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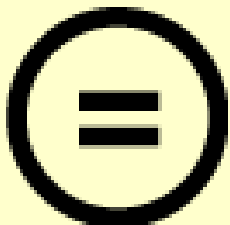
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**CAREER EXPLORATION OF CHINESE UNIVERSITY  
STUDENTS IN HONG KONG: TESTING RELATIONS  
AMONG ANTECEDENT, PROCESS  
AND OUTCOME VARIABLES**

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## ABSTRACT

A quantitative research study was conducted with Chinese students from a university in Hong Kong over a period of up to six months to examine relations among antecedent, process and outcome variables of career exploration. With reference to Flum and Blustein's (2000) research framework of vocational exploration and the situation in Hong Kong, 22 hypotheses were developed for testing. A cross-sectional sample of 271 and a longitudinal sample of 101 respondents were obtained from students who participated in either a student internship or a series of career seminars.

The results demonstrated that relational support, prior career exploration and time effects were related consistently to career exploration as hypothesized, but the claim that achievement motivation is an antecedent of exploration received only limited support. Career exploration was also found to be related consistently to career decision making self efficacy and associated with identity status as hypothesized, but the propositions that self clarity, career decisiveness and career decidedness are outcomes of career exploration were not sufficiently proved. Moreover, participants in work internships did not show a significantly greater increase in career exploration over time than participants in career seminars.

Taken in total, the study was fruitful in applying the framework of Flum and Blustein (2000) for the first time in Hong Kong and adding culture-specific variables to it. Especially, the constructs of Chinese motivation (Yu & Yang, 1987) and of prior career exploration (Millar & Shevlin, 2003) were found relevant in understanding career exploration behaviour. The theoretical and applied implications of this study are discussed and suggestions are made to further extend the line of career exploration research in Hong Kong and other Chinese societies.



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# 1. INTRODUCTION

## 1.1. Generation of Research Ideas

When I generate ideas for researching the career development of local university students, I wish to start from the social, educational and economic context of Hong Kong. This does not mean that I am trying to do a social study to provide immediate solutions to these pressing social issues. I believe that Hong Kong is now in transition with major changes going on and contextual factors do affect the career development experience of university students. I, therefore, would proceed to review relevant perspectives and theories of career development to focus on a specific area of investigation. I hope my study will contribute in terms of extending theoretical development of vocational psychology, as well as shedding light on the career interventions and practice of local practitioners. I shall begin with the relevant contextual background of Hong Kong.

Tracing the history of Hong Kong, we find that Hong Kong was a British Colony for about 100 years. It was originally a small fishing village with a population of 15,000 in South China in the Qing Dynasty. After the Nanking Treaty in 1842, the Convention of Peking in 1860 and another convention signed in Peking in 1898 (Information Services Department, 2003), it was put under British administration and has now prospered to become a great cosmopolitan city with a population of over 6.9 million (Census & Statistics Department, 2007) and GDP Per Capita US\$ 27,000 (Hong Kong Trade Development Council, 2006). Hong Kong's economic development and achievements are well recognized. It now ranks as the world's freest economy and the world's second highest per capita holding of foreign exchange reserves (Hong Kong Trade Development Council, 2006). Citizens have been accustomed to Western-style administration, education, and rule of law under the British and generally have a very Westernized outlook. According to the



Government's population census (Census and Statistics Department, 2001) 94 % of the citizens are ethnic Chinese. From history, we find that many local Chinese are the descendants of immigrants or refugees from Mainland China. Therefore, local China citizens still keep Chinese traditions and customs, with strong identification to the Chinese ethnicity and culture. With such unique historical and cultural background, Hong Kong generally offers fertile ground to explore the impact of traditional culture on modern work behaviour.

Having served as a career advisor in higher education in Hong Kong for over 10 years, I first generate and develop my research ideas from practical experience and observing the changing employment context. With Hong Kong's rapid economic growth since the 1980s, we saw the rapid expansion of higher education. The Asian Financial Crisis after 1997 posed difficulties for the local employment market but then the return to China seemed to offer new career opportunities. These significant changes have been affecting the career development of local university graduates. Yet, there is very limited literature to account for the career development of the local university students from the perspective of vocational or applied psychology in the Hong Kong context and this triggers my interests in this area. The key changes in the environment affecting career development of university students are discussed as follows.

## 1.2. From Elite to Mass Education

### 1.2.1. Hong Kong's Education System

To understand the changes and challenges in Higher Education in Hong Kong, one has to understand its education system. According to Leung (2002), the Hong Kong education system had followed a British model, requiring students to take a lot of school and public examinations before securing a place in the university, and with its layers of schooling, its structure can be compared to a pyramid.



- Primary education: 6 years (Compulsory)
- Junior Secondary education: 3 years (Compulsory)
- Senior Secondary education: 2 years
- Pre-university course: 2 years
- University: 3 years

Students take the Hong Kong Certificate of Education Examination after their senior secondary education and the Hong Kong Advanced Level Examination after a pre-university course. Public Examination results affect their chance of progressing to the next stage of education. According to Zhang (1998), in 1995 about 80% of the students progressed from junior to senior secondary school education, 20% of junior secondary school graduates entered a pre-university course and only half of those who completed a pre-university course gained admission into a local university. Leung (1999 b) highlighted that the Hong Kong Education system had adopted tracking and streaming methods as primary school students were assigned to junior secondary schools through a centralized allocation system mostly by test scores. Secondary schools were put under five categories, subsequently reduced to three in recent years, known as bands. Students with lower learning abilities were assigned schools of lower banding. Moreover, at the start of senior secondary school, students have to choose between an arts or science stream of study. Science stream students will take mainly science and mathematics subjects, while their arts stream counterparts will focus on history, literature, humanities and social sciences subjects in their senior secondary education. Many schools only allowed students with adequate scores in mathematics and science to take the science stream which was believed to lead to better career prospects. The streaming system actually channelled students of better academic abilities into the science stream (Leung, 1999 b).

The Hong Kong education system, especially before 1990s, was widely regarded as elitist, producing leaders and the cream of the society. At the turn of the century,



the Government re-examined whether the existing education system could meet the challenges of the society and needs of citizens. Starting from 1999, the Education Commission, a consultative committee under the Government, has been putting forward consultative papers on fundamental education reforms to “build up an education system conducive to life-long learning and all-round development” (Education Commission, 1999; p.3), covering curriculum, medium of instruction, and school place allocation system as well as overall education structure from primary to tertiary education. The overall aim of education as proposed by the Education Commission (1999), inclined obviously towards education for all:

“To enable everyone to develop his/her potential to the full according to his/her characteristics in the moral, intellectual, physical, social and aesthetic domains so that each individual is ready for continuous self-learning, thinking, exploring, innovating and adapting to changes throughout his/her life; filled with self-confidence and team spirit; and is willing to strive incessantly for the prosperity, progress, freedom, democracy and the rule of law of the society, and to contribute to the future well-being of the nation and the world at large.”  
(p. 30)

In the Education Commission’s 2004 Annual Reporting Session, Professor Arthur Li, Secretary for Education and Manpower of Hong Kong Government, reported that the Government’s fundamental reforms of the education system structure (Li, 2004) as follows. The Education and Manpower Bureau have adopted proposals of the Education Commission to change the secondary and tertiary education structure under the “3+3+4” reform. There will be three years of junior secondary education, three years of senior secondary education and four years of university education. All junior secondary school graduates will be offered places in the new senior secondary school education which will be more diversified and career



orientated. Places in tertiary education will further be expanded and the four-year university education was aimed at producing graduates of higher quality.

The new education structure for senior secondary education and higher education will be launched in 2009 and 2012 respectively (Education Commission, 2006). How far they will succeed is too early to say. Definitely, the previous mechanical “streaming” system as well as the rapid expansion of local higher education in the 1990s have a significant impact on the career development and work adjustment of graduates.

At the top of the “pyramid” system, those who could enter university were regarded as the cream of the society. In the 1970s, only about 2% of the 17 to 20 age group entered university. In the 1990s we saw the rapid expansion of higher education in Hong Kong, with the percentage of the 17 to 20 age group entering into university increasing from 8.6% in 1990 to 18.8% in 1996 (University Grants Committee, 1996). In addition to the three existing universities, five polytechnics and colleges were upgraded to universities from 1993 to 1999.

In Hong Kong, most undergraduate bachelor degree programmes are still funded by the Government. The Government was naturally concerned if public money was well spent to produce graduates of high quality. As early as 1965, the University Grants Committee (also known as UGC) was established. It is a non-statutory body for advising the Hong Kong Government on the development of higher education and utilization of government funding in subsidizing local universities. For achieving this role, the UGC stated its mission statement (University Grants Committee, 2007) as:

“The UGC works with Institutions, the Administration and the Community to promote excellence in the higher education sector, with a view to establishing Hong Kong as the education hub of the region and to nurturing high

quality people to promote the economic and social development of Hong Kong.”

In recent years, the UGC has promoted a quality review process within all local universities known as the “Teaching and Learning Quality Process Reviews” or TLQPR, ensuring universities have systems in place to assure the quality of students (Massy, 2001). As the next step, for ensuring future subsidies for academic programmes, universities may be required to produce evidence of learning outcomes of graduates in competence development and graduate employment.

### 1.2.2. The Expectations of Employers

From the perspective of some employers, the graduates from mass university education now are of lower quality in terms of language abilities, reasoning skills and career preparation as compared with the elite graduates of say 10 years ago. Generally, the impression of local career advisors in higher education is that students are less confident and certain about their future career. In their article titled “Shrinking Earnings Premium for University Graduates in Hong Kong: The Effect of Quantity or Quality?”, two local economists, Lui and Suen (2003), found from substantial income data over five years that after the expansion of university students from 8 to 18% of the 17 to 20 age group in the 1990s, the relative earning of local university graduates shrank. They concluded that this was very much due to the declining quality of graduates as a result of the admission of more students of lower ability by local universities in order to achieve the rapid expansion expected of them.

In fact, the quality of local graduates in terms of language skills, work attitude and general business sense are concerns of both local employers and career advisors. In recent years, opinion surveys of employers (e.g. Leung, 2001) highlighted performance areas of graduates that the former were not satisfied with,



including generic workplace competencies (e.g. problem solving, team work, common sense) and work attitude. Understandably, in a knowledge economy, employers are looking for graduates who are capable of adapting to changing workplace needs and continuous learning. In this light, graduates have to possess both technical and generic workplace competencies. As universities expanded their admission numbers rapidly, more students of lower learning ability and generic skills were taken in, and these students tended to have more potential difficulties in adjusting to study and learning in a university. Unless they could make substantial progress in their university years, they might be seen as lower in quality by some employers and critics in society upon graduation. Therefore, to further understand the quality of graduates in mass university education, one needs to examine the university experience of students, together with their pre-entry variables and subsequent transition into work.

From the statistics of University Grant Committee (University Grants Committee, 2006), the annual changes in average salary of local Bachelor's Degree graduates from 2000 to 2005 ranged from 4% to over 7%, with the exception in 2002 when there is a decrease of 14% which was very much related to the economic downturn of the time. Their data also showed an overall high employment rate of about 75% and low unemployment rate of below 3% from 2003 to 2005. On the whole, it is fair to say that graduates are well accepted by the local employment market. However, external factors like economic recession and SARS did have a sharp impact on salary and employment opportunities of graduates. Moreover, in the eyes of career advisors and employers, local university graduates are losing ground in competing for top graduate jobs to graduates returning from overseas or coming from Mainland China, as compared to the situation in the past.

The Education and Manpower Bureau (2006) published results from a survey to solicit feedback on the overall performance of local first-degree graduates from their employers. With 622 valid questionnaires received from the employers, a response rate of 50.4% was achieved. Employers assessed the performance of



graduates employed in their organization on a five-point scale under a set of competencies. They also rated the respective importance of eight aspects of performance on a five-point scale. As indicated in the Table 1.2.1, graduates have achieved over three in all the aspects of competencies on a five-point scale, which might suggest, as the Government interpreted, employers are on the whole satisfied with the performance of graduates. In the eyes of employers, graduates perform best in information technology, Chinese language and work attitude, relatively lower in the competency areas of analytical and problem-solving skills, as well as management skills. Moreover, from the importance ratings by employers, the mean scores of all competency areas except one are above four on a five-point scale, reflecting the degree of importance employers perceived. Rating of technical skills for the job is 4.03, and it ranks fifth in the list. Overall, the results suggest that employers are not just looking for competencies in technical skills required for the job, but also in personal attitude and generic transferable skills.

Moreover, from the experience of local career counsellors, many graduate recruiters look for work attitude and English proficiency in their selections more than technical skills which they suppose to be more trainable at work. Thus, local universities need to prepare students to acquire these various attributes and competencies, not just the professional know-how in the academic disciplines.

On the side of students, how do they perceive their graduate job in the workplace? Lau and Pang (1995) studied the career perceptions and first job needs of 492 undergraduate students of a local university through focus groups and a quantitative survey. The subjects responded to a list on the meanings of career,

**Table 1.2.1 Employers' Feedback on Performance of  
Local First Degree Graduates**

<b>Aspects</b>	<b>Performance</b>	<b>Perform. Rating</b>	<b>Importance</b>	<b>Import. Rating</b>
Information Technology Literacy	3.81	1	4.01	7
Work Attitude	3.74	2	4.37	1
Chinese Language Proficiency	3.71	3	4.00	8
Numerical Competencies	3.66	4	4.03	6
Inter-personal Skills	3.58	5	4.23	2
English Language Proficiency	3.56	6	4.15	3
Technical Skills Required for the Job	3.45	7	4.03	5
Analytical & Problem-solving Abilities	3.42	8	4.14	4
Management Skills	3.29	9	3.93	9

Source: The Education and Manpower Bureau (2006)



and the four meanings most frequently chosen were “career as a long term profession”, “continuous development”, “area of self interest” and “goal in life”. There were other descriptions of career that were less frequently chosen, including “continuous promotion”, “same as job” and “my field of study”. However, when students were asked about their criteria of choosing the first job, they reported extrinsic rewards like promotion prospects and attractive salary as well as motives of professional and career development. Lau and Pang (1995) also found that graduates approached their first job with opportunism and lacked commitment to employer organizations. They concluded,

“In the long run, then, intrinsic rewards are predominant but in the short term extrinsic rewards are as valued and sought after as intrinsic rewards. A possible explanation for the divergence in expectations of rewards may be due to the fact that ‘career’ carries long term connotations and, as such, it operates on the assumption that lower-order needs have been satisfied and the satisfaction of higher-order needs (through intrinsic rewards) has become the primary goal and objective.” (Lau and Pang, 1995; p.21)

“The present study found that undergraduates in Hong Kong approach their first job with opportunism of what they can learn in the position. The graduates appeared to treat their first job as a spring board from which they can acquire skills and knowledge to enable them to advance on to something better.” (Lau and Pang, 1995, p.22)

It seems that the students value both long term career advancement and short-term extrinsic rewards in their graduate jobs. More fundamentally, however, what is the career development experience of graduates like? Are they gaining adequate learning and experience for them to lead a successful career upon graduation?



What sorts of career intervention would be most effective for their career development? But first of all, confronted with the challenges on the quality of graduates, do we have both theoretical frameworks and empirical data on the actual career development experience of local university students and graduates? As discussed earlier in this chapter, the Education and Manpower Bureau, University Grants Committee and individual universities do accumulate annually graduate employment destination data and solicit feedback from graduate employers. I am sure local career practitioners have developed very sound practice wisdom to enhance career development of local university students as well. However, other than the above studies in vocational interests, there is little academic research on either the process of career development or work entry transition of local university students. Such research data will be very valuable to guide effective policies and actual interventions.

### 1.3. Changes after 1997

Economically, Hong Kong was badly hit by the Asian Financial Crisis in 1997 and the spread of the SARS epidemic in 2003. The economy was on the downturn and the unemployment rate rose from 2.3% in 1997 to a historical high of 8.8% in 2003 (Census and Statistics Department, 2004). The return of Hong Kong to China in 1997 posed both challenges and opportunities for graduates. University graduates may not immediately relocate themselves to Mainland China to seek jobs, but must pay attention to the impact of increasingly close economic ties with China.

Local leaders in industry and commerce appealed to young people to consider the immense opportunities for career development in Mainland China. For instance, Dr. Eden Woon, Chief Executive Officer of the Hong Kong General Chamber of Commerce (Woon, 1998) promoted the favourable environmental factors like China's entry to the World Trade Organization and the signing of the Mainland



and Hong Kong Closer Economic Partnership Arrangement (CEPA), Hong Kong youth will gain from going north to the Pearl River Delta Area in Mainland China, and lose from not doing so. But the young people in Hong Kong seem not ready for “north” yet. From a survey published by Hong Kong Federation Youth Group (Mok and Chan, 2003), out of 1501 local respondents of age 15 to 34, only 16% would consider their career development in Mainland China, 60% would not consider and 23.6% had not thought about this issue. It was also found that when they considered their career development in the Mainland, they were very much influenced by family and their own worries about conditions in the Mainland like public order, hygiene and legal practice. Such worries were mainly perception and they had limited understanding about the Pearl River Delta and Mainland China as a whole.

Against such economic and social background, I am very interested in researching the career development of local Chinese university students in general, and their transition from study to work in particular. For instance, how is the vocational behaviour of the local university students affected by Chinese cultural factors, the return of Hong Kong to Mainland China, as well as rapidly changing social and education environment? More fundamentally, can we apply Western vocational theories to account for the situation in Hong Kong?

#### 1.4. The Need for Theory Building to Guide Local Practice

Practitioners generally feel that we need more theory building to guide local practice. Although career development theories have been widely researched in the United States and Europe by vocational psychologists, they cannot be just conveniently applied. Cross cultural transferability is often questioned. How far can these theories be applied to Chinese people? Are there cultural factors moderating their applicability? It is especially worthwhile to test these career theories in Hong Kong where East meets West, with people adopting Western



lifestyle and education but still very much under Chinese traditions.

There is, however, a general lack of theory building and research data on career counselling and development in Hong Kong. Why is this so? Zhang (1998) traced the historical development of career guidance in Hong Kong and his account of development is summarized here. In 1958, the Director of Education in Hong Kong appointed a teacher in each secondary school to serve on a part-time basis as Career Master to help young people to be aware of employment opportunities upon graduation. Accordingly, the professional association, the Hong Kong Association of Career Masters was formed. In 1968, the Labour Department also set up Young People Career Guidance Group to help school leavers by providing job information and giving talks on how to choose jobs. In 1978, Hong Kong introduced nine year compulsory education starting from primary to the end of junior secondary school. Career guidance by Labour Department, Career Masters and Education Department, was designed to help students to choose and fit into different streams and paths after junior secondary education. From the outset, the guidance was meant to serve the existing education and methods employed were mainly compiling information handbooks and mass talks for further studies or employment. There was no major effort by the Government and Education sector to explore career theories and models to guide practice. As Zhang (1998) commented, there were very few studies on exploring career guidance theories in Hong Kong and many career teachers used traditional methods of information giving.

Gysbers (2000) found that local career guidance activities of secondary schools were mainly mass functions like talks and visits which tended to be fragmented and superficial. Leung (1999 a) summarized from Spokane (1991) the major types of career interventions as information giving, self-directed activities, workshops or classes, group counselling and individual counselling while local career counsellors tended to focus just on the first two. Leung (2002) emphasized the need for a “guiding framework that is consistent with the local context” in career



counselling and development. To achieve this mission, he proposed that theories from the United States can be adapted and applied. Moreover, as a career scholar returned from the United States, he also drew our attention to a number of similarities and differences in career counselling as compared with US as follows.

Firstly, as compared with US, there are more environmental and social barriers preventing the change of career choice in Hong Kong, such as the education system and study streams that we have already discussed. In terms of career, freedom to choose is more restricted and counsellors may need to help clients to face or even compromise with reality. Secondly, a valued objective of career intervention in the United States is self actualization of the clients. But in Hong Kong, counsellors need to respect the collectivistic orientation by maintaining a balance between personal goals on one hand and family and social loyalty of the clients on the other. Thirdly, he pinpointed that there is a strong school-to-work transition movement in United States by the Government and the Education sector to make students' education experience more relevant to their future careers. He criticized that such efforts were lacking in Hong Kong due to a mechanistic education system with strong emphasis on academic results. Fourthly, in terms of intervention methods, he urged the development of locally validated career tests and encouraged the use of diverse career intervention methods and techniques to achieve the best results. In general, Leung's comparisons generated interesting points for further discussion and investigation. Fundamentally, besides their differences in cultural and social backgrounds, the United States is much more advanced and sophisticated in the development of career research and practices than Hong Kong.

### 1.5. Research on Career Development in the Local Context

It is encouraging that now there are more pioneer efforts to test western vocational theories in Hong Kong. Previously, most local studies were on



secondary school students using a single construct in the form of unpublished Masters theses, (e.g. Au, 1988; Chu, 1991). Recently, there was some initial effort (Yuen et al., 2005) to apply the construct of self efficacy to develop and validate a career development self efficacy scale for guidance practice use in local secondary school settings. Significantly, moreover, there have been vigorous efforts to test Holland's hexagon typology in the local setting (e.g. Wong & Wong, 2001; Wong & Wong, 2002; Law, Wong & Leong, 2001; Farh, Leong & Law, 1998; Leung & Hou, 2001). The primary assumptions of Holland's theory (1973, 1997) are:

- (1) Persons and environments can be categorised into six types (realistic, investigative, artistic, social, enterprising and conventional; RIASEC);
- (2) Persons tend to seek environments that will allow them to implement the characteristics of their work personality; and
- (3) Behaviour is a product of the interaction between personality types and environments.

Farh, Leong and Law (1998) found from a sample of 1813 university freshmen some cross-cultural validity of Holland's six interest personality types in Hong Kong. They suggested that the Holland model works better for less traditional students. In their study, they interpreted that being traditional in Chinese culture was mainly characterized by showing "respect for authority". The dimension of traditionality-modernity was identified to have an important impact of career development of vocational interest of Hong Kong students. Leung and Hou (1994) obtained concurrent validity of the Self Directed Search (SDS; Holland, 1987) from over 700 second school students in Hong Kong. They found that science stream students had higher SDS scores in realistic and investigative while arts stream students were higher in the other interest categories. Law, Wong & Leong (2001) found from samples of university students and secondary students that Holland's classification was applicable in Hong Kong, but instead of the original



six circular order relationship among the six dimensions, their evidence inclined to support more a revised two-group model from confirmatory factor analysis. The two-group model consisted of realistic and investigative categories on one end and the other categories of artistic, social, enterprising and conventional categories on the other. According to Law, Wong and their colleagues (2001), this two-group model is related to the Hong Kong education system's early streaming of students into arts and science in their senior secondary school. Subsequently, science students develop a vocational orientation towards investigative and realistic jobs while arts students incline towards artistic, social, enterprising and conventional jobs. Wong and Wong (2002) also found that among the six categories, social and enterprising are more closely related than any other links between types. They explained this by the fact that interpersonal relationships, or *guanxi*, have been playing an important role in business in Chinese culture. In this light, enterprising people tended to be more social in their interest in Chinese culture.

With the above career research efforts, Holland's hexagon has been put under vigorous testing in Hong Kong, and the contextual factors in education and culture have been highlighted. However, all these efforts have been focused primarily on Holland's theory, which can be classified as a content theory. According to Patton and McMahon's (1999) classification, Holland's typology theories, together with Work Adjustment Theory, Psychodynamic Theory, Values-based Theory, belong to content theories as they are concerned with the content of career development. Process theories in turn concentrate on the process of career choice and adjustment, namely the Developmental approach of Super (e.g., 1957, 1990) and Gottfredson (1981). The third category is Content and Process theories, which include Social Learning theories, Social Cognitive theories and Contextual Theories. While testing Holland's typology locally is highly worthwhile, researchers also need to go beyond the hexagon and develop research in the other two categories to give a comprehensive view of career development.



## 1.6. Summary and Overview

In this chapter, I started to generate ideas for researching the career development of local university students by examining the social, educational and economic context of Hong Kong. Moreover, local career research efforts were put primarily on Holland's hexagon only. There is a lot of room for researching into the process of career development. On the whole, given the advanced economic and development status of Hong Kong, the scope and pace of vocational research development is lagging behind. On the 30<sup>th</sup> Anniversary of the Journal of Vocational Behavior, Savickas (2001a) summarized the mission of vocational psychology as,

“The mission for vocational psychology in the next decade concentrates on advancing scientific understanding of vocational behavior and providing information to shape career interventions and inform public policy.” (p.284)

It seems vocational psychology is very limited in both shaping intervention and informing public policy here in Hong Kong. There is still a long way to go. However, if we look at it as potential for research development, there are a lot of opportunities in terms of both extending existing lines of research and examining cultural specific and contextual factors. For this research, I would like to explore the process of career development of local university students. There is an obvious lack of research data in this area for both theory building and practice. Taking a developmental perspective (e.g. Super, 1963, 1990), I may trace the development and evolution over time, attending at the same time to the relevant culture-specific and contextual factors. To specify on the topic of investigation, I shall first conduct a literature review in Chapter 2 on the of major career development perspectives, with emphases on process oriented-theories. Moreover, I shall focus on a specific process-oriented theory that will shed light on the

process of career development of local students and accommodate the culture-specific and contextual factors. As career exploration is key to the career development process of university students (e.g. Super, 1990; Blustein, 1997), effort will be made especially to review the line of career exploration research (Flum and Blustein, 2000) in the West. Then, in Chapter 3, based on the selected theory, the research framework and hypotheses will be developed. Chapter 4 will be on the research method and Chapter 5 on the results of this study. Finally, conclusions and implications of this study will be discussed in Chapter 6.



## **2. CAREER DEVELOPMENT AND CAREER EXPLORATION**

In this chapter, I shall conduct a literature review for this study. Starting with the nature and major theoretical approaches of career development, I shall then focus on career exploration of university students in late adolescence. The assumptions, research evidence of different perspectives will be discussed, especially on their relevance and application to the Hong Kong context.

### **2.1. Nature of Careers and Career Development**

As mentioned in the previous section, I would like to explore the career development of university students in the local context. I shall briefly review the nature of career development and its major perspectives to focus on a specific area of investigation.

What is a career? For our purpose of studying career development of university students, I adopt the definition of “career ” as “the sequence of employment related positions, roles, activities and experiences encountered by a person” (Arnold, 1997, p. 16). Kidd (2006) highlighted the characteristics of this definition as follows. Firstly, this definition incorporated both objective and subjective aspects of career. Secondly, the breadth of “employment-related” implies the inclusion of various positions, activities and roles like doing an educational course. Thirdly, the definition does not make reference and confine career to specific types of occupations or increase of status.

This study investigates career exploration of Chinese university students in Hong Kong. Taking the above definition of career, both objective behaviour and subjective perception of career exploration of students can be examined.

Obviously, the career exploration of full-time students is “employment related”. Moreover, as career is looked upon as a “sequence”, a longitudinal perspective can be adopted to examine the evolutionary process of career exploration. What is career development? Put most simply, career development is how a career unfolds (Arnold, 1997). As Brown and Brooks (1996) pointed out, career development is commonly regarded as “a lifelong process of getting ready to choose, choosing, and, typically, continuing to make choices from among the many occupations available in our society” (p. xv). I can see the importance of making occupational choices in one’s career. However, for a comprehensive explanation of career development, we need to consider the following explanation as well:

- “1. Career development is a continuous process over the life span.
2. Career development involves both career choice and adjustment issues.
3. Both career choices and adjustment involve content and process variables.
4. Theories tend to focus on either content or the process of career choice and adjustment.” (Minor, 1992, p.7)

Summing up from above, career development can be conceptualized as a continuous process over the lifespan, involving career choice and adjustment. Career choice is the selection of occupational areas or work roles, while career adjustment is the subsequent adjustment to these areas and roles. Career adjustment is also about what happens after the job entry. The contents of career development are those occupational areas and work roles one chooses and adjusts oneself to, while its process is the psychological process of making and adjusting to career choices. Arthur (1992) emphasized the applied focus of career development theory which is the body of all generalizable attempts to explain career phenomena. On applying the concept of “development”, Arnold (1997) maintained that we should emphasize uniqueness of the individual but also allow



comparison between different individuals and groups. He added that development is a neutral term, and one's career can go in favourable and unfavourable ways.

With rapid technological changes, globalization and competition, work structures in organizations have been changing fundamentally. Companies all over the world are restructuring themselves to become flatter organizations. They can no longer afford to provide predictable and stable career paths for their employees. Herriot and Pemberton (1995) used the term "psychological contracts" to describe any set of understandings held by employers and employees about what "the deal" is between them, very much characterized nowadays as conditional, explicit, economic and short-term transactions between employers and employees. Mutual attachment and commitment between organizations and employees has been diminishing. Killen (1996 a) and Arnold (1997) summarized data gathered on changes like restructuring, outsourcing, unemployment, short-term contracts affecting the workforce in the United Kingdom. Likewise, the restructuring of work in the new economy pattern of organizational downsizing and restructuring would diminish managerial jobs in corporations and traditional paths for career advancement in the workplace in the United States (Boyett & Conn, 1991; Boyett & Boyett 1995). Lock (2000) also highlighted employment trends in the United States like slower increase of labour force, unemployment, growth in service industries, increase in temporary jobs and the need for multi-skilled workers.

With these unprecedented changes in the workplace in the 21<sup>st</sup> Century, the conceptualization of careers has gradually changed. There is a gradual move from organizational career to individual careers in the sense that the focus of career is on learning and development experience of individuals in the workplace, than the upward progression in the organization hierarchy (e.g. Collin and Watts, 1996). Severy (2002) summarized that in the agrarian economy, jobs were mainly agricultural and in exceptional cases one had a special "calling" to do something different and lead a "romantic career". In the industrialized society, there was the stable "bureaucratic career". In the knowledge economy, career paths are not so

predictable and changes are inevitable. To cope with the changes, one needs to make meaning out of his or her own career. She suggested a model of helping students to create their own life stories to facilitate students' career development.

Brown (2003) proposed that career theories are usually based on either positivist or postmodern theoretical assumptions. Positivist assumptions include:

- “1. Human behaviour can be measured objectively if reliable, valid instruments are utilized.
  2. Human behavior can be studied outside the context in which it occurs.
  3. Research process should be value free. If the researcher's values enter into the process, the results are likely to be flawed.
  4. Cause and effect relationships occur and can be measured.”
- (Brown, 2003, p.25)

Postmodern assumptions include,

- “1. Human behavior is nonlinear and thus cannot be studied objectively.
  2. Cause and effect relationships cannot be determined.
  3. Individuals cannot be studied outside the context in which they function.
  4. Research data cannot be generalized.
  5. Research is not a value-free process. The researcher's values should in fact guide the research process.”
- (Brown, 2003, p.25)

Brown (2003) further classified existing career theories into the two theoretical approaches. He regarded trait and factor theories, developmental theories and learning theories as positivist, and the contextual theory (Young, Valach & Collin,



1996) as postmodern. Due to changes like organization downsizing and restructuring discussed earlier, people are likely to look beyond organizational advancement in their jobs and seek personal experiences of fulfilment and development in the workplace. Job security will be less likely and people may need to reflect on what they want from a career and design their own career strategies in different life stages. This is perhaps related to why more theorists nowadays have found that the scientific principles of positivism cannot fully explain and guide career development in the information economy and move towards the postmodern approach to account for the more subjective nature of careers. Brown (2002) commented,

“Perhaps career development theorizing is in the midst of paradigm shift from logical positivism to postmodernism, as suggested by Savickas and Lent (1994) and Patton & McMahon (1999). However, Lent and his associates suggest that their social constructive theory is a bridging theory; that may be the case. However, adherents to the theory continue to generate knowledge based on the epistemology of logical positivism. It seems to me that most career development theorists and practitioners are unready to jettison one hundred years of thoughts and research because of criticism from the postmodern thinkers.”  
(p. 513)

I do not think that the postmodern approach should replace positivism completely. They can complement each other. As Arnold (1997) pointed out, both the uniqueness of the individual, and comparison between different individuals and groups should be emphasized in understanding career development. The nature of careers is both objective and subjective, individual and institutional (Watts, 1981). Therefore, it is not wise to emphasise either one or the other. Positivists are good at exploring causal relationships and outcome assessment, as well as making comparisons across individuals and groups. However, they also need to attend to



the influence of contextual factors and self perception of individuals.

Postmodernist approaches are good at reflecting reality as experienced by the individual. Savickas (1995) rightly emphasized that constructivist and objectivist vocational psychologists should seek to complement each other in research models and materials. He pointed out that in the postmodern information age, the constructivist approach might contribute by encouraging people to pursue personal meaning and fit work into their lives proactively while objectivist researchers could extend the career concept beyond occupational roles to other life roles and concerns. For studying vocational behaviour in the Hong Kong context, both the positivist and constructive approaches are viable and desirable. For this study aiming at applying Western theories, a positivist approach will enable me to test existing constructs of vocational behaviour. While I prefer to select the positivist approach for this study, I see generally the relevance of both approaches in studying vocational behaviour in the local context.

## 2.2. Major Career Development Perspectives and Focusing on the Area of Study

There are numerous ways to explore the career development of university students in Hong Kong. A first consideration is whether to test Western theories or develop local theories. Both are viable and desirable. To test the applicability of Western theories by making comparisons across groups and inferences about causal relations in local settings, positivist approaches are more appropriate. To understand local reality as perceived by students themselves, a postmodern approach is preferred. Brown (2003) categorised career development theories into trait and factor theories, developmental theories, learning based theories, socioeconomic theories and recent theoretical statements. Within the theoretical traditions of vocational psychology, theories can be classified as trait-factor, developmental and social learning/ or learning based theories (Hackett, Lent & Greenhaus, 1991; Hartung & Niles, 2000; Brown, 2002). As the objective of this



study is to apply Western theories to Hong Kong, I shall examine the major theoretical approaches. Bearing in mind that they are rooted mainly in positivism, I will also consider how far they can accommodate local context as applied across culture.

### 2.2.1. Trait-Factor Approaches

Rooted in differential psychology and psychometric movement in the 1900s, the trait-and-factor approach is concerned with identifying and measuring traits of individuals like personality, interests, values and aptitudes and subsequently matching these traits to educational and occupational factors, resulting in job satisfaction and successful performance (Hartung & Niles, 2000; Hackett, Lent & Greenhaus, 1991). This approach is also called “person-environment fit” to emphasize its person-environment interaction (Hackett and Lent, 1992). In this approach, the most representative theories come from Holland (1985) and Dawis and Lofquist (1984). I shall elaborate on Holland’s theory as it is highly relevant and applicable to the career development of university students. As explained in the last chapter, Holland’s theory (Holland, 1985; Spokane, 1996) categorized both persons and environments into six types (realistic, investigative, artistic, social, enterprising and conventional; RIASEC) and proposed that persons tend to seek environments that will allow them to implement the characteristics of their work personality. His secondary assumptions included calculus, consistency, differentiation, congruence and identity. From the principle of calculus, the six types are arranged in a hexagonal structure. Differentiation concerns whether one’s likes and dislikes can be distinguished in the hexagon. Consistency connotes that some interest types have more in common than others do. Congruence is the degree of fit between person and environment, while identity means the degree of clarity and stability of one’s goals, interests and talents.

