented operators or vice versa. Hirsch (2001) proposes that academic advisors need to carefully pace the students in terms of

their changing entity. Transformative properties therefore need to be consistent with students' levels of willingness for change, the pace they are willing to change at, their levels of understanding, and their preferred learning systems. Hence, in this data set the change agents appear to be random and not easily defined producing both positive and negative changes suggesting potent and complex contextual influences impinging on students' perceptions and experiences with regards to their motivation to learn and choice of study (Bennett, 2003).

Predicting Grade Average and Retention

A further underlying assumption taken from Hirsch's (2001) model suggests that academic grade could be predicted by self-defined estimates of students' motivation levels and experiences with self-regulation. Proposition 2c (see Table 17) suggested that, "Self-defined levels of motivation, and MSLQ and LASSI scores will likely predict end-of-semester grade averages and retention measures, i.e., high motivation levels, and high MSLQ and LASSI scores predicting high end-of-semester grade averages and high retention measures." This aspect of the study explored the possible differences between students that academically achieve versus those that do not. In addition, the adaptation of Hirsch's system of classifying motivation could be investigated in line with external standards, specifically motivational and self-regulatory indicators.

Proposition 2c was also based on prior research demonstrating that students' levels of perceived motivation and self-regulation may predict academic success (Lynch, 2006; Pintrich & De Groot, 1990; Spitzer, 2000; Tremblay et al., 2000; Vanderstoep et al., 1996; Zimmerman & Martinez-Pons, 1990). Lynch (2006) utilised the MSLQ and identified variables related to the concepts of motivation and self-regulation that predicted course grades. The variables included effort, self-efficacy, and external goal orientation. He further found that students' grades could be predicted from different variable combinations depending upon the level of study being engaged in (upper level; freshman). Self-efficacy was found to be an influential predictor for both groups. Lynch's findings tended to confirm Pintrich and De Groot's (1990) earlier results. In addition, Tremblay et al. (2000) found that low levels of aptitude and interest in mathematics resulted in high levels of

anxiety which were further linked to low grades. Moreover, they suggested that motivation positively influenced achievement, and this association was related to attitude to academic teachers and course of study, and to examination performance. Nonetheless, Vanderstoep et al. (1996) found that variables related to the themes of knowledge, motivation and self-regulation were able to differentiate achievement in some courses but not others.

The results of this study are partially consistent with these studies. First, the LASSI attitude subscale (attitude being a subfactor of will) predicted grade average. Secondly, the dummy variable high level of motivation predicted retention. Nonetheless, these results are inconclusive, as neither the LASSI motivation subtest nor the MSLQ component motivational beliefs generated significant results. This inability to produce significant effects is unlikely to be related to a difficulty in measurement (Petri & Govern, 2004), as both Lynch (2006) and Pintrich and De Groot (1990) both used the MSLQ. The results tentatively suggest that this study's method of categorising students may not have strong criterion-related validity in terms of predicting academic achievement. Nonetheless, the method of allocating motivation level in this study is not as thorough as that proposed by Hirsch (2001) who uses both semi-structured interviews and psychometric instrumentation in the form of the College Student Inventory (CSI) to make a definitive categorisation. Hence, the factors of the CSI may prove to be more accurate predictors of academic achievement, which is a possible area of further research. In addition, it may be fruitful to assess disciplinary differences (Covington, 2000a).

Finally, the notion of a temporal effect (Pintrich & De Groot, 1990; Remedios et al., 2005; Wicker et al., 2004), was considered as the post measures yielded no significant predictions. These findings may imply that measures of student motivation and self-regulation are more unstable as students approach examinations (Pintrich & De Groot, 1990; Remedios et al., 2005; Wicker et al., 2004). The study by Remedios et al. (2005) may present some clues to this supposition. In their study they suggested two alternatives that may be relevant for these findings. Their initial assertion was that some students may have lowered

interest before examinations while others have heightened interest due to the challenge of examinations, the opposing effects thus balancing each other out. They also inferred that pressures of examinations appear to undermine interest and aspects of denial (or other emotions) may distort students' ability to accurately perceive their level of interest. Self-concepts with regards to accurate judgement of self-competence may thus be distorted prior to examinations indicating greater discrepancies between the three aspects of self: perceived, ideal, and ought (Markus & Wurf, 1987; Pintrich & Schunk, 2002).

The findings in this study are therefore exploratory as they tend to show that attitude at the beginning of the semester is the most accurate predicator of academic achievement in terms of using motivation and self-regulation measures, than immediately prior to examination. This has ramifications in terms of decisions about enrolment in courses of study. Attitudes to study and transition into tertiary study are likely to be self-defined by students from interpersonal and intrapersonal sources such as family and community background, personal features and experiences, as well as educational history (Corbin, 1998; Terenzini & Pascarella, 1980; Tinto, 1988). Nonetheless, it is also important that attitude was the only significant predictor of grade average; suggesting that further research is required to more comprehensively determine other factors that may significantly contribute to academic achievement such as prior education and financial concerns.

Study 3: Impact of a Study Skills Programme and

Access to Academic Advisory Services

The four propositions stated earlier for this study in Chapter 2 and associated research findings from Chapter 4 are presented below in Table 18. The principal purpose of this study was to assess the value of an academic advisory service in the form of a group-based generic study skills programme, and access to academic advisory services. To achieve this purpose, three separate statistical procedures were applied to the questionnaire data. First, multivariate statistics were performed to investigate the sustained value of study skills programmes on grade average, and perceived motivation and self regulation. In addition, the influence of motivation

level was considered. Second, two sets of log-linear modelling procedures were executed to investigate the value of access to academic advisory services.

Before the above analyses were undertaken it is noted that it was not surprising that there would be a natural attrition in the participants from 317 students who responded in the first instance to 147 students who responded on both occasions (beginning and end of the semester). Hence, a 46% response rate to the follow-up postal questionnaires was established, which is below the recommended rate of 60% (Armstrong & Ashworth, 2000), but some studies have reported much lower response rates of 40% or lower (Morrison, Thomson, & Petticrew, 2003). The response rate of this study's postal questionnaire was evaluated by considering the persistence of this study's 147 participant group as compared to the 170 non-response group in terms of MSLQ and LASSI responses scores. The findings indicated that the students who completed the postal surveys were no different in terms of distribution of initial motivation and self-regulation measures. Thus, any differences in the way students dropped out from the study are probably due to chance variation. Moreover, there is confidence in interpreting the statistics for the abridged sample of 147; the reduction was likely to be a consequence of natural attrition.

Table 18

Propositions and Research Findings for Study 3

Propositions	Findings
Proposition 3a Students who have higher grade averages at the end of the semester will likely have higher self-defined motivation levels and have attended a study skills course.	Some evidence of support for Proposition 3a noted. • The 3 x 3 ANOVA indicated a significant main effect of study skills course completion.
Proposition 3b Students who have attended a study skills course will likely enhance their self-perceptions in relation to motivation and self-regulation as determined by their MSLQ and LASSI measures more than non-attendees and this will be more pronounced for students with high motivation levels than lower level peers.	No significant evidence in support of Proposition 3b noted but some trends in the data acknowledged. • The one-way (completion of a study skills course) repeated-measures MANOVA used against the five questionnaire measures associated with the LASSI and MSLQ components indicated three significant effects, but no significant time effect.
Proposition 3c Students with high self-defined motivation levels will more likely intend to and actually access academic advisory services than their peers.	No significant evidence in support of Proposition 3c noted but some trends in the data acknowledged. • The higher order analyses showed that there was no significant three-way effect, but there was a significant two-way effect. • For motivation Level 3, about 26% of those who did not intend to did access services (compared with an overall level of 15%), while for motivation Level 1, 24% of those who did intend to actually, accessed services (compared with an overall level of 63%).
Proposition 3d Students who have higher self-defined levels of motivation and academic difficulty are likely to have accessed academic advisory services more frequently than their peers.	No significant effects noted but some trends in the data acknowledged. • The higher order analyses showed that there was no significant three-way or two-way effects. • For those students who appeared to have academic difficulty 2 out of 8 (25%) Level 1 students accessed the student academic advisory service compared to 13 out of 49 (27%) Level 2 students and 12 from 38 (32%) Level 3 students.

The Impact of a Study Skills Programme

Academic Attainment, Study Skills Course Completion and Self-Defined Motivation Level

The results for this aspect of Study 3 indicated two interesting outcomes. First, the analysis of variance results suggested that completion of a study skills course was linked to higher grade averages at the end of the semester compared to non-completion. Moreover, the grade averages were also significantly improved by attending multiple course options, that is, generic study skills course completion plus another more specialised course in writing or mathematics or computing. This outcome tended to partially confirm Proposition 3a (see Table 18), namely that "Students who have higher grade averages at the end of the semester will likely have higher self-defined motivation levels and have attended a study skills course", in that students who attended the courses did appear to achieve higher grade averages than their peers who did not attend the courses. However, allocation of self-defined motivation levels did not show any definitive link, which may be due in part to the flaws in the present research's classification method.

Proposition 3a was developed as a consequence of examining Hirsch's (2001) notion of developing study skills. The assumption was that students gain greater proficiency in their study and this will likely manifest itself in higher grades, following explicit development in areas of study skills weakness, building skills to correct these weaknesses, and consolidating skills through repeated practice. These types of intervention promote areas of cognitive and metacognitive development (Pintrich, 2003). The areas specified by Hirsch are close to the areas taught in a naturally occurring study skills generic workshop at the university where the present study was conducted, but there was no preconceived match, as the university's programme was developed prior to the author's knowledge of Hirsch's intervention systems.