Brown (1996) praised Holland’s theory as “the best constructed of those presented to date” in terms of parsimony, definition of constructs and interrelationships



among principles. Research support on the typology is extremely strong and it can be conveniently used by career centres as a scheme for organising information about persons, environments and their interaction. In a comprehensive review, Spokane (1996) supported the typology as a theoretical organiser for understanding how individuals differ in personality, interests and behaviours. Summing up from literature, there is consensus on the point that Holland's typology is a good presentation of vocational interests (Swanson & Gore, 2000). As a large-scale investigation from over thirty thousand subjects showed, the typology was representative of the population studied (Weinrach & Srebalus, 1990), and thus concurrent validity is strong. Other than the typology, evidence on concepts like differentiation and consistency is weaker, leading to debates about measurement issues (Swanson & Gore, 2000).

As stated in the last chapter, studies of the structure of Holland's Hexagon in Hong Kong found that the relations among RIASEC types here were different from those of the West. In studies in Mainland China, the validity of Holland's original six-type model was compared to those of other models of vocational interest (Long, Adams & Tracey, 2005; Long & Tracey, 2006). A recent structural meta-analysis (Long & Tracey, 2006) revealed that out of four representations of relations among RIASEC types, Gati's (1991) three-group partition model and Rounds and Tracey's (1996) alternative three-group partition model had the best fit, and "Holland's circular model" (1997) the worst, in Chinese population. While vocational interest classification is found valid in Mainland China, the structure is found to be different. The line of vocational interests study is progressing well. As more culture-specific variables and considerations received attention, they will shed more light on the understanding of Chinese vocational interests. However, as explained in the previous chapter, most research effort in vocational psychology in Hong Kong has been channelled into testing Holland's Hexagon. While testing Holland's typology locally is highly worthwhile, researchers need to go beyond the hexagon as a content theory (Patton & McMahon, 1999) and seek to explore more the process of career development in Hong Kong.



### 2.2.2. Learning Based Approaches

Originating from Bandura's social learning theory (1977, 1986, 1995) are the social learning theory of career decision making (SLTCDM; Mitchell & Krumboltz, 1990), as well as social cognitive career theory (SCCT; Lent, Brown and Hackett, 1994).

Bandura's social learning theory (1977, 1986, 1995) recognizes that people are active problem solvers who strive to understand and control the environment to suit their own purposes and needs through their learning experiences. Based on this theory, Krumboltz's SLTCDM accounts for the process by which people learn to make and change their educational and occupational decisions. In this theory, there are four categories of factors influencing one's career paths, namely genetic endowment and special abilities, environmental conditions and events, learning experiences, and task approach skills. The complex interactions between the four types of factors influence the beliefs, skills and actions of individuals. Beliefs can either be self-observation generalizations which are self evaluations of one's performance, interests or values, or world view generalizations about the environment. Influenced by these generalizations, people develop task approach skills and actions for coping with the environment.

Lent, Brown and Hackett (SCCT, 1994) developed their career theory from Bandura's reformulated social cognitive theory (1986). A central idea of Bandura is person-environment interaction, or triadic reciprocity. Personal variables, environmental factors and overt behaviour affect one another bidirectionally. He also highlighted the importance of cognitive, motivational and self regulated processes in guiding psychosocial functioning and behaviour. Accordingly, Lent, Brown and Hackett (1994) proposed a social cognitive framework to explain career related behaviours in three segments of interests, choice and performance.



Also rooted in learning of individuals, the Cognitive Information Processing theory (CIP; Peterson, Sampson & Reardon, 1991; Peterson, Sampson, Reardon & Lenz, 1996) was built on the thought and memory processes involved career problem solving and career decision-making. In this theory, the cognitive domains involved in career choice are categorized as self knowledge, occupational knowledge, decision-making skills and executive processing, which are arranged in ascending order in a pyramid form. In the domain of decision-making skills, the generic information processing phases identified are communication, analysis, synthesis, valuing and execution. In the executive processing domain, meta-cognition skills like self-talk, self-awareness and self-control are employed.

The above cognitive and social cognitive approaches share certain commonalities. As they all attend to both career choice and decision-making, they can be classified as content and process theories (Patton & McMahon, 1999). Secondly, all three emphasise interaction of person and environment in career development, conceptualising individuals as active problem solvers seeking self-mastery and control. In terms of practice, all three provide useful assessment tools for application, including the Career Beliefs Inventory (Krumboltz, 1994), Career Decision Making self efficacy Scale (CDMSE; Taylor & Betz, 1983) and Career Thought Inventory (Sampson Jr., Peterson, Lenz. & Saunders, 1996). In fact, all of them are classified as emerging career theories by Brown and Brooks (1996), as opposed to the established theories of Holland and Super. As they are still developing, there may be room for cross fertilisation (Brown, 1996). In terms of research support, Lent et al.'s model operationalized a later version of Bandura's theory. The constructs of self-efficacy, outcome expectancies and goal intentions are more precisely defined and easier to test than the major constructs of Krumboltz (Brown, 1996). SCCT has strong research support and recent theorizing in SCCT has paid attention to the contextual factors variables by including variables of perceived difficulties and supports (Schoffner, 2006). As for Peterson et al's new CIP theory, much more empirical evidence is still needed (Nile & Harries-Bowlsbey, 2005; Schoffner, 2006).



In essence, the social learning theory has been focused on how the individual can do and learn to be in control of his or her career. Similarly, the SCCT emphasized developing competence or a sense of self efficacy to complete future tasks. In considering the application of these approaches locally, we have to note that career development is closely related to concept of “self”. The social learning and cognitive theories have concentrated mainly on the motivational aspects of self like self efficacy. However self is much more than that. Betz (1994) quoted Super (1963) defining self concept as the constellation of self attributes and as personal constructs (1990), including the construct of self efficacy of Bandura. Self is multi-dimensional with both content and evaluative components. In psychology, it is often regarded as a multi-faceted construct and different perspectives of psychology emphasize different aspects of it. For instance, Stevens (1996) explained that “self” included embodiment, subjective experience, social medium, unconscious feelings and complex interrelations of the above. In other words, we have the biological self, interpreting self, reflective self and the defensive self from the biological, experimentalist, experiential, psychodynamic and other perspectives of psychology. As psychologists categorised Hong Kong as collectivistic (e.g. Holstede, 1984) and social oriented (Yang, 1981), we may draw our attention to collectivistic self in addition to individual self in understanding vocational behaviour in Hong Kong. Osborne (1996) distinguished the differences in self-construction between collectivist and individualist cultures with reference to the function of family.

“For the collectivist culture, the family unit and commitment to family serve as the referent point by which self is constructed. A self developing within an individualistic culture, however, will be encouraged to use family as a point of stability from which exploration into self-definition can be made” (p.85).

Fundamentally, Krumboltz and Lent’s models are developed in the American



culture emphasising self-development and advancement. To develop a sense of self-efficacy is crucial to personal success and the realisation of the American dream. How far this framework can directly be applied to a Chinese society where social relations are emphasised more often than individual pursuits is questionable. Central to the social learning frameworks is the construct of self-efficacy, which is only one aspect of self-concept, the motivational aspect. In my opinion, to understand career development of Chinese people, it makes sense to explore widely various aspects of self, rather than narrowing it to a single construct at this exploratory stage.

While it is highly worthwhile to apply the social learning and cognitive approaches locally to Hong Kong, I choose to start from a broader concept of self to allow for more comprehensive understanding of both self and context in relation to career development in Hong Kong. I may apply constructs in social learning like career self efficacy, but replicating or directly adopting the entire research model or framework of Lent or Krumboltz is not my priority for this study.

### 2.2.3. Developmental Approaches

The developmental approach looks at how an individual makes his or her career decisions and progression in different stages of the life span. To cope with the developmental crisis of a stage, an individual would seek to develop and implement his or her vocational self-concept. Major theories of this approach are the lifespan- life space theory of Super (Super 1990; Super, Savickas & Super, 1996) and the theory of circumscription and compromise of Gottfredson (1981). To examine the relevance of this approach to university students, we look more closely at Super. Super (1990) described his approach as segmental, or a creative synthesis of “developmental, differential, social and phenomenological psychology held together by self-concept or personal construct theory” (p.194). His lifespan-life space approach (Super, Savickas & Super, 1996) is summarised



into 14 propositions. The main ideas are outlined as follows.

In their development, people differ in their abilities, personalities, values and interests, as well as the self-concept, which is a product of social learning. With his or her self-concept and competencies, one can fit into a number of jobs. Formed by vocational preferences, competencies and environmental influences, one's self-concepts change over time but become more and more stable from late adolescence onwards in the life span. Career choices and development should bring a good match between self and the world of work, representing an implementation of the self-concept. Satisfaction from work depends on the extent to which one can implement his or her self-concepts in work.

Life span career development is a process consisting of a series of life stages, or maxicycle, characterised by a sequence of stages of growth, exploration, establishment, maintenance and disengagement. A mini cycle takes place in the transition from one stage to another, involving processes of growth, reexploration and reestablishment. There are specific developmental tasks in each stage. Successful coping with the task requirements enables one to function well in a given stage and prepares him or her for the next. Successful coping with a stage, in turn, depends on one's career maturity or readiness to master the developmental task of each stage. According to Super (1990):

“Career maturity is defined as the individual's readiness to cope with the developmental tasks with which he or she is confronted because of his or her biological or social development and because of society's expectations of people who have reached that stage of development. This readiness is both affective and cognitive.” (p. 211)

Moreover, successful coping in each stage also involves performing well in life roles of worker, student, leisurite, homemaker and citizen, though the relative

importance, or salience, of roles differs in different stages. Thus, Super has gone beyond jobs and occupations, looking at career development in the context of life development and satisfaction.

Super's theory deserves special credit as it comprehensively covers different stages in the life span. However, as his theory consists of various segments like self-concept, life stages, life roles and career maturity, even he (1990) admitted the difficulties of putting different segments of his theories together. Many of his constructs have been put to the test separately, not as an integrated developmental theory. Brown (1996) fairly commented:

“Super's developmental theory will forever be the segmental legacy of a brilliant thinker. It is not a well-constructed theory in that the concepts are not well defined, no hierarchy was developed among them, and researchers have ignored all the hypotheses that were developed. To be sure, researchers have used Super's ideas as the basis of numerous studies, and his ideas about values, career maturity, life role interactions, and stages in career development will influence our thinking for years to come” (p. 522).

Recent theory development is addressing this segmentation. Savickas (1997) has advocated the modification of Super's construct of “career maturity” into “career adaptability”, defined as the “readiness to cope with changing work and work conditions” (Savickas et al, 1994, p.58). Since career adaptability is related to adult career development in all stages, it is becoming a potential linking construct for different segments. Commenting on the segmented nature of Super's theory, Shoffner (2006) concluded different segments of the theory were tested in research and results were supportive of the general model.



Super's theory sheds much light on the career development of university students. It is concerned with the whole life span, but related research has been focusing primarily on early adulthood stage of exploration (Swanson & Gore, 2000), particularly relevant to college students. Secondly, in terms of practical applicability, Super's ideas on life-span development and career maturity have led to the creation and utilisation of a number of very useful careers assessment instruments and tools. Osborne (1997) summarised that Super's developmental theory can be applied in career counselling through five instruments, namely the Adult Career Concerns Inventory (Super et al., 1986), the Career Development Inventory (Super, Thompson & Lindeman, 1981), Strong Interest Inventory (Harmon, Hansen, Borgen & Hammer, 1994), the Salience Inventory (Nevill & Super, 1986a) and the Value Scale (Nevill & Super, 1986b). He coined this as the C-DAC, or Career Development, Assessment and Counselling approach, which is particularly relevant to college students.

#### 2.2.4. Focusing on the Area of Study

To extend Super's theory to Hong Kong, the major concern is its cross-cultural validity. Normative constructs like career maturity and developmental tasks are developed and tested in the United States, and have to be validated before applying across cultures. Fundamentally, the development of self-concepts is influenced by one's gender, ethnicity and socio-economic status, and it is questionable if the same process of self development can be applied to different cultural and ethnic groups (Brown, 1996). Secondly, the nature of Super's theory poses relatively more difficulties in research as compared with approaches discussed earlier. As a developmental theory, it needs longitudinal methodologies, rather than commonly used cross-sectional designs, to establish its validity. Also, its major propositions lack the operational specificities found in other theories (Swanson & Gore, 2000).

On the other hand, there are obvious advantages of extending the developmental



perspective of research to the Hong Kong context. First of all, it will enable us to examine how the careers of local university students are evolved and developed over time from the lens of self concept formation and career readiness, which is particularly relevant in a rapidly changing society like Hong Kong. Secondly, the issue of cross-cultural application may not be unsolvable. Life role salience, a key theme in the developmental perspective, is already examined under the specific developmental and cultural context of different countries (Niles & Goodnough, 1996; Shoffner, 2006). Moreover, the Developmental perspective takes a broader view of self concept, as compared to self efficacy we just discussed, and thus allows for more comparisons of cross-cultural differences. More recent conceptualizations in this broad perspective put much consideration on the context of career development (eg. Vondracek et al., 1986, Savickas, 2005). I shall elaborate on this as I discuss the theories of career exploration later in this chapter.

Admittedly, Super's theory deals with different segments or stages in life. For him (1990), the late adolescence stage of age 18 to 25 is a period of exploration in which the young person engages in exploration activities first to crystallize his or her self concept, and goes on to specify and implement his or her vocational preferences. Super conceptualised career development as the implementation of self-concept, and it will be interesting to explore the themes of vocational self, life stages, life roles and career readiness in a Chinese society like Hong Kong. The developmental perspective is a grand theory of the whole life-span. For this study, I would like to focus on career exploration of university students in late adolescence. In fact, the line of research study on career exploration stage of adolescents has grown gradually and significantly since the 1980s. With the contribution by David Blustein and his colleagues, a comprehensive framework of career exploration was developed (Flum & Blustein, 2000). The career exploration research has also accumulated rich research data and has much to offer in both theory building and practice. I think the concept of career exploration will apply well to Hong Kong. First of all, from a developmental perspective, the process of



exploration is critical to university students, in both Hong Kong and the West, in their identity development (e.g. Marcia, 1980) and transition into employment. Secondly, with mass university education and changing demands of graduate employers in Hong Kong as discussed in chapter 1, it is important for local university students to engage early in career exploration and develop confidence and readiness for their careers. Local theorists and practitioners alike will be interested to understand why students engage in career exploration and the likely consequences of the exploration behaviour. Moreover, the recent framework of career exploration of Flum and Blustein (2000) is not only based on research for over two decades, but has also incorporated historical, cultural and contextual perspectives. Such design, which I shall discuss later, is likely to make the application the model across cultures possible. As Flum and Blustein (2000) commented,

“One of the central elements in most career-choice and development theories and career intervention practices is the explicit reference to the vocational exploration process.”  
(p. 380)

Given the central role of career exploration in both career development and intervention, it is worthwhile to focus on this theme in this study on Chinese university students in the Hong Kong context. I shall further discuss the literature and research of career exploration in the following section.

### 2.3. Early Studies of Career Exploration

Because career exploration is central to my research, I shall trace the development of the line of career exploration research, focusing on the significant early conceptualizations and important research work in this area from the 1970s onwards. Then, I shall examine the research framework by David Blustein and his

colleagues (Flum & Blustein, 2000) in the next section.

### 2.3.1. The Conceptualization of Career Exploration

There are different ways to conceptualize “career exploration”. Flum and Blustein (2000) contrasted their views of career exploration with the previous theoretical perspectives that considered career exploration only as a stage (Ginzberg et al., 1951; Super, 1957) of either career development or career decision making (Harren, 1979, Tiedeman & O’Hara, 1963). In Super’s (1957) early conceptualization, exploration is a life stage in adolescence. In Tiedeman and O’Hara’s (1963) perspective, career decision-making is a sequential progression of the following stages of exploration, crystallisation, choice, clarification, induction, reformation and integration. From this prescriptive approach, adequate self and career exploration led naturally to career choice, and having a career decision is both desirable and preferable. Taveira & Rodriguez (2003) summarized four conceptions of career exploration, namely (i) career information seeking and problem solving (Krumboltz, 1979), (ii) a phase in career decision making (Gelatt, 1962; Tiedeman & O’Hara, 1963), (iii) a career development life stage in adolescence (Super, 1957) and (iv) a lifespan process underlying career learning and development (Jordaan, 1963, Blustein , 1997). The first three conceptualizations took a relatively narrower view of exploration and generated some research work. It was the last expanded conception represented by Blustein that stimulated substantial research since the 1980s. I shall now trace the early work of career exploration by Jordaan, Stumpf, Greenhaus and Vondracek before going on to David Blustein.

### 2.3.2. The Work of Jordaan

It is Jordaan’s (1963) definition of vocational exploration that set the tone for its future development. As early as 1963, in Super’s book on the Career Development: Self Concept Theory of Career Development, Jordaan contributed a



chapter on vocational exploration. From experimental psychology, he noticed that exploratory behaviour occurred when a person responded to stimuli by obtaining additional information from the environment. He also defined vocational exploratory behaviour as:

“refers to activities, mental or physical, undertaken with more or less conscious purpose of hope of eliciting information about oneself or one’s environment, or of verifying or arriving at a basis for a conclusion or hypothesis which will aid one in choosing, preparing for, entering, adjusting to, or progressing in, an occupation” (p. 59)

As a pioneer in the study of vocational exploration, Jordaan laid important groundwork in many ways with advanced thinking that is still very relevant nowadays. Firstly, he put forward vocational exploration as a serious subject of study, not just an element of another theory. Secondly, he defined it to include conscious and unconscious, as well as vocational and avocational activities. In this way, a broad range of activities across different life roles of a person can be put under investigation.

While Jordaan’s work was very advanced at his time, it appeared insufficient to renew investigation in career exploration in the 21<sup>st</sup> Century. As Flum and Blustein (2000) pointed out, it did not attend enough to contextual factors and exploration across the lifespan. They argued,

“Jordann’s formulations lack several important components to provide the important groundwork for the renewed investigation into the exploration process that we believe is needed. First, the work of Jordaan, along with many of those who followed his perspective, did not capture the embedded nature of life roles that defines the psychological

and social experience for most individuals at the turn of the millennium. Second, Jordaan's work focused on vocational exploration primarily in adolescence and early adulthood. Thus work by Jordaan would not likely provide the foundation for a more contemporary view of exploration as a lifelong process. Third, following Jordaan's focus on integrating related enquiry in collateral lines of psychological research, there is a need to integrate subsequent work with more current bodies of research and theory." (p. 383)

### 2.3.3. The Work of Greenhaus

Greenhaus' (e.g. Greenhaus 1973, 1981; Greenhaus & Sklarew 1981) work on career exploration of college students and employed adults managers was influenced by both the early conceptualizations of Super (1957) and Jordaan (1963) on career salience, as well as Schein's (1978) ideas of adult development in organizations. Greenhaus vigorously put the key developmental constructs of career salience, career exploration and career decision making into testing in studies of college students. Greenhaus (1973) developed a framework of career salience with three factors, including the relative priority of career, general attitude towards work and career advancement and planning. Greenhaus and Sklarew (1981) also found from 161 undergraduate students that career salience predicted self and work related exploration. Low anxiety students were found more satisfied with their career decision when they engaged in self exploration as compared to high anxiety students. In this study, anxiety was measured by the Trait Anxiety Scale (Spielberger, Gorsuch & Lushene, 1970). Anxiety here referred to the proneness to be anxious, which is a psychological trait. Greenhaus and Sklarew proposed that career exploration would generate useful information about alternative occupational choices, which would, in turn, facilitate reaching an appropriate choice and gaining satisfaction from it.



They also stated that the relation between career exploration and satisfaction of decision was moderated by the trait of anxiety. From studies in test anxiety, they found that anxious people tended to engage in self deprecatory thinking and distort information cues from the environment. Accordingly, they hypothesized that highly anxious students tended to be pre-occupied and distort information as they engaged in self exploration. As proved by their study, even if these students engaged in self exploration, it was less likely that they would arrive at a satisfying occupational choice. Those with lower anxiety, in comparison, tended to process self related information more objectively to reach a satisfying occupational choice. In short, through this study, Greenhaus and Sklarew established the relation between career exploration and satisfaction with career decisions. Also, the personality trait of anxiety was found to be a moderator. Those who were high on the anxiety might need more guidance and support in processing occupational information effectively.

Greenhaus, Lawkins and Brenner (1983) found that self and occupational exploration accounted for significant variance of career decision making from a sample of 284 undergraduate business students. Sugalski and Greenhaus (1986) found again work role salience related to career exploration in a study of 257 managers in a communication company. Career exploration, however, did not predict the goal setting of managers as expected.

In summary, Greenhaus linked the source of career exploration to work role salience and level of anxiety and its consequences to career decision making. In other words, he had established the developmental variable of career salience as a predictor of career exploration, and career decision making as the outcome in the 1980s. Moreover, his work of career exploration was not limited to the university setting; he also tested the construct on practising managers in organizational settings. Greenhaus, Callanan and Godshalk (2000) emphasized that career management, including a necessary component of career exploration, should be an on-going process for managers and professionals in organizational settings.



Indeed, exploration behaviour is not limited to adolescence and early adulthood, but appears in different stages of the lifespan. Thirdly, Greenhaus et al. (1994, 2000) has built up a model of career management for students and managers based on theories and research. In this model, career exploration played an important role in career management. Self and environment exploration can enhance awareness, which is important for goal setting and career strategy formation of careerists. Greenhaus et al.(2000) summed up his model of career management as follows,

“Career exploration, the driving force of the model, involves the collection and analysis of career related information. This information can increase awareness of personal qualities (interests, values, talents, and lifestyle preferences) as well as environment (the world of occupations, jobs, organizations and family). Awareness of self and environment enables people to set realistic career goals. The development of specific career goals can help individuals choose and implement appropriate career strategies designed to help them attain these goals. However, no particular strategy is likely to be effective in every situation, hence the need for on-going career appraisal in which career-related feedback is acquired and used.” (p. 37)

Greenhaus’s work extended the practical application of the construct of career exploration in both career development of college students and the career management of employed adults. Other than this, however, not much effort was made on elaborating or extending the conceptualization of career exploration, nor on the contextual or cultural variable that might affect the construct. To extend the construct across cultures to another context, we have to move on to other perspectives as well.

#### 2.3.4. The Work of Stumpf



Stumpf and his colleagues worked on the development of new dimensions for the concept of career exploration. They developed a conceptual framework of measurement of career exploration known as the Career Exploration Survey (CES; Stumpf, Colarelli & Hartman, 1983).

In their model, they emphasized the interrelation among three domains of process, beliefs and reactions of exploration. The exploration process included exploration of both self and environment, as well as the occupational focus, frequency and amount of information obtained. Also, it examined whether the exploration activities were intended and conducted systematically. The exploration process was related to beliefs towards exploration. The beliefs included how favourably one perceives the general economic outlook is to the employment opportunities he or she was seeking, as well as the likelihood and importance that he or she will get the desired positions. Moreover, exploration activities were also associated with belief in instrumentality or how probable one thought it was that the self, environment and intended-systematic exploration would result in obtaining his or her career preferences. As for the reaction to exploration, it could be affective when the individual satisfied with the occupational information obtained, or stressful as one was in the exploring or deciding his or her career. All these reactions are associated with the process variables of exploration as explained.

Specifically, the CES consists of seven measures of exploration processes, six of beliefs and three of reactions to exploration as indicated Table 2.3.1. Stumpf et al. (1983) provided sound evidence of dimensionality, reliability and validity with data obtained from 601 individuals in four studies. With the CES, Stumpf and his colleagues moved on to investigate the consequences of career exploration upon organization entry. Stumpf and Hartman (1984) conducted a longitudinal study of 85 individuals who were recently employed by organizations. They found that prior exploration two months previously predicted organization entry and socialization variables. Specifically, prior exploration predicted person-job

**Table 2.3.1 Domains and Dimensions of Career Exploration**

Domains	About	Scales
Belief:	Labour Market	- Employment Outlook
		- Certainty of Exploration Outcomes
	Instrumentality	- External Search
		- Internal Search
Preference	- Method	
		- Importance of Obtaining Preferred Positions
Process:	Where	- Environment Exploration
		- Self Exploration
	How	- Intended-systematic Exploration
	How Much	- Frequency
		- Amount of Information
Directedness	- Focus	
	- Number of Occupations Considered	
Reaction:	Affect	- Satisfaction of information
	Stress	- Explorational
		- Decisional

Source: Stumpf, Colarelli and Hartman (1983)



congruence which was, in turn, moderately related to work motivation, work satisfaction, perceived work performance and perceived influence on job and work unit.

In another longitudinal study of business graduates (Stumpf, Austin & Hartman, 1984), prior self exploration was related to interview readiness and recruiters' ratings of candidates' performance. Stumpf and his colleagues have made substantial progress in the study of career exploration by proposing theoretical framework of career exploration that is good for both theoretical understanding and measurement.

The CES was subsequently adopted by Blustein and others in further investigations of career exploration. Moreover, by studying the impact of exploration in subsequent organizational entry, Stumpf had extended the application of career exploration to the organizational context. Following his pioneer work, however, further research can be done to establish the causal relations among the many aspects of exploration. More attention could also be paid to the contextual factors of exploration.

In developing their framework, Stumpf and his colleagues (Stumpf & Corlarelli, 1980; Stumpf et. al, 1983) elaborated some of Jordaan's (1963) ideas on the nature of content of exploration behaviour. However, it was based more on a cognitive expectancy theory than Jordaan's work (Flum & Blustin, 2000). According to their framework, as shown in the above, career exploration in terms of self exploration, environment exploration and amount of information are related to job seeking and entry, while beliefs, especially the value and importance of employment seeking, are predictive of exploration behavior. As Flum and Blustein (2000) commented,

“Perhaps the most elaborate model of career exploration was proposed by Stumpf, Colarelli and Hartman (1983). The Stumpf et al. model, which was based on an application of cognitive expectancy theory and to a lesser extent Jordaan’s (1963) ideas, evoked considerable research that described some of the antecedents and consequences of exploratory activity. However, the measurement tool developed by Stumpf et al. did not capture the complexity of exploration, particularly self exploration.” (p. 384)

In retrospect, Stumpf and his colleagues deserve credit in building up a comprehensive framework, and their measures of career exploration have been widely used in vocational research up till now. However, their framework and constructs appear inadequate in the 21<sup>st</sup> Century in understanding both the complex psychological process of the motivation of exploration, as well as the contextual and cultural variables. I shall therefore go on to examine other conceptualizations of career exploration.

#### 2.3.5. The Developmental-Contextualism of Vondracek et al.

Vondracek, Lerner & Schulenberg (1986) put forward a developmental contextual approach to the study of vocational behaviour. Drawing on life-span developmental psychology, they pointed out that “individual changes across life are both products and producers of multiple levels of context within which the person is embedded”. In other words, an individual is changed by his or her environment, but he or she may also change the environment to make it become more affordable gradually. As behaviour at one point in time may be related to changes at another point of the lifespan or the context, they take a longitudinal view on the study of vocational behaviour. They summarized their position as follows.



“In short, we call for a developmental and multidisciplinary approach to the study of vocational role or career development. This approach must emphasize the antecedents and consequences of features of vocational development - It must look at features of vocational development as potentially involving all of the life-span – and it must emphasize too the context within which such development occurs, a context which itself has developmental features.” (Vondracek, Lerner & Schulenberg 1986; p. 82)

Vondracek and his colleagues further tested their contextual development approach. For instance, Silbereisen, Vondracek and Berg (1997) compared 1090 adolescents from former West Germany with 584 counterparts from former East Germany and found that on average the latter made their initial vocational preferences one year earlier. Parental supportive behaviour was found related to earlier vocational preferences for all. The importance of contextual factors in the formation of vocational preference was highlighted. For youth from both East and West Germany, self reported identity status was related to the timing of initial vocational preference. The earlier timing for youth from former East Germany was explained by the more restrictive, constrained systems which offered fewer choice options in vocational opportunities as compared with former West Germany. In this study, individual career development, operationized as the initial timing of vocational preferences, were related to different levels of context, namely family and political system. Moreover, Vondracek and his colleagues also established relationships between career exploration and the process of adolescent identity development (e.g. Marcia, 1980). Schmitt-Rodermund and Vondracek (1999) found from 933 German youth that exploratory activities were related to identity statuses, with identity achievers and moratorium statuses related to more exploration and diffusion and foreclosure less. Marcia’s theory of ego identity development (1966) stated that identity formation involved both going through crisis and developing commitment. Depending on whether a person has gone



through respectively crisis and commitment, he or she can be classified into one of the four ego identity statuses of foreclosure, diffusion, moratorium and identity achievement.

In retrospect, the development contextual approach further advanced the study of vocational behaviour. In line with the original conceptualization of Jordaan (1963), Vondracek and his colleagues have again put exploration on a lifespan perspective, encouraging the use of longitudinal study methods. Secondly, from a developmental perspective, they have also related vocational development to ego identity status in adolescence. Thirdly, they examined the contextual factors of family and political systems by their cleverly designed study on youth from the former East and West Germany after the unification. On the other hand, they also indicated (Vondracek et al. 1986) that their developmental-contextual model could not be tested as a whole, but served only as a guide for selecting individual and ecological factors for career research. Regarding career exploration research in a different context, say Hong Kong or China, the application of the developmental-contextual approach will be very enlightening. Vondracek's approach was proven useful in examining career exploration of students under different contexts in both the former East and West Germany. Accommodating contextual variables, it is also expected to shed light of career exploration behaviour of students in Hong Kong.

In essence, however, we have to note that the development-contextual approach is a general approach of career development, not a specific theory on career exploration though the construct of career exploration was employed in related studies. For a comprehensive framework of career exploration, we have to look at the work of David Blustein and his colleagues.

#### 2.4. The Framework of Blustein et al.



The work of David Blustein et al. is particularly relevant to the study of career exploration of university students. Since the 1980s, Blustein has been doing work on this professional area and has accumulated rich research data to develop and improve his approach and research framework. He has made a significant contribution in the following ways. Firstly, he set the direction of a new line of research on career exploration. Secondly, his vigorous research efforts shed much light on the process of career exploration. Thirdly, he proposed a new research framework for the future development of career exploration research. I shall now elaborate on these.

#### 2.4.1. Their Approach to Career Exploration

Blustein (1977) established a clear direction for the study of career exploration. Before him, career exploration was examined from either the social learning (e.g., Krumboltz & Thoresen, 1964; Krumboltz & Schroeder, 1965) or developmental approach (e.g. Super, 1957; Jordaan, 1963). He further developed and expanded the developmental approach after Jordaan and Super. Blustein (1992) criticized the social learning approach of career exploration. In his opinion, the social learning perspective (e.g., Fisher, Reardon & Burck, 1976; Krumboltz & Thoresen, 1964; Aiken & Johnston, 1973) considered career exploration mainly in terms of modelling or vicarious learning. He stated that “one of the implicit assumptions of the social learning view is that exploratory activity is not an intrinsically rewarding experience and therefore environmental forces must evoke, sustain, and reinforce exploratory behaviour” (Blustein 1992; p.172). By linking Deci and Ryan’s (1985) theory of human motivation with career exploration, Blustein (1992) proposed that career exploration behaviour can be both extrinsic and intrinsic and “might be related to such phenomena as curiosity, creativity, playfulness, goal-directedness, and self-confidence” (p. 172)

In developing the line of research on career exploration, Blustein (1992) emphasized the importance of going beyond the social learning perspective.



Accordingly, he (1997) advocated using Super's life career rainbow and career adaptability model (Super, 1980; Super & Knasel, 1981) to expand the conceptualization of career exploration, because the model examined life stages from both psychological and social perspectives, considered both work and nonwork life roles and promoted career adaptability across the lifespan. In Blustein's (1997) opinion, Super had revised his thinking by moving from "a life-stage maturity model (1957) to a context-based life-career rainbow model "(1980) in the following ways: Firstly, life stages are no longer biologically defined, but examined psychologically and socially. Secondly, emphasis was put on the interaction of different life roles across the lifespan, rather than merely on work roles. Thirdly, non-maturation issues related to one's career development were considered, including social and economic factors. From Super's revised model, Blustein (1992, 1997) developed an expanded view of exploration that includes exploration activities of different life roles throughout the lifespan and considers a variety of motivational, relational, contextual, economic and social factors. Blustein (1992) defined career exploration as,

“encompassing those activities, directed toward enhancing the knowledge of the self and the external environment, that an individual engages in to foster progress in career development.”  
(p.261)

In this way, the investigation of career exploration can be put in a social, context-rich life-career perspective. Blustein (1997) believed such an expanded view would facilitate the investigation of antecedents, consequences and context of career exploration.

“The context-rich perspective seeks to attend to relevant historical, and cultural factors, as well as those factors emerging from one's educational, vocational, relational and psychological world that influences the antecedents, process and outcomes



of career exploration.” (p. 267)

In essence, the context-rich perspective as advocated by Blustein did not appear very much different from the developmental-contextual approach of Vondracek and his colleagues (Vondracek et al., 1986) in the consideration of developmental, psychological, social and educational factors of career development. The unique contribution of Blustein is his focus and persistence in conducting research and subsequently building up a framework of career exploration. I shall examine his research on the antecedents, process and outcomes of career exploration now.

#### 2.4.2. Their Studies on Antecedents and Consequences of Career Exploration

Since the 1980s, Blustein has been working through vigorous research efforts to determine the antecedent conditions and the outcomes of career exploration.

Through his studies, he established intrinsic and extrinsic motivation, relational and family support, as well as ego identity statuses among the antecedent conditions of exploration. Related studies on the antecedent conditions of career exploration are explained as follows.

Blustein and Philips (1988) asked 148 undergraduates to complete measures of vocational decision-making (Vocational Decision Style Indicator, VSDI; Walsh 1985), and selected measures from the Career Exploration Survey (Stumpf et al, 1983). Employing canonical analysis to study the relation between the factors of exploration and exploration activities, he found, from a significant root accounting for 27% of the variance between canonical composites, that a thinking-oriented approach and stress in decision making predicted career exploration activities. In sum, from these initial studies, Blustein found that individual characteristics like thinking style, self efficacy and stress levels were related to exploration.

To test the relationship between motivational processes and career exploration,



Blustein (1988) conducted a study on 154 undergraduates. The General Causality Orientation Scale by Deci and Ryan (1985) was used as a measure of motivation processes, with its autonomy orientation subscale reflecting intrinsic motivation and the control orientation subscale reflecting extrinsic motivation. He found, through a canonical root that accounted for 22% of the variance between canonical composites, that autonomy orientation was positively related to self exploration and control orientation to the instrumentality of career decision making instrumentality. From a sample of 106 college students, Blustein (1989a) conducted a canonical analysis on self and environmental exploration. He found that career self efficacy and goal-directedness explained exploration in a significant canonical root that accounted for 37% of the variance between the canonical composites. In these studies, Blustein successfully linked career exploration with factors of intrinsic motivation. These include generic motivational factors goal-directedness, autonomy orientation, as well the career-specific factor of career decision making self efficacy.

Blustein and his colleagues also established relational and family support as contextual factors of exploration. For instance, Ketterson and Blustein (1997) found from a sample of 137 undergraduates by canonical analysis that higher levels of attachment to parents were associated with higher levels of self and environmental activities. Felsman and Blustein's (1999) study on 147 undergraduates demonstrated that three peer related variables of attachment to peers, intimacy and mutuality accounted for a significant amount of variance in career exploration and commitment.

From his context-rich approach (1997), the consequences of career exploration are not confined to the career domains, but other life roles as well. Accordingly, career exploration does not result in occupational information only, but involves how one makes sense of his or her life and career. In his studies, Blustein related career exploration to the outcomes of decision making progress, in terms of self concept crystallization, and vocational commitment. He also found that career



exploration is related to ego identity statuses. Key related studies related to the consequences of career exploration are explained as follows.

From 134 undergraduates in a career and life planning course, Blustein, Pauling, DeMania and Faye (1994) tested the relation between adaptive career exploration was related to three different conceptualizations of career decision making process. Career decision making process was operationalized by three constructs of vocational self-concept crystallization, commitment to the process of making career choices, and the readiness to implement own career choice. Adaptive career exploration was measured by the Intended-Systematic Exploration Scale of the Career Exploration Survey (Stumpf et al., 1983). It was found that intended, systematic career exploration behaviour was consistently related to all three constructs of progress of career decision making. In sum, the study supported that intended exploratory activities, especially conducted in a systematic manner, was associated with progress in career decision making.

Blustein (1989 b) tested 103 college students with selected scales of Career Exploration Survey (Stumpf et al, 1983) and the Decision Making Task: Occupations of the Assessment of Career Decision Making (ACDM; Buck & Daniel, 1985). He found that those committed to a career plan tended to engage in environment exploration. Students who were planning to make their career decisions tended to believe in the usefulness of self exploration. Blustein, Devenis and Kidney (1989) found career exploration positively related to moratorium and achievement status but inversely correlated with diffusion status. In sum, Blustein proved that career exploration did not result only in the acquisition of occupational information, but also changes and progress in the psychological process of career decision making and commitment. His studies related career exploration to the psychological outcomes, including self concept crystallization, vocational planning, vocational commitment and ego identity development.

Considered in total, Blustein has established with sound evidence some

relationships among variables of career exploration antecedents, process and outcomes. However, we should also note that he mainly employed cross sectional canonical analysis. In cross sectional studies, a variable can be conceptualized as a cause or an effect of the dependent variable. For instance, career decision making self efficacy can be considered either as a predictor or an outcome of career exploration. The cross-sectional evidence is not adequate to confirm the causal relationship among the two variables. To confirm causal relationships, more stringent statistical methods and longitudinal designs are needed in future studies.

#### 2.4.3. The Research Framework

Based on their previous research, Flum and Blustein (2000) proposed a research framework to reinvigorate the study of vocational exploration, in which four perspectives of investigation were put forward:

- The perspective of identity formation process
- The perspective of human motivation and self determination
- Contextual perspective
- Historical perspective

In this new research framework, vocational exploration is defined broadly to include “the appraisal of internal attributes and exploration of external options and constraints from relevant educational, vocational and relational contexts” (Flum & Blustein, 2000; p381). It can be directed towards “enhancing self knowledge and knowledge about one’s relevant environment” (p. 381). It also includes the dimensions of planned and unplanned activities, as well as exploratory attitudes and skills. The feedback of exploration to an individual can be cognitive or affective, including obtaining information and the feelings about the information.



In the first perspective of identity development, Flum and Blustein looked at exploration from the lifespan developmental perspective. They argued that career exploration should be examined from the broad perspective of identity development of young people. They quoted Erikson's (1968) view that the major developmental task of late adolescence is identity formation. Marcia (1966, 1980) further stated that identity formation involved both going through crisis and developing commitment. As I indicated a little earlier, depending on whether a person has gone through respectively crisis and commitment, he or she can be classified into one of the four ego identity statuses of foreclosure, diffusion, moratorium and identity achievement. Flum and Blustein (2000) emphasized that career exploration and identity formation are two major processes occurring in late adolescence and they are related to each other. From the lens of identity formation, we can look more closely at how exploration is related to ego identity development.

In the second perspective of human motivation, we learn that exploration activities can be triggered by intrinsic and extrinsic motivation. Flum and Blustein proposed that the theory of human motivation (e.g. Deci and Ryan, 1985) would help us to understand why an individual engages in exploration behaviour. Blustein drew on theories of motivation, attachment and relational support to account for exploration behaviour. Adopting Deci and Ryan's (1985) theory of intrinsic and extrinsic motivation, Blustein and Flum (1999) postulated that exploration of various vocational interests is intrinsically motivated, and active exploration will result in greater ownership and increased proportion of adaptive career behaviour and attitudes. Career exploration can also be generated by extrinsic motivation so long as the exploration activities are considered functional to the implementation of one's life plan or identity. Intrinsic motivation comes from the basic human needs for autonomy, competence and relatedness. Blustein (1997) emphasized that the theory of extrinsic and intrinsic motivation gives a complete view of motivational antecedents of exploration:



“In addition to the traditional social learning influences, individuals also seem to engage in career exploration when faced with personally relevant social and contextual influences. A more complete view of the motivational antecedents of career exploration would suggest, however, that individuals engage in exploration as a means of manifesting their own curiosity, self-determination, and volition with respect to their career lives.”

(Blustein 1997; p172)

The third perspective is about the context of exploration. By context they refer broadly to relevant relational and social, cultural, economic and political environment. The key question here is how far the contextual factors may constrain or facilitate exploratory behaviour. In other words, it considers how far the society allows an individual to have more room to make vocational choice self determined. Like Vondracek, Flum and Blustein (2000) agreed that culture and individual affect each other.

“Culture is not external and separate from people; the cultural context may have group or ecological implications, but, most importantly, it is an active part of the individual’s dynamics.” (p. 378)

The fourth is the historical perspective. Flum and Blustein traced the historical development from pre-modern to modern era, and then to the present information age. In the information era, there are rapid and unpredictable changes and people will experience more job transitions. To cope with such challenges, one has to be flexible and yet maintain a coherent self-constructed identity, as well as developing exploratory attitudes, skills and activities. For Flum and Blustein (2000), career exploration will result in self construction and life-long adaptability to meet the workplace challenges of the 21<sup>st</sup> Century:



“In our view, one of the core outcomes of exploration is self construction, which refers to the process of developing a coherent and meaningful identity and implementing that identity in a life plan. Self-construction may become critically useful in the 21<sup>st</sup> Century. More precisely, exploration provides the cognitive and affective building blocks for self-construction, in effect furnishing individuals with the capacity to construct themselves in the face of increasingly daunting work-based challenges.” (p. 382)

Summarizing their four perspectives, Flum and Blustein (2000) stated the main theme of their framework as,

“The identity-formation literature sheds light on differentiated development paths while also expanding our view to encompass various domains and full arrays of roles within the life space. The self determination literature furnishes a necessary depth by focusing on the motivational process that plays a critical role in energizing exploration and developing an approach or avoidance attitude towards the exploratory process. Taken together, these bodies of research contribute to understanding of a self determined, self constructed course of development. With exploration as a core concept, a clear and explicit inclusion of the cultural and relational context encourages a view of broader social milieu that frames the intra and interpersonal aspects of exploration.” (p. 399)

In other words, from their point of view, to facilitate a young person to freely explore, he or she should preferably have a secure attachment base from family. His or her exploratory activities should better be self-determined and intrinsically

motivated. In terms of contextual factors, various social structures and network relationships, especially family and peer, will facilitate exploration behaviour, giving approval, support and access to information.

As they stated, Blustein and his colleagues have contributed significantly in “reinvigorating the study of vocational exploration” (Flum & Blustein, 2000, p. 380). They have expanded the conceptualization and brought in rich theoretical frameworks and perspectives. Like Vondracek et al.’s model (1986), Flum and Blustein’s (2000) framework gave direction and orientation to future career research rather than prescribing strictly factors and variables to measure.

Compared with Vondracek et al.’s model (1986), theirs specified the nature of exploration and linked it with identity formation and human motivation. Given the cultural considerations, their framework can accommodate cultural differences when applied outside the United States. Given its historical perspective, the framework inclines towards social constructionism (Brown, 1996) and thus accounts better for the more subjective and individual careers in the knowledge economy.

Under their theoretical frameworks many universal and culture-specific variables can be adopted in future studies. In this sense, it appears to be a grand theory of career exploration across the lifespan relevant in different cultures. In terms of theory building, the contribution of Blustein and his colleagues is remarkable in building up the research framework. To understand career exploration behaviour of specific target groups in a specific cultural context for policy development or practical interventions, however, additional studies have to be tailored.

For future studies of career exploration, Flum and Blustein (2000) suggested researchers to be creative and adopt diverse modes of inquiry. They also made some suggestions on specific methods:

“More specific recommendations include: (1) Longitudinal



research that can track exploration across time would be particularly useful in describing the natural ways in which individuals explore themselves and their relevant environments as they move across the lifespan. (2) Narrative research that would allow scholars to understand the richly personal and culturally embedded nature of exploration represents a key element of our recommendations. (3) Investigations that build on traditionally important outcome issues, such as assessing the consequences of a given type or expression exploration activity, are increasingly important.” (p. 401)

Understandably, longitudinal research will enable us to understand more about evolution of exploration behaviour, as well as the causal relations among variables. I am interested in examining the career exploration process of Chinese university students in Hong Kong and I am going to incorporate the above features 1 and 3 in this study. A longitudinal perspective will shed light on the evolution of the career exploration process over time, and the emphasis on outcomes of exploration will answer the concerns on programme assessment of both theorists and practitioners.

I understand that narrative studies can tap the subjective experience and perception of exploration of individuals. However, as my objective is to apply and adapt Flum and Blustein’s framework (2000) in Hong Kong by testing specific relations among antecedent, process and outcome variables in this study, I shall adopt a positivist approach and so narrative study will not be used at this stage.

#### 2.4.4. Application of the Framework in the Hong Kong Context

The contribution of Blustein and his colleagues lies in outlining a comprehensive and context-sensitive blueprint for the study of career exploration. Their research model (Flum & Blustein, 2000) gives broad directions and theoretical foundation



more than specificities for interventions in a specific situation. It does not prescribe exhaustively all specific variables to be tested. There is still much room to test additionally both universal and culture-specific variables under each perspective in the framework. From a pragmatic point of view, as Krumboltz (1996) argued, a theory should be simple and predictive to guide actual practice and interventions. To make this complex framework useful in the local situation to specific targets, more focused follow-up studies are required to attend to local specificities.

For the purpose of this research, I have started with the context of Hong Kong and found that the environment is changing rapidly and research is needed to account for the process of career development experience of local university students. I think, by utilizing Blustein's framework, I can examine the career exploration experience of university students with its antecedents and outcomes in career decision making and commitment. Such research would be meaningful to both academics and practitioners. The study would not be a direct transplant of Blustein's work. Rather, I would consider from both the cultural and social context views and adopt contextual factors into research. Actually, the research has specified the perspectives and relevant factors in domains of antecedents, process and outcomes, but it does not prescribe specific variables in each domains. To apply his theory, I can adopt the above four perspectives as a guiding framework and add in cultural-specific variables. In this first chapter, I have highlighted rapid social and educational changes in Hong Kong like the growth of mass university education, competition in graduate employment and the ties with Mainland China. It appears the research framework of Flum and Blustein provides insights and sound theories for understanding the career exploration behaviour of local students, accommodating the historical, cultural context of the career exploration context.

In the next chapter, I shall develop my research hypotheses for "testing relations among variables of career exploration antecedents, process and outcomes on



Chinese University students in Hong Kong”. From the above general discussion of career exploration, I shall move on to discuss how specific the perspectives, constructs and culture-specific variables can be applied in domains of career exploration. The research hypotheses of this study will be developed.

### **3. RESEARCH FRAMEWORK AND HYPOTHESES**

The research framework (Flum & Blustein, 2000) is actually a blueprint for the essential domains of variables related to career exploration. It outlines the key perspectives and broad directions of future career exploration research. The authors did not strictly prescribe a specific model of variables of career exploration to be tested in totality. Rather, there is plenty of room to test different variables in the domains of antecedents, process and consequences of career exploration under this broad framework. To the best of my knowledge, there is no major effort to test the relations among variables of antecedents, process and outcomes in this framework of career exploration in Chinese societies, if not in Asia at all. I am now extending and adapting the framework of Flum and Blustein (2000) to the Hong Kong context.

In this chapter, I shall identify the variables to be tested in each domain and go on to develop my research hypotheses. Before discussing the variables, I would like to briefly review the Chinese cultural context and my orientation to link theory with practice.

#### **3.1. Chinese Cultural Context**

In cross cultural psychology, there is much discussion on whether a theory developed in the cultural context of one country can be applied to explain behaviour in another culture (e.g. Berry et al., 2002; Lambert, 1980). Berry, Poortinga, Segall and Dasen (1992, 2002) distinguished three positions regarding such application as absolutism, relativism and universalism. For them, while absolutism means that all psychological behaviour is basically common across culture, relativism emphasizes that all behaviour is culturally patterned and should be explained only in its cultural context. For the third position of universalism,



Berry et al. (2002) explained:

“First, universalism seeks to understand the role of culture in stimulating behavioural diversity and, rather than dismissing culture, accepts it as the source of human variety. Second, while assuming that the basic processes are likely to be common features of the human species, this approach permits the discovery of not only behavioural similarities but also the differences across human groups. Universalism is also clearly distinguishable from relativism, since comparisons are considered essential to the achievement of a global understanding of human behaviour.” (p.5)

Based on the position of universalism, we can take a general theory that is developed in the West and apply it in the Chinese context. Essential to the application is, of course, the identification of cultural specific factors that will affect the validity of the theory. Moreover, in vocational psychology, there are also strong appeals to make theories developed in the West more useful in different cultures by identifying relevant culture-specific variables (e.g. Leong, 2002; Blustein & Ellis, 2000; Leong & Hartung, 2000; Leong & Serafica, 2001). While I understand the importance of identifying culture-specific factors to extend the usefulness of vocational theories, I also know very well the immense complexities due to cultural variations in different parts of the world. The career exploration research framework of Flum and Blustein (2000) was developed in the United States. Applying it locally in Hong Kong in my study will shed some light on its cross cultural validity.

To identify the culture-specific variables, I would like to first go back to the fundamental questions of what culture is and what Chinese culture is. Hofstede

(1991) defined culture as “collective programming of the mind”. Smith and Bond (1999) quoted Rohner’s (1984) definition of culture as “the organized system of meanings which members of culture attribute to the persons and objects which make up the culture” and concluded culture simply as “what things mean to a group of people.” Looking beyond such broad definitions, I would examine the specific constructs applicable for cross cultural comparisons. One of the most notable classifications of national cultures derived from Hofstede’s (1980; 1984) study of work values. From his data collected from employees of IBM from over 50 countries, he classified cultures along different dimensions. According to his classification, Hong Kong, Taiwan and China were high in the dimensions of collectivism and power distance. Hofstede (1984) defined the dimensions of collectivism-individualism and power distance respectively as:

“Individualism stands for a preference for a loosely knit social framework in society wherein individuals are supposed to take care of themselves and their immediate family only. Its opposite, Collectivism, stands for a preference for a tightly knit social framework in which individuals can expect their relatives, clans or other in-groups to look after them in exchange for unquestioning loyalty.” (1983, p.83)

“Power distance is the extent to which members of a society accept that power in institutions and organizations is distributed unequally.” (1984, p.83)

According to such cross cultural comparisons, Hong Kong Chinese, together with Chinese in Taiwan and Mainland China, incline to be collectivistic and accept inequality of organizational power. However, the above is from a Western perspective. How does it compare with the Chinese indigenous theorizing? Bond and Hwang (1986) highlighted three key indigenous perspectives of Chinese



behaviour by Hsu, Yang and Hwang respectively. As quoted by Bond and Hwang (1986), Hsu (1971) emphasized that Chinese social behaviour should not be understood from the level of individual personality, but from the interpersonal level called “ren” or “personage”. Similarly, Yang’s (1981) social orientation is a tendency for Chinese people to meet social expectations:

“Basically, it represents a tendency for a person to act in accordance with external expectations or social norms, rather than internal wishes or personal integrity, so that he would be able to protect his social self and function as an integral part of the social network.” (p.161)

Hwang’s (as quoted by Bond and Hwang, 1986) model of resource allocation focused on the relationship between a resource allocator and his or her petitioner. It proposed that the allocator will be influenced by his or her relationship with the petitioner to decide the appropriate type of exchange. He adopted indigenous Chinese concepts as *guanxi* (relationship), *renqing* (favour), *mianzi* (face) and *bao* (reciprocation) to explain the nature of social ties and exchanges among Chinese people.

From both western and indigenous theorizing, we can find that a lot of emphasis was put on the impact of social relationships on behaviour. Chinese societies are highly contextual. Individual needs are subordinated to social obligations. Bond (1991) summarized the major themes in Chinese behaviour in his book “Beyond the Chinese Face” as:

- “1. Chinese believe in naturalness, necessity and inevitability of hierarchy. It is self evident to Chinese that all men are born unequal. An

efficient society requires a broadly accepted ordering of people. The alternative to hierarchy is chaos and anarchy which are together worse than harsh authority.

2. The basis of this authority is achievement, usually academic; wealth and moral example. The last is especially important for commanding political authority.
3. Laws negotiated by men are rigid, artificial and insensitive to the changing nature of life. The judgment of wise, compassionate men is a better way to regulate personal, social and political relationships.
4. Man exists in and through relationships with others. The goal of socialization is to train children for lifelong interdependence with others by developing skills and values which promote harmony. The family is the fundamental cradle of sure support across time and requires commitment of all members.” (p.118)

From the above, we can see that there are certain agreements among different theorists mainly in terms of the emphasis on social relationships and power distance. However, it is still questionable how far these cultural generalizations are preserved for Chinese people in Hong Kong, Taiwan, Mainland China and other parts of the world. After rapid modernization and changes for the past 30 to 50 years in Chinese societies, how far are such cultural orientations changed or modified? Hong Kong was under British rule for about 100 years and its people are very much Westernized. Yang (1996) argued that traditional Chinese psychological characteristics can coexist with modern characteristics and they do not necessarily replace each other. Anyhow, this is a disputable issue that deserves



further on-going study by psychologists.

On the other hand, since social orientation and power distance are found characteristic of Chinese behaviour, it is very likely that they also affect Chinese vocational behaviour. In this study, I am interested in analyzing the antecedents, process and outcomes of career exploration behaviour in Hong Kong. On the motivational factor of exploration, literature has been focused on individual goals and personal agency – both very much inclined towards individualism. In Chinese societies, would the consideration of significant others and social obligations affect vocational exploration behaviour? Moreover, what roles do social relationships play in vocational behaviour in Hong Kong context? Can western theory of relation support and attachment (e.g. Flum, 1999; Felsman & Blustein, 2001) account for such impact? If not, how are social relationships related to exploration behaviour in Hong Kong context? In short, the above review on Chinese psychology leads me look into individual motivation of career exploration in a *collectivistic* culture, as well as relational support in a relatively *hierarchical* society. Specific factors and constructs will be discussed in later sections.

### 3.2. Career Exploration of Participants of Career Intervention Programmes

As I have explained in the first chapter, I have started to generate my research ideas as a career practitioner observing the changing career scene for university graduates and I am developing research work useful to theorists and practitioners alike. Actually the studies of career exploration by theorists like Blustein, Vondracek and Stumpf are already of great value to practitioners. Blustein (1992) summarized how research results of career exploration can guide career counselling. For this study, in addition to adapting a career exploration framework relevant in the local context, I shall pay special attention to the career exploration behaviour of university students who have committed themselves to a career

intervention programme.

As mentioned in Chapter one, Hong Kong has entered a stage of mass university education and both universities and employers are very concerned about the competitiveness of graduates in the employment market. To enhance the career preparation of students, local university career services have moved towards a more developmental approach in terms of using more career and education programmes and work experience schemes in addition to the traditional one-to-one career counselling method. A common concern from practitioners is naturally the effects of such career intervention programmes. Against such a background, I am interested to understand more about the relation between career exploration and career interventions. Therefore, I shall focus on the exploration behaviour of students who have committed themselves to a career intervention programme in the university setting in this study, though I understand very well that career exploration is broadly defined by Blustein (1997) to include vocational and avocational activities. In this sense, a more self motivated group will be selected for investigation.

What are career interventions? How are they different from career guidance, career counselling and career education? There is no consensus on the exact definitions of these terms. Spokane (1991) defined career intervention broadly as:

“Any activities (treatment or effort) designed to enhance a person’s career development or to enable that person to make more effective career decisions.”

(p 22)

And a career intervention programme as:

“An organized compilation of techniques and strategies with specific and well defined objectives that is



designed to alter systematically vocational behaviour of a group of individuals in a specific setting over time.” (p. 22)

Spokane (1991) classified the major types of career interventions as information giving, self-directed activities, workshops or classes, group counselling and individual counselling. In the broad definition of Spokane, all activities to enhance career development, ranging from individual and group career counselling, career education classes to other vocational activities, are included in career interventions.

In the United Kingdom, the term “career guidance” is often used. Watts and Kidd (2000) explained a broad definition of guidance as:

“comprises a range of processes designed to enable individuals to make informed choices and transitions related to their educational, vocational and personal development.” (p. 489)

Watts and Kidd (2000) also opined that use of career guidance in the broad sense is relevant to the nature of career development in the 21<sup>st</sup> Century:

“the use of the term career links life-long learning to work, adds the element of progression, and grounds both firmly in the individual. Career guidance is then focused on helping individuals not to choose a career but to construct it.” (p. 494)

In sum, both career interventions and career guidance are defined by the above authors in the broad sense, including all kinds of relevant activities for enhancing career development. In the further discussion of career interventions in this study,

I shall also refer the terms in their broad sense. What are then the outcomes of career guidance and interventions? What are career outcomes? Killeen (1992) distinguished economic and learning outcomes of career guidance, as well as of immediate, intermediate and ultimate nature as follows. Economic outcomes are examined in relation to implementation of relevant policies, while learning outcomes are evaluated from people in guidance. There are also immediate and long term considerations. Immediate outcomes are changes in terms of attitude, skills, knowledge and career decision state, intermediate in motivation, commitment and career decision progress. Ultimate outcomes are assessed in terms of employment situation, job entry and adjustment.

Spokane (1991) also proposed a classification of career intervention outcomes with four categories, namely career decision making, effective role functioning, counselling evaluation and miscellaneous. The career decision category consisted of accuracy of self knowledge, appropriateness of choice, instrumental behaviours, attitude towards choice and other characteristics of choice, while the effective role functioning category includes performance variables and adjustment variables.

On the whole, research indicated that career interventions yield leaning outcomes for individual participants, but evidence on the economic outcomes is still inconclusive (Maguire, 2004; Killeen, 1996). To study the outcomes of career interventions, Oliver and Spokane (1988) conducted a meta-analysis of 58 studies with 240 treatment control comparisons. Using the same classification of interventions, Whiston, Sexton & Lasoff (1998) did another meta-analysis on 47 studies with 268 treatment-control comparisons. In both studies, interventions resulted in significant changes in career maturity, career certainty and career related skills. Killeen and Kidd (as quoted by Maguire, 2004) also proposed a classification of learning outcomes including attitudes, decision making skills, self awareness, certainty of preferences and transition skills, and they identified positive intervention outcomes in all these categories by reviewing 40 studies.



No doubt, there is evidence that career interventions led to positive outcomes of some kinds. Also there have been efforts linking career counselling with information seeking behaviour (e.g. Aiken & Johnson, 1973; Robbins & Tucker, 1986). In previous studies, efforts were made to find out as far as possible the effectiveness and possible outcomes of career interventions. From the broad framework of career exploration, I shall investigate how participation in a career intervention is related to the evolving process of exploration. For instance, will self and environment exploration result in different career outcomes? When individuals participate in different intervention programmes, will there be different impact on exploration behaviour? Spokane (1991) classified the major types of career interventions as information giving, self-directed activities, workshops or classes, group counselling and individual counselling. Career exploration activities are often categorized into self exploration and environment exploration (e.g. Stumpf, Colarelli & Hartman 1983; Greenhaus, 1994). It will be worthwhile to test and understand how different types of intervention are related to different categories of exploration. To my understanding, these relations have not been treated as a major question for direct investigations in research studies. Further investigation of these relations will shed light on both the development of exploration behaviour and the design of career interventions.

Following the above sections on the discussion on cultural adaptation and local relevancy, I shall go on to develop my specific hypotheses relating career exploration and intervention in later sections.

### 3.3. Testing the Antecedents of Career Exploration

#### 3.3.1. Individual-Oriented and Social-Oriented Achievement Motivation

Key to Flum and Blustein's (2000) framework are intrinsic and extrinsic motivational antecedents of exploration. Based on different interpretations of the

concept of self, Chinese psychology accounts for motivation differently. Yu (1996) summarised the essential points of departure from studies in Chinese psychology:

“While Western ideas emphasize an understanding of what the self is and how to control and master it, Confucianism stresses the remaking and reforming the moral self in hope of realizing the ethical ideals of ultimate goodness. Attaining these family-and clan-oriented achievement goals was the true measure of self realization and the fulfilment of one’s familial self. Ordinary Chinese people have pursued these social values with societal, clans and familial characteristics, and these values have been a great motivating force behind individual self development. The formation, development and completion of the moral and familial selves are the ultimate life concerns and life goals of Chinese; Chinese individuals are motivated to achieve not through a desire to externalize the kind of Western self upon which McClelland’s IOAM (individual oriented achievement motivation) is based, but through a desire to realize and merge their familial and moral selves.”

( p. 225)

From Yu, we learn that the ultimate life concern of Chinese is different from that of Western people. Accordingly, while Chinese culture emphasizes the need to reform and develop self internally for highest virtue and common good, Western people seek to express and exhibit it externally for self actualization. So Yu did not think the achievement motivation of Chinese people was properly explained by McClelland’s motivation theory (e.g. McClelland, 1985) which is individual oriented.



In contrast to individual oriented achievement motivation of the West, Yu and Yang (1987) put forward the indigenous construct of social-orientated achievement motivation or SOAM. For SOAM, significant others, the group or society set one's achievement goals or standards, approve the means of goal attainment and appraise final outcomes of performance. For individual achievement motivation or IOAM, the individual sets achievement goals, selects achievement behaviour, and evaluates outcomes.

The academic achievement of Chinese students was found to be related to the nature of their achievement motivation (e.g. Lee, 1996; Salili, 1996). Salili (1996) reviewed related studies to show that Chinese students expended effort to obtain good academic performance in order to meet the expectations of parents and families. They were motivated by this performance goal to study well and believed that putting in more effort would result in goal attainment. In contrast, American students tended to be motivated by achievement goal, or need for personal achievement, in their academic pursuits (Salili, 1996). Tao and Hong (2000) further studied the relation between achievement motivation and Chinese learning behaviour. They reviewed American literature to distinguish learning and performance goals, with the former being to learn well and latter to demonstrate good performance to others. They (2000) also tested the impact of IOAM and SOAM on the learning behaviour of a sample of 108 university students in Hong Kong. They found that IOAM is correlated with SOAM, and that endorsement of performance goals is correlated with SOAM, while establishment of learning goals is related to IOAM. Both IOAM and SOAM are positively related to learning behaviour in a Chinese context.

So far the construct of SOAM has not been linked to career exploration. Based on the above discussion of Chinese self and the proven effect of SOAM on learning, I proceed to examine the impact of SOAM on career exploration as compared to IOAM. Like achieving academic achievements, obtaining good career prospects can honour the parents and family. Moreover, if a student can have good future



career prospects, he or she can also fulfil family obligations by both supporting the family and glorifying the family name. The more one wants the family or significant others to look good, the more one would seek to understand career opportunities for the future. He or she then will seek more occupational information, or even network to become more resourceful with career opportunities. Therefore, I propose that social-oriented achievement (SOAM) is an antecedent of environmental exploration.

On the other hand, both the achievement motivation and exploration behaviour of the students are influenced by the environment they are in. Hong Kong is a highly modernized metropolis with Western-style educational, economic and social systems. It might be expected that students growing up in such an environment are increasingly orientated towards individual achievement as compared to their past generations, although there is no relevant research on this. Moreover, Hong Kong is a successful business city in which being resourceful and opportunity-seeking is generally valued. It is well known that Hong Kong started from an entry port to become an international business hub. It is the world's 11th largest trading economy and the world's 10th largest exporter of commercial services (TDC, 2005). As Enright and Scott (1996) highlighted, the role of Hong Kong in the world economy is an integrator. The trading and export companies here are related to markets in Europe, America on one hand and at the same time tied to the manufacturing and production capacities in Mainland China, and they create business opportunities and success. According to Fung (1996), 90% of the 100,000 active trading companies and 24,000 manufacturing companies in Hong Kong employed less than 10 persons. Many of these SMEs are family-owned and have shown great entrepreneurship and contributed to the economic development of Hong Kong.

Given the local emphasis on business opportunities and networking, it is expected that those seeking individual achievement would explore both their internal attributes as well as external opportunities. In sum, from general observation, both



individual achievement and business opportunities exploration are very much emphasized locally. It also makes sense that the motivation for achievement will lead to exploration of both internal strengths and external opportunities. Therefore, I propose that in the Hong Kong context, university students will be motivated by IOAM to self exploration and environment exploration as are their counterparts in the West.

In sum, individual-oriented achievement motivation (IOAM; Yu & Yang, 1987) is proposed as an antecedent to both self and environment exploration for university students in Hong Kong, whilst social-oriented achievement motivation (SOAM; Yu & Yang, 1987) is an antecedent to environment exploration for university students in Hong Kong. To test the relation between IOAM and career exploration, I shall first look at the correlation between them. Then, I shall examine the extent IOAM is a predictor of career exploration from regression analyses. Specific hypotheses are:

Hypothesis 1A:

Individual-oriented achievement motivation (IOAM) is positively correlated with both self and environment exploration.

Hypothesis 1B:

Individual-oriented achievement motivation (IOAM) explains significant variance in both self and environment exploration after other relevant variables are accounted for.

Likewise, the specific hypotheses for the relation between social-oriented achievement motivation (SOAM) and environment exploration are:

Hypothesis 2A:

Social-oriented achievement motivation (SOAM) is positively correlated with environment exploration.

Hypothesis 2B:

Social-oriented achievement motivation (SOAM) explains significant variance in environment exploration after other relevant variables are accounted for.

### 3.3.2. Relational Support

On social facilitation of career exploration, Flum (2000) highlighted that relational support of significant others, especially parents and peers, provided a secure base and support for career exploration. Kram (1996) also proposed a relational approach for career development in the workplace:

- “1. The relationships are characterized by interdependence, mutuality and reciprocity,
2. A willingness to see relationships as important sites of personal learning and development,
3. Interpersonal competencies including self-reflection, self disclosure, active listening, empathy and feedback, and
4. Opportunities to develop multiple developmental alliance at work.”

(p. 136)

Kram (1996) agreed that previous studies had shown the importance of relationships in career development, but she opined that such work was limited to the mentoring relationship in early career and inadequate for today’s rapidly changing workplace. She explained how her perspective will contribute to the study of career development,

“This perspective on growth and development implies that relational activity that supports learning is two-way (rather than one-way), and both parties enter the interaction



expecting to be both expert and learner, to give and receive, to enable and be enabled. A relational approach to career development assumes that individuals at every career stage can learn and contribute to other's learning, and the over-arching goal is inter-dependence that supports task accomplishment and as well as personal learning.” (p. 140)

The relational perspective of Flum (2001) and Kram (1996), as reviewed in the last chapter, also conceptualized relational support as a secure attachment base, interdependence, mutuality and reciprocity. Such relational support will facilitate students into career exploration.

From a Chinese perspective, relationship is examined in a different way. As pointed out by Yang (1981), Chinese tend to be social oriented and children are socialized to take up their social obligations and responsibilities to significant others and social groups. Parents and teachers, instead of encouraging their children to pursue personal goals, tend to socialize them towards fulfilling their social obligations. So, when we talk about relational support for career exploration, instead of supporting the student to freely explore, it may be more directive, in terms of socializing children into roles and obligations in the world of work, providing information and even networking opportunities, or even serving as a role model.

It is generally understood that teachers play an important role in the personal development of students in higher education. In Chinese societies, particularly, teachers enjoy high social recognition and earn high respect from both students and the society as a whole since the days of Confucius. Local research in education has given sound support to such “moral role” of teachers in the Chinese context (e.g. Biggs & Watkin, 2001). Gao & Watkins, (2001) identified from a qualitative study of school teachers from Guangdong teaching conceptions that related teaching to developing good learning attitudes and good conduct. They



also identified a framework of teaching concepts which included a construct of cultivating, meaning ability development, attitude promotion and conduct guidance. Ho (2001) quoted her comparison study between the conceptions of Australian and Hong Kong teachers to demonstrate that the former focused on a well-defined instructional role in class, whilst the latter emphasized the moral responsibility to guide student behaviour in students' personal problems and issues. She also quoted Biggs's previous studies that although Chinese university teachers appeared formal and impersonal in class; they developed very warm and personal relationships with students through out-of-class activities.

From the above, the role perceptions of teachers in Hong Kong differ from those of the West in their relative emphasis. While teachers in the West concentrated mainly on the professional role of imparting knowledge, the Chinese teachers in Hong Kong inclined more to mould students' behaviour and socialize them into the responsibilities and obligations of the society.