Hirsch (2001) promotes the idea of augmentation in areas of concentration and attention, classroom behaviour, and generic skills areas such as memorisation, reading comprehension, and test-taking strategies. At the university in question,

the naturally occurring generic study skills programme focuses on critical thinking, learning styles, reading academic texts, taking and making useful notes, memory techniques, time management, planning assignments, plagiarism, referencing, writing practice, and test and examination skills (AUT University, 2007). Other more specialised short courses are available to students concentrating on writing, oral presentation, group work, mathematics and software skills (AUT University, 2006b).

The improved grade average scores in students who attended the study skills courses are consistent with Hirsch's (2001) assertions, and elsewhere (Fraser & Hendren, 2002; Manalo et al., 1996; Onwuegbuzie et al., 2001; Trotter & Roberts, 2006; Tuckman, 2003; Wai-yung & Lai-ling, 1984). According to Tuckman (2003) and Manalo et al. (1996), programmes designed to teach students cognitive and motivation strategies improve academic performance, as determined by grade average for students who attend study skills programmes as compared with non-attending peers. Nonetheless, as with the present research, Tuckman acknowledged the problem with the internal validity of his study, related to students being naturally selected into the two groups thus compromising random selection.

Hattie et al. (1996) used a meta-analysis to explore the value of study skills courses. Optimal results appeared for programmes incorporating metacognitive strategy formation, alongside motivational and contextual relevance. Research in this area (Hattie et al., 1996; Robbins et al., 2004) suggests it was difficult to tease out the impact of core teaching and assessment context on study skills development. In the present research, the powerful influence of the core content teaching would have likely been equally influential on all students in the study, thus not necessarily a major confounding factor in the present research. Nonetheless, this research shows a positive attitudinal shift in students following completion of a study skills programme, but Hattie et al. suggest that non-academic factors do not necessarily translate into academic attainment suggesting independence between the non-academic and academic pathways. In the university in which the present study was conducted, given the heavy emphasis on critical thinking and contextual relevance in areas of referencing, writing and reading, this

research (Hattie et al., 1996; Robbins et al., 2004) may have provided a clue as to why there is a shift in grade average in the present study. The indication may relate to the complex interplay between the way psychosocial, study skills and motivational factors interact to complement the learning process. However, the present discourse suggests that there are potential opportunities for research in teasing out these specific aspects of the study skills programme.

Study Skills Course Completion and Self-Defined Motivation Level, and LASSI and MSLQ Scores

Next, several main findings of this aspect of the study were noted from the multivariate analyses.

First, there was a significant between-subjects main effect for study skills completion but no time or time and study skills course completion interaction effect. The presence of no interaction effect was unexpected but may be linked to the study by Remedios et al. (2005). Students may be undergoing emotional, motivational and self-regulatory concerns related to the forthcoming examination period and as such they perceived a reduction in their self-testing skills and use of study aids, and an increase in anxiety (Akgun & Ciarrochi, 2003; Durkin & Main, 2002; Entwistle & Entwistle, 2003; Naveh-Benjamin et al., 1987; Remedios et al., 2005; Tsai & Tsai, 2003; Zeidner & Matthews, 2005). This may be a reasonable assumption given the significant differences noted with respect to grade. Therefore, given the subtle nature of a cancelling or dampening effect the study skills workshop may have an effect on achievement but not on changes in the perceptions of study-related affect and cognition, especially in the areas of self regulation. It is further proposed that this finding is related to activating a working self-concept promoting change but the magnitude and direction of this change is being subjected to a neutralising phenomenon (Markus & Wurf, 1987).

Second, when all 10 LASSI scores were scrutinised three measures were consistently low, namely anxiety, self-testing and time management. These results are consistent with the interview data suggesting time management as a major issue for students. In addition, there appears to be a strong anxiety component to student behaviour, indicating a strong case for an affective and cognitive

combination in terms of identifying specific problem areas (Hirsch, 2001), which is consistent with the self-concept theory discussed earlier (Markus & Wurf, 1987). The low scores for anxiety are also consistent with other research in this area (Proctor et al., 2006; Sansgiry et al., 2006; Yip & Chung, 2005). Findings from two of these studies (Proctor et al., 2006; Sansgiry et al., 2006) are consistent with the present study's sample which self-reported problems with time management and test anxiety.

In addition, Yip and Chung's (2005) sample from Hong Kong generated higher scores in terms of time management. The Yip and Chung results indicated high-anxiety feelings amongst both low and high achievers, while the Proctor et al. (2006) study indicated high anxiety among only low achievers. These differences in the studies may indicate cultural similarity and disparity, and may be linked to the notions of individual versus collectivist behaviour and cognition (Kanagawa et al., 2001; Pintrich & Schunk, 2002).

Moreover, two interaction effects were noted between questionnaire component scores and both completion of a study skills course and time. With regards to the first interaction effect, the results indicated that the non-completion group were different from the completion groups (generic and multiple study skills workshops) in terms of questionnaire responses on the LASSI component self-regulation. Self-regulation is composed of the subtests concentration, self-testing, study aids, and time management. These findings suggest that students who attend study skills programmes self-report their motivational and self-regulatory strategies differently to those who do not attend such programmes and these differences are likely to be consistent over time, as there were no time and study skills course completion interaction effect.

In terms of the second interaction effect, the LASSI self regulation scores decreased over time for multiple course completion and non-completion, and the MSLQ motivational beliefs score decreased for non-completion only. All other scores increased over time. As a result, students' perception of their self-regulatory strategies as measured by the LASSI self regulation component decreased over time. In particular, students perceived potentially greater problems in the areas of

the LASSI self-regulation subtests self-testing and study aids prior to their examinations than at the beginning of the semester.

Lastly, motivation level (pre and post) and study skills course completion were adjudged independent which complements the repeated measures results showing no time and study skills course completion interaction effect, and the results regarding the stability on motivation level over time. As such, students' self-definitions of motivation level were not influenced by the study skills programmes. This is a surprising result as an underlying assumption of Hirsch's (2001) model is that motivation Level 3 students will more likely engage in study skills programmes and moreover are more likely to be affected by completion of such programmes, especially given that the study skills programmes in this research simulate intervention Level 3 interventions. Nevertheless, the sample size in this research may be too small to contribute to a significant difference, given the low number of motivation Level 1 students attending the study skills programmes and completing the research requirements. In addition, this finding may suggest that this study's method of categorising motivation level is not as sensitive a measure for discerning the influence of a study skills programme as compared to the LASSI component self-regulation and to some extent the LASSI skill component. It is further acknowledged that these conclusions are is speculative and based on trend data rather than levels of clear significance. Future research may need to consider using a more formal experimentally controlled process or developing innovative qualitative systems to investigate motivational and self-regulatory changes over time.

The findings of this research cautiously indicate that there may be some subtle changes prior to the examination period in relation to the way students perceive their self-regulatory strategies and in particular self-testing and use of study aids. In addition, it is noteworthy that the three areas consistently scored low by students were anxiety, time management and self-testing. Naveh-Benjamin and McKeachie (1987) compared the performances of anxious students on formative and summative assessments. Students with good study habits in the form of self-regulation did well on formative tasks, but had problems in the summative test

situations. As such, this may indicate a problem with processing and retrieving information under pressure. The anxious students with poor self-regulation skills found both formative and summative tasks difficult. This result indicated that problems occurred not only with retrieval under pressured conditions but also in the application of cognitive strategies such as time management and self-testing. The authors suggested the difference lay in the form of information processing.

In the present research, students who completed the multiple course options tended to score higher on the LASSI self-regulation component than students who completed the generic course option only and students who did not complete the courses at all. Self-regulation contains the LASSI subtests concentration, self-testing, study aids, and time management. It was further shown that the LASSI subtests anxiety, self-testing and time management were scored consistently low. On the post-measures prior to examinations students who attended the multiple course option scored lower on the subtest anxiety than other options and higher on the subtests time management and self-testing, compared with generic course completion and non-completion options. These results suggest that students perceived that they had learnt something of value from the multiple course option in terms of time management and self-testing but not in the area of anxiety. As such, students who completed the multiple course option may have learned a greater sense of resourcefulness in the more teachable areas of time management and self-testing but not in the affect-laden area of anxiety (Akgun & Ciarrochi, 2003).

By engendering more study skills, the multiple course option may be imparting group-based competence in areas such as time management and self-testing skills that creates the foundation for good study habits but this group process may have greater difficulty in teaching the management of anxiety (Hattie et al., 1996). It is proposed that the multiple study skills courses may have greater generalisability, possibly creating connections with content-based teaching. Hence, future research may benefit from investigating the hierarchical influences of the LASSI subtests in relation to study skills workshop completion and academic achievement. Therefore, the Proposition 3b (see Table 18), namely that "Students

who have attended a study skills course will likely enhance their self-perceptions in relation to motivation and self-regulation as determined by their MSLQ and LASSI measures more than non-attendees", is not significantly confirmed but these probing results but may be useful fodder for further research in this area.