Naturally, in the Hong Kong context, where teachers emphasize their moral role and establish warm, informal relationship with students, teacher support and guidance could have a significant impact on their career exploration behaviour. Therefore, I propose to include teacher support in the framework of career exploration. This is a new factor in addition to the relational support from parents and peers mentioned previously (Flum, 2001; Flum & Blustein, 2000). As reviewed and discussed earlier, Hong Kong is a more hierarchical society than many Western countries (e.g. Hofstede, 1984), and Chinese teachers have a strong moral and socializing role (e.g Biggs & Watkins, 2001). In the light, career support from teachers is expected to encourage career exploration of students. Comparatively, students will find that most of their fellow classmates are first generation university students lacking exposure and experience in the workplace, naturally incomparable to their resourceful teachers. Moreover, if the awareness for the need of career preparation is generally low among the students, as commented by many career practitioners, peer influence among them still may not



induce career exploration behaviour. Therefore, I propose that, in our context, teacher support tends to relate more to career exploration as compared to peer support. To test this proposition about career exploration and relational support, I shall first compare the correlation coefficients and then the partial regression coefficients of teacher and peer support that explain the variance of career exploration. Specific hypotheses are:

Hypothesis 3A:

Career exploration is more strongly correlated with career support of teachers than with career support of peers.

Hypothesis 3B:

Career support of teachers explains more variance in career exploration than career support of peers does after other relevant variables are accounted for.

### 3.4. Examining Prior and Subsequent Career Exploration Behaviour

#### 3.4.1. The Difference between Prior and Subsequent Exploration

As explained in the last chapter, I have adopted a development-contextual perspective (Vondracek, Lerner, & Schulenberg, 1986; Flum & Blustein, 2000) in which career exploration is influenced by both development and contextual variables. In terms of natural maturation development, university students in late adolescence are facing the life tasks of establishing vocational identity and career choice (e.g. Super, 1980; Blustein 1997; Savickas, 2001b). Moreover, the environmental challenge of graduation employment becomes nearer and nearer as they approach graduation. It is then reasonable to assume that exploration will increase the more a student approaches senior years and moves towards graduation. Taking a longitudinal perspective, considering both natural development and external challenge, career exploration at a subsequent time, or

Time 2, is proposed to be significantly higher than career exploration at a prior time, or Time 1. The time gap between Time 1 and Time 2 is not definite.

However, a common reference point is the duration of a semester of normally 13 teaching weeks spreading over 3 to 4 months in a local university. In other word, students are expected to complete a course and acquired related learning outcomes within a semester. So, a minimum duration of 3 to 4 month between Time 1 and Time 2 can be a convenient reference point for research design in conducting this longitudinal study. In sum, I propose that in the local university setting, career exploration of university students at a subsequent time will be generally higher than it measured at a prior time. The specific hypothesis is:

Hypothesis 4:

Career exploration as measured at time 2 is significantly higher than career exploration measured at time 1.

#### 3.4.2. Past Exploration Behaviour

We have been examining career exploration primarily from a developmental and contextual perspective after Super, Vondracek and Blustein. From another angle, career exploration is also a behaviour that is consciously planned and performed. In this light, we can draw on the theory of planned behaviour to explain it. Put simply, whether a person will perform a specific behaviour depends a lot on his or her intention to do so. At the same time, whether he or she has control on doing so also counts. To account for one's behavioural attempt, Ajzen (1985) put forward the theory of planned behaviour (TPB):

“According to the theory of planned behaviour, therefore, the considerations that, in the final analysis, enter into determination of a behavioural attempt include beliefs of likely consequences of success and failure, normative beliefs regarding important referents, and motivations to comply with



these referents. Generally speaking, a person will attempt to perform a behaviour if he believes that the advantages of success outweigh disadvantage of failure, and if he believes that the referents with whom he is motivated to comply think he should try to perform the behaviour. He will be successful in his attempt if he has sufficient control over internal and external factors which, in addition to efforts, also influence the attainment of behavioural goals.” (p.36)

Ajzen (1991) further argued that salient beliefs are the major determinant of behaviour intentions, including behavioural beliefs (beliefs about the specific behaviour), normative beliefs (subjective norms about the behaviour) and control beliefs (beliefs about behavioural control). In sum, TPB (1985, 1991) proposed that behaviour is predicted by behavioural intention, which is in turn explained by attitude towards the behaviour, subjective norm and perceived behavioural control. Ajzen (1991) provided data of TPB successfully applied to explain a variety of behaviours including leisure, exercise and diet control. He also included into his model of planned behaviour the factor of past behaviour. Though he (1991) found that past behaviour was related to the performance of the behaviour in future, he doubted if the relation between past behaviour and later behaviour was really causal. He opposed treating past behaviour simply a single determinant of habit, but regarded it as a reflection of the impact of all the factors.

As TPB was proved effective in predicting a specific behaviour, it was applied in the study of vocational behaviour. Van Hooft et al. (2004) applied TPB to predict job search behaviour and found intention accounted for job search behaviour, but self efficacy did not. Giles and Rea (1999) found that the intention of female students to go into a sex atypical career was predicted more by self efficacy and attitude as compared to males. Moreover, the theory of planned behaviour also shed new light on the study of exploration. Millar and Shevlin (2003) applied Ajzen’s (1988) theory of planned behaviour (TPB) to predict career exploration of



278 school pupils. Their findings were that exploratory behaviour was predicted by the intention to search for career information which was in turn affected only by attitude toward exploration but not by subjective norm and perceived behaviour control. More importantly, Millar and Shevlin (2003) found past exploration behaviour six weeks before accounted for more variance in career exploration than behavioural intention, and it also accounted for substantial variance in behavioural intention. Based on the results, they emphasized the importance of both encouraging students to start engaging in exploration and nurturing their intention to do so. As exploration may form a habit, they suggested practitioners to facilitate students to continue to do so in future. I think prior exploration behaviour should not be conceptualized as merely a habit. Taking a developmental perspective, it can be linked to motivational factors. Flum and Blustein (2000) adopted Deci and Ryan's (1985) framework of intrinsic and extrinsic motivation to explain exploration behaviour. They proposed that if exploration of vocational interest is intrinsically motivated, it will result in greater ownership. If exploration behaviour is related to basic human motivation of vocational interests, curiosity and personal agency, it is likely to persist continuously once started. If exploration behaviour is driven by extrinsic motivation, it may still go on so long as the behaviour is considered instrumental to more long term goals like better career prospects. In other words, a student tends not to engage in career exploration unless driven by either intrinsic motives or extrinsic benefits they consider instrumental to their long term career development. If the above is true, then past exploration behaviour will be predictive of present exploration behaviour so long as the motivation towards exploration remains unchanged. In sum, taking a longitudinal perspective and considering the impact of past behaviour from TPB, I propose to add a factor of past behaviour in the framework of career exploration. In the following hypotheses, the proposition will be tested by correlations and then more stringent regression analyses.

Hypothesis 5A:



Career exploration measured at an earlier time will be positively correlated with career exploration measured at a subsequent time.

Hypothesis 5B:

Career exploration measured at an earlier time explains significant variance in career exploration measured at a subsequent time after other relevant variables are accounted for.

### 3.5. Testing Relations between Career Exploration and Types of Intervention

As stated previously, the exploration process was well explained by Career Exploration Survey (CES; Stumpf, Colarelli & Hartman, 1983) in terms of intensity, duration, frequency and focus of exploratory activities. Career exploration activities are often categorized into self exploration and environment exploration (e.g. Stumpf et al.' 1983; Greenhaus, 1994). Considering the special relevance to the local higher education setting, I shall focus on the relations among two types of interventions and the two categories of self and environment exploration activities. The two types of interventions are career education course and student work internship, which are commonly employed in the local higher education setting. Past studies on the two interventions are discussed as follows.

#### 3.5.1. Career Education Programme

Career education programme was included by Spokane (1991) in his classification of career interventions. In a meta-analysis mentioned before, Oliver and Spokane (1988) found that among different career interventions, individual career counselling resulted in the biggest gain per hour and career education class in the biggest overall impact in career intervention outcomes. Killeen (1996) discussed the nature of career education as essentially tied to a curriculum with educational, instructional and some personal guidance elements. He also argued that career

education had to strike a balance between “a culture of standard” and “a culture of relevance”. By the former he meant the career education as a formal curriculum to be taught and assessed academically in class and latter as relevance to the individual learners in terms of application, interests or pleasure. The DOTS (Law and Watts, 1977) analysis (including self awareness, opportunity awareness, decision learning and transition learning) was proposed by Law (1996) as a framework for setting objectives and designing a career education curriculum.

Previous work on career education courses related it to outcomes in career decision making. Hardesty (1991) found from a meta-analysis of 12 studies that career courses accounted for variance in both career maturity and career decidedness. Savickas (1990) field tested a career decision making course and found it produced significant changes in career decision-making and commitment to long-term goals. Johnson and Smouse (1993) also found from a sample of 295 students in a career and life planning course in a US university significant improvement in career decision making. A multidimensional approach was adopted in course assessment using the Career Decision Profile (Jones, 1989) which included dimensions of self clarity, occupational information, decisiveness, comfort in decision making and career choice importance. Significant changes were found only in decidedness, comfort in decision making and self clarity.

Peng and Herr (1999) proposed that a career course could bring about changes in both career beliefs and career decision making and proceeded to assess a career course in this light in Taiwan. From a sample of 495 college students in Taiwan, they assessed the participants of a one-semester career education course with the Career Decision Scale (Osipow et al, 1976) and the Career Belief Checklist (Lin, Chi & Jin, 1994), a Chinese instrument based on Krumboltz’s career decision theory. By comparing the treatment and control groups through pre-and-post testing, significant treatment effects were found in career decidedness and career indecision. However, the authors did not find significant changes in most of the career belief subscales, and they explained this by the fact that the career course



had not been designed to change specific career beliefs. The course content, as they described it, was about career planning and interpersonal relationships rather than specifically the career beliefs measured. Peng (2004) conducted pre-and-post testing using a Chinese questionnaire adapted from the Career Decision Scale (CDS; Osipow, Carney & Barak, 1976) on a total of 152 college freshmen in Taiwan. 65 of them participated in one of two one-semester career courses and the non-participants were regarded as respondents from a control group. One course adopted the cognitive restructuring approach while another applied a career decision making skill training approach. While differences were found between the control group and the two treatment groups, no significant difference was found between the two treatment groups. Despite the intervention approach, both treatment groups had a significantly higher improvement in career decision making than the control group.

Reed, Reardon, Lenz and Leierer (2001) also attempted to test the cognitive impact of a career course and they found evidence from a sample of 181 university students in US. The Career Thoughts Inventory (Sampson et al, 1996) was administered before and after the course in order to assess course impact. Significant cognitive changes in terms of lower levels of negative thoughts were identified by all the subscales of decision making confusion, commitment anxiety and external conflict in decision making. A main reason for course effectiveness I can see is that the course content was tailor made on making and implementing career decisions and especially changing the negative thoughts as specified in the Career Thoughts Inventory. Moreover, the changes identified in this study were admittedly cognitive, but they were at the same time still within the domain of career decision making. Reese and Miller (2006) applied the career decision making self efficacy scale (Betz, Klein & Taylor, 1996) and the career decision making difficulties scale (Gati, Krausz & Osipow, 1996) as pre-and-post measurements of 30 college students enrolled in a career development course, as well as 66 in an introduction to psychology course (quasi-control group). Significant differences were found for the interaction effects of time and group for

both measures. They attributed the success, in terms of increased career decision making self efficacy and reduced perceived career decision difficulties of the intervention group, to the fact that the course was developed from a theoretical model (Sampson et al., 1992) and designed to include most of the elements of effective career intervention from a meta-analytic study (Brown and Krane, 2000).

Summing up, research supports the proposition that career courses result in better career decision making, as measured by scores on either cognitive or self efficacy inventories. Previous studies, as discussed, tend to link career intervention to different career outcomes. In this study, alternatively, I propose to consider career interventions in relation to a framework of career exploration. It is plausible that participation in different career intervention activities will affect the process and intensity of career exploration. Blustein (1992) defined career exploration as:

“encompassing those activities, directed toward enhancing the knowledge of the self and the external environment, that an individual engages in to foster progress in career development.” (p. 261)

By design, a career education course involves the participants first in a certain level self introspection and then a process evaluating different career options. As a result, outcomes of self clarity and decision making will be achieved as stated above. To link this with career exploration, I would propose that a career education course will trigger a process of self exploration.

### 3.5.2. Student Work Internship

Work experience schemes are mentioned by Watts et al. (1996) as a kind of career guidance practice. The literature on the career impact of college internships is inconclusive. Taylor (1988) hypothesized that the three main effects of college



internships on individual participants are first, greater crystallization of vocational self concept and work values, second, less reality shock and third, better employment opportunity upon graduation and she tested her hypotheses in a longitudinal study of 67 students as well an experimental study of 128 recruiters. The longitudinal study collected data from students at four points of time, namely before their internship, after their internship, during their job search and in their new graduate jobs. The hypothesis of self crystallization was partially supported with significant differences found between the treatment and control groups in vocational self concept but not in work values and the intention to remain with their graduate employers. The employment opportunities hypothesis was supported by significant differences in more frequent use of job search information, higher starting salary and higher extrinsic job satisfaction of the treatment group as compared to the control group. The reality shock hypothesis, which predicted fewer conflicts and higher confidence in job adjustment for the treatment group, was not supported. However, Taylor also found that when the level of autonomy in the internship was used as a moderator for hypotheses, all three hypotheses were supported. In the experimental study, the recruiters assessed student resumes with and without internship experience. They assessed more favourably in terms of job qualifications and hiring actions for those with internship experience.

Brooks, Cornelius, Greenfield and Joseph (1995) tested the relationship between internship experience and the different career development indexes of decidedness, self concept crystallization, amount of information, career self efficacy and vocational commitment. In addition to completing various career instruments, the 165 college seniors participating in the study also gave details of their prior internship and other work related experience if they had any. They found a significant difference between those with and without internship for self concept crystallization only.

Feldman and Weitz (1990) examined internship from the attitude of interns

towards the internship in general and specifically towards the vocational area of the internship. They collected data from 72 students and their respective 72 supervisors before and after 10-12 weeks internships. They found that interns' attitude towards internship in terms of job satisfaction, internal motivation, job involvement and organization commitment were related to their prior positive expectations of the internship, characteristics of internship work as well as organizational socialization procedures. Effects of the work supervisor on interns' attitude were only moderate. Accordingly, they also highlighted factors of successful internship experience as students' expectations about the internship, the socialization procedures used, the design of internship work, attitudes and expectations of internship supervisors, as well as how far the internships fit into students' career plans.

Arnold, Auburn and Ley (1995) studied the impact of supervised work experience on a sample of 281 psychology students from two cohorts who undertook their sandwich placements. Data were collected from students at three points of time over one year and five months, and some students were already in their transition to work as they responded the third time. No impact from placement was found on career decidedness and self esteem, though some significant change was found on self rated abilities. Job autonomy was found related to self rated ability and self esteem. From follow-up interviews of some of the students, they found that the job of the supervised work was mainly academic and there had been no relevant experience to enhance the career outcomes concerned. They concluded that work placements have to be carefully designed if they are meant to enhance the career development of students. Previously, we have concluded from literature that career education will result in career decision making and self clarity, thus related to a process of self reflection and exploration. Work internships, in turn, were planned to facilitate the transition from university to work and previous research above highlighted its outcomes in vocational self concept, job entry and adjustment. To link this with career exploration, I propose that work internships trigger a process of both self and environment exploration. In linking career



interventions with career exploration, we do not just consider that interventions alone lead to the desirable outcomes. Instead, interventions may trigger a process of exploration which will result in various career outcomes.

Comparing the two types of interventions, career courses are more related to outcomes career decision making. Courses that follow a theoretical model with specified assessment tools are shown to have produced desirable cognitive or efficacious effects in career decision making as intended. Research results on work internship are not conclusive. However, an internship by design puts participants into a work situation and requires them to adjust to work requirements and acquire work experience. As discussed, Taylor (1988) proposed with some data support that the impact of work internship can be found in greater crystallization of vocational self concept and work values, less reality shock and better understanding of employment opportunities upon graduation. Concluding from such a comparison, it seems that a career course tends to result in cognitive or efficacious changes in focused areas of career decision making, while an internship may involve much broader changes in both vocational self and work adjustment. To acquire these changes from an internship, a participant has to self reflect vigorously while engaged in a real work situation. In this light, it appears to me that an internship may be in a better position to induce active career exploration as compared to a career course. To test this proposition, I put forward the following hypotheses. (Participation in a career course is operationalized as participation of career seminars which will be explained in the next chapter on methodology.)

Hypothesis 6:

Participants in an internship will show a significantly greater increase in career exploration over time than participants in career seminars.

### 3.6. Testing Outcomes of Career Exploration

#### 3.6.1. Career Exploration and Career Outcomes

Earlier in this chapter, I have discussed some of the research on the outcomes of career interventions. There is already evidence (eg. Killeen, 1996) that career guidance will produce some positive career outcomes. Maguire (2004) quoted Killeen and Kidd's (1991) classification of career outcomes as decision making skills, self awareness, opportunity awareness, certainty of preference and transitional skills. From meta-analyses (Oliver & Spokane, 1988; Whiston, Sexton & Lasoff, 1998), career intervention outcomes were found as significant changes in career maturity, career certainty and career related skills. In Blustein's studies, he proved that career exploration did not result only in the acquisition of occupational information, but also changes and progress in the psychological process of career decision making (e.g. Blustein, Pauling, DeMania & Faye, 1994). His studies related career exploration to psychological outcomes, including self concept crystallization (Blustein, Pauling, DeMania & Faye, 1994), career commitment (Blustein, 1989 b) and ego identity development (Blustein, Devenis & Kidney, 1989). In Greenhaus' model (1994, 2000) of career management, self and environment exploration can enhance awareness, which is important for goal setting and career strategy formation of careerists. Naturally, career exploration will increase awareness of self and environment, followed by goal setting. Following the study of Blustein and Greenhaus, I shall further investigate how self and environment exploration enhance awareness, decision making and goal setting.

Career exploration has been found to be related to self concept crystallization. Self is a multi-faceted concept, and in this study I shall test and compare how career exploration is related to two different conceptualizations of self, one from a



matching model (Jones, 1989) and another from a social cognitive model (Taylor & Betz, 1984). From matching models (e.g. Holland 1973; Dawis, 1996), individuals should understand their personal attributes so as to fit into appropriate work environments. Alternatively, the social cognitive model (Lent, Brown and Hackett, 1994) focuses on the motivational aspect of self or self efficacy to complete specific career-related tasks.

In testing the relationship between career exploration and awareness of environment, the latter will be operationalized as amount of information, a construct from the career exploration framework of Stumpf, Colarelli and Hartman (1983) in which amount of information is defined as information obtained about occupations, jobs, organizations and oneself. In testing the relations between career exploration and career decision making, I shall test and compare three different constructs of career decision making, namely decidedness, decisiveness and career decision making self efficacy (Taylor and Betz, 1983). For goal setting, I shall test the relations between career exploration and a locally relevant construct of intention to develop career in Mainland China.

Before testing the relation between career exploration and the outcomes, a first question can be whether these outcomes will occur naturally with the passage of time. As explained when proposing Hypothesis 4, I have adopted a development-contextual perspective (Vondracek, Lerner, & Schulenberg, 1986; Flum & Blustein, 2000) in which career exploration is influenced by both development and contextual variables. In terms of natural maturation and the challenge of graduation employment, students will be increasingly engaging in career exploration, which will in turn lead to greater self and environment awareness (Greenhaus & Callanan, 1994) as they are promoted to more senior years. In examining self awareness, I shall compare two constructs of self understanding, namely self clarity meaning understanding of how one's own interests, personality and abilities in fitting into different occupations (Jones, 1998), as well career decision making self efficacy which is one's self confidence

in career decision making (CDMSE; Betz & Taylor, 1983). From this rationale, I propose the following hypothesis to test how far time is related to the two constructs of self and increase in occupational information.

Hypothesis 7:

Self clarity and amount of information measured at time 2 will be significantly higher than measured at time 1.

Career outcomes have been classified as decision making skills, self awareness, opportunity awareness, certainty of preference and transitional skills (Maguire, 2004). Will these outcomes emerge naturally with the passage of time? In this study, I will compare three constructs of career decision making and one construct of transition, namely intention to develop career in Mainland China. As time passes, how will one's career decision making be improved? Will it be decidedness (e.g. Jones, 1989) meaning certainty about career choice? Or decisiveness (e.g. Jones, 1989; Jones & Lohmann, 1998) which is one's perceived ability to make career decision (e.g. Jones, 1989; Jones & Lohmann, 1998)? Can it be career decision making self efficacy (Taylor & Betz, 1983; Betz, Klein & Taylor, 1996) which means perceived confidence to complete the tasks of career decision making. In proposing the following research questions, I seek to compare the effects of time on the three constructs of career decision making and understand its impact on the intention for career exploration in Mainland China.

Research Question 1:

To determine whether decisiveness, decidedness, CDMSE and intention to develop career in Mainland China as measured at time 2 is significantly higher than the same variables measured at time 1.

As discussed earlier, career exploration was found related to career self understanding and acquisition of occupational information (e.g Greenhaus 1994, Blustein, Pauling, DeMania and Faye, 1994; Stumpf et al, 1983). So I proposed



that self and environment exploration will result in higher levels of self clarity and occupational information. In this study, I shall adopt the constructs of self and environment exploration as defined by Stumpf, Colarelli & Hartman (1983), which specified career exploration to include relevant exploration activities in the past three months. So, the related hypotheses are:

Hypothesis 8A:

Self exploration in the past three months is positively correlated with self clarity.

Hypothesis 8B:

Self exploration in the past three months explains significant variance in self clarity after other relevant variables are accounted for.

Hypothesis 9A:

Environment exploration in the past three months is positively correlated with self clarity and amount of information.

Hypotheses 9B:

Environment exploration in the past three months explains significant variance in self clarity and amount of information after other relevant variables are accounted for.

As discussed earlier, career exploration will result in progress in career decision making (e.g Greenhaus, 1994; Blustein, Pauling, DeMania & Faye, 1994). In this study, I shall examine how far the two categories of self and environment exploration will result in career decision making measured in three different constructs, namely decidedness (e.g. Jones, 1989), decisiveness (e.g. Jones, 1989) and career decision making self efficacy (Taylor and Betz, 1983). The hypotheses are:

Hypothesis 10A:

Career exploration in the past three months is positively correlated with decisiveness, decidedness and career decision making self efficacy.

Hypotheses 10B:

Career exploration in the past three months explains significant variance in decisiveness, decidedness and career decision making self efficacy after other relevant variables are accounted for.

### 3.6.2. Intention for Career Development in Mainland China

Another contextual consideration is the return of Hong Kong to China in 1997. How far are students ready to face their career opportunities and challenges that come with the return of Hong Kong to China? In my study, I will examine the relation between career exploration behaviour and the intention of local university students to further explore their career in Mainland China. This is intended to add in constructs of career mobility into exploration research.

In this light, I shall draw on literature on the willingness to relocate. Noe, Steffy and Barber (1988) conducted a study on 1076 Government employees in the United States and found that those in their early career stage who expressed low desire to stay in present job and perceived no career congruence (between existing and ideal job) were most likely to accept mobility offers. Feldman (2001) reviewed related literature and summarized major factors of geographical mobility as demographic variables, gender and family variables, attitudes towards present job and community as well as attitudes towards new job and community. From the review, he found that the two attitude variables towards present and new job and communities accounted significantly for willingness to relocate whilst results on the impact of demographic and family factors, including age, gender, marital status and number of children, were not conclusive. Feldman emphasized it is the willingness to move and not the actual relocation behaviour that is often investigated. In the Hong Kong context, it is worthwhile to study the intention of



university graduates to relocate to Mainland China after the return of Hong Kong to China.

Krumboltz (1991) theorized that willingness to move is desirable a career belief that can be learned through career counselling. From the theory of planned behaviour we have just discussed, intention towards specific behaviour is a predictor of the behaviour. In this light, it is worthwhile to study the intention to relocate in relation to career exploration. Drawing again from the theory of planned behaviour (TPB), prior behaviour will enhance the intention to perform the behaviour in future. Therefore, I propose that participation in career exploration activities in Mainland China is related to the intention of further career exploration in Mainland China. Specific hypothesis is as follows:

Hypothesis 11:

Participation in career exploration activities in Mainland China will enhance the subsequent intention for career development in Mainland China.

### 3.6.3. Ego Identity Development

As discussed earlier, Flum and Blustein (2000) emphasized that the core outcome of exploration is self construction and life-long adaptability. In this light, career exploration is related to identity statuses and the construction of personal meaning.

Flum and Blustein (2000) argued that we should examine career exploration from the broad perspective of identity development of young people. They pointed out that Erikson (1968) regarded the major developmental task of late adolescence as identity formation. Marcia (1966) further stated that identity formation involved both going through crisis and developing commitment. Depending on whether a person has gone through respectively crisis and commitment, he or she can be classified into one of the four ego identity statuses of foreclosure, diffusion,

moratorium and identity achievement. In the developmental process, an adolescent faces the developmental challenges and finally commits to his or her identity. In the process, he or she will change and shift to different identity statuses. Flum and Blustein (2000) emphasized that career exploration and identity formation are two major processes occurring in late adolescence and they are related to each other.

Identity status is a general measure of developmental status and has been found to be related to exploration behaviour. For instance, Blustein, Devenis and Kidney (1989) found career exploration positively related to moratorium and achievement status but inversely correlated with diffusion status. Blustein and Philips (1990) found that different ego identity statuses were related to different career decision making styles. Bartley and Robitschek (2000) included ego identity status as one of the *predictors* of career exploration. To Flum and Blustein, identity formation, as a construction of personal meaning, tends to be a core *outcome* of career exploration. So far, we can only be sure that the process of career exploration and identity formation are two major related developmental processes in late adolescence. It has been referred to as both an antecedent and an outcome of exploration in correlation studies. But how far it is an antecedent and how far it is an outcome? Or both? I think one's identity status will affect how you explore your career. Previous studies focused on this. At the same time, exploration is related to reaching the identity achievement status. Therefore, it makes sense to say that the more a person explores, the more likely his or her identity status will be shifted until identity achievement is reached in late adolescence. In this study, I shall adopt the constructs of self and environment exploration defined by Stumpf, Colarelli and Hartman (1983), which specified career exploration to include relevant exploration activities in the past three months. For identity status, I shall refer to one's perceived identity status. In other words, I seek to understand how one's exploration in the last three months might predict his or her perceived identity status at the moment. If exploration for the past three months affects identity status now, there will be more grounds to examine identity as a predictor



of exploration, but may, in turn, be affected by career exploration. Accordingly, the following hypotheses are proposed:

Hypothesis 12:

Identity status at Time 1 is associated with amount of self exploration in the three months preceding Time 1.

Hypothesis 13:

Identity status at Time 2 is associated with amount of self exploration in the three months preceding Time 2.

Hypothesis 14:

Identity status at Time 1 is associated with amount of environment exploration in the three months preceding Time 1.

Hypothesis 15:

Identity status at Time 2 is associated with amount of environment exploration in the three months preceding Time 2.

As highlighted earlier, career exploration was found related to moratorium status (Blustein & Philips, 1990). Schmitt-Rodermund and Vondracek (1999) also found career exploration related most to identity achievement and least to diffusion. The relation between career exploration and specific identity statuses has not been examined in the local context. Therefore, I propose the following research question to investigate if career exploration is related which of the four identity statuses:

Research Question 2:

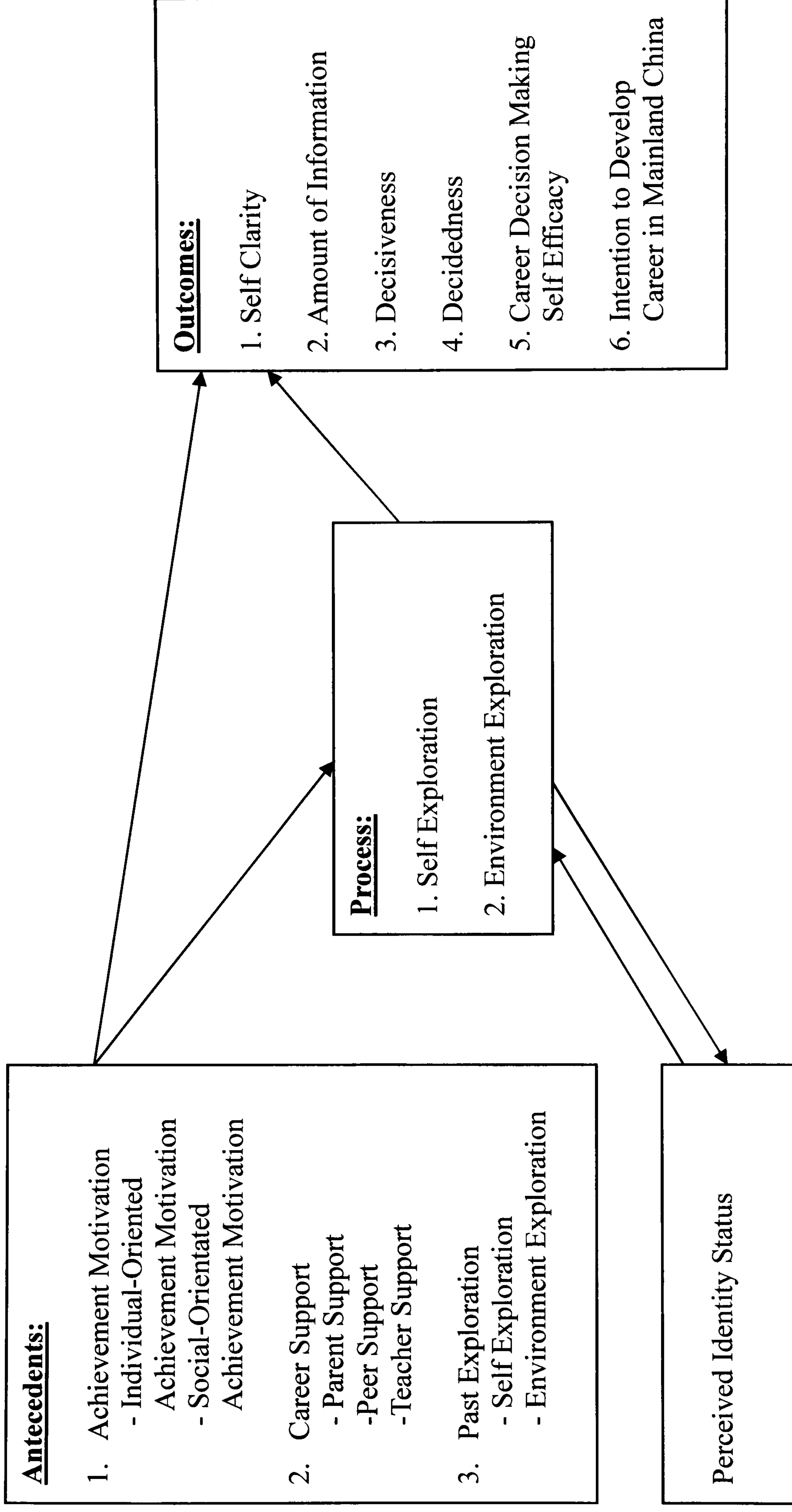
In what ways, if any, are different identity statuses related to exploration of self and environment?

### 3.7. Chapter Summary

In this chapter, I have discussed how a framework of career exploration antecedents, process and outcomes (Flum & Blustein, 2000) can be adapted and applied to the local context. Starting with theories of Chinese achievement motivation (Yu & Yang, 1987) and local career intervention relevance, I go on to examine relevant constructs for testing. Efforts were especially made to compare the motivational and relational factors of exploration. In discussing prior exploration behaviour as an antecedent of career exploration, the theory of planned behaviour (TPB; Ajzen, 1985) has been applied. In discussing outcomes of career exploration, emphasis was put on comparing and testing different constructs of career self understanding and decision making. To examine relations among variables in an adapted framework of career exploration of Chinese university students in Hong Kong, as presented in Figure 3.7.1, I have developed 22 hypotheses and 2 research questions for testing. Through the hypotheses testing in this study, the original exploration framework will be enriched through adding cultural and context specific variables. From the research results, implications for local career interventions will also be identified.



**Figure 3.7.1 A Framework of Antecedents, Process and Outcomes of Career Exploration in Hong Kong Context**



## 4. METHOD

### 4.1. Design

#### 4.1.1. Overall Research Strategies and Design

Recapping from the last chapter, I shall test a framework of antecedents, process and outcome variables of career exploration in the Hong Kong context.

Antecedent variables are individual-oriented achievement motivation (IOAM), social-oriented achievement motivation (SOAM), family support for career, peer support for career and teacher support for career. Process variables are self exploration and environment exploration while outcome variables include self clarity, decisiveness, decidedness, amount of information, career decision making self efficacy and intention for career development in Mainland China. For testing each specific relation, two hypotheses are worked out as far as possible, with one (A) on establishing basic statistical association and the other (B) on proving statistical relationship with more stringent regression tests. Specific hypotheses for testing relationship among different variables are as follows:

Hypothesis 1A:

Individual-oriented achievement motivation (IOAM) is positively correlated with both self and environment exploration.

Hypothesis 1B:

Individual-oriented achievement motivation (IOAM) explains significant variance in both self and environment exploration after other relevant variables are accounted for.

Hypothesis 2A:

Social-oriented achievement motivation (SOAM) is positively correlated with environment exploration.



Hypothesis 2B:

Social-oriented achievement motivation (SOAM) explains significant variance in environment exploration after other relevant variables are accounted for.

Hypothesis 3A:

Career exploration is more strongly correlated with career support of teachers than with career support of peers.

Hypothesis 3B:

Career support of teachers explains more variance in career exploration than career support of peers does after other relevant variables are accounted for.

Hypothesis 4:

Career exploration as measured at time 2 is significantly higher than career exploration measured at time 1.

Hypothesis 5A:

Career exploration measured at an earlier time will be positively correlated with career exploration measured at a subsequent time.

Hypothesis 5B:

Career exploration measured at an earlier time explains significant variance in career exploration measured at a subsequent time after other relevant variables are accounted for.

Hypothesis 6:

Participants in an internship will show a significantly greater increase in career exploration over time than participants in of career seminars.

Hypothesis 7:

Self clarity and amount of information measured at time 2 will be significantly higher than measured at time 1.

Hypothesis 8A:

Self exploration in the past three months is positively correlated with self clarity.

Hypothesis 8B:

Self exploration in the past three months explains significant variance in self clarity after other relevant variables are accounted for.

Hypothesis 9A:

Environment exploration in the past three months is positively correlated with self clarity and amount of information.

Hypotheses 9B:

Environment exploration in the past three months explains significant variance in self clarity and amount of information after other relevant variables are accounted for.

Hypothesis 10A:

Career exploration in the past three months is positively correlated with decisiveness, decidedness and career decision making self efficacy.

Hypotheses 10B:

Career exploration in the past three months explains significant variance in decisiveness, decidedness and career decision making self efficacy after other relevant variables are accounted for.

Hypothesis 11:

Participation of career exploration activities in Mainland China will enhance the



subsequent intention for career development in exploration in Mainland China.

Hypothesis 12:

Identity status at Time 1 is associated with amount of self exploration in the three months preceding Time 1.

Hypothesis 13:

Identity status at Time 2 is associated with amount of self exploration in the three months preceding Time 2.

Hypothesis 14:

Identity status at Time 1 is associated with amount of environment exploration in the three months preceding Time 1.

Hypothesis 15:

Identity status at Time 2 is associated with amount of environment exploration in the three months preceding Time 2.

Research Question 1:

To determine whether decisiveness, decidedness, CDMSE and intention to develop career in Mainland China as measured at time 2 is significantly higher than the same variables measured at time 1.

Research Question 2:

To determine which identity statuses will differ from which others regarding exploration of self and environment.

In this method chapter, I will first consider the overall research strategies and design for this study, and then move on to explain the sample, measures and procedures of data collection.

In the first place, in terms of research strategy, I understand that both quantitative and qualitative approaches are useful in vocational psychology. To put the hypotheses to test, I will adopt the quantitative research design. As Bryman (2001) points out, the adoption of quantitative or qualitative research is related to the consideration of a number of epistemological and ontological issues. The quantitative method of data collection, as summed up by him, involves a deductive approach of testing theories, an objective view of social reality as well as research practices of the natural scientific model. Qualitative method, in turn, is described as an inductive approach of generating theories from qualitative data, adopting a constructionist view of social reality, as well as research practices emphasizing how individuals interpret the social world. For this study, I will basically select a quantitative approach. As stated in the previous chapter, the primary objective of this study is to test the relations among variables in a framework of exploration. The hypotheses on the relations are developed from reviewing past literature and analyzing the local situation. So it is basically a deductive approach of putting theories to test.

I have selected the quantitative approach because it is appropriate for testing the specific hypotheses of this study. On the other hand, I also see generally the value of both qualitative and quantitative approaches in vocational psychology. Savickas (1995) rightly emphasized that constructivist and objectivist vocational psychologists should seek to complement each other in research models and materials. He pointed out that in the post-modern information age, the constructivist approach might contribute by encouraging people to pursue personal meaning and fit work into their lives proactively while objectivist researchers could extend the career concept beyond occupational roles to other life roles and concerns.

Then I consider research design. Research design is referred to as the structure or framework to conduct the research data collection and analysis (Bryman, 2001).



He (2001) defines cross-sectional design as,

“A cross-sectional design entails the collection of data on more than one case and at a single point of time in order to collect a body of quantitative or quantifiable data in connection with two or more variables (usually more than two), which are then examined to detect patterns of associations.” (p.41)

Spector (2001) compared different research designs. He pointed out that the cross-sectional design was easier to accomplish, allowing anonymity, though appeared insufficient for examining causality. As for longitudinal design, he comments,

“A longitudinal design involves repeated measurements over time on the same subjects, often on the same variables. It is one of the most powerful tools for the study of many organizational phenomena that cannot be studied experimentally.” (Spector, 2001, p16)

He added that longitudinal designs helped us to examine the effects of an independent variable at a prior time on the dependent at a subsequent time, but it did not lead to causality automatically:

“Longitudinal designs do not automatically indicate causality; that is, one should not expect that merely assessing a variable subsequently indicates that that variable was an effect of what was assessed previously if there is a relation. Causality can only be inferred if it can be shown

that the state of 'effects' variable at time 2 do not occur until after the cause variable at time 1 reached a certain stage, or what Davis (1985) called freezing. Furthermore, the appropriate time period for variable 1 to cause variable 2 must be chosen, which is quite difficult to determine.”  
(Spector, 2001, p17)

As most past studies in the area of career exploration were correlational and cross-sectional, causal relationships among variables could not be sufficiently established. Blustein (1987; 1988; 1989a), for instance, mentioned correlational designs as a limitation in this area of study and he recommended longitudinal designs (Flum and Blustin, 1999). From a developmental-contextual perspective of career development, Vondracek, Lerner and Schulenberg (1986) also highlighted the importance of repeated measurement and longitudinal design as what they called the only way to detect intra-individual changes. In this study, the application of a longitudinal design will enable me to trace the evolution of career exploration over time and hopefully be a little more confident in explaining causal relationships among the domains of antecedent, process and outcome variables. However, I will also note that longitudinal designs do not lead automatically to causality as cautioned by Spector (2001).

Considering the value of both cross-sectional and longitudinal data in the study of career exploration, I would adopt both. Cross-sectional methods will generate data on the antecedents, process and outcomes of exploration. Such data will be used to test the relations among variables in the framework through multivariate statistics. Moreover, longitudinal data would be collected from participants of different types of formalized exploration activities like internship and career seminars. Through such longitudinal data, changes in exploration process and outcomes over time can be examined.



## 4.2. Background and Objectives of Data Collection

### 4.2.1. Background

The objective is to collect data from participants who committed to an internship programme or a career education programme twice with several months in between. Longitudinal data will be examined together with cross-sectional data to determine the relations among variables. So I have chosen to collect data from City University of Hong Kong where I, the researcher, work as a career counsellor.

There are now nine universities in Hong Kong. Seven of them are primarily funded by the Government and most of their students are from the 17 to 22 age group locally. The Open University of Hong Kong is self-financing and mainly provides open learning programmes for working adults and the Hong Kong Shue Yan University is a private university. City University of Hong Kong is one of the seven Government funded universities in Hong Kong. It has a student population of over 25,000, offering both undergraduate and postgraduate education. In addition to the three major faculties (Business, Humanities and Social Sciences, and Science and Engineering), it has two schools and a college (Law, Creative Media and Higher Vocational Studies).

In City University of Hong Kong, career programmes are offered by academic departments and the Career Centre. The career development activities organized by different academic departments vary in both scope and nature. Typically most departments include a few career preparation and job search workshops conducted by professionals or alumni. The Faculty of Business (FB) offers an annual summer internship programme for over 100 students, while the Faculty of Science and Engineering (FSE) for about 200 annually. The FB internship programme is credit-earning and takes place in Hong Kong. The FSE internship programme



takes place in Guangdong Province in Mainland China. Both are elective courses for students of respective Faculties. The Career Centre of the university, in turn, offers career services to all students of the university, including individual career advising, job placement services, career testing, career education workshops, job search guidance and management skills training. It also organizes an annual summer internship programme in Mainland China, mainly Beijing and Shanghai, for 80 to 100 students.

#### 4.2.2. Data Collection Plan

I planned to collect data from the participants of the career education programmes as well as summer work internships organized by the Career Centre. A major career education programme run by the Career Centre in the past few years is known as Career Achievers. The primary objective of “Career Achievers” is to provide opportunities for motivated students to start early for their career preparation in terms of self understanding, opportunity awareness, career planning and job search and encourage them to make use of the existing career services of the career centre to achieve such ends. The career programme is open to all undergraduate students to participate. It has two phases. The first phase consists primarily of 5 two-hour career seminars in two months. In the second phase, students are selected from the phase one participants on competitive basis for a business orientation tour in Mainland China during the summer vacation.

All undergraduate students are invited to apply for the career education programme and the applicants have to hand in an application form together with a short essay on their reasons of application. Two career counsellors look at all the applications and select successful applicants on the basis of their motivation and attitude to learn. In fact, they just screen out a few students who are obviously lacking commitment or not serious with their application. It is estimated that over 95% of the students are invited to participate in the phase one of the programme. The two-hour career seminars covered the following themes:



### Seminar 1- Career Planning

This seminar introduces a process of career planning consisting of “understanding yourself”, “understanding world of work”, “goals and decisions”, as well as “change, grow and learn”. It also encourages students to utilize career services, programmes and services in the university for their career planning.

### Seminar 2 - Career Self

This seminar facilitates the participants to be aware of their own vocational interests, values and aptitudes in relation to career development through a series of interactive quizzes and short questionnaires. The participants are also briefed on the service for further career assessment and self understanding available in the university.

### Seminar 3 - Learning and Thinking

This seminar introduces the participants to the self learning abilities and problem solving skills required in the workplace. Participants are also briefed on the practical conceptual tools for developing business sense. The importance of “life long learning” as well as “learning to learn” is highlighted.

### Seminar 4 - Careers in the 21<sup>st</sup> Century

This seminar explains the key changes in the workplace in the 21<sup>st</sup> Century. Participants are encouraged to formulate their own career strategies to cope with the changes.

### Seminar 5 - Job Search Skills

This seminar introduces the requirements and selection methods of employers. Participants are encouraged to make early preparation for job search, application letter and CV, as well as to familiarize with different selection methods.

Each seminar was conducted by a career counsellor in an interactive way. In addition to a mini lecture, the counsellor provided self assessment exercises for students to discuss and reflect on the themes. The workshops aimed at stimulating the interest of students so that they would continue their career exploration and preparation throughout the semester. Therefore, participants were also given information about other open services and workshops of the Career Centre. However, it was up to individual students to decide if they would take further career exploration on their own.

The participants were also briefed about the phase two business orientation tour in Mainland China for “committed careerists” who had made prior career preparation actively. It was known that many of them were interested in the business orientation tour which would be a one-week activity scheduled in the summer vacation. It aimed at enhancing business awareness, and consisted of company visits to State-owned and private enterprises in Mainland China, as well professional sharing and small group learning sessions.

There were two intakes for the programme in the academic year 2002-3. The first intake was in October, 2002 and the second on February, 2003. Students of the 2002 intake participated in the five career seminars organized from October onwards and students of the 2003 intake participated in another round of career seminars commencing February, 2003. I prepared to collect data from participants of both intakes.

For data collection from internships, originally, I planned to collect data from participants of internships in Mainland China organized by the Career Centre. The

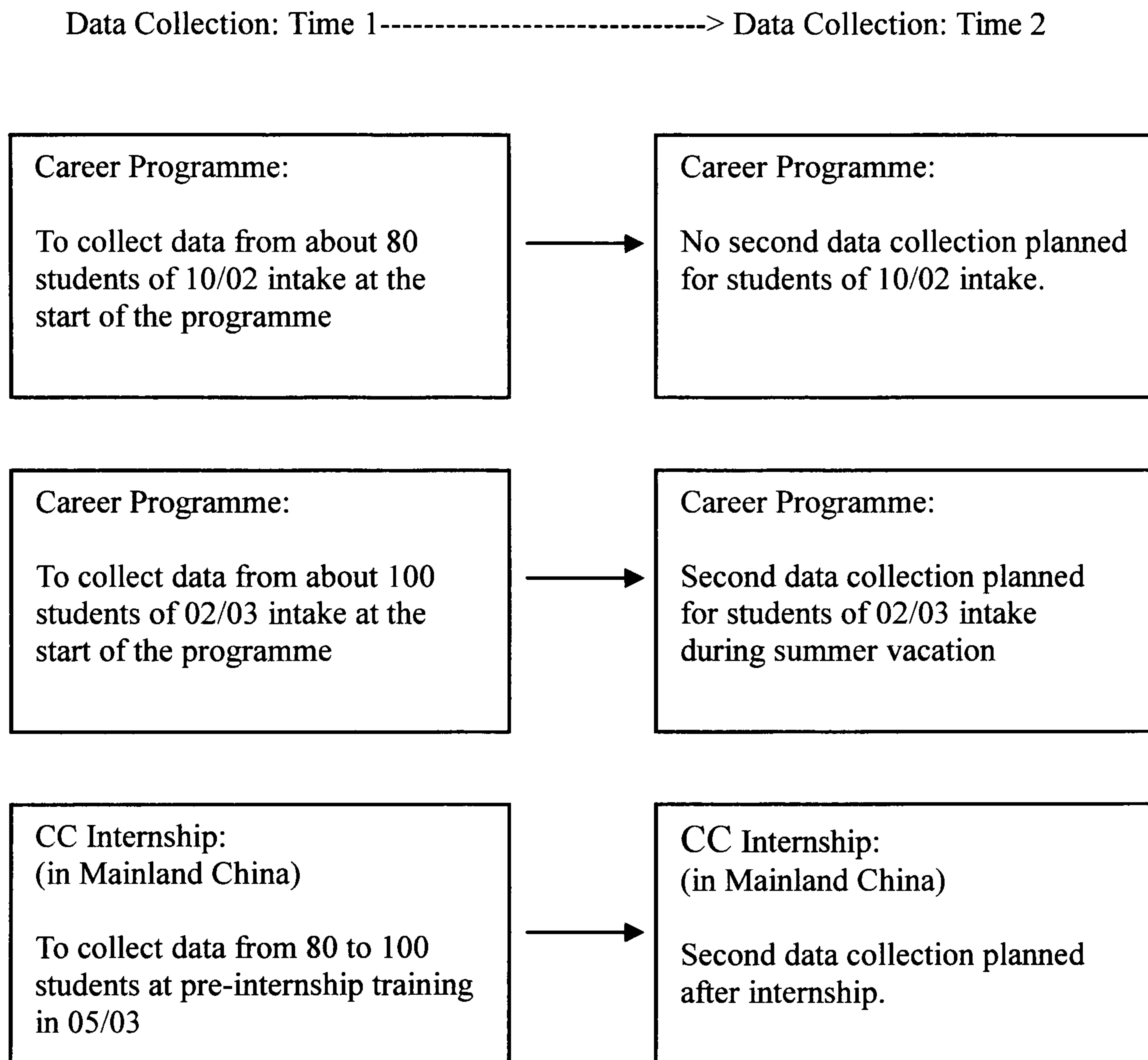


Summer Internship Programme of the Career Centre would last for about two months from May to July in Mainland China in 2003. It was estimated that there would be 80 to 100 students participating in the internship programme to Shanghai and Beijing in that year. It was open for all interested students to apply on their own initiative. Applicants would be invited for an interview on the basis of their motivation to learn, preparation, language skills and maturity. Students with better interview performance would be given higher priority in their selection of companies for employment. Pre-internship training and briefing sessions on work attitude, business etiquette and generic management skills were scheduled for the selected students before their departure. The 80 to 100 internship placement positions would be offered by corporations and companies in Banking, Finance, Marketing, Logistics and Property and Information Technology in Shanghai and Beijing. The original data collection plan designed prior to the collection exercise is shown at Figure 4.2.1. Subsequently, data collection from participants in the career programme at Time 1 did proceed as planned in October, 2002 and February, 2003. However, subsequent data collection was affected by the outbreak of Severe Acute Respiratory Syndrome (SARS) in March, 2003 and I shall elaborate on this in the next section.

#### 4.2.3. Data Collection and the Outbreak of SARS

Data collection was subsequently affected by the outbreak of Severe Acute Respiratory Syndrome (SARS) in Hong Kong and Mainland China from March, 2003 onwards. Originally, for the career education programmes, I aimed to collect data from students who would have completed both the first phase career seminars and the second phase of the Business Orientation Tour to Mainland China. Due to the SARS, the Business Orientation Tour to Mainland China was cancelled. So I could only collect data from the participants knowing that they had just gone through the first phase.

**Figure 4.2.1 Original Data Collection Plan**





The internship programme of the Career Centre (CC) was also affected. The original plan of placing students in Mainland China was cancelled. Instead, the Career Centre organized a local internship programme in Hong Kong in the summer of 2003 on a much smaller scale. Consequently, 27 students were selected and participated in the summer internships. In addition to the Career Centre internship, I then considered collecting data also from other local internships run by academic faculties. Then, I got the consent of the organizer of the internship programme of the Faculty of Business (FB) to collect data from their internship participants.

Admittedly, there are differences between the FB and CC internships. The FB internship was an elective course open primarily to year two students of the Business Faculty who are in three year BBA programmes. The CC internship was open to all undergraduate students preferably not in final year and was not credit-bearing. However, there were also a lot of similarities between them in terms of selection process, pre-internship training and internship arrangement. Both were not compulsory and interested students had to apply on their own initiative. Both invited most applicants for an interview and selected students on the basis of their motivation to learn, preparation, language skills and maturity. Students with better interview performance were given higher priority in their selection of companies for employment. It was estimated that the interview in both cases screened out only a minority of less motivated applicants and it was used mostly for making allocation decisions. Both internship programmes organized several pre-internship training and briefing sessions on work attitude, business etiquette and generic management skills. Both internships lasted for two months, with employers mainly from small and medium size companies in the industries of accounting, finance, sales, marketing and retail.

From the above, I am aware that the participants of the career programme and the internship from the Career Centre were from different faculties and years of study



though I find female students, year-two students and Business Faculty students tended to participate in higher proportion. FB internship, in turn, was open only to year two Business Faculty students. I am aware of the demographic differences between the participants of Career Centre and the Faculty of Business and I will seek to control for these. The reason for including the FB data, as explained earlier, was firstly due to the outbreak of SARS which reduced drastically the size of CC internship. Moreover, the combined internship data actually were representative of the typical students who had voluntarily committed themselves to a summer internship in 2003 in the University.

### 4.3. Procedure and Sample

#### 4.3.1. Data Collection at Time 1

First of all, the support and consent of both the Career Centre and the Faculty of Business was obtained for conducting this study. If relevant, some of the research findings would be fed back to the Career Centre for programme evaluation and planning purpose.

In October, 2002, 137 students were invited by the Centre to attend the series of five seminars of the Career Education Programme. About 80 students attended the first seminar and were requested to complete the Time 1 questionnaires at the start of the first seminar and 75 completed questionnaires were obtained. In March, 2003, 132 students were invited by the Centre to attend another series of seminars. 110 attended the first session of the seminars and 98 of them completed the questionnaires. On both occasions, I, as the researcher, was present to brief them about the research nature and purpose and invited them to participate voluntarily. I introduced myself as a career counsellor from the student service department and explained that data collected would be used for both my academic study and evaluation of the career programme.



At March, 2003, about 100 students were accepted into the FB Internship. They were requested to complete the Time 1 questionnaires at their pre-internship training sessions in May, 2003. They completed and returned the questionnaires in a classroom setting. 97 completed questionnaires were returned and used in the research. The CC Internship participants were requested to complete their Time 1 questionnaires at a pre-internship session in May, 2003. All 27 participants returned their completed questionnaires. On both occasions, a training facilitator briefed them about the research nature and purpose and invited them to participate voluntarily.

At all the above data collection occasions, the researcher or a training facilitator was present to explain the purpose of the research. All students were given a questionnaire, an answer sheet, and a consent form to participate. Respondents completed the questionnaires in a classroom setting and returned all forms and questionnaires upon completion. They were informed that participation was voluntary and most of them cooperated. There was no time limit but most finished within 20 minutes. They were also informed that they would be contacted again some time later to complete the questionnaire a second time. In signing the consent form, the respondents agreed to participate in the research conducted by the researcher as a career counsellor from the student service department. They knew that all data and profiles from completing the questionnaire would be used for research and programme assessment purposes and only group data would be presented. With the support of the student services department in scanning the computer answer sheet, scorings of all questions together with simple demographic details of gender, faculty and year of study were obtained. The student identity numbers provided by respondents were used to match by student data obtained at Time 1 and Time 2.

So the sample at Time 1 was drawn from participants of either the career education programme or the student internship from 2002 to 2003. At Time 1, 75

students from the 10/02 intake, 98 from the 02/03 intake of career programme, as well as 97 from FB internship and 27 from CC internship completed the questionnaires. Response of Time 1 and Time 2 data collection is summarized in Figure 4.3.1.

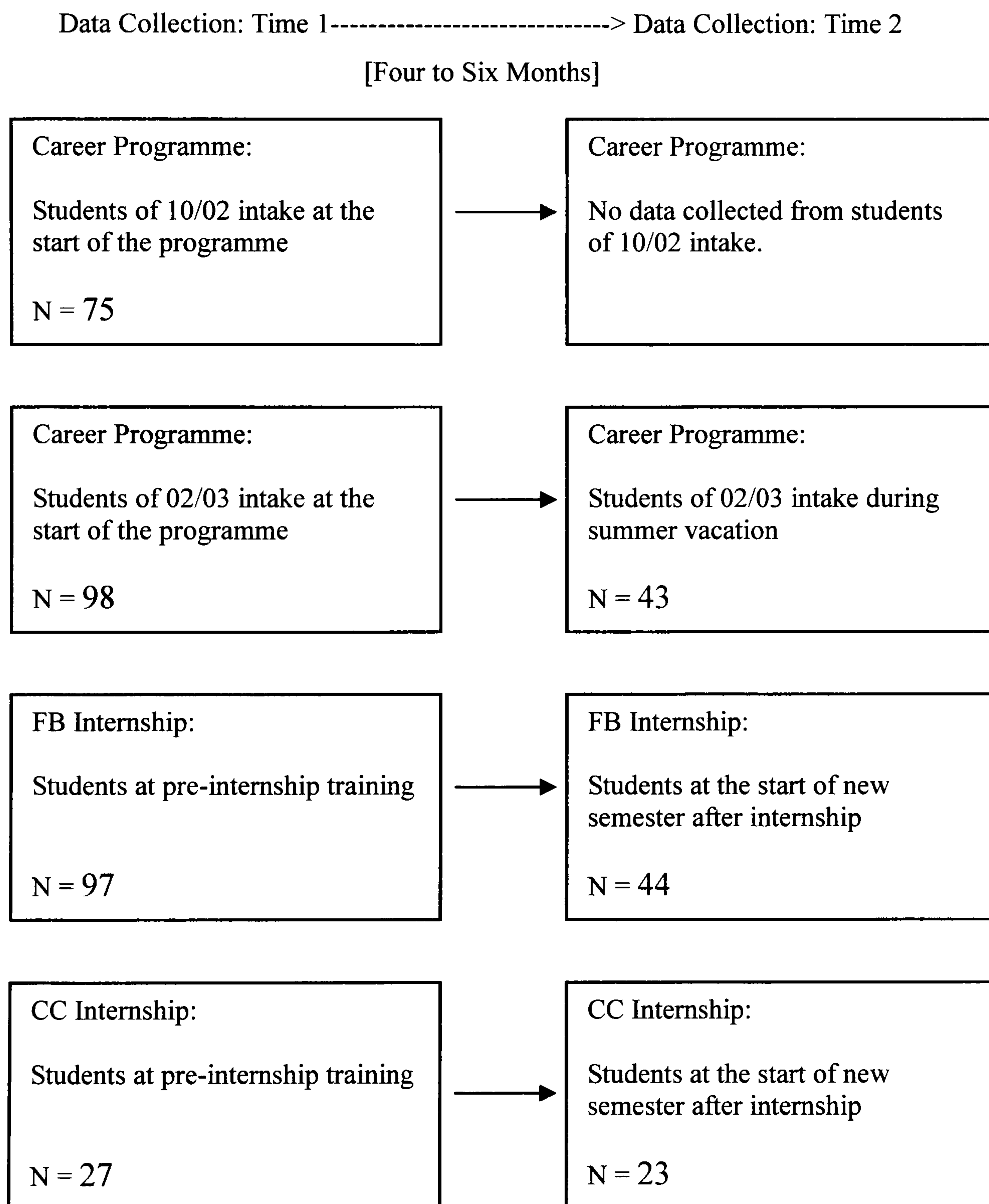
Then I proceeded to combine data collected from both career programme and internship at Time 1 to produce a cross-sectional sample at Time 1 for analysis. For the career programme data, combining 10/02 and 02/03 intake, I have a total of 173 respondents. 63% of them were female, 34% male. 68% were in Business Faculty, 10% in Faculty of Humanities and Social Sciences and 8 % in Science and Engineering. Moreover, there were 78% in year two of study, 17% in year one and 3 % in year 3.

For the student internship data, there were a total of 124 respondents. The 97 FB participants were all from Faculty of Business in the year two of study and 56% were female and 41% male. For the CC Internship, I have a total of 27 respondents and it is known that 73% were female, 26% male. There were 59% in Business Faculty, 22.2% in Faculty of Humanities and Social Sciences and 7.4 % in Science and Engineering. 59% were in year two of study and 33% in year one.

With all data collection at Time 1 combined, there was a total of 297 cases. From further checking, I found that there were 20 FB internship students and 6 Career Centre internship students who had attended the career programme before their internship. In a cross-sectional sample, I seek to avoid double counting of the subjects and thus counted their earlier participation of career programmes only. So 26 cases are taken away and there were now 271 cases in the cross-sectional



**Figure 4.3.1 Time 1 and Time 2 Data Collection (Actual)**



sample. So at Time 1, the cross-sectional sample represented data from 271 students who have committed themselves either to a series of career seminars or an internship before the respective programme commenced. Among them, 61.6% were female and 35.1% male. Over 75% were from the Faculty of Business and 81.9% were in their year 2 of study. The characteristics of this cross sectional sample are summarized in Table 4.3.1.

#### 4.3.2. Data Collection at Time 2

As noted earlier, data collection at Time 2 was affected by the outbreak of SARS. Originally, I planned to collect data from participants of Career Centre activities only. From past experience, face-to-face sessions guaranteed much higher response rate in surveys and research as compared to electronic or postal means and I, as a career counsellor, and my colleagues would have face-to-face sessions to collect data from the participants at Time 2. With the outbreak of SARS, some class and examination activities were affected and both staff and students had to wear surgical masks in the university area. Moreover, the Career Centre cancelled both its Business Orientation Tour and Internship Programme to Mainland China in the summer vacation. This affected my phase two data collection. Firstly, one of the hypotheses on career exploration activities in Mainland China could not be tested. Secondly, I had to collect additional data from participants of local internships organized by the Faculty of Business and combine data. Thirdly, with the cancellation of the phase two of the career programme, I could not collect data in face-to-face sessions and had to use electronic means, which affected the response rate.

The Time 2 data collection for the Career Programme participants was conducted in the summer of 2003. I had planned to collect data again just from the participants of the 2003 intake who joined the career seminars starting February, 2003 after they had completed the first phase of career seminars and second phrase of tour to Mainland China. Based on this reasoning, the 2002 intakes were



**Table 4.3.1 Characteristics of Cross-Sectional Sample (N=271)**

Variable	Category	N	Percentage
Gender	Female	167	61.6 %
	Male	95	35.1 %
	Missing	9	3.3 %
Faculty of Study	Business	205	75.6%
	Humanities & Social Science	24	8.9%
	Science & Engineering	16	5.9%
	Others	20	7.4%
	Missing	6	2.2%
Year	Year 3	5	1.8%
	Year 2	222	81.9%
	Year 1	37	13.7%
	Missing	7	2.6%
Participation	Work Internship	98	36.2%
	Career Education Programme	173	63.8%

not included in the Time 2 assessment from the start. The 10/02 intake would also be eligible for the Career Exploration Tour, but the time gap between the two assessments would be too large if they would also complete the time 2 questionnaires after the tour. In reality, due to the SARS, no Business Orientation Tour was organized. So, efforts were made to collect data the second time from the 02/03 intake who had attended seminars only. There was difficulty in this data collection because there was no opportunity to gather the students. From past experience, face-to-face sessions guaranteed much higher response rate in surveys and research as compared to electronic or postal means. So, efforts were first made to collect data through face-to-face encounters. Due to the SARS, the Career Centre cancelled its Business Orientation Tour to Mainland China in May. Instead, a series of Business Orientation talks and visits was organized in the summer at the end of May. 18 students from the 02/03 intake attended the series and were contacted to complete the questionnaire a second time. In addition, another 5 of them completed the Time 2 questionnaires when they attended pre-internship training. So there were a total of 23. The remaining of the 02/03 intake was invited to complete the Time 2 questionnaires twice later in the summer vacation and subsequently another 20 sent back questionnaires via email. In sum, a total of 43 students responded 4 to 6 months after the time 1 collection, making a response rate of 44%. These respondents also indicated in their Time 2 questionnaires that they had not participated in any summer internships in 2003 at the time they completed the questionnaires.

The 27 respondents of the Career Centre Internship completed their work internship during the summer vacation and then were given the time 2 questionnaires. At the start of the new semester in September, 23 completed questionnaires were sent back to the Career Centre and were used for the research.

The 97 respondents from FB internship also completed their two month internship during the summer vacation. Towards the end of August, the organizer from the Faculty of Business sent them an email, with the Time 2 questionnaires attached



to it, and invited them to complete it again. Later, a reminder was sent by email. Finally 44 completed questionnaires were received via email in September, making a response rate of 45%. Details of the data collection at Time 2 can be found in Figure 4.3.1 which has been presented earlier when discussing the cross-sectional sample.

Then I proceed to discuss the longitudinal sample. In sum, Time 2 data were collected from students four to six months after time 1. In between Time 1 and Time 2, respondents had gone through either a series of career seminars or a two-month summer internship. A total of 110 cases were obtained for Time 2, in which 9 subjects have participated first in career seminars and then an internship afterwards. From this longitudinal sample, I explored mainly how the participants had changed within a time segment. Though the 9 subjects have gone through two types of interventions in two time segments, they were participating in one kind of intervention only at a time. Pre-and-post assessments results were obtained from them for both time segments. Since the nine students completed the career seminars before they went on to the internship, I count only their pre-and-post assessments for the career seminars. I do not include their pre-and-post assessment data from their participation of work internships. So without double counting, a total of 101 cases were included in the longitudinal sample.

In retrospect, due to the SARS, the longitudinal sample obtained was different from what was originally planned. Despite the above limitations, the longitudinal sample were selected from students who were self motivated to participate in an internship or a career programme in a university in Hong Kong in the same academic year. They completed the questionnaires before and after a period of 4 to 6 months in which they had either attended career education seminars or undertaken a work internship. In this light, the sample is still appropriate and useful for testing the longitudinal hypotheses. Characteristics of the longitudinal sample are shown in Table 4.3.2.

**Table 4.3.2 Characteristics of Longitudinal Sample at Time 2 (N=101)**

Variable	Category	N	Percentage
Gender	Female	69	68.3%
	Male	31	30.7%
	Missing	1	1.0%
Faculty of Study	Business	82	81.2%
	Humanities & Social Science	10	9.9%
	Science & Engineering	2	2.0%
	Others	6	5.9%
	Missing	1	1.0%
Year of Study	Year 2	89	88.1%
	Year 1	10	9.9%
	Missing	2	2.0%
Participation	Internship	60	59.4%
	Programme	41	40.6%



#### 4.4. Measures

In the section on hypotheses development, I identified a framework with four domains of variables for testing, and therefore it was necessary to identify specific measures for each of them. This was done either by adapting existing measures or designing new measures as follows.

##### 4.4.1. Achievement Motivation

Yu and Yang (1987) explained achievement motivation of Chinese people by the constructs of individual achievement motivation (IOAM) and the indigenous construct of social-orientated achievement motivation (SOAM). For SOAM, significant others, the group or society set one's achievement goals or standards, approve the means of goal attainment and appraise final outcomes of performance. For individual achievement motivation or IOAM, the individual sets achievement goals, selects achievement behaviour, and evaluates outcomes. Measures of IOAM, individual-oriented achievement motivation, and SOAM, social-oriented achievement motivation were first developed by Yang and Yu (1987). Originally they are in Chinese. There are 30 items for IOAM and another 30 items from SOAM. Having obtained the English translation from the original authors, Tao and Hong (2000), as well as Chang, Wang & Teo (2000) used this English version in Singapore after minor adaptation. The items were on a six-point scale on how far the statement was applicable to the respondents. The measures in this study were adapted from the English version as revised by Tao and Hong (2000) who reported Cronbach Alpha of .92 for SOAM and .91 for IOAM. Tao and Hong (2000) also conducted principal component factor analysis for all measures of IOAM and SOAM from data of 111 secondary school students. In a two factor solution, they found that 93.3% of SOAM items were loaded on factor 1 while 93.3% of IOAM were loaded on factor 2. Moreover, correlations were found

between SOAM and performance goals ( $r = .65, p < .01$ ), as well as IOAM is related to learning goals ( $r = .70, p < .01$ ).

Examining the scales, I found that they were developed in the school setting and many items were about academic study. So, instead of using all the items I have taken nine items from the 30 items of IOAM and another 9 from the 30 SOAM items to use in my study which are general statements on achievement motivation and not confined to the school and study setting. In the questionnaire of this study, I have generally used a five-point scale for most measures, measuring the level of agreement to respective statements. So I have also adopted a five-point scale for IOAM and SOAM. In this study, from a total of 263 respondents, a Cronbach Alpha of .82 was obtained for SOAM, and .65 for IOAM from 266 respondents. As a Cronbach Alpha of .65 for IOAM is obtained in this study, the scale can be further revised and adapted to improve reliability in future studies. In adapting the IOAM from the original scale, I aimed at using a scale of IOAM which is much shorter and not confined to the educational context. Some sample items of original IOAM not included are presented here:

‘When I do badly on a test, even though my parents and teachers may not reprimand me, I feel I have let myself down.’

‘I would pursue some higher degree in education, not to glorify my parents or ancestors but for my own interest in learning.’

‘I enjoy making progress towards the educational goals that I have set for myself.’

‘I rely on my own approach to obtain the best possible grades.’

Some samples of the generic items included in this study are presented below:

‘I try to do my best if I consider a task worth doing.’



‘I feel a sense of accomplishment after finishing a task even if no one knows about it.’

As for SOAM, some items not included in this study are also shown here:

“I am concerned with whether my school performances meet my parent’s expectations.”

“I study hard because teachers always praise diligent students”

“When a teacher praises other students in my class, I feel I must work hard to do better.”

The following sample items of SOAM were used in this study:

“Before I do anything, I first consider whether my goals fit my parents’ expectations.”

“I would feel regretful to my ancestors if I do not achieve more than most of other people.”

“I want to pursue the goals that people in general consider valuable.”

In summary, the original IOAM and SOAM items were developed mainly for examining the study behaviour of secondary and tertiary students in relation to their achievement motivation. The adapted items are more generic and potentially applicable for both students and working adults. The items of the adapted IOAM and SOAM scales in this study are shown in Appendix 1 for reference.

#### 4.4.2. Relational Support

Relational support by teachers, peer and family were measured by three respective 5-point scales. The simple rating scales were developed for this study.

Respondents are requested to indicate the level of career support they have from teachers, peers and family, ranging from no support to maximum support.