Finally, there was no time main effect indicating no significant changes in the ways students responded to the MSLQ and LASSI questionnaires between the first session at the beginning of the semester and the last session at Weeks 10 and 11 prior to examinations. The lack of a significant time main effect is contrary to expectations given the implied assumptions related to Hirsch's (2001) model and the results of other studies using similar methodology in this area (Knox, 2005; Maclellan & Soden, 2006). However, for most of the scores there is an upward trend over time. Therefore, the present research may not have gained a significant time main effect for various reasons. The following research employed different design features to the aforementioned studies (Knox, 2005; Maclellan & Soden, 2006), as it incorporated less specific measures of self-regulation and motivation, the questionnaires responses were obtained from students in the post phase at different times, and this study used a natural control group. Therefore, it could be argued that the present research is a more generalisable estimate of the value of study skills workshops and thus a more accurate measure of the long-term impact of study skills programmes on students' self-evaluations. Maclellan and Soden (2006) suggested that their research was impeded by the lack of a control group, but they were able to pose three alternative propositions about their findings, namely students acquired a level of expertise through engagement with content, students acquired learning as a consequence of teaching proficiency, and students adopted a mastery level of goal orientation. A further explanation is that students' memory of events might be influenced by a recency effect (Baddeley & Hitch, 1993) and that long term self-evaluations may regress back to a baseline mean.

Access to Academic Advisory Services

Motivation Level, and Actual and Intended Use of Academic Advisory Services

The results of this study suggest that students' motivation levels had no significant bearing on students' decision-making processes with regards to accessing academic advisory services. Therefore, these findings suggest that students with different self-defined motivation levels (1 to 3) made similar decisions about utilising academic advisory services. However, there is a subtle trend indicating that students with higher motivation levels tend to follow through on their intentions to seek academic assistance while students with lower motivation levels are less likely to ask for assistance even if they experience academic difficulty. The lack of significance in these findings is contrary to expectations but the trend was predicted, as indicated in the wording of Proposition 3c (see Table 18), namely that "Students with high self-defined motivation levels will more likely intend to and actually access academic advisory services than their peers."

The findings of this study somewhat affirm the assumption underlying Hirsch's (2001) model that students who are uninterested in their study in the first instance are not likely to seek assistance compared to more motivated students. Moreover, the interaction between the intended and actual access factors indicated fewer students than expected sought assistance from academic advisory services, but students not seeking assistance from academic services were consistent with expectations. Therefore, students knew about the services but appeared to not use the services. It cannot be assumed that the students who did not use the services were academically able students, as the results showed that the students accessing academic advisory services were both academically able as well as those not passing their courses. Hence, several explanations of these findings are posed drawing on the notion of self-concept and expectancy-value theories.

Expectancy-value theory relates to the idea of student motivation being determined by a combination of students' beliefs about how good an academic

advisory service may be moderated by their expectancies related to such a service (Eccles & Wigfield, 2002). Moreover, this theory can also consider aspects of academic or performance value that students perceive when engaging such services. The intrinsic value of the service to students' study habits can be appraised, together with how useful the services are perceived as being for study and academic attainment. Lastly, the cost of time and convenience will probably be added to the decision-making formula (Eccles & Wigfield, 2002). This is a highly cognitive process that implies students are viewing the academic advisory services as a cognitive exchange agency (Leonard et al., 1999). Nonetheless, expectancy constructs have a wide reach and can be to be linked to "self-efficacy, perceptions of competence, and expectancy for success from self-efficacy, self-worth, [and] self-determination" (Pintrich, 2003, p. 671). Therefore, there may be strong emotional and social influences related to choosing to access academic advisory services. The decision-making process of choosing to access academic advisory services is therefore likely to engage both cognitive and affective processes and as such students may have an unclear idea of whether or not they will need academic services.

The judgements about utilisation of services are therefore likely to be both intrapersonal and interpersonal in nature, and may be related to the initial students' perceptions about their motivations with regards to enrolling in their courses. This resonates well with self-concept theory suggesting that the way students perceive themselves is a dynamic process involving a continuous and probably non-linear self-reflexive process (Leonard et al., 1999; Markus & Wurf, 1987). In addition, in line with self-worth theory, students may be utilising failure-avoidant tactics by purposefully setting up failure justifications (Covington, 2000a). However, in this research the expectation was that motivation Level 1 students would require more assistance and the fact that they appear to seek less assistance compared to other groups reaffirms that they may be more avoidant in responding to learning difficulties. There is thus a feasible interaction between students' self-concepts and their motivation for seeking assistance to enhance their academic performance (Eccles & Wigfield, 2002). It is proposed that the strategy to successfully alleviating academic problems does

not lie in the awareness of the problems, but in the methods students choose to solve them. In the present research, the two methods emphasised were students' approach or avoidant systems to solving problems; the choice of orientation possibly being related to the way students view their course in the first instance.

Motivation Level, Academic Difficulty and Actual Use of Academic Advisory Services

The results of the log-linear analysis indicated that the variables motivation level, academic difficulty, and actual use of academic advisory services were adjudged to be independent. This was an unexpected result, as Proposition 3d (see Table 18) stated that, "Students who have higher self-defined levels of motivation and academic difficulty are likely to have accessed academic advisory services more frequently than their peers." In the present research there was no such interaction. However, on reflection this result matches previous findings in this research, and suggest that utilisation of academic advisory services has little to do with prior motivation level for study or actual experience of academic difficulty. This is definitely a problem for students who experience academic difficulty at all levels of motivation. Hirsch's (2001) model implies that students with high levels of motivation would more likely access academic advisory services than students with low levels of motivation. There is a marginal trend that does not contradict this premise in relation to students experiencing academic difficulty given that 32% of motivation Level 3 students accessed academic advisory services, compared to 27% for motivation Level 2 and 25% for motivation Level 1. However, this trend is not convincing.

It can be posited that students often appear to be unable to effectively regulate their study-related behaviour due to a set of faulty academic self-representations (Markus & Wurf, 1987). An explanation for this acquisition of distorted academic self-representation may lie in further examination of the concept of self. Markus and Wurf (1987) suggest that self-concept is made up of multiple selves that can be represented in the form of actual, ideal, and ought selves that are being shaped through interaction with one's culture, social environment, individual needs, and perception with regards to what is reality. This

shaping process involves a cocktail of feelings, cognitions and beliefs that drive behaviour. Therefore, students' effectiveness in terms of academic achievement is being determined by the orientation of each of these driving forces. The self-regulatory process required to be effective students may thus be either positively or negatively influenced by the level of balance in these forces.

Consequently, students can employ either approach systems of study-related behaviour by focusing on positive possibilities or avoidant behaviours by concentrating on negative outcomes (Elliot & Covington, 2001). The utilisation of these approaches in terms of solving problems appears to be equally distributed across all groups, suggesting that even those students interested in their study may have misleading concepts about learning with respect to study-related solutions such as avoiding academic assistance and, furthermore they are also likely to fail some or all of their subjects. The reason for avoiding assistance may be due to an acquired set of expectancies, beliefs and values related to the academic assistance programmes available at this university. Also students may be employing self protection mechanisms linked to self-worth protection, self-handicapping and defensive pessimism (Covington, 2000a). Students thus set goals accordingly (Eccles & Wigfield, 2002).

According to Markus and Wurf (1987), for self-regulation to be enacted effectively several components need to be considered. The first relates to the issue of goal setting, followed by cognitive preparation for action and a cybernetic cycle involving behaviour, monitoring, judgement and self-evaluation. If students are unable to develop accurate and authentic self-representations then the self-regulatory processes is not likely to be effectively and efficiently initiated. It was shown in this research that students who experience academic difficulty were able to recognise that they had greater problems with areas of will and self-regulation compared with their non-academic difficulty counterparts. Hence, the point of difference may not be the level of recognition but the utilisation of strategies to solve their problem, such as accessing academic advisory services. The problem is one of execution rather than acknowledgement such that students' goal-setting strategies are not achieved possibly because of disengagement or avoidance

(Boekaerts & Corno, 2005). Students who experience academic difficulty may acknowledge problems (internal attributions) but they may have difficulties in developing solutions due to self-misrepresentation in terms of competence and values (Leonard et al., 1999).

This interpretation of the findings is consistent with Hirsch's (2001) strategy of developing a helping relationship between academic advisors and students with the aim of increasing students' motivational strategies so that they can optimise utilisation of relevant self-regulatory learning strategies. The future development of self-regulatory patterns that are able to enhance learning depends upon accuracy and acceptance of incoming data about ability and skill levels, and the requirement for the willingness to process such data (Greve & Wentura, 2003; Ommundsen et al., 2005; Wentura & Greve, 2005). This process of integration often requires the assistance of academic advisors to realistically mirror present self-descriptions with future self-possibilities. This is likely to be more of an individualised intervention strategy than a group-based one. This interaction may inculcate the development of recognising and understanding what it means to be a successful student and the behavioural commitment associated with this self-recognition (Collier & Callero, 2005).

Conclusion: How useful is Hirsch's (2001) Multiple Intervention Model with Respect to its Research Application in the Area of Academic Advising?

In applied research there are feedback loops between the areas of theory, research and practice. The results of the present research propose that Hirsch's (2001) model is useful in exploring areas of students' motivation to learn and academic difficulty, and the effectiveness of academic advising intervention resources. The specific propositions presented in chapter 2 are somewhat supported by the findings. The findings also revealed extensive non-significance, suggesting that more conclusive results may be achieved through a more

systematic research design drawing from the experiences and findings of this research. Nonetheless, there are a number of inferences that can be drawn from the results of the present research.

The findings imply that students having academic difficulty may be utilising avoidant learning strategies and have difficulties with both motivational and self-regulatory aspects of learning. The problem areas identified were anxiety, self-testing, and time management. Moreover, the findings indicate that students who have strong connections between education and life goals are more likely to achieve higher grades than students with no such connection.

The evidence cautiously indicates that students with low levels of enthusiasm towards their learning at the beginning of the semester are more prone to develop additional problems with self-regulation and motivation, which also appear be linked to academic achievement and their choices with regards to seeking academic assistance. Moreover, the findings suggest that insight into developing problems does not necessarily constitute a willingness to seek academic assistance. Thus, reasons for selecting a course in the first instance, or attitudes towards learning, will probably have a potent influence on the likelihood of academic attainment and retention at the end of the semester.

In a more positive light, the research also shows that students tend to fluctuate in terms of their motivation for selecting their courses and this will likely affect their perception of the value of study. An important implication from this is that students can be positively influenced through direct experience with transformative change agencies. In other words, it seems that students who have low motivations towards study in the first place will obtain significant benefit from encouragement to access academic advising. The benefit will be the influencing or neutralising of their initial negative motivational inclination and the engendering of more positive academic outcomes.

These findings provide a basis for some useful understanding of student motivation and their problems and the possibilities of action and change. In saying this, however, there is no suggestion that the matters should be seen as simple and

easily resolved. In particular, while the understanding may help, it is acknowledged that changing behaviour is a substantially layered matter. This includes of course the specific case of the concept and practice of changing or transforming students' attitudes and practices of study. These are also multifaceted and complex issues and involve both academic and non-academic interventions.

With respect to the overriding proposition of the research project, the findings tentatively indicate that Hirsch's multiple intervention model can be effectively used as a research framework to investigate the learning needs of students, specifically in the areas of motivation and academic difficulty. There is also some evidence to corroborate the view that cost-effective group-based educational interventions in the form of academic advising will likely be more effective for highly motivated students who are ready for study and that these interventions will likely improve students' achievement and retention, heighten motivation, and develop self-regulatory strategies.

Central to his model, Hirsch (2001) outlined five main areas for assisting students who experience academic difficulty, which include:

1. a holistic system for diagnosis.

2. a cost-effective model of intervention.

3. acknowledgement of motivation and readiness for change.

4. individualised educational plans.

5.   interventions on a larger scale involving study and learning skill development.

First, the findings of the research have shown the value of a holistic assessment of students' educational practices. This assessment allows academic advisors to access information about students' problems, their readiness for study, and their explanations with regards to their learning practices. This process also allows for students to access self-relevant information that can be potentially useful for their own academic and non-academic development.

Second, the university where this research was undertaken provides a study skills programme and academic advisory services that are freely available to all students. These services are an integral part of university commitment to assisting the students' development of learning skills. As such, students are able to access cost-effective services that will likely improve their learning competence and level of academic attainment.

Third, this research has shown that Hirsch's (2001) idea of categorising students does have some useful applications to investigating students' readiness to study as it can be used to appraise students' perceptions about their motivational and self-regulatory learning strategies. However, there may be scope for future work in this area as the LASSI measures in particular are likely to be more sensitive measures of students' self-perceptions with regards to motivation. Nonetheless, the present research was not able to combine the interview and survey data for all participants and therefore the categorisation process used in this study could have been more thoroughly developed and was likely not as substantial as that proposed by Hirsch.

Fourth, Hirsch (2001) argued that students require individualised assistance if they experience academic difficulty and intervention for these students will require both cognitive and affective approaches. In this research, Hirsch's model was useful as it provided a frame of reference to allow investigation into the associations between motivation level, academic difficulty, and students' discrepancies between intended and actual access of academic services. The results of this research concerning the issue of access to academic advising services indicate that students may be confused or in a state of denial or refusal about the value of these services for learning development.

Lastly, this study has shown that Hirsch's (2001) system can be applied to researching the effectiveness of naturally occurring study skills programmes in universities. In this research, study skills programmes had a positive effect in terms of improving students' end-of-semester grades. Moreover, this investigation has

further shown that this process is a potentially useful research method for evaluating the way all students study and learn.

The results of this study also indirectly corroborate other approaches to researching and modelling in this area of education (Bennett, 2003; Tinto, 1975, 1982, 1987, 1988, 1993, 1997). However, these research models tend to have a wider scope and greater breadth than Hirsch's (2001) system of intervention as they describe the student's journey through higher education and have an inherent interest in the causes of attrition and the need for retention at a global level. Hirsch's system differs from these models as his focus in on psychoeducational assistance in the context of academic advising, but his model also acknowledges the wider educational context. Consequently, this area of research is complex and multidimensional with interweaving combinations and permutations in terms of multiple influences (Bennett, 2003; Elliot & Covington, 2001; Pintrich, 2003; Thijssen et al., 2002).

Furthermore, there are environmental influences that underpin the different players in the drama of higher education and in particular the drama of academic advising. The main players are academic advisors, administrators, students, and faculty staff, and each player is replete with his or her own self-systems, motives, values, visions and identity images (Gardner & Avolio, 2003b). Inevitably, there are therefore strong complex interactions in the interpersonal and physical environments that have significant influences on how students study. Hence, any research will probably yield its own particular set of unique trends. Consequently, future research will undoubtedly find the reductionist approach as a stand-alone process difficult in terms of explaining such complex phenomena, as it is reasonable to assume that contextual factors will change due to circumstantial differences that are likely to exist within each research environment. Nonetheless, some future areas of research may need to go beyond a reliance on self-report measures, and consider using larger sample sizes and utilising more sophisticated mixed-paradigm research in order to assemble a more authentic and complete view of students' learning strategies.

The findings of the present research also confirm the likely usefulness of educational principles that have been applied to the area of teaching, and are relevant to the area of academic advising. The discussions in the literature suggest that students' learning can be enhanced and developed through applying authentically co-coordinated tasks and the use of appropriate educational models (Boekarts & Corno, 2005; Covington, 2000a; Pintrich & Schunk, 2002; Weinstein et al., 2000). In the promotion of learning, several areas of development are emphasised: these include the use of engagement, meaningfulness, sensitive feedback systems, collaboration, and encouragement, in conjunction with giving recognition to application and providing group activities and time management activities. Moreover, as Covington (2000a) argued education strategies could incorporate equity principles by emphasising learning rather than performance, encouraging individual goal setting, advocating student participation, and rewarding improvements in learning. Educational considerations may also need to reflect on institution-wide responsibilities and activities such as in areas of extracurricular life, orientation processes, group sizes, and ways to heighten student integration at social, affective and cognitive levels (Hattie, Biggs, & Purdie, 1996).

It is important to also acknowledge that when investigating complex and multifaceted areas such as academic advising and student learning, there will undoubtedly be different approaches to consider. The essence of this research was exploratory and thus certain limitations can be retrospectively deliberated upon. Nonetheless, the limitations of the present study will inevitably provide scope and knowledge for future research.

First, the classification of Hirsch's (2001) levels of motivation using one question only from the demographic data required more extensive investigation to confirm its utility and validity, and a pilot study could have been instructive. Further research would need to trial and more rigorously test such measures to increase empirical veracity. Moreover, additional research may need to incorporate the Level 1 and Level 2 intervention strategies posed by Hirsch.

Second, the operational definition of academic difficulty may need further refinement, such as measuring students' self-perceptions and teachers' external-perceptions of academic difficulty, course work measures, and utilising individual grades. This may require different types of statistical examination such as discriminant function analysis and the incorporation of qualitative approaches.

Third, participants answered the questionnaires, in the first instance, in a classroom setting with the experimenter present creating a possible researcher presence effect. This may have adversely affected the way participants responded. Nevertheless, inviting respondents to participate, and keeping their responses anonymous, minimised this potential presence effect.

Fourth, use of a natural experimental design has problems associated with lack of random selection and reliance on self-selection. With access to lucrative research funds, further studies could attempt to employ a more experimentally controlled environment to reduce the risk of error. In addition, more creative ways to inspect qualitative changes may need to be considered and explanations for findings could be more rigorously debated and reflected upon.

Finally, the study generated numerous non-significant effects that suggest the measures or interventions may not be synchronised. More research is required in terms of viewing the process of evaluating study skills programmes especially over time. Moreover, the short time frame of the study skills courses (8 hours) may likely be insufficient to generate a significant and long lasting effect on its own given the numerous aforementioned contextual influences and the effect of learning prescribed course content.

To conclude, Hirsch's (2001) notion of motivation level may need to be refined to consider both goal orientations and learning pathways along with contextual factors such as teaching characteristics and financial pressures (both institutional and student-based). The application of Hirsch's levels of motivation in this research appear to be insensitive to detecting refined changes and therefore need to be approached in more subtle terms by creating closer links with aspects of motivation theory. At a general level, Hirsch's system tends to support theoretical

forethought with regards to motivation and self-regulation and is consistent with self-concept theory based on multiple selves, intrapersonal and interpersonal factors and a moderating mechanism in the form of a working self (Weinstein, Husman, & Dierking, 2000). As such, transformative change (or its catalyst) is likely to be optimised by considering all aspects of the self that incorporate facets of the affective, the cognitive and the regulatory. It is therefore likely that successful interventions will incorporate integrative regulatory change agents that utilise a holistic framework promoting cognition, motivation and affect, behaviour and context (Pintrich & Schunk, 2002). In other words, a multidimensional model that is fit for the purpose and one that has strong connections between the theory, research and practice that inform each aspect of epistemology.