#### 4.4.3. Career Exploration

Career exploration is measured by the self exploration and environment exploration scales of Career Exploration Survey (CES) by Stumpf, Colarelli and Hartman (1983) who defined environment exploration as exploration related to occupations, jobs and organizations in the past three months, and self exploration to self assessment and introspection in the past three months. The authors provided evidence of dimensionality, reliability and validity for CES scales together as a framework of career exploration in four studies from a total of 601 subjects through factor analysis, correlations, within and between-subjects comparisons. Specifically, they reported from a sample of 241 college students .83 coefficient alpha as estimate of reliability for environment exploration and .88 for self exploration. In the same sample, self exploration was found associated with environment exploration ( $r = .42, p < .01$ ), exploration frequency ( $r = .29, p < .01$ ), exploration focus ( $r = .52, p < .01$ ), amount of information ( $r = .71, p < .01$ ), satisfaction with information ( $r = .56, p < .01$ ) and beliefs on employment outlook ( $r = .32, p < .01$ ), while self environment exploration with amount of information ( $r = .29, p < .01$ ), exploration focus ( $r = .25, p < .01$ ), satisfaction with information ( $r = .20, p < .01$ ) and belief about employment outlook ( $r = .20, p < .01$ ). The authors also reported construct validity obtained from 57 career changers (from academic to business) and 61 graduate business students. The career changers filled in CES before and 4 weeks after they participated in a career change training programme and reported significant increase in environmental exploration ( $t = 12.2, p < .01$ )



over time. As compared to career changers, business students were found significantly higher in their scores in environmental exploration ( $t = 5.4, p < .01$ ), amount of information ( $t = 5.5, p < .01$ ), exploration frequency ( $t = 5.5, p < .01$ ) and focus ( $t = 5.9, p < .01$ ), and belief about employment outlook ( $t = 3.7, p < .01$ ). In sum, from the correlations and group comparisons, career exploration was found to be related to amount of information, exploration focus and beliefs about employment market.

In this study, the subscales of self exploration (SX) and environmental exploration (EX) were adopted from the CES. SX has 5 items about concrete activities of exploration. Respondents were asked to state the extent they had engaged in the activities for the past three months on a five-point scale. EX has 6 items about concrete activities of exploration. Respondents were also asked to state the extent to which they had engaged in the activities for the past three months on a five-point scale. From a total of 268 students responded to the items of this SX scale in this study, a coefficient alpha of .81 was obtained, and .86 for EX scale from 269 students.

#### 4.4.4. Amount of Information

Amount of information is measured by the amount of information (AIF) scale of Career Exploration Survey (CES) by Stumpf, Colarelli and Hartman (1983) who defined AIF as information obtained about occupations, jobs, organizations and oneself. As stated earlier, the authors provided evidence of dimensionality, reliability and validity for CES scales together as a framework of career exploration. Specifically, from a sample of 241 college students, Stumpf et al. (1983) reported a coefficient alpha of .79 as reliability estimate for the AIF scale. In the same sample, AIF was found associated with environment exploration ( $r = .71, p < .01$ ), self exploration ( $r = .29, p < .01$ ), exploration focus ( $r = .59, p < .01$ ), satisfaction with information ( $r = .64, p < .01$ ) and beliefs on employment outlook ( $r = .34, p < .01$ ). The authors also reported construct validity obtained



from 57 career changers (from academic to business) and 61 graduate business students. The career changers filled in CES before and 4 weeks after they participated in a career change training programme and reported significant increase in amount of information. As compared to career changers, business students were found higher in their scores in amount of information ( $t = 5.5$ ,  $p < .01$ ). In sum, from the correlations and group comparisons, amount of information is found related to career exploration and belief about employment outlook.

Amount of Information is measured by AIF or amount of information scale of the Career Exploration Survey (Stumpf, Colarelli & Hartman, 1983). It consists of 3 items on career, job and organizations. Respondents were asked to rate on a five point scale ranging from limited/ little amount to tremendous amount. In this study, from a sample of 270 students, a coefficient alpha of .79 was obtained for AIF.

#### 4.4.5. Identity Status

Silbereisen, Vondracek and Berg's (1997) one-item measure of identity status was used. Identity status is measured by asking adolescents to choose from four descriptions of their present identity status: A. "I am currently not sure about what I want to do with my life; I simply let things happen." (Indicating Diffusion), B. "I know pretty well what I want to do with my life, because I usually follow well-established paths." (Indicating Foreclosure), C. "I am currently not sure about what to do with my life, but I am investing much effort and time to find out." (Indicating Moratorium) and D. "I know pretty well what to do with my life, because I have spent a great deal of time and effort to find out." (Indicating Identity Achievement). Schmitt-Rodermund and Vondracek (1999) found that exploration activities were related to identity status as measured by this item. Using the survival analysis technique, Silbereisen, Vondracek and Berg (1997) found that adolescents in more advanced identity statuses tend to experience an earlier initial vocational choice. Reitzle, Vondracek and Silbereisen's (1998)



found from a sample of 933 German youth that career exploration was related to identity status (ANOVA ;  $F = 7.86, p < .01$ ) with subjects in identity achievement status highest in exploration and diffusion lowest. This item was included in this study as a measure of identity status.

#### 4.4.6. Intention to Develop Career in Mainland China

In understanding mobility in our context, I focus on intention to develop their career in mainland China. From the literature review of career mobility earlier, the intention to relocate will affect subsequent mobility behaviour (e.g. Feldman, 2001). Intention for career development in mainland China is measured by a scale of five items tailored for this research called Intention to Develop Career in Mainland China, IDC. Sample items are “I would like to explore my career opportunities in Mainland China” and “I think the development of China provides a lot of opportunities for my future career”. Respondents will be asked to state how far they agree each of the following statements as applied to them on a five-point scale. In this study, from a total 262 respondents in this study, a coefficient alpha of .83 was obtained for IDC.

#### 4.4.7. Decisiveness

Decisiveness was measured by the Decisiveness Scale of Career Decision Profile (CDP; Jones, 1989; Jones & Lohmann, 1998) and is defined as how far a person perceives that he or she can make career decision without delay, difficulty and dependence on others. Jones reported that it has internal consistency of .71 (Jones, 1989), as well as .84 for college students (Murry, 1989). For validity, Jones (1998) summed up that it was correlated with the Goal Instability Scale (-.56; Multon et al, 1995), which measures an individual’s lack of goal directedness, as well as trait anxiety (-.40; Wanberg & Muchinsky, 1992), social anxiety and self esteem (-.39 and .47 respectively; Wanberg & Muchinsky, 1992). The original scale was an 8-point Likert scale ranging from strongly disagree to strongly agree. In this study,



I have generally used a five-point scale for most measurements. So I have also adopted the five-point scale from strongly disagree to strongly agree for this measure as well. In this study, from a total of 270 students responded to items of the scale in this study, a coefficient alpha of .72 was obtained for Decisiveness.

#### 4.4.8. Self Clarity

Self clarity was measured by the three-item Self Clarity Scale of the Career Decision Profile (CDP; Jones, 1989; Jones & Lohmann, 1998). Jones and Lohmann (1998) defined self clarity as how clearly a person understands his or her interests, personality and abilities, as well as how these characteristics fit into different occupations. They (1998) reported three-week test-retest reliability of .85 (Jones, 1989), as well as internal reliability coefficients of .80 (Murry, 1989) and .86 (Brisbin & Savickas, 1994) for college students. Jones (1998) also summarized that the Self Clarity scale correlated with trait anxiety (-.37; Jones, 1989), achievement identity status (.36; Jones, 1989) and Vocational Identity Scale (.68; Jones, 1989). The original scale was an 8-point Likert scale from strongly disagree to strongly agree. In this study, I have generally used a five point scale on the level of agreement to the statement from strongly disagree to strongly disagree for most measurements. So I have also adopted the five-point scale from strongly disagree to strongly agree in this study. In this study, due to reliability considerations, an item was dropped from the scale. From a total of 270 students responded to the remaining two items, a coefficient alpha of .77 was obtained for self clarity.

#### 4.4.9. Decidedness

Decidedness was measured by the two-item Decidedness Scale of Career Decision Profile (CDP; Jones, 1989) which is defined as how decided one is about his or her career or occupational choice. Jones (1989) reported an internal reliability of .84 (Murry, 1989) for college students. He (1989) also summarized that the



scale correlated negatively with career indecision (-.46 by Slaney, 1980) and positively with career salience (.39; Greenhaus and Simon, 1977). In this study, I have generally used a five point scale on the level of agreement to the statement from strongly disagree to strongly agree for most measurements. So I have also adopted the five-point scale from strongly disagree to strongly agree. From a total 270 respondents to this scale in this study, a coefficient alpha of .76 was obtained in this study for decidedness.

#### 4.4.10. Career Decision Making Self Efficacy

Career decision making self efficacy (CDMSE) is measured by the Short Form of Career Decision Making Scale (Betz, Klein & Taylor, 1996). Career Decision Making Self Efficacy Scale (Taylor & Betz, 1983; Betz, Klein & Taylor, 1996) is a construct concerning how far one believes that he or she is able to complete successfully the tasks necessary for career decision making, including five competence areas of career maturity (Crites, 1978):

- accurate self appraisal
- gathering occupational information
- goal selection
- making plans for the future
- problem solving

First developed by Taylor and Betz (1983), the Career Decision Making Scale has 50 items (10 items on each competence area) and has been widely used in career research. Betz and her colleagues then worked towards a modified and shorten version of the scale with similar good reliability and validity and subsequently created a revised scale called the Short Form of Career Decision Making Scale (CDMSE-SF; Betz, Klein & Taylor, 1996). CDMSE-SF has 25 items, five on each of the competence areas. The authors reported a coefficient alpha of .94 from a sample of 346 university students, indicating good reliability for the scale of 25

items. For the subscales, .77 coefficient alpha was obtained for self appraisal, .78 for occupational information, .83 for goal setting, .81 for planning and .75 for problem solving. The authors also provided concurrent validity estimates by gender from a sample of 103 female and 81 male university students. From the female sample, CDMSE-SF was found to be negatively correlated with the indecision subscale ( $r = -.68, p < .001$ ) of the Career Decision Scale (Osipow, 1987), as well as positively correlated ( $r = .63, p < .001$ ) with the My Vocational Situation Scale (MVS; Holland et al., 1980). Likewise, from the male sample, CDMSE-SF was found to be negatively correlated with the indecision subscale ( $r = -.48, p < .001$ ) of the Career Decision Scale (Osipow, 1987), as well as positively correlated ( $r = .48, p < .001$ ) with the MVS. Summing up, CDMSE-SF has strong and sufficient evidence of reliability and concurrent validity as a scale of career decision making self efficacy for university students.

Betz, Klein & Taylor (1996) also specified that the items of CDMSE-SF can be scored on a five-point or ten-point scale ranging from no confidence to complete confidence. As I have primarily adopted the 5-point scale for measures in this study, I have also adopted the five-point scale for CDMSE-SF. In this study, from a total of 256 students responded to items of the scale, a coefficient alpha of .91 was obtained for CDMSE.

#### 4.4.11. Other Measures

Other measures were also used in the data collection. Some of them were not used for data analysis while others were reported as supportive descriptive data.

Measures not used included the “comfort”, “importance” and “planfulness” scales. The “comfort” and “importance” scales were from the Career Decision Profile (CDP; Jones, 1989; Jones & Lohmann, 1998). The comfort scale is a two-item instrument on how far one is comfortable with making a career decision. The Importance scale is a three item measure on perceived importance of career



decision at the current moment. The planfulness scale has four items. It is developed by Reitzle, Vondracek and Sibereisen ( 1998) for measuring the extent one plans for his or her life and career. All three were not used in the subsequent analysis due to low reliability obtained for the scales from the sample of this study.

The frequency (FRE) and number of occupations (NOC) scales from the Career Exploration Survey (Stumpf, Colarelli and Hartman, 1983) were also included in the questionnaire. FRE has one item and requires respondents to indicate by selecting one from five choices to indicate the times of exploration a week within the past few months, ranging from “0” to “21 and over”. NOC also has one item only. It asks the respondents to select from five choices to indicate the number of occupations one is investigating currently, ranging from “0” to ‘over 5”. Results from the two scales are presented as descriptive data in the next chapter.

## 5. RESULTS

### 5.1. Descriptive Statistics of the Variables

The means, standard deviations and reliabilities for the cross-sectional sample are presented in the Table 5.1.1. For instance, the mean for decidedness (Variable 11 in the Table) is 7.19, which is above the mid-point of 6 on the scale with 10 as the maximum and 2 as the minimum. For easy comparison, a column of “Mean divided by Number of Items” was added. As all the scales were five-point, the new column of “Mean/ Number of Items” also had a possible maximum of 5 and possible minimum of 1, as well as a mid-point at 3.

Comparing the two motivational variables, I find that students scored above the mid-point of the scale of 27, relatively higher in IOAM than SOAM. The means of the three relational support variables all exceeded 3 on five-point scales. Scores of career support of family (SFAM) were slightly higher than those of career support of peers (SPEER) which were, in turn, higher than of career support of teachers (STEAM). For the career exploration variables, the mean of self exploration slightly exceeded the mid-point of the scale (3.02), while that of environment exploration was just below. Comparatively, the students scored higher in self exploration as compared to environment exploration (2.82). For the outcome variables, means of decidedness (3.60), career decision making self efficacy (3.25) and intention for career development in Mainland China (3.46) exceeded the mid-point while those of self clarity (1.95), amount of information (2.56) and decisiveness (2.95) were considerably below. The students perceived higher decidedness (DED), career decision making self efficacy (CDMSE), intention to develop career in China (IDC) and, in contrast, lower self clarity (SC), amount of information (AIF), and decisiveness. Self clarity had the lowest mean of 1.95 among outcome variables and the implications may be further explored.



**Table 5.1.1 Means, SD and Reliability of Scales (N = 256 to 271)**

Variable	Mean	SD	Mean/ SD	Highest Possible Score	Lowest Possible Score	Number of Items	Cronbach Alpha
1. Individual-Oriented Achievement Motivation*	33.43	3.74	3.71	45	9	9	.65
2. Social-Oriented Achievement Motivation*	27.01	5.62	3.00	45	9	9	.82
3. Career Support of Family	3.46	1.13	3.46	5	1	1	\
4. Career Support of Peers	3.41	.93	3.41	5	1	1	\
5. Career Support of Teachers	3.10	1.01	3.1	5	1	1	\
6. Self Exploration	15.10	3.32	3.02	25	5	5	.81
7. Environmental Exploration	16.92	4.63	2.82	30	6	6	.86
8A. Self Clarity	3.90	1.54	1.95	10	2	2	.77
8B. Self Clarity 1	6.02	2.12	2.01	15	3	3	.68
9. Amount of Information	7.69	2.36	2.56	15	3	3	.79
10. Decisiveness	8.86	2.39	2.95	15	3	3	.72
11. Decidedness	7.19	1.83	3.60	10	2	2	.76
12. Career Decision Making Self Efficacy	81.17	12.33	3.25	125	5	25	.91
13. Intention for Career Development in Mainland China	20.74	4.43	3.46	30	6	6	.83

\* A revised version different from the original scales (Hong & Tao, 2000) used. Details presented in Section 4.1.1.

As explained in the Method Chapter, a revised self clarity scale of two items, which showed higher reliability than the original 3-item scale, is used in this study as the primary measurement and indicator of self clarity and it will be called self clarity (SC). The original 3-item self clarity scale (Jones, 1989) will be called self clarity1 (SC1) and data related to SC1 will be presented additionally for comparison where appropriate.

From Table 5.1.2 below, 56.5 % of students were considering 1 to 2 occupations, and over 90% were investigating 1 to 4 occupations. Students tended to examine a few occupations only. This matches their relatively high mean score of 3.6 on the decidedness scale. In terms of frequency of information seeking, 57.2% sought information up to 5 times and 82% up to 10 times in a week. Over 11% sought information 11 to 15 times. This suggested that they sought occupational information rather frequently. It was perhaps due to the fact that they had easy access to various occupational information, especially web-based and electronic means.

However, frequency does not tell us about the process and depth with which they looked at occupational information. As discussed previously with local studies (Lau & Pang, 1995), students might have an instrumental and practical mindset and might focus on short-term opportunities rather than long term career planning and development. Table 5.1.2 also highlights the identity statuses of the university students. Over 50% were in the moratorium status, meaning that they were actively exploring their life goals and direction. Below 10% of them reported the identity achievement status.

On the whole, most students were not exactly clear about their long term life goals, as reflected from their reported identity statuses, but they were inclined to be decided in their career choices (3.6 on a five-point scale), and actively seeking vocational information selectively in a few occupations . However, establishment of life goals and career exploration should be closely inter-related. Career



**Table 5.1.2 Other Characteristics of the Cross-Sectional Sample**

Variables	Categories	N	%
<b>Number of Occupations Under Consideration</b>	0	9	3.32
	1-2	153	56.5
	3-4	93	34.3
	5	10	3.69
	Above 5	5	1.85
	Missing	1	0.37
	Total	271	100
<b>Frequency of Information Seeking</b>	5 or less	155	57.2
	6 to 10	68	25.1
	11 to 15	32	11.8
	16 to 20	11	4.06
	21 or over	3	1.11
	Missing	2	0.74
	Total	271	100
<b>Identity Status</b>	Diffusion	37	13.7
	Foreclosure	69	25.5
	Moratorium	140	51.7
	Achievement	25	9.2
	Total	271	100

development is more than job seeking, but involves the commitment into professional identity and lifestyle. An opportunistic approach to career exploration might not contribute very well to vocational identity and career commitment. While broad generalizations cannot be made at this stage, I shall keep these questions and concerns in mind as I look further at the relation between career exploration and identity development later.

Comparisons are made between the means obtained in this study with those from Stumpf's et al's (1983) study of a total of 223 undergraduate students. The classifications in the variable "number of occupations under consideration" (NOC) and "frequency of information seeking" (FRE) in Table 5.1.2 were obtained from the Career Exploration Survey (Stumpf et al, 1983). Stumpf et. al (1983) scored the NOC and FRE as continuous scales and provided the means of the two variables. In order to compare with their study, I have followed their scoring method to calculate FRE and NOC in this study. It appears that the means are lower than theirs, in self exploration (3.0 as compared to 3.4), environmental exploration (2.8 as compared to 3.1), amount of information (2.6 as compared to 3.1) and number of occupations (2.4 as compared to 3.8), but not for frequency of information seeking (1.6 as compared to 1.5). There are many confounding variables that might explain the differences, and a simplistic conclusion is not advisable here.

Basically, the confounding variables might be understood from historical, demographic and cultural considerations. First of all, Stumpf et al.'s study was conducted in 1983 and this study was completed in 2007. As explained earlier, employment and career development are much different in the 21<sup>st</sup> Century as compared to the 1980s. In his book titled "the World is Flat", Friedman (2005) highlighted a breakthrough in global connectivity with the emergence and popularity of the internet from the 1990s onwards. People all over the world can



put up or download information on the World Wide Web at low cost. Career exploration of students is influenced by this information revolution. On one hand, they are prompted to browse on the web for career or occupational information at any time convenient to them. On the other hand, they may be confused or turned off by the massive information of varied quality and relevance put up by people from different walks of life. Career guidance professionals are expected to possess and update the technological competencies required to guide students in the acquisition and use of occupational information on the web (e.g. Brown, 2003). In short, the internet will facilitate career exploration behaviour only if students can make good use of it. Very often, they have to be advised and guided by career advisors to locate information specific to their needs. If they find their initial web-based career exploration relevant, satisfying and interesting, further career exploration behaviour is likely to follow.

Taking a closer look at the demographic differences, I notice that the respondents of this study were participants in career seminars or work internships. The majority of them were second year students from the Business Faculty who expected to graduate one year later. Stumpf et al.'s sample was 185 business and liberal arts college students in their graduating year. Moreover, according to Vondracek et al. (1984), to understand career development, one must examine the context in which such development occurs. For instance, Silbereisen, Vondracek and Berg (1997) found that youth in former East Germany made their initial vocational preferences significantly earlier than youth of former West Germany. By the same token, to compare the levels of career exploration in different societies, the respective contextual factors that facilitate or hinder exploration should also be considered.

Out of the many societal differences between the United States and Hong Kong, the education system of the former appears to facilitate career exploration better. As discussed in Chapter 1, Leung (2002) found that Hong Kong has a more mechanistic education with strong emphasis academic results. Local students



decide their majors upon entry to university, very much influenced by public examination results and it is difficult to change it throughout their three years' university education. Given the high value the society puts on degrees, students tend to stay on and complete a university programme even if it does not fit their personal interests and career choices. In comparison, the students of the United States follow a more broad-based academic curriculum. Within their four years of university education, they can take courses from different disciplines before declaring their majors. Moreover, in higher education, more sophisticated interest tests and assessment tools (Leung, 2002), together with well-coordinated programme initiatives (Gore, 2002) are employed to enhance career development of students starting from the freshmen years. In short, given the above differences, it is reasonable to expect local students to engage in less exploration behaviour than their American counterparts. Hopefully, the situation might change with the current introduction of fundamental educational reforms in Hong Kong.

Table 5.1.3 presents the breakdown of number of occupations, frequency of information seeking, and identity status for the longitudinal sample. From the table, 52.53 % at Time 2 (as compared to 56.44% of this sample at Time 1) of students were considering 1 to 2 occupations, and over 89.9 % (as compared to 93 % at Time 1) were investigating 1 to 4 occupations. At both Time 1 and Time 2, students in this longitudinal sample were examining only a few occupations. In terms of frequency of information seeking, 49.52% of students (as compared to 57.43% at Time 1) sought information up to 5 times and 82.17% (as compared to 81.19% of this sample at Time 1) sought up to 10 times in a week. 15.84 % (as compared to 11.88% of the time 1 sample) sought information 11 to 15 times. As for identity statuses of the longitudinal sample, 18 cases reported identity achievement (as compared to 18 at Time 1) and 49 reported moratorium at Time 2 (as compared to 46 at Time 1), and there were three more cases in moratorium, two less diffusion and one less in foreclosure. Apparently, there were three more students in the status of moratorium and two less in diffusion and one less in foreclosure.



To recap the discussion on identity development, Erikson (1958) proposed the formation of clear and coherent self identity as the development task of adolescence. Marcia (1966; 1980) operationalized the themes of identity and commitment of Erikson's theory by specifying crisis as a period of role experiments and decision making in areas of occupation, religion, beliefs and political ideology while commitment is the personal investment one devotes to the areas. He expected those in diffusion and foreclosure status to experience crisis in their development. They will shift to moratorium status as they actively try out new roles, and reached identity achievement when they make commitments to the key life areas. Between Time 1 and Time 2, from a total of 101 students, about 60% reported different identity statuses at Time 1 and Time 2. In Table 5.1.4, the cross tabulation of Time 1 and Time 2 identity statuses is presented. There is a considerable number of respondents who changed to another status after their initial categorization into one of four statuses. There may be two points to note on this. First, identity status is measured by one self-reported item known as identity belief (Silbereisen, Vondracek & Berg, 1997). Although the item has been applied in German youth studies (Reitzle, Vondracek & Silbereisen, 1998; Schmitt-Rodermund & Vondracek, 1999) with proven validity related to career exploration, it is basically a simple self classification into one of the four identity statuses. So, it may also reflect that students' perceived identity statuses are liable to change in the late adolescent stage of university students. How far will such changes in identity status be different when more objective interviews and behavioural scales (e.g. Marcia, 1966; Bennion & Adams, 1986) are used? This seems an interesting question for future investigation. Secondly, as one tries out new roles in the crisis period, many psychological and social factors may affect his or her making commitments in key life areas. Key to identity achievement is the formation of a clear and coherent self identity (Erikson, 1968). Failing this, one may move back from the moratorium to the diffusion or foreclosure statuses. Therefore, adolescent development is an evolving process which can move either forward to or

**Table 5.1.3 Other Characteristics of the Longitudinal Sample**

Variables	Categories	N	N	%	%
		(Time 1)	(Time 2)	(Time 1)	(Time 2)
Number of Occupations	0	2	3	1.98	3.03
	1-2	57	52	56.44	52.53
	3-4	37	37	36.63	37.37
	5	3	5	2.97	5.05
	Above 5	2	2	1.98	2.02
	Total	101	99	100	100
Frequency of Information Seeking	Missing	0	2		
	5 or less	58	50	57.43	49.50
	6 to 10	24	33	23.76	32.67
	11 to 15	12	16	11.88	15.84
	16 to 20	6	2	5.94	1.98
	21 or over	1	0	0.99	0
Total	101	101	100	100	
Identity Status	Diffusion	9	7	8.91	6.93
	Foreclosure	28	27	27.72	26.73
	Moratorium	46	49	45.54	48.51
	Achievement	18	18	17.82	17.82
	Total	101	101	100	100

**Table 5.1.4 Cross Tabulation of Time 1 and Time 2 Identity Statuses**

Identity Status at Time 1	Identity Status at Time 2				Total
	Diffusion	Foreclosure	Moratorium	Achievement	
Diffusion	3	1	5	0	9
Foreclosure	0	10	13	5	28
Moratorium	3	10	24	9	46
Achievement	1	6	7	4	18
Total	7	27	49	18	101



backward from identity formation. This also explains why perceived identity appeared not to be stable between Time 1 and Time 2.

In Table 5.1.5, the means of variables of the longitudinal sample at Time 1 and Time 2 are listed. The means had increased from Time 1 to Time 2 for all variables, including self exploration (14.92 as compared to 16.79), environment exploration (17.18 as compared to 19.14), self clarity (3.98 as compared to 4.74), decisiveness (8.88 as compared to 9.88) decidedness (7.15 as compared to 7.43), amount of information (8.05 as compared to 8.22), CDMSE (82.17 as compared to 85.54) and intention to development career in Mainland China (20.14 as compared to 21.28). For easy comparison, two columns of “Mean 1 divided by Number of Items” and “Mean 2 divided by Number of Items” were included in the following table. As all the scales were five-point, the new column of “Mean/ Number of Items” also had a possible maximum of 5 and possible minimum of 1, as well as mid-point at 3.

By this simple calculation, the difference varies from 0.11 to 0.38 on a five point scale. Whether there are significant changes for each variable will be discussed in relation to the results of the hypotheses tests later.

## 5.2. Correlations between the Variables

From Table 5.2.1, significant and moderate correlations could be found among groups of measures. For the two motivational variables, IOAM and SOAM were correlated with each other ( $r = .13, p < .05$ ). The two process variables of self and environment exploration were also correlated with each other ( $r = .49, p < .01$ ). The three factors of career support were also all correlated, family support with peer support ( $r = .53, p < .01$ ) and teacher support ( $r = .23, p < .01$ ), as well as peer support with teacher support ( $r = .31, p < .01$ ). For the outcome variables, self clarity was correlated with decisiveness ( $r = .16, p < .01$ ) and amount of

**Table 5.1.5 Comparing Means of Variables over Time for the Longitudinal Sample**

Variables	No. of Items	Time 1 Mean (M1)	M1 / No. of Items	Time 2 Means (M2)	M2/ No. of Items	M1/ No.- M2/ No.
Self Exploration	5	14.92	2.98	16.79	3.36	0.38
Environmental Exploration	6	17.18	2.86	19.14	3.19	0.33
Self Clarity	2	3.98	1.99	4.74	2.37	0.38
Self Clarity 1	3	6.12	2.04	6.93	2.31	0.27
Amount of Information	3	8.05	2.68	8.82	2.94	0.26
Decisiveness	3	8.88	2.96	9.88	3.29	0.33
Decidedness	2	7.15	3.58	7.43	3.72	0.14
CDMSE	25	82.71	3.31	85.54	3.42	0.11
Intention for Career Development in Mainland China	6	20.41	3.4	21.28	3.55	0.15

(N ranges from 89 to 100)

Key:

CDMSE: Career Decision Making Self Efficacy



information ( $r = .17, p < .01$ ). It suggested that higher self clarity is associated with higher decisiveness and amount of information. Decisiveness was associated with amount of information ( $r = .25, p < .01$ ), decidedness ( $r = .22, p < .01$ ), CDMSE ( $r = .33, p < .01$ ) and IDC ( $r = .17, p < .01$ ). Decidedness, in turn, was found to be correlated with decisiveness ( $r = .22, p < .01$ ), CDMSE ( $r = .21, p < .01$ ) and IDC ( $r = .18, p < .01$ ). Amount of information was found to be correlated with self clarity ( $r = .17, p < .01$ ), decisiveness ( $r = .25, p < .01$ ) and CDMSE ( $r = .33, p < .01$ ).

The process variables were found to be associated with both antecedent and outcome variables. Environment exploration was correlated with social-oriented achievement motivation (SOAM) ( $r = .13, p < .05$ ), career support of peers ( $r = .14, p < .05$ ), career support of teachers ( $r = .25, p < .01$ ) as well as outcomes of self clarity ( $r = .16, p < .05$ ), decisiveness ( $r = .16, p < .05$ ), amount of information ( $r = .47, p < .01$ ) and CDMSE ( $r = .38, p < .01$ ). Self exploration, in turn, was associated with IOAM ( $r = .17, p < .01$ ), teacher support ( $r = .17, p < .01$ ) and outcomes of amount of information ( $r = .32, p < .01$ ) and CDMSE ( $r = .40, p < .01$ ). Moreover, antecedent factors were also found to be correlated with outcome variables. IOAM is correlated with the outcomes of decisiveness ( $r = .18, p < .01$ ), decidedness ( $r = .21, p < .01$ ), CDMSE ( $r = .19, p < .01$ ), intention to develop career in Mainland China ( $r = .19, p < .01$ ), as well as career support of teacher ( $r = .15, p < .05$ ). SOAM, in turn, was correlated with career support of family ( $r = .17, p < .01$ ).

On the whole, significant and moderate correlations among variables were found within groups and between of groups of antecedent, process and outcome variables. As the associations were not overwhelmingly strong, it is very likely that most variables are distinct and do not overlap unduly with each other.

**Table 5.2.1 Correlations of the Variables of Antecedents, Process and Outcomes of Career Exploration at Time 1**

Scale	1	2	3	4	5	6	7	8A	8B	9	10	11	12	13
1. IOAM	1.00													
2. SOAM	.13*	1.00												
3. Career Support of Family	.01	.17**	1.00											
4. Career Support of Peers	.07	.10	.53**	1.00										
5. Career Support of Teachers	.15*	.09	.23**	.31**	1.00									
6. Self Exploration	.17**	.35	.06	.09	.17**	1.00								
7. Environmental Exploration	.09	.13*	.01	.14*	.25**	.49**	1.00							
8A. Self Clarity	-.11	.04	-.06	-.11	-.00	.08	.16**	1.00						
8B. Self Clarity 1	-.13*	.05	-.07	-.12*	-.02	.00	.09	.9**	1.00					
9. Amount of Information	-.07	.04	.10	.23**	.37**	.32**	.47**	.17**	.15*	1.00				
10. Decisiveness	.18**	-.09	.01	.03	.10	.10	.16*	.16**	.14*	.25**	1.00			
11. Decidedness	.21**	.00	.20**	.23**	.14*	.11	.12	-.06	-.09	.10	.22**	1.00		
12. Career Decision Making Self Efficacy	.19**	.03	.07	.06	.24**	.40**	.38**	-.00	-.08	.33**	.33**	.21**	1.00	
13. Intention for Career Development in Mainland China	.19**	.07	.07	.17**	.08	.09	.04	-.09	-.10	.04	.17**	.18**	.17**	1.00

(N ranges from 249 to 270) \* p<.05\* \*\*p<.01 (2-tailed)

Key: IOAM: Individual-Oriented Achievement Motivation SOAM: Social-Oriented Achievement Motivation



In Table 5.2.2, the correlations of variables of antecedents, process and outcomes of career exploration are presented. At Time 2, I have a smaller sample of 101 but some significant correlations were still found. For the process variables, self exploration was correlated with environment exploration ( $r = .57, p < .01$ ). For relational support variables, family support was correlated with peer support ( $r = .50, p < .01$ ) and teacher support ( $r = .24, p < .01$ ). For the outcome variables, self clarity was correlated with decisiveness ( $r = .33, p < .01$ ) and intention to develop career in Mainland China ( $r = -.30, p < .01$ ). In other words, those with higher self clarity tended to be higher in career decision making but lower in their intention to develop their career in Mainland. Self clarity here means clear about interests and abilities in relation to occupations. Understandably, higher self clarity was associated with decisiveness. It is also not surprising that those with lower self clarity tended have higher intention to develop career in Mainland China. Students with lower clarity might think more about different options, including career development in Mainland China. However, it should also be noted that the negative correlation between self clarity and intention to develop in Mainland China was not found in the larger cross-sectional sample. Also, decisiveness was associated with amount of information ( $r = .23, p < .05$ ) and self clarity ( $r = .33, p < .01$ ). Decidedness, in turn, was correlated with CDMSE ( $r = .32, p < .01$ ). Amount of information was correlated with Decisiveness ( $r = .23, p < .01$ ), CDMSE ( $r = .35, p < .01$ ). It makes sense that the decision making variables were associated with each other and also with amount of information. The process variables were found to be associated with both antecedent and outcome variables. Environment exploration was correlated with career support of family ( $r = .33, p < .01$ ), teacher support ( $r = .29, p < .01$ ) as well as outcomes of amount of information ( $r = .31, p < .01$ ) and CDMSE ( $r = .41, p < .01$ ). Self exploration, in turn, was associated with career support of family ( $r = .20, p < .05$ ), career support of teachers ( $r = .22, p < .05$ ) and the outcomes of amount of information ( $r = .26, p < .01$ ) and CDMSE ( $r = .42, p < .01$ ).



Interestingly, social-oriented achievement motivation was negatively correlated with self clarity at Time 2 ( $r = -.22, p < .05$ ). In other words, the more one tends to achieve for meet other's expectations, the less likely that he or she can clearly fit own attributes to appropriate occupations. As appeared at Time 1, there were correlations between relational support and outcomes factors. Career support of teachers was correlated with self clarity ( $r = .26, p < .05$ ), amount of information ( $r = .22, p < .01$ ). In a smaller sample at Time 2, the respective correlation effects of career support of family and career support of peers with outcome variables were not found as in the larger sample in Time 1. Career support of teachers, in comparison, still showed such correlations.

In short, correlations were still found in different groups of relational support, process and outcome variables, but not for the group of motivational factors. As before, process variables were found to be associated with antecedent and outcome variables. From the evidence of correlations at both Time 1 and Time 2, I move on to test the specific relations among variables in the hypotheses.

Both self clarity and self clarity 1 were correlated with some variables in this study. At Time 1, self clarity was correlated with decisiveness ( $r = .16, p < .01$ ) and amount of information ( $r = .17, p < .01$ ), while self clarity 1 also with decisiveness ( $r = .16, p < .01$ ) and amount of information ( $r = .15, p < .05$ ). In Time 2, self clarity was correlated with decisiveness ( $r = .33, p < .01$ ), intention to develop career in Mainland China ( $r = -.30, p < .01$ ) and career support of teachers ( $r = .26, p < .01$ ). Self clarity 1, in turn, also correlated with decisiveness ( $r = .31, p < .05$ ), intention to develop career in Mainland China ( $r = -.26, p < .01$ ) and career support of teachers ( $r = .28, p < .01$ ). It appeared that self clarity and self clarity 1 correlated with the other variable in similar ways, although self clarity had higher reliability. However, there is also a difference in correlation. In Time 1, SC1 ( $r = -.13, p < .05$ ) was negatively correlated with IOAM, which means that those with higher self clarity tended to be lower in self-oriented achievement motivation.