This present research has integrated three areas of educational concern, namely learning considerations of tertiary students having academic difficulty, academic advising, and Hirsch's (2001) multiple intervention model. The investigation was designed to evaluate and extend this model, and to consider its usefulness as a framework for researching the area of academic advising. The evidence of this research suggest that Hirsch's model has provided valuable insights into students' studying and learning strategies, and therefore creates a useful framework for researchers and professionals working in the area of academic advising. The findings emphasise the need for research in this area so that conceptual and professional based models of practice can be more usefully understood and applied. The research findings also suggest the need for further research into the relationship between one-to-one academic advising and group-based study skills programmes (Butler, 2002). The study acknowledges that many of the subtle nuances of Hirsch's model were beyond the scope of the present research, but these other areas will likely be useful fodder for future research, such as in the areas of disability, learning styles and prior learning.

Nonetheless, the findings confirm Hirsch's claim that academic advisory services are essential for university education and add substance to students' learning at all levels, not only for students experiencing academic difficulty but also for academically capable students motivated enough to refine and augment

their learning practices. Furthermore, the study has shown the value of mixed-paradigm research in this area as it was noticeable how interview data added a useful human face to the multivariate data sets, thus creating a useful platform for discussion that could be generalised to the wider student population. Finally, this research adds further substance to claims that motivation and self-regulation are powerful and essential considerations for any academic advising process whether this is applied to individualised educational plans or to larger group-based study skills programmes.

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APPENDICES

Appendix A: Research Communications

Participant Information Sheet

The Project Title:

Validation study of Hirsch's 'Multiple Intervention Model'

My name is Marcus Henning. I am a registered psychologist and PhD student in the School of Education Te Kura Mātauranga. You are invited to participate in a study that is a part of my PhD Thesis. The purpose of the study is to investigate three aspects of learning: (1) the measure of the study systems used by students; (2) the ways in which students learn; and (3) the effectiveness and efficiency of certain strategies in terms of improving the learning process. Two questionnaires will be used to appraise the kinds of learning strategies that you use. It takes about 15-20 minutes for you to fill in both of these questionnaires. These will be administered in both week 1 and later on in week 10 of this semester. The questionnaires will be used to measure the value of your learning at AUT, and the results will be statistically analysed and used in the write-up of a PhD. I am inviting you to participate because you are a student at AUT.

This study will provide higher education professionals with greater insight into teaching and learning processes, and will benefit both academic staff and higher education students. As such, this study will also retrieve academic information such as your grades to help the reseacher ascertain the extent of your learning at AUT in the study skill area and to appraise the validity of the questionnaires. However, no personal identification of your grade information will be shown in the forthcoming research reports. The results will be used to make inferences with regard to learning theories and practices.

As a participant you will likely benefit by improving your own levels of study competence. There are no physical or psychological risks involved in this procedure. You may decline from filling in the questionnaire at any time, and you may withdraw from the study at any time. The individual results of the questionnaires will be kept confidential. There is no cost of participation. All information will be kept confidential in accordance with the Privacy Act 1993. Furthermore, the information contained in this report is to be used for the specific, relevant and lawful purpose that it is intended, as required by the Privacy Act 1993. All other principles of this Act also apply.

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Professor Colin Gibbs, School of Education Te Kura Mātauranga, colin.gibbs@aut.ac.nz, 917 9999 ext 7227. Concerns regarding the conduct of the research should be notified to the Executive Secretary, Madeline Banda, madeline.banda@aut.ac.nz , 917 9999 ext 8044. Approved by the Auckland University of Technology Ethics Committee on 21 October 2004 AUTEC Reference number 04/188

Consent to Participation in Survey Research

Title of Project: Validation study of Hirsch's 'Multiple Intervention Model'

Project Supervisor: Professor Colin Gibbs and Associate Professor Chris Fraser

Researcher: Marcus Henning

- I have read and understood the information provided about this research project (Information Sheet dated …../…../……….).

- I have had an opportunity to ask questions and to have them answered.

- I give permission for the researcher to gain access to my academic records

- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.

- I agree to take part in this research.

- I wish to receive a copy of the report from the research:

     Tick one: Yes O No O

Participant signature: ....……………………..

Participant name: ………………………………………………………….

Participant Contact Details (if appropriate):

………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………

Date:

Approved by the Auckland University of Technology Ethics Committee on 21 October 2004 AUTEC Reference number 04/188
Note: The Participant should retain a copy of this form.

Invitation for Interview: Letter Format

Marcus Henning
Student Services
Auckland University of Technology
Private Bag 92006
Auckland 1020

Hi *<student's name>*

Many thanks for your participation in this research project thus far. The information you have provided will be very useful for the research I am doing.

If you are willing to provide further information in a short interview, please indicate this below, and return it to Marcus Henning, Student Services, Auckland University of Technology, Private Bag 92006, Auckland, and you be contacted shortly if you fit the selection requirements. Or you could indicate you interest via email to marcus.henning@aut.ac.nz, or phone me on 921 9999 ext. 8531.

There is no cost of participation in the interview. However, you will be provided with a book voucher to show our appreciation of supporting this project by supplying me with your interview responses. All information will be kept confidential in accordance with the Privacy Act 1993. Furthermore, the information contained in this subsequent report is to be used for the specific, relevant and lawful purpose that it is intended, as required by the Privacy Act 1993. All other principles of this Act also apply.

- I wish to participate in an interview about my study techniques and attitudes to the study:

    Tick one: Yes O No O

If you do not wish to participate in the interview, then I would like to thank you for your responses thus far to the questionnaires and wish you well in your studies at AUT.

Marcus Henning
PhD student

Consent to Participation in the Interview

Title of Project:	Validation study of Hirsch's 'Multiple Intervention Model'
Project Supervisor:	Professor Colin Gibbs and Associate Professor Chris Fraser
Researcher:	Marcus Henning

- I have read and understood the information provided about this research project when previously asked to fill in the questionnaires

- I have had an opportunity to ask questions and to have them answered.

- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.

- If I withdraw, I understand that all relevant tapes and transcripts, or parts thereof, will be destroyed.

- I agree to take part in this research.

- I wish to receive a copy of the report from the research:

    Tick one: Yes O No O

Participant signature: ....…………………...

Participant name: …………………………………………………………

Participant Contact Details (if appropriate):

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

Date:

Approved by the Auckland University of Technology Ethics Committee on 21 October 2004 AUTEC Reference number 04/188
Note: The Participant should retain a copy of this form.

Background Information

1. **Student ID number:** ………………………………
2. **Age** (years): ……………………………..

3. **Full-time work experience** (years): ……………………………….
4. **Your gender**: ☐ Male ☐ Female
5. **Is English your first language?**
   ☐ Yes
   ☐ No
6. Education (check one):
   ☐ Some secondary school
   ☐ Fifth form (Year 11) completed
   ☐ Sixth form (Year 12) completed
   ☐ Seventh form (Year 13) completed
   ☐ Some technical education (e.g., polytechnic)
   ☐ Technical qualification completed
   ☐ Some university education
   ☐ Bachelor's degree completed
   ☐ Some postgraduate/Masters education
   ☐ Masters degree completed
   ☐ Other qualification (specify) ……………………………….
7. Do you have work experience related to your present course of study? (Please check one):
   ☐ Yes
   ☐ No
   If yes, please specify ……………………………….
8. **Your present course (Please check one):**
   ☐ Certificate in Early Childhood Education
   ☐ Certificate in Social Science
   ☐ Other (specify) ……………………………….
9. Ethnicity (Please check one):

   (European/Pākehā

   (Māori

   (Pacific Island/ Pasifika

   (Asian

   (Other (specify) ………………………………

10. Do you have a Disability? (Please check one):
   (Yes
   (No

   If yes, please specify ………………………………

11. Your approximate yearly income
    $NZ……………………………….
12. Support. If you were in difficulty with your studies would you consider seeking support from a student support service at AUT?
    (Please check one):
    (Yes
    (No
13. Reason for study. Please indicate your reason for study at AUT. (Please check one):
    (Coerced into it by significant others (e.g., parents, friends)
    (Did not know what else to do, or had nothing better to do

    (Needed a qualification for work

(Was not given entry into the degree programme
 Considered the present course as a second choice option
 Was interested in the course of study, and considered it has a first choice option

Appendix B: Study 1: Students' Interview Data

Table 19a

Interviews: Participant Details

Participant code	Year of study	Age (years)	Ethnicity	Gender	Motivation level	Faculty	Level
147	1	35	NZE	F	3	B	D
167	1	25	E	M	3	DCT	P
175	1	32	A	F	2	B	L
194	1	33	A	F	2	B	D
210	1	18	NZE	M	2	HES	C
219	1	35	NZE	F	2	B	L
223	1	18	A	M	3	DCT	D
224	2	33	PI	F	3	AH	C
228	1	18	PI	F	2	AH	C
252	3	20	A	F	2	AH	D
258	2	23	A	F	3	HES	D
293	3	25	NZE	F	3	B	D
300	5	24	A	F	2	AH	D
315	9	50	NZM	M	3	AH	P

Notes: Abbreviations.
1. For ethnicity,
    a.   NZE = New Zealand European,
    b.   E = European,
    c.   A = Asian,
    d.   PI = Pacific Island, and
    e.   NZ M = New Zealand Maori.

2. For gender,
    a.   F = female, and
    b.   M = male.

3. For faculty,
    a.   B = Business,
    b.   DCT = Design and Creative Technologies,
    c.   HES = Health and Environmental Sciences, and
    d.   AH = Applied Humanities.

4. For level,
    a.   D = Degree,
    b.   P = Postgraduate,
    c.   L = Diploma, and
    d.   C = Certificate.

Table 19b

Interviews: Participant Details

Participant code	MSLQ Motivation beliefs	MSLQ Self-regulated learning	LASSI will	LASSI skill	LASSI self-regulation	Retention
147	2.74 *	3.25 *	3.88	3.29 *	3.34	1
167	3.86	3.4	4.46	4.13	3.69	1
175	2.56 *	2.57 *	3.25 *	2.67 *	2.53 *	0.50 #
194	4.56	3.6	4.67	3.96	3.84	1
210	4.69	3.32 *	4.38	4.13	2.56 *	1
219	3.93	4	3.58	3.79	3.66	1
223	3.34 *	3.5	3.13 *	3.21 *	3.72	1
224	3.68	3.4	3.42	2.99 *	3.34	1
228	2.61 *	2.96 *	3.54	2.13 *	2.41 *	0.50 #
252	3.67	3.12 *	3.63	2.71 *	3.25	1
258	2.82 *	3.08 *	2.83 *	3.30 *	2.93 *	0.00 #
293	4.4	3.9	4.25	4	3.38	1
300	2.87 *	2.98 *	3.29 *	2.88 *	2.56 *	0.50 #
315	3.64	2.57 *	3.29 *	4.04	2.69 *	Deferred #

Notes.

1. * Below 95% confidence intervals of the larger group ($n = 317$) [for details see Table 17 below]

2. #   Students who experience academic difficulty

3. Deferred = student who decided to withdraw due to experiencing academic difficulty and began again in Semester 2.

Table 20

Details from the Post-Measures (n = 147)

Measures	Means	Standard Deviations	95% Confidence interval for mean lower bound	95% Confidence interval for mean upper bound
MSLQ: Motivation beliefs	3.52	0.49	3.43	3.60
MSLQ: Self-regulated learning	3.48	0.39	3.41	3.54
LASSI: will	3.62	0.53	3.54	3.71
LASSI: skill	3.42	0.52	3.34	3.51
LASSI: self-regulation	3.17	0.51	3.09	3.25

Note.

The interview sample means ($n = 14$) were not significantly different to the survey sample means ($n = 147$).

Table 21

Emerging Themes of Students' Problem Descriptions Classified According to Students'
Perceived Level of Motivation and Academic Difficulty and Linked to Aspects of Learning
(Multiple Occurrences of Themes are in Parentheses)

Motivation level	Learning orientation	Academic difficulty	
		Failed at least one paper	Passed all enrolled papers
2	Self-regulation	concentration (2), note-taking, reading (2), study techniques (2), time management (3), understanding (3), writing (3). (*n* = 16)	competition, concentration, critical thinking, cultural adjustment, external people issues, interest, reading, selecting main ideas, stress management (2), study techniques, time management (6). (*n* = 17)
	Motivation	anxiety (2), fear, negative thinking, physical illness, uncertainty. (*n* = 6)	anxiety, depression, sleeping. (*n* = 3)
3	Self-regulation	communication (2), expression of ideas (3), external teaching issues, language, time management, work-life balance, writing (5). (*n* = 14)	assessment issues, communication, critical thinking, external teaching, external teaching issues, general external issues, level of thinking, note taking, processing speed, processing speed (2), reading, stress management, study techniques (2), time management (3), understanding (3), writing. (*n* = 22)
	Motivation	confidence. (*n* = 1)	anxiety, fear, finances, frustration, insecurity, motivation, self-efficacy, test anxiety. (*n* = 8)

Notes.
1. The above emerging themes are related to problems identified by students thus the themes are, without exception, assumed to be negatively loaded.
2. Numbers of occurrences (*n*-values) of themes are presented in parentheses below the thematic representations.
3. Themes are presented in alphabetical order within the cells.

Table 22

Emerging Themes of Students' Perceived Readiness for Study as a Function of Level of Motivation and Academic Difficulty and Linked To Students' Readiness for Study (Multiple Occurrences of Themes are in Parentheses)

Motivation level	Readiness for study	Academic difficulty	
		Failed at least one paper	Passed all enrolled papers
2	Yes	church, excited, medium motivation, medium to high motivation, my choice(2), Ok, relevant work, social experiences, step-by step.	fully ready, goal directed, high motivation(2), life experience, like to study, medium motivation, medium to high motivation, motivation comes from me my choice(2), my second choice, priorities, relevant work experience (4), straight from school, supported from people and church, very ready.
		(*n* = 10)	(*n* = 21)
	No	adverse influence from friends, boyfriend's choice, culture differences, did not have relevant work experience (2), don't want to study more, expectation was different, grades were low, lack of study(2), low-medium motivation, need to work harder, reaction is to give up, wasn't ready.	Fatigue, no preparation, not my choice, not ready other pursuits, problems with concentration, time management problems, unexpected.
		(*n* = 14)	(*n* = 8)
3	Yes	application of study, challenge, comparative level of motivation, medium motivation, motivated for profession, my choice(2) opportunity to be in New Zealand, previous success, ready to study, relevant prior study experience, relevant work experience (2).	a beginning, believe ready, competitive, my choice, contribute to family and community, goal-directed good high school grades, high motivation(3), high to medium motivation(2), increase awareness, interested(2), my choice, out of comfort zone, ready and interested, related to study, relevant work experience, schoolmates and teachers believe in me self belief, my choice, stage of life, used to assessments very ready, completed degree, work related (4).
		(*n* = 13)	(*n* = 28)
	No	dropping papers, low motivation for study.	distracted by social things, lack of recent study, wasn't ready.
		(*n* = 2)	(*n* = 3)

Notes.
1. The above emerging themes are related to readiness to study thus the themes are either positive (yes = ready to study) or negatively loaded (no = not ready to study).
2. Numbers of occurrences (*n*-values) of themes are presented in parentheses below the thematic representations.
3. Themes are presented in alphabetical order within the cells.

Table 23

Emerging Themes of Students' Explanations of their Learning and Study Practices (Motivation) as a Function of Level of Motivation and Academic Difficulty and Linked to Students' Attributions (Multiple Occurrences of Themes are in Parentheses)

Motivation level	Attributions	Academic difficulty	
		Failed at least one paper	Passed all enrolled papers
2	Approach	Internal affirmations, applied to study, develop confidence, emotionally OK, enjoyment, if passing then happy, interested, know what to do (2), like to do it now, love to study, more determination, next semester, passion for helping people, persistence, relevance, time is ticking, want to do better, what I wanted to do. (*n* = 19)	Internal able to help others, able to manage, balanced, confident(3), eager to study, emotionally ok(2), enjoy learning, fear of failure, goal setting, happy to study, high motivation, I like it, independent, it comes from self, knowledge, like the discipline, motivated to achieve peaceful, previous work linked to study, related to work, stressed when not prepared, very willing, willingness to know how to change. (*n* = 26)
		External family pressure, if problems ask others, looking after dog, parents and God care about study. (*n* = 4)	External able to talk to peers, family and peers, give glory to God, lecturer makes it fun, paid money. (*n* = 5)
	Avoidance	Internal horrible, struggle, like to do better (2), nervous all the time, nervous, scared (3), think I will not pass pressure from self, very worried. (*n* = 9)	Internal anxious, not achieving, not clear, study something else? panicked, pressure from self , sleep disturbances, worry. (*n* = 8)
		External think I will not pass pressure from others, negative peer pressure. (*n* = 2)	External different to home country, financial pressures, pressure from others. (*n* = 3)
3	Approach	Internal Assignments give adrenalin rush, confident, curious, work requires effort, I enjoy it once I start, intellectual challenge, stress implies some anxiety, voluntary, voluntary stress. (*n* = 9)	Internal able to change, balanced, no problems, challenged, challenging (3), confident, enjoy it, enjoy learning, enjoy study, excited, exciting, feel okay, goal-oriented, happy to do it, happy with status quo, interesting, effort, know what I have to achieve, like to study, medium-high motivation, need to be applied, need to be enthused (2), no problem with emotional well-being, perseverance, proactive, put in effort, realistic, require interest, self-belief, set high standards, want to succeed. (*n* = 32)
		External don't know but receptive to change ideas (2), enjoy peers and lecturers, group activity. (*n* = 4)	External accommodation, friends and family, others believe in me paid money, work and travel issues. (*n* = 5)
	Avoidance	Internal anxious, apathy, depressed, mixed willingness, negative thoughts, not enjoying course. (*n* = 6)	Internal afraid of failure, anxiety (3), difficulty affects enjoyment, disappointed if studying the wrong thing for exams, fear of failure, not consistent, self-problems, unsure. (*n* = 10)
		External financial problems, no space congenial for study. (*n* = 2)	External separation from family, time and lecturers beyond control. (*n* = 2)

Notes.

1. Attribution themes are either positively (approach) or negatively loaded (avoidance).
2. Numbers of occurrences (n-values) of themes are presented in parentheses below the thematic representations.
3. Internal and external categories refer to sources of motivation and self-regulation, whereas approach and avoidance categories refer to learning orientations.
4. Themes are presented in alphabetical order within the cells.