**Table 5.2.2 Correlations of the Variables of Antecedents, Process and Outcomes of Career Exploration at Time 2**

Scale	1	2	3	4	5	6	7	8A	8B	9	10	11	12	13
1. IOAM	1.00													
2. SOAM	.95	1.00												
3. Career Support of Family	.03	.13	1.00											
4. Career Support of Peers	.11	.01	.50**	1.00										
5. Career Support of Teachers	-.00	-.04	.24**	.19	1.00									
6. Self Exploration	-.05	.18	.20*	.01	.22*	1.00								
7. Environmental Exploration	.05	.21*	.33**	.20	.29**	.57**	1.00							
8A. Self Clarity	.02	-.22*	.13	.13	.26*	-.19	-.14	1.00						
8B. Self Clarity 1	.04	-.16	.06	.14	.28**	-.16	.14	.91**	1.00					
9. Amount of Information	.06	.15	.01	.04	.22**	.26**	.31**	.17	.20	1.00				
10. Decisiveness	.16	-.21*	.10	.12	.01	-.02	-.07	.33**	.31**	.23*	1.00			
11. Decidedness	.13	.14	.08	.06	.16	.20	.19	-.13	-.18	.11	.01	1.00		
12. Career Decision Making Self Efficacy	.11	.10	.13	.18	.19	.42**	.41**	.16	-.13	.35**	.18	.32**	1.00	
13. Intention for Career Development in Mainland China	-.12	-.05	.08	.19	-.01	.16	.16	-.30**	-.26**	.06	.12	.15	.17	1.00

(N ranges from 97 to 100) \* p<.05\* \*\*p<.01 (2-tailed)

Key: IOAM: Individual-Oriented Achievement Motivation SOAM: Social-Oriented Achievement Motivation

This seems a bit difficult to understand. An item of the SC1 scale, which was deleted in SC, incorporated the idea of matching oneself into occupation by personality. By such matching, one's self motivation to achieve might be somehow associated negatively. Of course, this plausible assumption is still to be further tested. When the revised self clarity scale was applied, there was no such significant negative correlation. In sum, given the high correlation between self clarity and self clarity 1 ( $r = .91, p < .01$ ) and their correlations with other variables, they appear to operate similarly. Therefore, I shall keep using self clarity in the analyses in this study as the primary measurement of self clarity, while results of self clarity 1 will also be provided in the tables of correlations and multiple regressions.

### 5.3. Relations between Antecedents and Process Variables

Relationships between antecedent and process variables will be discussed with references to the above correlations in Table 5.2.1 and 5.2.2, and regression models in Table 5.3.1 and 5.3.2. In Table 5.3.1, results of two hierarchical multiple regressions with self and environment exploration at Time 1 as dependent variables respectively are presented.

In the hierarchical multiple regression models, gender, year of study, faculty of study and activity nature were entered as the first block. Activity nature here referred to whether the activity was organized by the Career Centre (CC) or the Faculty of Business (FB) of the university. The activities of the Career Centre were open to all students while the FB internship was organized for year 2 students of the Faculty. IOAM and SOAM were entered together as the second block. Career support of family, career support of peers and career support of teachers were entered together as the third block.



The first block was designed to control the main differences in the sample by the categorical factors of gender and other background information. For gender, “female” was coded as “1” and “male” as “0”. For year of study, “year two” was coded as “1” and “other years of study” as “0”. For Faculty of study, “Faculty of Business” was coded as “1” and “other faculties and schools” as “0”. For activity nature, “CC activity” coded as “1” and “FB” activity” as “0”. This coding was adopted for the categorical factors in all regressions for the cross-sectional sample at Time 1. The second block was designed to control the achievement motivation, which was an inherent human need or motive, presumably more long-lasting than social relationships and career development outcomes. The third block of relational support might be affected by life events and situational factors. However, one’s relationships with parents, teachers and peers tend to be the dominant relationships in the late adolescent stage, and are likely to be more stable than other social relationships. So the block was entered in the third place. In this third block, I seek to examine the effects of relational support as a contextual factor of career exploration. In this way, the variance of career exploration accounted by different blocks of variables could be controlled for and examined respectively. The hierarchical models in Table 5.3.1 accounted respectively for 9.6% of the variance in self exploration and 17.1% for environment exploration.

In Table 5.3.2, results of two hierarchical multiple regressions with self and environment exploration at Time 2 as dependent variables respectively are presented. In the hierarchical multiple regressions, gender and activity nature were entered as the first block. In a smaller sample, it is not appropriate to include all controlling factors. Therefore, only gender and activity nature were entered as background factors. The activities of the Career Centre were open to all students while the FB internship was organized for year 2 students of the Faculty. Activity nature was selected because it captured the differences by Faculty, Year of Study and activity organizer. The coding of the categorical factors was as follows. For gender, “female” was coded as “1” and “male” as “0”. For activity nature, “CC



activity” coded as “1” and “FB” activity” as “0”. This coding was adopted for all regressions for the longitudinal sample.

IOAM and SOAM were entered together as the second block. Career support of family, career support of peers and career support of teachers were entered together as the third block, and self exploration and environment exploration at Time 1 were entered together as the fourth block. The hierarchical models explained 27 % of the variance of self exploration and 36% of environment exploration. In the regression, the sequence of entering the first three blocks are same as the regressions for career exploration at Time 1 presented in Table 5.3.1.

The first block was designed to control for the main differences in the sample by the categorical factors of gender and other background information. The second block was designed to control for the achievement motivation, which was an inherent, psychological factor of human motive, presumably more long-lasting than social relationships and career development outcomes. The third block of relational support might be affected by life events and situational factors.

However, one’s relationships with parents, teachers and peers tend to be the dominant relationships in the late adolescent stage, and are likely to be more stable than other social relationships. So this block was entered in the third place. In this third block, I seek to examine the effects of relational support as a contextual factor of career exploration. In this way, the variance of career exploration accounted by different blocks of variables could be controlled for and examined respectively. Moreover, career exploration at Time 1 was entered in the fourth block to understand the effects on prior exploration on subsequent exploration when other relevant factors were controlled for. This will facilitate the understanding on the evolution of the career exploration process over time.

Drawing from relevant statistics of correlations and regression analyses explained earlier, I shall move on to discuss each of the hypotheses as follows. Hypothesis 1A states that individual-oriented achievement motivation (IOAM) is positively



correlated with both self and environment exploration. From Table 5.2.1, IOAM is found correlated with self exploration ( $r = .17, p < .05$ ) but not correlated with environment exploration at Time 1. At Time 2, in a smaller sample, no correlation was found with either IOAM or SOAM, as indicated in Table 5.2.2. As the correlation effect was significant for self exploration at Time 1 only, the hypothesis was not supported. Hypothesis 1B states that individual-oriented achievement motivation (IOAM) explains significant variance in both self and environment exploration after other relevant variables are accounted for. From Table 5.3.1, I find motivational factors significantly accounted for 3% of the variance of self exploration at Time 1 after the first block of background variables was controlled. The partial regression coefficient was statistically significant for IOAM ( $beta = .14, p < .05$ ). However, motivational factors did not explain the variance of environment exploration at Time 1. Moreover, from Table 5.3.2, motivational factors did not account for the variance of self exploration and environment exploration at Time 2 after the first block of background variables was controlled. IOAM was found significantly related to self exploration at Time 1 only. The limited and inconsistent support appears inadequate to prove the hypothesis. IOAM does not shed much light in explaining the variance in career exploration. To understand more about the variance in career exploration, I move on to the relational variables.

Hypothesis 2A states that social-oriented achievement motivation (SOAM) is positively correlated with environment exploration. From Table 5.2.1, SOAM is found correlated with environment exploration at Time 1 ( $r = .13, p < .05$ ). From Table 5.2.2, SOAM is found correlated with environment exploration at Time 2 ( $r = .21, p < .05$ ). The hypothesis is supported. As a correlation between social-oriented achievement and career exploration is clearly established, I move on to examine the relationship by more stringent regressions.

**Table 5.3.1 Hierarchical Multiple Regressions of Career Exploration at Time 1**

	Self Exploration (N=248)		Environment Exploration (N= 246)			
	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta
Block 1	.027	.027		.073	.073**	
Gender			-.05			-.06
Year of Study			.01			-.09
Faculty			-.13			.00
Activity Nature			-.13			-.25**
Block 2	.058	.030*		.084	.011	
Individual-Oriented Achievement Motivation			.14*			.04
Social-Oriented Achievement Motivation			-.02			.03
Block 3	.096	.038*		.171	.087**	
Career support of Family			.00			-.12
Career Support of Peers			.08			.14
Career Support of Teachers			.16*			.26**

\* p<.05    \*\*p<.01    (2-tailed)



**Table 5.3.2 Hierarchical Multiple Regressions of Career Exploration at Time 2**

	Self Exploration-Time 2		Environment Exploration-Time 2	
	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>
	N= 92		N= 92	
	R <sup>2</sup>	ΔR <sup>2</sup>	beta	ΔR <sup>2</sup>
Block 1	.051	.051		.104**
Gender			-.06	
Activity Nature			-.13	
Block 2	.078	.027		.035
Individual-Oriented Achievement Motivation			-.04	
Social-Oriented Achievement Motivation			.15	
Block 3	.160	.082*		.132**
Career support of Family			.14	
Career Support of Peers			-.19	
Career Support of Teachers			.15	
Block 4	.267	.107**		.087**
Self Exploration – Time 1			.33**	
Environment Exploration Time 1			.05	

\* p<.05    \*\*p<.01 (2-tailed)

Hypothesis 2B states that social-oriented achievement motivation (SOAM) explains significant variance in environment exploration after other relevant variables are accounted for. In Table 5.3.1, the second block of motivational factors did not further explain significantly the variance in environment exploration in Time 1 after the first block of demographic variables was controlled. Likewise, in Table 5.3.2, the second block of motivational factors did not further explain significantly the variance in environment exploration in Time 2 after the first block was controlled. Hypothesis 2B was not supported. In other words, while SOAM is correlated with environment exploration, it is proved not to be a significant factor in environment exploration. A possible explanation is a third factor may have accounted for more variance of both SOAM and environment exploration, for example supportive relationship or other contextual variables.

So far we have seen that motivational factors in the research framework did not account for much variance of career exploration. Relational factors, in turn, will be examined. Hypothesis 3A states that career exploration is more strongly correlated with career support of teachers than with career support of peers. From Table 5.2.1, self exploration at Time 1 is found to be significantly correlated with career support of teachers ( $r = .17, p < .01$ ), but not with career support of peers. Environment exploration is, in turn, correlated with career support of teachers ( $r = .25, p < .01$ ) and career support of peers ( $r = .14, p < .05$ ). At Time 2, as indicated by Table 5.2.2, self exploration is correlated with career support of teachers ( $r = .22, p < .05$ ) and not correlated with career support of peers. Environment exploration is also correlated with career support of teachers ( $r = .29, p < .01$ ) and not correlated with career support of peers. However, the significance and relative higher correlations of career support of teacher do not necessarily support the hypothesis. To test if it is more strongly correlated with career exploration as compared to career support of peers, further testing will be conducted.



Cohen and Cohen (1983) proposed a formula to test the significance of the difference between the “ $r$ ”s. Their formula is:

$$t = \frac{(r_{XY} - r_{VY})\sqrt{(n-1)(1+r_{XV})}}{\sqrt{2\left(\frac{n-1}{n-3}\right)|R| + \bar{r}^2(1-r_{XV})^3}}$$

$$\bar{r} = \frac{r_{XY} + r_{VY}}{2}$$

$$|R| = 1 - r_{XY}^2 - r_{VY}^2 - r_{XV}^2 + 2r_{XY}r_{VY}r_{XV}$$

To test if career support of teachers correlates more with self exploration than career support of peers, I substitute the correlations of the variables into the formulas. Let correlation between career support of teachers and self exploration at Time 1 be  $r_{XY}$ , correlation between career support of peers and self exploration at Time 1 be  $r_{VY}$ , and correlations between teacher and peer career support be  $r_{XV}$ . Then the values of  $\bar{r}$ ,  $|R|$  and  $t$  can be worked out accordingly. As calculation showed that  $t = 1.026$  (df = 247), the difference between correlations is not significant. (Detailed calculation can be found in Appendix 9 of this study.)

Likewise, to test if career support of teachers correlates more with environment exploration at Time 1 than career support of peers, I substitute the correlations of the variables into the formulas. Let correlation between career support of teachers and environment exploration at Time 1 be  $r_{XY}$ , correlation between career support of peers and self exploration be  $r_{VY}$ , and correlations between teacher and peer career support be  $r_{XV}$ . Then the values of  $\bar{r}$ ,  $|R|$  and  $t$  can be worked out. As calculation showed that  $t = 1.483$  (df = 247), the difference between correlations is again not significant.

Similarly, to test if career support of teachers correlates more with self exploration at Time 2 than career support of peers, I substitute the correlations of the variables into the formulas. Let correlation between career support of teachers and environment exploration be  $r_{XY}$ , correlation between career support of peers and environment exploration be  $r_{YX}$ , and correlations between teacher and peer career support be  $r_{XV}$ . Then the values of  $\bar{r}$ ,  $|R|$  and  $t$  can be worked out. As calculation showed that  $t = 1.646$  ( $df = 95$ ), the difference between correlations is not significant. Also, a test was conducted to compare the correlations of the two variables in their correlations with environment exploration at Time 2. As calculation showed that  $t = 0.798$  ( $df = 95$ ), the difference between correlations are not significant. Summing up, the hypothesis was not supported by the results of the T-tests. (Detailed calculation of the above tests of differences is attached in Appendix 9.)

In the research framework, both career support of teachers and career support of peers are conceptualized as antecedents of career exploration. Hypothesis 3B states career support of teachers explains more variance in career exploration than career support of peers does after other relevant variables are accounted for. Multiple regressions for career exploration at Time 1 and Time 2 respectively are presented in Tables 5.3.1 and 5.3.2. The rationale for the sequence of entering different blocks of factors has just been explained. Briefly, the variance in career exploration accounted by different blocks of variables could be controlled for and examined respectively. In the hierarchical models presented in Table 5.3.1, the third block of relational support additionally accounted for 3.8% of the variance of self exploration and 8.7% of that of environment exploration at Time 1 after blocks of background and motivational factors were controlled.

In the block of relational support factors, the partial regression coefficients for teacher support were statistically significant for the dependent variable of self exploration at Time 1 ( $beta = .16, p < .05$ ) and environment exploration at Time 1



( $\beta = .26, p < .01$ ). The partial regression coefficients for peer support were not significant in either case. In the hierarchical models presented in Table 5.3.2, the third block of relational support additionally accounted for 8.2% of the variance of self exploration, and 13.2% of the variance of environment exploration at Time 2 after blocks of background and motivational factors were controlled. In the block of relational support factors, the partial regression coefficients for both career support of teachers and career support of peers were not statistically significant for either self or environment exploration at Time 2. However, the significance and relative higher beta value of career support of teacher do not necessarily support the hypothesis. To test if it explains significantly more variance of career exploration as compared to career support of peers, further testing will be conducted.

Cohen and Cohen (1983) presented a method to test the difference between partial regression coefficients in the same sample by hand calculation. From a correlation matrix of the related variables, its inverse can be work out. Using the inverse matrix, the difference between partial regression coefficients in the same sample can be tested by T-Test using the following formula.

$$t = \frac{\beta_i - \beta_j}{SE_{\beta_i - \beta_j}}$$

$$SE_{\beta_i - \beta_j} = \sqrt{\frac{1 - R_Y^2}{n - k - 1} (r^{ii} + r^{jj} + 2r^{ij})}$$

To test the difference between partial regression coefficients of relational independent variables for the dependent variable of Self Exploration at Time 1, let  $X_1 =$  Career Support of Teacher,  $X_2 =$  Career Support of Peers  $X_3 =$  Career Support of Parents and  $Y =$  Self Exploration at Time 1 ( $n = 268$ ). With the correlations matrix of the four variables, the inverse matrix is worked out. Working through the formula, I found  $t$  equalled to 0.96 (for  $df = 264$ ) and the



differences is not significant. (Detailed hand calculation attached in Appendix 10). The exercise was repeated for the same X1, X2 and X3 and with environment exploration at Time 1 as Y, and the  $t$  obtained was 1.13902 (for  $df = 264$ ) and the difference is not significant. Then, the same calculation process was done for career exploration at Time 2. With environment exploration at Time 2 as Y, the  $t$  obtained was 1.46 (for  $df = 94$ ), Again, the difference between the partial regression coefficients was not significant. However, with self exploration at Time 2 as Y, the  $t$  obtained was 2.028 (for  $df = 94$ ,  $p < .05$ ), which is significant (Detailed hand calculations of the testing shown in Appendix 10). As all but one T-Tests are not significant, there is not enough evidence to say career support of teachers explained significantly more variance in career exploration than other form of career support do.

It should be noted that the difference between partial regression coefficients of the relational independent variables is significant only for the dependent variable of Self Exploration at Time 2. Generally, since the respondents were in a career intervention programme, their career exploration prior to Time 2 might be influenced by intervention in addition to relational support. In Table 5.3.2 it can be seen that the block of relational support accounted for 8.2 % of self exploration at Time 2 after demographic and motivational factors were controlled. It is interesting to note that in this block, the partial regression coefficient for peer support was negative (-.19) and that for teacher support positive (.15) though both were not significant as assessed by their respective T-values. Nevertheless, after substituting these beta values into Cohen and Cohen's (1983) formula, a significant difference between teacher and peer support in accounting for the variance of self exploration at Time 2 was found.

To understand this difference, I shall first draw on the correlations between self exploration and peer support. Peer support is expected to be associated positively with career exploration. This had been proved by prior studies of Blustein and his colleagues (e.g. Blustein, 1997; Flum, 2001). However, peer support was not



significantly correlated with self exploration at both Time 1 and Time 2 in this study. It was correlated with environment exploration at Time 1. Career support of teachers, in turn, was found to be significantly correlated with self and environment exploration at both Time 1 and Time 2. From the above correlations, it is very likely that peer career support in Hong Kong context was geared towards environment rather than self exploration. As pointed out by Lau (1995), students were concerned with practical and immediate occupational information rather than in-depth self discovery in seeking career guidance, and it is very likely that they will take a similar approach when offering career support to each other. Therefore, the more peer career support, the more a student will engage in environment exploration. A positive relation between peer support and self exploration was not established. If a student is very much influenced by peer support, he or she may focus most attention and energy to external occupational information and disregard self exploration increasingly. In this study, students had participated in either a work internship or career seminars prior to Time 2. With the career support, facilitation and guidance from teachers who were resourceful and well-experienced, these students could integrate and relate their learning experience to self understanding. Peer influence, in turn, might focus the students on immediate and tangible concerns rather than self exploration. That might explain the significant differences between teacher and peer support in accounting for the differences of self exploration at Time 2. Of course, though this proposition is very plausible, it is still to be further tested in future studies, especially using qualitative designs to capture the subjective experience and perception of students.

In sum, from the Time 1 data, teacher support obviously had a higher face value of beta as compared to peer support. The results of hand calculation afterwards, however, did not establish the significant differences. While relational support in the research framework is established as an antecedent of career exploration with career support of teachers demonstrated relatively higher beta value than career



support of peers, significant difference cannot be consistently established to support the hypothesis.

#### 5.4. Time Effects on the Antecedent and Process Variables

Before further examining the relationship between process and outcome variables, I shall examine the time effect on process and outcome variables. In other words, values of variables as measured in Time 2 will be significantly different from when they are measured at Time 1. The changes may be caused by interventions between Time 1 and Time 2. Or, it may be due to maturation effects or the natural course of growth and development. For comparison of means of the same variables at Time 1 and Time 2 in the longitudinal sample, results of Paired T Tests are presented in Table 5.4.1.

In addition to motivational and relational variables, prior career exploration was also proposed as a factor of subsequent career exploration. Hypothesis 5A states that career exploration measured at an earlier time is positively correlated with career exploration measured at a subsequent time. From Table 5.4.1, self exploration at Time 1 is correlated with self exploration at Time 2 ( $r = .39, p < .01$ ), while environment exploration at Time 1 is correlated with environment exploration at Time 2 ( $r = .46, p < .01$ ). The hypothesis is supported. Having established the correlation between prior and subsequent exploration, I move on to discuss prior exploration as a factor of exploration.

Hypothesis 5B states that career exploration measured at an earlier time explains significant variance in career exploration measured at a subsequent time after other relevant variables are accounted for. In the hierarchical models presented in Table 5.3.2, the fourth block of prior career exploration at Time 1 additionally



**Table 5.4.1 Comparing Means of Variables over Time for the Longitudinal Sample**

Variables	Time1		Time 2		Time2	T-value	Correlations
	M	SD	M	SD			
Self Exploration	14.92	3.67	16.79	2.97	2.97	-4.99**	.39**
Environmental Exploration	17.18	4.43	19.14	4.36	4.36	-4.27**	.46**
Self Clarity	3.98	1.55	4.74	1.68	1.68	-3.66**	.12
Self Clarity 1	6.12	2.13	6.93	2.08	2.08	-2.83**	.18
Amount of Information	8.05	2.25	8.82	2.01	2.01	-3.01**	.31**
Decisiveness	8.88	2.27	9.88	2.29	2.29	-2.70**	.53**
Decidedness	7.15	1.93	7.43	1.78	1.78	-1.41	.43**
Career Decision Making Self Efficacy	82.71	13.18	85.54	11.81	11.81	-2.09*	.46**
Intention for Career Development in Mainland China	20.41	4.33	21.28	3.85	3.85	-1.77	.39**

(N ranges from 89 to 100)

$p < .05^*$   $p < .01^{**}$  (2-tailed)

accounted for 10.7% of the variance of self exploration and 8.7% of that of environment exploration at Time 2 after blocks of background and motivational factors and relational support were controlled for. In the block of prior exploration, the partial regression coefficient was statistically significant ( $\beta = .33, p < .01$ ) for self exploration at Time 1 in the model with self exploration at Time 2 as dependent variable.

Similarly, the partial regression coefficient for environment exploration at Time 1 was statistically significant ( $\beta = .24, p < .01$ ) in the fourth block of the model with environmental exploration at Time 2 as dependent variable. The hypothesis was supported.

Hypothesis 4 states that career exploration as measured at Time 2 is significantly higher than career exploration measured at time 1. From Table 5.4.1 which compares the means of variables over time for the longitudinal sample, means of self exploration at Time 1 and Time 2 are respectively 14.92 and 16.79 with significant difference ( $t = -4.99, p < .01$ ). Similarly, means of environment exploration at Time 1 and Time 2 are respectively 17.18 and 19.14 with significant difference ( $t = -4.27, p < .01$ ). The hypothesis is supported. Then I turn to the outcome variables of self clarity, amount of information and career decision. Hypothesis 7 states that self clarity and amount of information measured at time 2 are significantly higher than the same variables measured at time 1. From Table 5.4.1, means of self clarity at Time 1 and Time 2 respectively are 3.98 and 4.74 with a significant difference ( $t = -3.66, p < .01$ ). Means of amount of information at Time 1 and Time 2 are respectively 8.05 and 8.82 with significant difference ( $t = -3.01, p < .01$ ). The hypothesis was supported. In sum, from the Paired T-Tests, there were significant improvements in the process variables of career exploration and outcome variables of self clarity and amount of information. Over time, significant changes were found for the process and outcome variables of career exploration. However, at this point, the changes could not be attributed to the intervention of internship or career seminars in a simplistic way. There were the



maturation effects, prior level of the variables and other intervening variables to be controlled for. In later hierarchical multiple regression analyses, the relations among variables will be examined with related factors controlled for.

As discussed in the Hypotheses chapter, there is no consensus on the maturation effect in career decidedness and decidedness. Moreover, intention to develop career in Mainland China (IDC) is a new measurement designed for this study. Whether these factors will be affected by time of measurement or maturation effect cannot be ascertained at this stage. Therefore, Research Question 1 was proposed for examining the three variables in this light. Research Question 1 is on whether decisiveness, decidedness, CDMSE and intention to develop career in Mainland China as measured at time 2 is significantly higher than the same variables measured at time 1. From Table 5.4.1 which compares the means of variables over time for the longitudinal sample, means of decisiveness at Time 1 and Time 2 respectively are 8.88 and 9.88 with a significant difference ( $t = -2.70$ ,  $p < .01$ ). Means of CDMSE at Time 1 and Time 2 respectively are 82.71 and 85.54 with a significant difference ( $t = -2.09$ ,  $p < .05$ ). Mean of decidedness at Time 1 and Time 2 are respectively 7.15 and 7.43 with no significant difference found from Paired T-Test. Decisiveness, decidedness and CDMSE are all established measurements and indicators of career decision making. In this study, it is found that decisiveness and CDMSE improve over time but not decidedness. In other words, the maturation seemed to have no impact on career decidedness. The implications of this in both theory building and practice will be discussed in the next chapter. Moreover, means of intention to develop career in Mainland China (IDC) at Time 1 and Time 2 are respectively 20.41 and 21.28 with no significant difference found from Paired-Sample T-Test. Time difference is not found to have changed intention to develop career in Mainland China. Perhaps, the awareness of the students about career development in Mainland China needed to be heightened before their IDC would change. This could be achieved by the means of new learning, socialization or exposures about the opportunities and realities of career development in Mainland China.



As explained earlier, a revised Self Clarity Scale of two items, which showed higher reliability than the original 3-item scale, is adopted in this study which will be called just self clarity (SC). The original 3-item Self Clarity Scale (Jones, 1998) will be called self clarity1 (SC1). From the Paired T-Tests, significant of difference was indicated for both SC ( $t = -3.66, p < .01$ ) and SC1 ( $t = -2.83, p < .01$ ) between Time 1 and Time 2. SC and SC1 seem to operate similarly.

### 5.5. Relations between Process and Outcome Variables

Relationships between process and outcome variables will be discussed with references to the above correlations and regression models in Table 5.5.1 and 5.5.2. In Table 5.5.1 below, results of six hierarchical multiple regressions of the career outcomes at Time 1 are presented. The first block was designed to control the main differences in the sample by the categorical factors of gender and other background information. For gender, “female” was coded as “1” and “male” as “0”. For year of study, “year two” was coded as “1” and “other years of study” as “0”. For Faculty of study, “Faculty of Business” was coded as “1” and “other faculties and schools” as “0”. For activity nature, “CC activity” coded as “1” and “FB” activity” as “0”. This coding was adopted for the categorical factors in all regressions for the cross-sectional sample at Time 1. The second block was designed to control the achievement motivation, which was an inherent human need or motive, presumably more long-lasting than social relationships and career development outcomes. The third block of relational support may be affected by life events and situational factors, though one’s relationships with parents, teachers and peers tends to be the more dominant and stable than other relationships in the late adolescent stage. So it is entered in the third place. In this third block, I seek to examine the effects of relational support as a contextual factor of career exploration. To account for the outcome variables, a fourth block of career exploration at Time 1 was added to understand how much additional



variance career exploration would explain after the three blocks of factors were controlled. In the regression, the sequence of entering the first three blocks of background, motivational and relational factors is the same as the regression for career exploration at Time 1 presented in Table 5.3.1. In this way, the impact of different blocks of factors can be controlled for and analyzed. The four-step hierarchical model explained variance for the dependents of self clarity (7%), decisiveness (11.5%), decidedness (12.1%), amount of information (37.7%), CDMSE (24.4%) and IDC (15.1%).

In Table 5.5.2, results of six hierarchical multiple regressions of the career outcomes at Time 2 are presented. In the hierarchical multiple regressions, gender, activity nature and the dependent at Time 1 were entered as the first block. IOAM and SOAM were entered together as the second block. Family support, peer support and teacher support were entered together as the third block, while self and environment exploration at Time 2 was entered as the fourth.

With the longitudinal design of this study, the effect of the dependent variable as measured at a Time 1 was controlled for in the first block. This will facilitate the understanding of the evolution of the dependent variable over time. Moreover, the fourth block was included to examine the additional variance of the outcome variables explained by career exploration three months preceding Time 2. The four-step hierarchical model explained variance for the dependents of self clarity (21.1%), decisiveness (35.3%), decidedness (26.4%), amount of information (22.4%), CDMSE (38.5%) and IDC (18%).

In the hierarchical multiple regressions, gender and activity nature were entered as the first block. In a smaller sample, it is not appropriate to include too many controlling factors. Therefore, only gender and activity nature were entered as demographic variables in the first block of background factors. The activities of the Career Centre were open to all students while the FB internship was organized

**Table 5.5.1 Hierarchical Multiple Regressions of Career Outcomes at Time 1**

	Self Clarity			Decisiveness			Decidedness			AIF			CDMSE			IDC		
	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta
Block 1	.047	.047*		.026	.026		.009	.009		.098	.098**		.022	.022		.076	.076**	
Gender			-.07			-.14*			.05						-.11			-.04
Study of Study			-.13			.03			-.06						-.04			.16*
Faculty			.17*			.01			.08						.06			-.18*
Activity Nature			-.03			-.06			.05						.02			.20**
Block 2	.058	.012		.090	.064**		.055	.046**		.099	.002		.065	.043**		.118	.042**	
IOAM			-.11			.21**			.19**						.13*			.16*
SOAM			.02			-.17**			-.09						-.05			.06
Block 3	.065	.007		.098	.008		.113	.059**		.258	.159**		.118	.053**		.144	.026	
SFAM			-.03			.01			.12						.09			-.03
SPEER			-.07			.04			.13						-.04			.15*
STEAM			.03			.03			.04						.11			.02
Block 4	.070	.005		.115	.017		.121	.008		.377	.119**		.244	.126**		.151	.007	
SX – Time 1			-.06			-.05			.02						.23**			.09
EX – Time 1			.08			-.06*			.09						.21**			.01

(N varies from 233 to 245)

\* p<.05\* \*\*p<.01 (2-tailed)

KEY: SOAM: Social-Oriented Achievement Motivation IOAM: Individual-Oriented Achievement Motivation

SFAM: Career Support of Family SPEER: Career Support of Peers STEAM: Career Support of Teachers SX: Self Exploration EX: Environment Exploration

AIF: Amount of Information CDMSE: Career Decision Making Self Efficacy IDC: Intention to develop career in Mainland



**Table 5.5.2 Hierarchical Multiple Regressions of Career Outcomes at Time 2**

	Self Clarity		DCS		DED		AIF		CDMSE		IDC			
	- Time 2	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta	R <sup>2</sup>	ΔR <sup>2</sup>	beta
Block 1	.050	.050	.294	.294**	.177	.177**	.090	.090*	.246	.246**	.107	.107*		
Gender		-.04		.10		-.02		-.03		-.11		-.06		-.06
Activity Nature		.14		-.15		-.07		.12		-.12		-.02		-.02
Dependent-Time 1		.18		.49**		.40**		.27**		.33**		.26*		.26*
Block 2	.108	.058	.332	.038	.219	.042	.116	.026	.257	.011	.134	.028		
IOAM		.05		.08		.13		.05		.08		-.19		-.19
SOAM		-.20		-.17		.15		.10		-.02		-.06		-.06
Block 3	.164	.057	.337	.004	.243	.025	.157	.041	.288	.031	.161	.026		
SFAM		.15		.07		-.08		-.09		-.22		-.06		-.06
SPEER		.04		.04		-.06		-.15		.17		.20		.20
STEAM		.25*		.03		.11		.08		.04		-.06		-.06
Block 4	.211	.047	.353	.016	.264	.020	.224	.067*	.385	.097**	.180	.019		
SX – Time 1		-.07		-.01		.16		.14		.23		.03		.03
EX – Time 1		-.21		-.14		-.01		.20		.18		.14		.14

(N varies from 79 to 91) \* p<.05\* \*\*p<.01 (2-tailed)

KEY: SOAM: Social-Oriented Achievement Motivation IOAM: Individual-Oriented Achievement Motivation  
 SFAM: Career Support of Family SPEER: Career Support of Peers STEA: Career Support of Teachers SX: Self Exploration EX: Environment Exploration  
 AIF: Amount of Information CDMSE: Career Decision Making Self Efficacy IDC: Intention to develop career in Mainland

for year 2 students of the Faculty. Activity nature was selected because it captured the differences by Faculty, Year of Study and activity organizer. The coding of the categorical factors was as follows. For gender, “female” was coded as “1” and “male” as “0”. For activity nature, “CC activity” coded as “1” and “FB” activity” as “0”. This coding was adopted for all multiple regressions for the longitudinal sample.

Hypothesis 8A states that self exploration in the past three months is positively correlated with self clarity. From Table 5.2.1 indicating correlations of variables at Time 1, self exploration for the past three months is found not to be correlated with self clarity. From Table 5.2.2 indicating correlations of variables at Time 2, self exploration for the past three months is found not correlated with self clarity. The hypothesis was not supported (correlations also not significant if SC 1 adopted as the measure of self clarity). This may be due to the fact that we are using a narrower conceptualization of occupational self. Essentially, self clarity is a measure of interest and ability relating to occupational matching. If a measure for a broader conceptualization of self concept was adopted, it is plausible that self exploration would be correlated with self clarity. I shall elaborate on this in the next chapter on conclusions.

Hypothesis 8B states that self exploration in the past three months explains significant variance in self clarity after other relevant variables are accounted for. In the hierarchical models presented in Table 5.5.1, career exploration did not further explain variance in self clarity after relevant factors are controlled for. In the hierarchical models for Time 2 variables presented in Table 5.5.2, the fourth block of career exploration again did not further explain variance in self clarity after relevant factors are controlled for. The hypothesis was not supported. Self exploration is not demonstrated to be a predictor of self clarity.

Hypothesis 9A states that environment exploration in the past three months is positively correlated with self clarity and amount of information. From Table 5.2.1



indicating correlations of variables at Time 1, environment exploration for the past three months is found to be correlated with amount of information ( $r = .47, p < .01$ ) and self clarity ( $r = .16, p < .01$ ). From Table 5.2.2 indicating correlations of variables at Time 2, self exploration for the past three months is found with amount of information ( $r = .31, p < .01$ ) but not with self clarity. Therefore, data at both Time 1 and Time 2 support the correlation between environment exploration and amount of information. The correlation effect between environment exploration and self clarity is found significant at Time 1 only.

Hypotheses 9B states that environment exploration in the past three months explains significant variance in self clarity and amount of information after other relevant variables are accounted for. In the hierarchical models presented in Table 5.5.1, the fourth block of career exploration additionally accounted for 11.9% of the variance in amount of information and the partial regression coefficient for environment exploration was significant ( $beta = .32, p < .01$ ). Environment exploration did not further explain variance in self clarity after relevant factors are controlled for. In the hierarchical models for Time 2 variables presented in Table 5.5.2, the fourth block of career exploration additionally accounted for 6.7 % of the variance of amount of information but the partial regression coefficient for environment exploration was not significant in the model. It did not explain the variance of self clarity at Time 2. Therefore, environment exploration explained the variance of AIF at Time 1 only after relevant factors are controlled for. The hypothesis did not receive adequate support.