Table 24

Emerging Themes of Students' Explanations of their Learning and Study Practices (Self-Regulation) as a Function of Level of Motivation and Academic Difficulty and Linked to Students' Attributions (Multiple Occurrences are in Parentheses)

Motivation level	Attributions	Academic difficulty	
		Failed at least one paper	Passed all enrolled papers
2	Approach	Internal 19-20h study/w, 4-6 h study/w, 4h study/w for four papers, concentration, do practice exams, effort, essay writing, go over notes, have breaks, list problems, make examples, planning, read lecture notes, reading, researching, review after lectures, revise, revise notes, self study, some textbook, think about failures, time management (3), try to understand, understand when in my words, understanding, use computer, use dictionary, use library, visual person. (*n* = 31) External ask lecturer, group study, seek assistance (2), talk with peers. (*n* = 5)	Internal 15h study/w, 16 h study/w, 21h study/w, able to change, additional reading (2), apply concepts, apply information learnt, communication, consider successes, essays, exam preparation, exam techniques, exercise and relaxation, for 1 paper 5 h study/w, improvements, learn from mistakes (2), memory(3), note-taking, planning, predict exam questions, prioritise, read practice questions, read textbook, read(2), reading(2), repeat, research, review and revise (2), schedules, summarise, summarise key points, time management (4), understanding, use study skills techniques, work-life balance (2), writing essays. (*n* = 47) External able to work in groups, library, listen to advice, listening seek feedback from others, seek peer assistance, work with others (3). (*n* = 9)
	Avoidance	Internal cannot concentrate, no exam system, not good at writing, unable to change. (*n* = 4) External need help. (*n* = 1)	
3	Approach	Internal 10 h study/w, 12h study/w for two papers, analysing, behaviour, exam techniques, finding materials, good study, prefer exams to assignments, proactive, read notes, rereading and review, research, retrieving relevant information, review and compare, task allocation, thinking, time management, understanding, writing. (*n* = 19) External library, study with others. (*n* = 2)	Internal 10-15 h study/w, 25-30h study/w, 30h study/w, 7h study/w, analyses and solves problems, analysis, assertive, assignment writing, clarify ideas, condense notes to one page or two, coping skills, critical analysis, effort(2), evaluate prior failures and self-correct, exam systems(2), focus on exams, get assistance when required, improvement, listening, make deadlines, maths, memorise(2), memory when enjoy work, note-taking(2), exam techniques (2), oral presentations, oral skills, organisation of self, planning(4), pre-read, problem solving, questioning(4), read notes and textbook, reading (2), reading textbook, research(2), retrieving information, review one week before and cram, revising and reviewing, seek help from peers, select main points, structuring, study two days before assignment due then 15h/day, summarising, team player (2), time management (6), understanding, understanding questions, use books/slides and definitions, use examples, use previous exams, work-life balance(3), writing(2). (*n* = 75) External discuss with peers, organisation of others, seeks feedback. (*n* = 3)
	Avoidance	Internal procrastination. (*n* = 1)	Internal do not review. (*n* = 1)

Notes.
1. Attribution themes are either positively (approach) or negatively loaded (avoidance).
2. Numbers of occurrences (n-values) of themes are presented in parentheses below the thematic representations.
3. Internal and external categories refer to sources of motivation and self-regulation, whereas approach and avoidance categories refer to learning orientations.
4. Themes are presented in alphabetical order within the cells.

Table 25

Emerging Themes of Students' Commentaries Linked Directly with Hirsch's (2001) Prescribed Interventions Systems with Regards to Motivation as a Function of Motivation Level and Academic Difficulty and Linked to Students' Attributions (Multiple Occurrences are in Parentheses)

Motivation level	Attributions	Academic difficulty	
		Failed at least one paper	Passed all enrolled papers
2	Approach	Internal Challenge, determination, experiential learning, overcome, frustration and failure, rewards, thinking I have to do it – money and time, tried writing, value in the exams. (*n* = 8)	Internal apply studies, cherish every minute, complete tasks, confidence form results and attending class, confidence from knowledge, confident emotionally balanced, enjoyable – content and people, find energy, get feedback from self, goal setting, goal-oriented, I am doing well, I won't fail, interested, manage environment, mini tests, attending class, money incentive, personality development, prior success, read motivational literature, share ideas, study is important. (*n* = 24)
		External family pressures, like to go home to Hong Kong, pray a lot, support systems – family and church, thinking of going home to relax, useful for work. (*n* = 6)	External compare with others, consider financial investment, family and practical living, fits with current work role (2), get feedback from others, helpful for work, support systems – God and family (2), transport problems, work with Dad. (*n* = 11)
	Avoidance	Internal do not know what to do, not good enough (*n* = 2)	Internal avoidance, lazy, lost time in previous experience, procrastinating. (*n* = 4)
3	Approach	Internal valuable for professional development. (*n* = 1)	Internal able to change, confident, consider future value, consider why I am doing this study, do a bit then motivated to do the rest, do it do my best (2), find more knowledge, focus on what I want, go for the highest grade, goal-oriented(3), hard and smart, high confidence about ability, keep in right direction, look at big picture, look at previous year exams, mastery focus, need to do this, not giving up, reconsider values and compare with list, self-improvement, set high standards, stubborn, tackle one thing at a time, type of sacrifice, work from home. (*n* = 29)
		External peer support, relevant to work and informs work, taking with lecturers and practitioners, use students services. (*n* = 4)	External able to see value related to business world, belief systems – Christian comparing with others, competitive urge, create support systems around me – family (2), education or health, enhances my career finances, friend (2), issues beyond my control – visa, links to my future work, mentors, try not let others down. (*n* = 15)
	Avoidance	Internal confidence down, language problems, negative external influence – lecturer, nervous participation, wait to last minute. (*n* = 5)	Internal first week felt like failing, not confident. (*n* = 2)

Notes.

1. Attribution themes are either positively (approach) or negatively (avoidance) loaded.
2. Numbers of occurrences (n-values) of themes are presented in parentheses.
3. The motivation Level 3 avoidance cells yielded no external commentaries.
4. Internal and external categories refer to sources of motivation and self-regulation, whereas approach and avoidance categories refer to learning orientations.
5. Themes are presented in alphabetical order within the cells.

Table 26

Emerging Themes of Students' Commentaries Linked Directly with Hirsch's (2001) Prescribed Interventions Systems with Regards to Self-Regulation as a Function of Motivation Level and Academic Difficulty and Linked to Students' Attributions (Multiple Occurrences are in Parentheses)

Motivation level	Attributions	Academic difficulty	
		Failed at least one paper	Passed all enrolled papers
2	Approach	Internal ask if I don't understand, do practice exams, hungry, in library I go online, make notes and use study skills course, read newspaper, sleep regularly, study, talk in lectures, tried mnemonics, try to make notes, use note-taking. (*n* = 12)	Internal ask for help, ask questions, avoid distractions, be happy, be interactive, create examples, daily planning, diet (2), exercise (2), goal setting, going to cafes, have time management plan, if I get distracted I go back to things, just rest, knowing what to do, maturity, planning, prioritise, read about study skills, read before exams, reading word-for-word and skimming when not enough time, reflect on plan, reward work, stay focussed, test taking skills, thought about procrastination, time management problems, time schedules, understand meanings, use down-time to revise – e.g. on bus, walking on beach. (*n* = 33)
		External listen to what the lecturer says, need someone to help me, study groups, walk my dog everyday. (*n* = 4)	External check with others, focus on lecturer, listen and look at lecturer, pray and stay in room, share with others, study with support from my Dad. (*n* = 6)
	Avoidance	Internal at home I usually eat, don't know how get distracted, if no ideas for essay I stop, keep quiet - think I am wrong, leave things to last minute, not good at listening, would say I am not good. (*n* = 8)	Internal sometimes can't get book. (*n* = 1)
3	Approach	Internal develop interest, difficult to be self-directed, divide tasks in to smaller units to avoid procrastination, eating well exercise, for memory make notes and keep exercise book, going to cafes, good at reading, shopping, test myself, try things out, use repetition. (*n* = 12)	Internal accept stress, allocate more to study, ask for support about understanding and reading, ask lots of questions, ask questions, ask teacher, avoid stress, balanced lifestyle, brainstorming for essays consistency, control the environment, coping techniques, curious to learn more, do it for myself, don't leave to last minute, eat and sleep well, exercise(2), exercise and food choice, I need to do it I do it, if it has to be done it will be done, intense study, interactive, interest, keep up interest, leave things to 4 days before, listen to music, memory related to interest, notes to enhance reading, partialise tasks, passing is a motivator, planning, pre-reading, put in the hours, read and talk it through with others, read more when interested, repetition, scheduling selective reading, set goals, summarise main points, talking about giving up unnecessary things, try to keep attention, use pictures to assist study, use repetition, find application, use study skill courses, walking, watch movies, work harder, write a lot in lectures. (*n* = 50)
		External good to have supervisors-keeps me on track. (*n* = 1)	External Christian faith, interact and ask questions, role sharing with husband. (*n* = 3)
	Avoidance	Internal don't know if I have useful strategies, don't manage time efficiently, if not interesting it is hard, indulge in procrastination, may not be on task. (*n* = 5)	Internal no extra reading, unable to control all situations. (*n* = 2)

Notes.

1. Attribution themes are either positively (approach) or negatively (avoidance) loaded.
2. Numbers of occurrences (n-values) of themes are presented in parentheses.
3. The motivation Level 3 avoidance cells yielded no external commentaries.
4. Internal and external categories refer to sources of motivation and self-regulation, whereas approach and avoidance categories refer to learning orientations.
5. Themes are presented in alphabetical order within the cells.

Appendix C: Study 2: Defining Levels of Motivation and Readiness for Study

Table 27

Tests of Between-Subjects Effects for Motivation Level and MSLQ and LASSI Measures

Source	Dependent variable	Type III sum of squares	df	Mean square	F	p
Intercept	MSLQ: Motivational beliefs	1912.249	1	1912.249	86660.309	.000
	MSLQ: Self-regulated learning	1817.699	1	1817.699	11087.633	.000
	LASSI: Skill	1726.177	1	1726.177	6046.948	.000
	LASSI: Will	1805.937	1	1805.937	6916.566	.000
	LASSI: Self-regulation	1513.412	1	1513.412	6138.339	.000
Motivation level	MSLQ: Motivational beliefs	.472	2	.236	1.068	.345
	MSLQ: Self-regulated learning	.725	2	.362	2.211	.111
	LASSI: Skill	.986	2	.493	1.727	.180
	LASSI: Will	2.609	2	1.305	4.997	.007
	LASSI: Self-regulation	3.807	2	1.903	7.720	.001
Error	MSLQ: Motivational beliefs	69.333	314	.221		
	MSLQ: Self-regulated learning	51.477	314	.164		
	LASSI: Skill	89.635	314	.285		
	LASSI: Will	81.986	314	.261		
	LASSI: Self-regulation	77.417	314	.247		
Total	MSLQ: Motivational beliefs	3969.717	317			
	MSLQ: Self-regulated learning	3797.796	317			
	LASSI: Skill	3601.519	317			
	LASSI: Will	3910.815	317			
	LASSI: Self-regulation	3305.440	317			

a. R Squared = .007 (Adjusted R Squared = .000)
b. R Squared = .014 (Adjusted R Squared = .008)
c. R Squared = .011 (Adjusted R Squared = .005)
d. R Squared = .031 (Adjusted R Squared = .025)
e. R Squared = .047 (Adjusted R Squared = .041)

Table 28

Tests of Between-Subjects Effects for Academic Difficulty and MSLQ and LASSI Measures

Source	Dependent variable	Type III sum of squares	df	Mean square	F	p
Intercept	MSLQ: Motivational beliefs	1405.037	1	1405.037	6519.976	.000
	MSLQ: Self-regulated learning	1311.619	1	1311.619	7984.817	.000
	LASSI: Skill	1237.166	1	1237.166	4370.238	.000
	LASSI: Will	1343.430	1	1343.430	5085.151	.000
	LASSI: Self-regulation	1110.409	1	1110.409	4392.279	.000
Academic difficulty	MSLQ: Motivational beliefs	2.138	2	1.069	7.4962	.008
	MSLQ: Self-regulated learning	.623	2	.311	1.896	.152
	LASSI: Skill	1.731	2	.866	3.058	.048
	LASSI: Will	1.641	2	.821	3.106	.046
	LASSI: Self-Regulation	1.842	2	.921	3.6142	.027
Error	MSLQ: Motivational beliefs	67.666	314	.215		
	MSLQ: Self-regulated learning	51.579	314	.164		
	LASSI: Skill	88.890	314	.283		
	LASSI: Will	82.955	314	.264		
	LASSI: Self-Regulation	79.382	314	.253		
Total	MSLQ: Motivational beliefs	3969.717	317			
	MSLQ: Self-regulated learning	3797.796	317			
	LASSI: Skill	3601.519	317			
	LASSI: Will	3910.815	317			
	LASSI: Self-regulation	3305.440	317			

a. R Squared = .031 (Adjusted R Squared = .024)
b. R Squared = .012 (Adjusted R Squared = .006)
c. R Squared = .019 (Adjusted R Squared = .013)
d. R Squared = .023 (Adjusted R Squared = .016)

Table 29

Regression Weights for the Two Dependant Variables, Grade Average and Retention with Respect to the Independent Variables and Motivational Measures

Dependent variable Independent variable	*B*	*SE B*	*β*
Grade average (R^2=0.074)			
High level of motivation	.558	.340	.098
Low level of motivation	-.285	.648	-.027
Pre MSLQ motivational beliefs	-.823	.493	-.137
Pre MSLQ self-regulation learning	.066	.558	.009
Pre LASSI skill	-.075	.461	-.014
Pre LASSI will	1.621	.526	.293*
Pre LASSI self-regulation	.134	.535	.024
Retention (R^2=0.053)			
High level of motivation	.110	.041	.161*
Low level of motivation	.077	.080	.058
Pre MSLQ motivational beliefs	-.035	.060	-.0.49
Pre MSLQ self-regulation learning	.028	.068	.033
Pre LASSI skill	.016	.056	.024
Pre LASSI will	.076	.064	.115
Pre LASSI self-regulation	.032	.065	.047

   * *p*<.05

Appendix D: Study 3: Considering the Impact of a Study Skills Programme and

Access to Academic Advisory services

Table 30

Tests of Between-Subjects Effects: Study Skills Course Completion

Source	Type III sum of squares	df	Mean square	F	p
Intercept	14765.251	1	14765.251	11104.073	.000
Study skills course completion (SSCC)	12.643	2	6.322	4.754	.010
Error	191.479	144	1.33.		

Table 31

Multivariate Tests for the Repeated Measures MANCOVA, with Study Skills Completion Options

Effect	Value	F	Hypothesis df	Error df	p
Time (T)	.994	.819[a]	1.000	144.000	.367
T* Study skills course completion (SSCC)	.987	.955[a]	2.000	144.000	.387
Questionnaire measures (Q)	.451	42.831[a]	4.000	141.000	.000
Q*SSCC	.880	2.327[a]	8.000	282.000	.020
T*Q	.903	3.781[a]	4.000	141.000	.006
T*Q*SSCC	.951	.892[a]	8.000	282.000	.524

a. Exact statistic

Table 32

Mean Scores for MSLQ and LASSI Component Measures as a Function of Completion of a Study Skills Course

MSLQ and LASSI components	Completion of a study skills course					
	Multiple course completion		Generic completion only		Non-completion	
	Mean	SD	Mean	SD	Mean	SD
MSLQ: Motivational beliefs	3.641	.466	3.514	.459	3.453	.383
MSLQ: Self-regulated learning	3.595	.399	3.454	.279	3.388	.353
LASSI: Skill	3.461	.521	3.339	.473	3.384	.478
LASSI: Will	3.727	.481	3.558	.473	3.509	.442
LASSI: Self-regulation	3.444	.438	3.088	.397	3.109	.456

Table 33

Means and Standard Deviations for the Significant LASSI Pre- and Post-Subtest Scores

Dependent variable: LASSI subtest	Pre-measures (*n* = 317)			Post-measures (*n* = 147)		
	Mean	*SD*	Rank	Mean	*SD*	Rank
Anxiety	2.936	.850	1	3.184	.827	3
Attitude	3.898	.558	10	3.922	.640	10
Concentration	3.259	.679	5	3.334	.701	5
Information processing	3.532	.676	7	3.535	.628	8
Motivation	3.589	.683	9	3.765	.687	9
Self-Testing	3.132	.739	3	3.059	.717	1
Selecting Main Ideas	3.207	.680	4	3.340	.671	6
Study Aids	3.334	.606	8	3.209	.590	4
Time Management	3.032	.596	2	3.074	.622	2
Test Strategies	3.245	.675	5	3.393	.689	7

Note. Rankings are provided from lowest to highest for pre- and post- scores.

Table 34

Frequency Counts for Motivation Level by Intention to Access Student Academic Advisory Services by Actual Access of Student Academic Advisory Services

Actual access to student academic advisory services	Motivation level	Intention to access student academic advisory services		
		no	yes	total
no	1	2	16	18
	2	17	74	91
	3	14	77	91
	Total	33	167	200
yes	1	0	5	5
	2	1	42	43
	3	5	52	57
	Total	6	99	105
	Total row	39	266	305

Notes.

1. The number of students who access academic services who did not intend to is 6 out of 39 (15%).
2. The number of students who access academic services who did intend to is 167 out of 266 (63%).
3. For motivation Level 3: The number of students who access academic services who did not intend to is 5 out of 19 (26%).
4. For motivation Level 1: The number of students who access academic services who did intend to is 5 out of 21 (24%).

Table 35

Frequency Counts for Motivation Level by Actual Access to Student Academic Advisory Services by Academic Difficulty

Actual access to academic advisory services	Motivation level	Academic difficulty no	yes	total
no	1	12	6	18
	2	54	36	90
	3	64	26	90
	Total	130	68	198
yes	1	3	2	5
	2	30	13	43
	3	43	12	55
	Total	76	27	103
	Total row	206	95	301

Notes.
1. The frequency of motivation Level 1 students who experience academic difficulty who access academic advisory services is 2 out of 8 (25%).
2. The frequency of motivation Level 2 students who experience academic difficulty who access academic advisory services is 13 out of 49 (27%).
3. The frequency of motivation Level 3 students who experience academic difficulty who access academic advisory services is 12 out of 38 (32%).