On the other hand, additional comparison on the results between using SC and SC1 as the dependent in the above regression models are presented in Table 5.33 and Table 5.3.4. Basically, results differed only slightly with SC2 and did not change research results and conclusions related to Hypotheses 9A and 9B.

Hypothesis 10A states that career exploration in the past three months is positively correlated with decisiveness, decidedness and career decision making self efficacy.



From Table 5.2.1 indicating correlations of variables at Time 1, self exploration for the past three months is found to be correlated with career decision making self efficacy ( $r = .40, p < .01$ ) but not with decisiveness and decidedness.

Environment exploration for the past three months is found correlated with career decision making self efficacy ( $r = .38, p < .01$ ) and decisiveness ( $r = .16, p < .05$ ) but not for decidedness. From Table 5.2.2 indicating correlations of variables at Time 2, self exploration for the past three months is found to be correlated with career decision making self efficacy ( $r = .42, p < .01$ ) but not for decisiveness and decidedness. Environment exploration for the past three months is found correlated with career decision making self efficacy ( $r = .41, p < .01$ ) but not with decisiveness and decidedness. Therefore, the correlation effect is clearly and consistently established between career exploration and CDMSE, not for decisiveness and decidedness.

Having established the association between career exploration and CDMSE, I move on to examine the relationship with more stringent regression analyses. Hypotheses 10B states that career exploration in the past three months explains significant variance in decisiveness, decidedness and career decision making self efficacy after other relevant variables are accounted for. In the hierarchical models for Time 1 variables presented in Table 5.5.1, the fourth block of career exploration additionally accounted for 12.6% of CDMSE and the partial regression coefficient for both self exploration ( $beta = .23, p < .01$ ) and environment exploration ( $beta = .21, p < .01$ ). Career exploration explained variance in neither decisiveness nor decidedness after relevant factors are controlled for. In the hierarchical models for Time 2 variables presented in Table 5.5.2, the fourth block of career exploration additionally accounted for 9.7% of the variance of CDMSE. Career exploration again explained variance in neither decisiveness nor decidedness after relevant factors are controlled for. In short, evidence consistently showed that career exploration only explained variance in the outcome of CDMSE but not for decisiveness and decidedness. Results for hypothesis 10A and 10B appeared to support the social learning approach of



career decision making (e.g. Krumboltz, 1979) asserting that in a complicated and changing world, learning experience about career will result in higher skills and confidence but not necessarily or preferably in making a career decision. This theme will be further investigated in the next chapter of conclusions and discussion.

## 5.6. Relation between Career Exploration and Types of Intervention

Hypothesis 6 states that participants in an internship will show a significantly greater increase in career exploration over time than participants in career seminars. A mixed model ANOVA was conducted for self exploration with Time 1 and Time 2 as a within-subject variable and type, internship or career seminars, as a between-subject variable. Results were presented in Table 5.6.1. Likewise, A mixed model ANOVA was conducted for environment exploration with Time 1 and Time 2 as the within subject variable and type (internship or career seminars) as a between-subject variable. Results were presented in Table 5.6.2.

From Table 5.6.1, the time effect was significant for self exploration,  $F(1, 99) = 22.94, p < .01$ . The intervention type effect,  $F(1, 96) = 3.32, p = .07$ , as well as the interaction effects of Time x Type,  $F(1, 96) = .014, p = .71$ , were not significant. From Table 5.6.2, the time effect  $F(1, 96) = 17.62, p < .01$ , as well as the intervention type effect,  $F(1, 96) = 7.02, p < .01$  were significant for environment exploration. The interaction effect of Time x Type,  $F(1, 96) = .001, p = .98$ , was not significant.

In sum, significant time effects were found for both self and environment exploration and a type effect for environment exploration only. However, such effects did not prove significant differences of type over time. The differences brought by type effects might be there with or without the time effect. To support the hypothesis, the interaction effects of time and intervention type have to be

significant. As there was no interaction effect for either self or environment exploration, the hypothesis was not supported.

Figure 5.6.1 and Figure 5.6.2 further illustrates why the proposition of differences by intervention type over time could not be established. As indicated in the Figures, both self and environment exploration had increased from Time 1 to Time 2. This might be due to intervention or maturation effects. Also, from both figures, participants of student internship scored higher in both self and environment exploration than participants of career seminars at both Time 1 and Time 2. This may be due to the inherent differences or prior experience between the two groups. I shall further explain this in the next chapter on conclusions.

Hypothesis 11 states participation in career exploration activities in Mainland China is positively correlated with to subsequent intention to develop career development in Mainland China. However, the hypothesis was not tested in this study. This was due to the fact that the internships and career programmes originally scheduled in China were cancelled due to SARS. I still postulate that career exploration activities in China are related to career mobility. From Table 5.5.2, prior level of intention to develop career in Mainland China predicted subsequent level of the variable. So, the intention for career development in Mainland China is a gradual evolutionary process. No doubt, it is worthwhile to further test career mobility in Hong Kong and the Mainland.

## 5.7. Relation between Career Exploration and Identity Status

Hypothesis 12 states that identity status at Time 1 is associated with amount of self exploration in the three months preceding Time 1. From Table 5.7.1, the Analysis of Variance of self exploration by identity status was significant ( $F = 6.06$ ;  $df = 3$ ;  $p < .01$ ). The hypothesis was supported.



**Table 5.6.1 Mixed Model ANOVA of Self Exploration (N=98)**

Source of Variance	SS	Df	MS	F	Sig.
<b>Between subjects</b>					
Type	50.01	1	50.01	3.32	.07
Error	1447.20	96	15.08		
Total	1497.21	97			
<b>Within Subject</b>					
Time	158.58	1	158.58	22.94**	<.01
Time * Type	.99	1	.99	0.14	.71
Error (Time)	663.65	96	6.91		

**Table 5.6.2 Mixed Model ANOVA of Environment Exploration (N=98)**

Source of Variance	SS	Df	MS	F	Sig.
<b>Between subjects</b>					
Type	186.80	1	186.80	7.02**	<.01
Error	2553.98	96	26.60		
Total	2740.78	97			
<b>Within Subject</b>					
Time	183.50	1	183.50	17.62**	<.01
Time * Type	0.01	1	0.01	0.01	.98
Error (Time)	999.91	96	10.42		

Figure 5.6.1 Estimated Marginal Means of Self Exploration

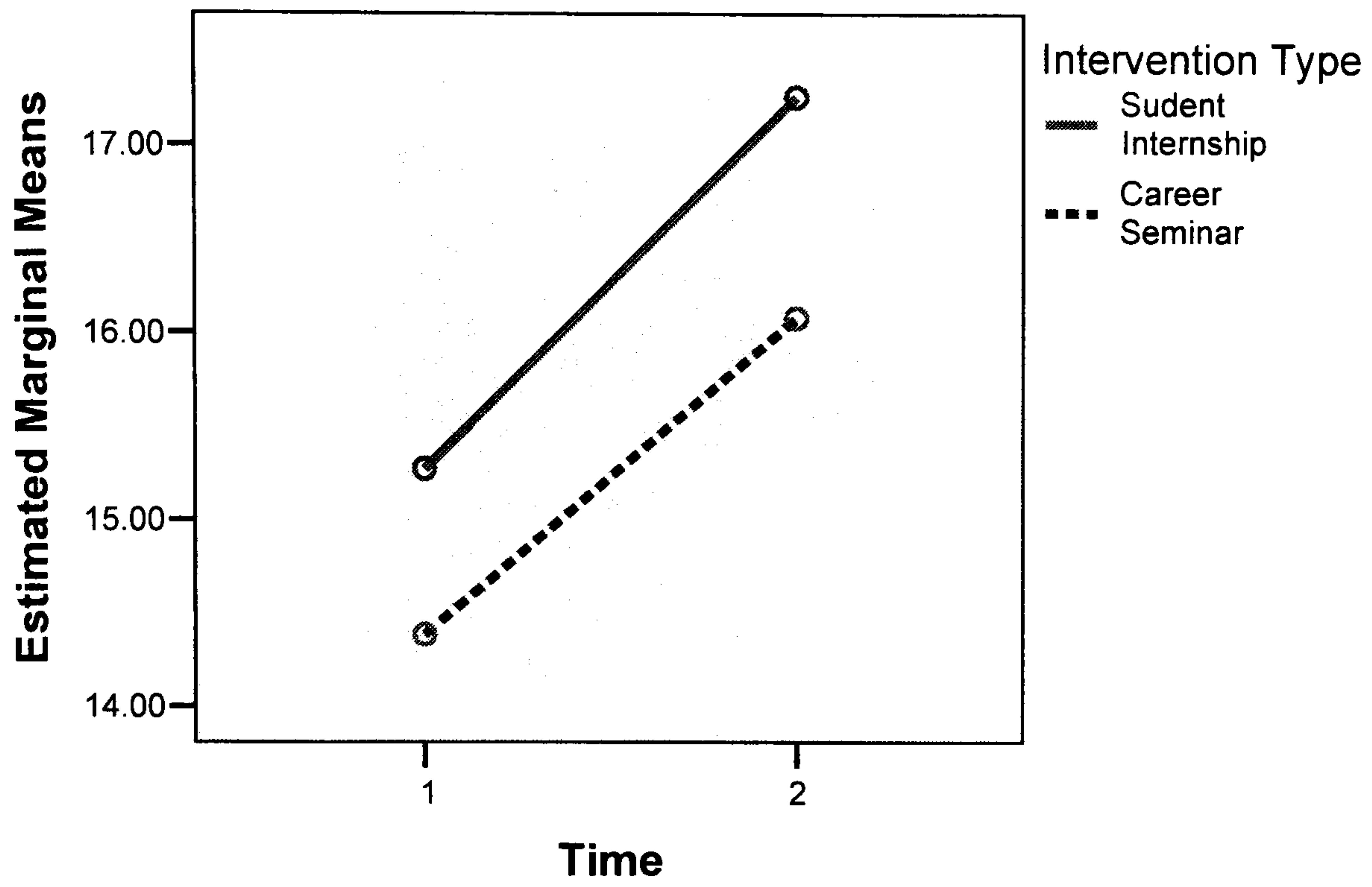
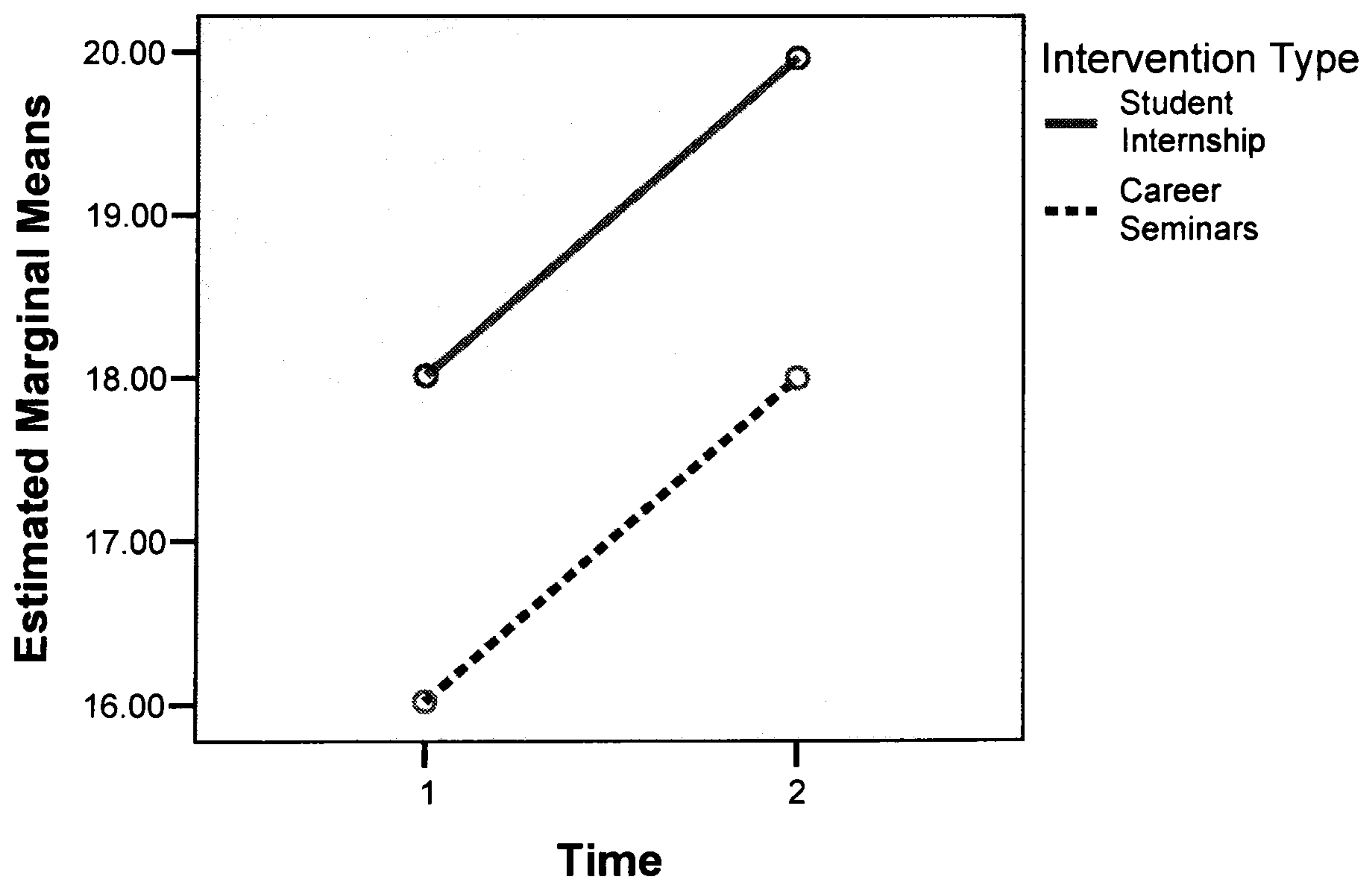


Figure 5.6.2 Estimated Marginal Means of Environment Exploration





Hypothesis 13 states that identity status at Time 2 is associated with amount of self exploration in the three months preceding Time 2. From Table 5.7.2, the Analysis of Variance of self exploration by identity status was significant ( $F = 4.01$ ;  $df = 3$ ;  $p < .01$ ). The hypothesis was supported.

Hypothesis 14 states that identity status at Time 1 is associated with amount of environment exploration in the three months preceding Time 1. From Table 5.7.3, the Analysis of Variance of environment exploration by identity status was significant ( $F = 9.43$ ;  $df = 3$ ;  $p = .01$ ). The hypothesis was supported.

Hypothesis 15 states that identity status at Time 2 is associated with amount of environment exploration in the three months preceding Time 2. From Table 5.7.4, the Analysis of Variance of environment exploration by identity status was significant ( $F = 5.01$ ;  $df = 3$ ;  $p < .01$ ). The hypothesis was supported.

Research Question 2 aims at determining which identity statuses will differ from which others regarding exploration of self and environment. The mean scores of self exploration at Time 1 by identity status are listed in Table 5.7.5. A posteriori comparison using the Bonferroni test illustrated that diffusion was significantly different from the other three statuses. Similarly, Table 5.7.6 shows the mean scores of self exploration at Time 2 by identity status. A posteriori comparison using Bonferroni test illustrated that identity achievement was significantly different from diffusion and foreclosure. Diffusion was significantly different from other identity status at both Time 1 and Time 2 for self exploration. The effects of identity achievement were found only at Time 2.

Moreover, the mean scores of environment exploration at Time 1 by identity status are listed in Table 5.7.7. A posteriori comparison using Bonferroni test illustrated that both identity achievement and diffusion were significantly different

**Table 5.7.1 ANOVA of Self Exploration by Identity Status at Time 1 (N=268)**

	SS	Df	MS	F	Sig.
Between Groups	188.96	3	62.99	6.06	.001
Within Groups	2756.53	265	10.40		
Total	2945.49	268			

**Table 5.7.2 ANOVA of Self Exploration by Identity Status at Time 2 (N=99)**

	SS	Df	MS	F	Sig.
Between Groups	97.89	3	32.63	4.01	.010
Within Groups	772.79	95	8.14		
Total	870.68	98			

**Table 5.7.3 ANOVA of Environment Exploration  
by Identity Status at Time 1 (N=268)**

	SS	Df	MS	F	Sig.
Between Groups	554.08	3	184.69	9.43	.000
Within Groups	5171.27	264	19.59		
Total	5725.35	267			



**Table 5.7.4 ANOVA of Environment Exploration  
by Identity Status at Time 2 (N=99)**

	SS	Df	MS	F	Sig.
Between Groups	258.31	3	86.11	5.10	.003
Within Groups	1605.04	95	16.90		
Total	1863.35	98			

**Table 5.7.5 Scores of self exploration at Time 1 by Identity Status**

	N	Mean	Std. Deviation	Minimum	Maximum
Diffusion	36	13.25	3.70	5.00	19.00
Foreclosure	68	15.21	3.39	5.00	23.00
Moratorium	140	15.24	3.09	7.00	24.00
Achievement	25	16.68	2.78	12.00	22.00
Total	269	15.10	3.32	5.00	24.00

from the other statuses. Similarly, Table 5.7.8 shows the mean scores of environment exploration at Time 2 by Identity Status. A posteriori comparison using Bonferroni test illustrated that identity achievement was significantly different from diffusion and foreclosure. From the posteriori tests at both at Time 1 and Time 2, identity achievement appeared significantly different from other identity statuses.

In sum, identity statuses as measured by identity beliefs of the respondents were found related to both self and environment exploration in the preceding three months. From the posteriori tests, the identity achievement was consistently different from other statuses for environment exploration and diffusion different for self exploration. Implications will be discussed in the conclusion chapter. It should also be noted that identity statuses were associated with both self and environment exploration while self clarity, as shown in earlier results, was not. In this light, a broad conceptualization of identity statuses will also be contrasted to an occupation-specific construct of self clarity with reference to further theory building in career exploration in the next chapter.

## 5.8. Chapter Summary

This chapter has covered the research results relating to 22 hypotheses and 2 research questions. To recap, out of the four hypotheses on motivational factors, one was consistently supported. Out of the two on relational support, both were not supported. The four on development or maturation effects were all supported. Out of the six hypothesized on relationships between career exploration and outcomes, three received partial support. The one on the differences of intervention type was not supported while the four on identity statuses were supported. There is one on career development in Mainland China but it was not tested. Moreover, the results have helped to clarify the research questions relating



**Tables 5.7.6 Scores of self exploration at Time 2 by Identity Status**

	N	Mean	Std. Deviation	Minimum	Maximum
Diffusion	7	14.71	2.36	11.00	18.00
Foreclosure	27	15.96	2.81	9.00	20.00
Moratorium	47	16.85	2.81	7.00	22.00
Achievement	18	18.44	3.17	13.00	23.00
Total	99	16.75	2.98	7.00	23.00

**Table 5.7.7 Scores of Environment Exploration at Time 1  
by Identity Status**

	N	Mean	Std. Deviation	Minimum	Maximum
Diffusion	36	14.53	5.085	6.00	24.00
Foreclosure	69	17.23	5.21	7.00	30.00
Moratorium	139	16.74	3.88	6.00	24.00
Achievement	24	20.67	3.87	13.00	30.00
Total	268	16.92	4.63	6.00	30.00

**Table 5.7.8 Scores of Environment Exploration at Time 2  
by Identity Status**

	N	Mean	Std. Deviation	Minimum	Maximum
Diffusion	7	15.43	6.78	6.00	23.00
Foreclosure	26	18.08	4.16	8.00	24.00
Moratorium	48	19.35	4.08	11.00	26.00
Achievement	18	21.83	2.62	17.00	27.00
Total	99	19.19	4.36	6.00	27.00

to career decision making and identity status. For easy reference, a summary of the results for the hypotheses and research questions is presented in Table 5.8.1.

All these hypotheses testing enabled me to understand more about the relations among antecedent, process and outcome variables in the framework of career exploration. The impact of motivational, relational and prior development on career exploration had been tested respectively. Both the affirmation and rejection of hypotheses shed light on the relations among variables. I shall now move on to the next chapter to examine the implications of the results on both theory building and professional career practices.



**Table 5.8.1 Summary of Results for Hypotheses and Research Questions**

<b>Hypothesis/ Research Question</b>	<b>Results</b>
<u>Hypothesis 1A:</u> Individual-oriented achievement motivation (IOAM) is positively correlated with both self and environment exploration.	IOAM correlated with self exploration only at Time 1 and not correlated with self and environment exploration at Time 2. Inadequate support for Hypothesis.
<u>Hypothesis 1B:</u> Individual-oriented achievement motivation (IOAM) explains significant variance in both self and environment exploration after other relevant variables are accounted for.	IOAM explained small variance in self exploration at Time 1 only. Limited support for hypothesis.
<u>Hypothesis 2A:</u> Social-oriented achievement motivation (SOAM) is positively correlated with environment exploration.	Correlation significant at Time 1 and Time 2. Hypothesis supported.
<u>Hypothesis 2B:</u> Social-oriented achievement motivation (SOAM) explains significant variance in environment exploration after other relevant variables are accounted for.	No significant variance explained at Time 1 and Time 2. Hypothesis not supported.
<u>Hypothesis 3A:</u> Career exploration is more strongly correlated with career support of teachers than with career support of peers.	Differences not significant at Time 1 and Time 2. Hypothesis not supported.
<u>Hypothesis 3B:</u> Career support of teachers explains more variance in career exploration than career support of peers does after other relevant variables are accounted for.	Differences not significant at Time 1. Significant difference at Time 2 only for self exploration. Inadequate support for the hypothesis.

**Table 5.8.1 Cont.**

<b>Hypothesis/ Research Questions</b>	<b>Results</b>
<u>Hypothesis 4:</u> Career exploration as measured at time 2 is significantly higher than career exploration measured at time 1.	Variable significantly higher at Time 2 than Time 1. Hypothesis supported.
<u>Hypothesis 5A:</u> Career exploration measured at an earlier time will be positively correlated with career exploration measured at a subsequent time.	Correlation significant. Hypothesis supported.
<u>Hypothesis 5B:</u> Career exploration measured at an earlier time explains significant variance in career exploration measured at a subsequent time after other relevant variables are accounted for.	Significant variance explained. Hypothesis supported.
<u>Hypothesis 6:</u> Participants in an internship will show a significantly greater increase in career exploration over time than participants in of career seminars.	No significant interaction of time and intervention type effects. Hypothesis not supported.
<u>Hypothesis 7:</u> Self clarity and amount of information measured at time 2 will be significantly higher than measured at time 1.	Variables significantly higher at Time 2 than Time 1. Hypothesis supported.
<u>Hypothesis 8A:</u> Self exploration in the past three months is positively correlated with self clarity.	Self exploration not correlated with self clarity at Time 1 and Time 2. Hypothesis not supported.
<u>Hypothesis 8B:</u> Self exploration in the past three months explains significant variance in self clarity after other relevant variables are accounted for.	No significant variance explained. Hypothesis not supported.



**Table 5.8.1 Cont.**

<b>Hypothesis/ Research Question</b>	<b>Results</b>
<p><u>Hypothesis 9A:</u> Environment exploration in the past three months is positively correlated with self clarity and amount of information.</p>	<p>Significant correlation found for amount of information at Time 1 and Time 2 and for self clarity at Time 1 only. Hypothesis partially supported.</p>
<p><u>Hypotheses 9B:</u> Environment exploration in the past three months explains significant variance in self clarity and amount of information after other relevant variables are accounted for.</p>	<p>Significant variance in amount of information explained at Time 1 only. No significant variance in self clarity explained at Time 1 and Time 2. Inadequate support for the hypothesis.</p>
<p><u>Hypothesis 10A:</u> Career exploration in the past three months is positively correlated with decisiveness, decidedness and career decision making self efficacy.</p>	<p>Significant for CDMSE at Time 1 and Time2 but not for decisiveness and decidedness. Hypothesis supported partially (for CDMSE).</p>
<p><u>Hypotheses 10B:</u> Career exploration in the past three months explains significant variance in decisiveness, decidedness and career decision making self efficacy after other relevant variables are accounted for.</p>	<p>Significant variance explained in CDMSE but not in decisiveness and decidedness at both Time 1 and Time 2. Hypothesis partially supported (consistently supported for the part relating to CDMSE).</p>
<p><u>Hypothesis 11:</u> Participation of career exploration activities in Mainland China will enhance the subsequent intention for career development in exploration in Mainland China.</p>	<p>Hypothesis not tested due to outbreak of SARS.</p>

**Table 5.8.1 Cont.**

<b>Hypothesis/ Research Questions</b>	<b>Results</b>
<u>Hypothesis 12:</u> Identity status at Time 1 is associated with amount of self exploration in the three months preceding Time 1.	Association significant. Hypothesis supported.
<u>Hypothesis 13:</u> Identity status at Time 2 is associated with amount of self exploration in the three months preceding Time 2.	Association significant. Hypothesis supported.
<u>Hypothesis 14:</u> Identity status at Time 1 is associated with amount of environment exploration in the three months preceding Time 1.	Association significant. Hypothesis supported.
<u>Hypothesis 15:</u> Identity status at Time 2 is associated with amount of environment exploration in the three months preceding Time 2.	Association significant. Hypothesis supported.
<u>Research Question 1:</u> To determine whether decisiveness, decidedness, CDMSE and intention to develop career in Mainland China as measured at time 2 is significantly higher than the same variables measured at time 1.	Decisiveness, CDMSE increased significantly from Time 1 to Time 2. No significant increase for decidedness and intention to develop career in Mainland China.
<u>Research Question 2:</u> To determine which identity statuses will differ from which others regarding exploration of self and environment.	Identity achievement significantly differently from the other statuses for environment exploration. Diffusion significantly differently from other statuses for self exploration.



## **6. DISCUSSION AND CONCLUSIONS**

This study was designed to investigate the relations among the antecedent, process and outcome variables of career exploration in Chinese university students in Hong Kong. Based on the results presented in the previous chapter, I shall proceed to discuss the findings and their implications. The findings will be highlighted and discussed under the major themes of achievement motivation, relational support, as well as the process and outcomes of exploration, with reference to current literature. Then, implications of the study for both practical interventions and research development will be drawn and discussed. I shall then proceed to the general limitations and overall conclusions of the study.

### **6.1. Achievement Motivation and Career Exploration**

In this study, I seek to understand the relation between achievement motivation and career exploration. There are two major themes to examine. First, I am interested in the relevance of the Chinese constructs of IOAM and SOAM to career exploration. Secondly, I examine the extent to which achievement motivation can be established as an antecedent of career exploration as proposed in the research framework of this study.

#### **6.1.1. Relevance of IOAM and SOAM**

This study examines the relevance of the IOAM and SOAM framework to career exploration. Some evidence of correlation was found. In testing Hypotheses 1A and 2A, correlations between IOAM and self exploration at Time 1, as well as SOAM and environment exploration at Time 1 and Time 2 were demonstrated. The findings imply that students with the higher individual-oriented achievement motivation tend to be higher in self exploration, while those with higher social-oriented achievement motivation are higher in environment exploration.



The association between IOAM and self exploration confirms generally the link between individual motivation and career exploration established in Western literature (Blustein, 1988, 1989; Barley & Robitschek 2000). IOAM is now found correlated with self exploration while SOAM with environment exploration. It makes good sense that the more one seeks individual achievement, the more he or she will engage in self introspection relating to the desired achievement. Moreover, the more one seeks to achieve for significant others, the more likely that he or she will look at career possibilities in the environment. As discussed earlier in Chapter 3, Chinese societies are collectivistic and relational (e.g. Bond, 1991; Yang, 1981), and Chinese achievement motivation cannot be fully explained by McClelland's (1976) motivation theory which is individual oriented. In contrast to individual oriented achievement motivation of the West, Yu and Yang (1987) put forward the indigenous construct of social-orientated achievement motivation or SOAM. Encouraged by their traditional culture, Chinese students tend to take responsibility to learn hard and achieve academically (e.g. Lee, 1996; Salili, 1996). Salili (1996) also reviewed related studies to show that Chinese students made efforts to obtain good academic performance in order to meet the expectations of parents and families. Chang, Wong and Teo (2000) accordingly demonstrated from a sample of 202 Singaporean Chinese youth that IOAM is correlated with SOAM. Moreover, achievement motivation was found to be associated with both the motive to learn and the motive to demonstrate good academic performance. In this study, IOAM and SOAM are found to be correlated in a sample of 250. It is also found that both individual-oriented and social-oriented achievement motivation are associated with career exploration in different ways. No doubt, it is clear that to further understand the motivation factors of career exploration in the Chinese context, attention should be paid to both individual and social oriented motivation.

#### 6.1.2. The Extent Achievement Motivation Explained Career Exploration

Then we looked at the extent to which achievement is a predictor of career



exploration using regression analyses. From the hierarchical regression results presented in the last chapter, achievement motivation was not found related to environmental exploration. However, achievement motivation was found to account for 3% of the variance in self exploration at Time 1 after gender and background variables had been controlled, and the standardized regression coefficient was significant for IOAM and not for SOAM. Achievement motivation did not explain career exploration at Time 2. Achievement motivation accounted for limited variance of career exploration. It appeared to be a weak and not so reliable predictor of career exploration in the multiple regressions. There is not enough ground for claiming causal relation between achievement motivation and career exploration. What are the implications?

First of all, it is important to qualify that the results do not rule out the influence of individual motivation on career exploration completely. There are different ways to conceptualize and measure motivational factors. Blustein used the constructs of autonomy orientation (1988) and goal directedness (1989). Barley and Robitschek (2000) opined that the many constructs of individual motivation actually overlapped and called for a single inclusive measurement of personal agency. Basically, Deci and Ryan's (Deci & Ryan, 1985; Ryan & Deci, 2000) framework of intrinsic and extrinsic motivation is broad to encompass different motivational factors along the continuum from intrinsic to extrinsic. This study focuses on achievement motivation only and the impact of other motivational variables cannot be ruled out at present.

### 6.1.3. Cultural and Contextual Considerations of Motivational Factors

The nature of Chinese achievement motivation can be drawn upon to explain the weak predictive strength of achievement motivation on career exploration.

Westwood (1992) defined motivation as “a complex psychosocial process in which a propensity or intention, of varying degree of intensity, to act or respond in a goal directed manner develops in an individual (p. 288)”. He also quoted



Hofstede's (1984) cross-cultural study that Hong Kong people inclined to be high on the preference of achievement as compared with other countries, evidenced from their high willingness to accept risk (low risk avoidance) and concern for performance (masculinity).

Yang and Yu (1987) proposed that Chinese achievement motivation is more than self realization; it also involves a social endeavour to accomplish for family and significant others. Moreover, Chinese achievement motivation is linked strongly to academic achievement as understood from both social traditions and cross cultural studies (e.g. Stevenson, Lee & Chen, 1990; Stevenson & Lee, 1996). Is the emphasis of academic achievement so strong that the students attend less to other aspects of their personal development? Does it reflect why achievement motivation does not predict career exploration very well in the Hong Kong context? A recent study on psychosocial development of university students in Hong Kong supported this. Lai, Chan, Cheung and Law (2001) examined the psychosocial development of 447 university students in Hong Kong through the Student Development Task and Lifestyle Inventory (SDTLI; Winston & Miller, 1987) and Self Esteem Scale (Rosenberg, 1965). The SDTLI is an established measure of student development in the United States on three subtasks of "purpose of life", "mature interpersonal relationships" and "academic autonomy". Regression analyses showed that the academic autonomy subtask explained twice as much of the variance of self esteem than mature interpersonal relationships or purpose of life. Moreover, from comparisons of the mean scores of Hong Kong students with norms of United States, Hong Kong scores were significantly higher in academic autonomy but lower in the other two subtasks. The authors attributed such results to the higher motivation to achieve academically of Chinese students as compared to U.S counterparts, as demonstrated in previous studies (e.g. Stevenson & Lee, 1990). Hong Kong students are so occupied with academic success that they are likely to pay less attention to their personal aspirations and pursuits. In this light, it is understandable that the energy from achievement motivation may not be channelled into career exploration.



After discussing the impact of achievement motivation, I shall examine specifically the possible influence of the factors of IOAM and SOAM. In this study, IOAM accounted for some variance in self exploration. Considering the small percentage of variance it explained, follow-up study will be required to confirm and establish how far it is a predictor of career exploration. With the present evidence, however, IOAM can be seen as related to self exploration in the Hong Kong context. Hong Kong is very much an internationalized and Westernized, metropolitan society, and its people had been under British rule. It is expected that people are driven to self exploration by individual-oriented achievement motivation. From the developmental-contextual view of career exploration (Vondracek et al., 1986; Blustein, 1997), however, career exploration is affected by different historical, cultural, educational, relational and psychological antecedents. Different categories of factors might be active or inactive at different points of time in the course of evolution. In this study, the impact of individual achievement motivation was significant before students participated in career activities at Time 1 but not significant at Time 2. In other words, IOAM was related to exploration activities three months prior to Time 1 but not to exploration activities three months prior to Time 2. Understandably, the students had gained access to additional opportunities and resources during their career programme or internship between Time 1 and Time 2. Instead of their achievement motivation, such opportunities and resources might have accounted more for their exploration behaviour three months prior to Time 2.

In this study, achievement motivation did not explain variance in environment exploration. Specifically, IOAM did not explain the variance of environment exploration either at time 1 or time 2. Previously, Blustein (1988) also found that motivational orientation was related to self and not environment exploration, and he explained this phenomenon by the fact that his respondents were in early adolescence. By their developmental stage, they naturally had explored internally rather than externally. However, Blustein (1989) also found that goal-directedness,



as a motivational factor, was related to both self and environment exploration among college students. In this study, the respondents are in late adolescence and it is interesting to understand why individual-oriented achievement motivation triggered self and not environment exploration. In other words, when they are motivated to achieve for themselves, why do they not explore externally?

I shall explain this in relation to the different mindset for exploration between the East and the West, which can be further illustrated by the local situation and examples in Hong Kong. According to Hofstede's (1980) cross-cultural comparisons, the Chinese societies in Hong Kong, Taiwan and the Mainland were included in the large power distance and low individualism group, while the United States, Britain and a number of European countries into the low power distance and high individualism group. Such cultural differences might have an impact on exploration behaviour. In the Western countries with high individualism, exploration is an individual pursuit for personal interest, fulfilment or enhancement. In fact, Western vocational psychology has been focusing on personal agency like pursuing one's vocational interest or the implementation of vocational self rather than compromising and adaptation to the environment since Holland and Super. There is a tradition of engaging in exploration for realizing personal ideals especially in many Western countries. For instance, the United States is known as the "Land of Opportunities" to realize the "American Dream".

In the Chinese societies, with low individualism/ high collectivism orientation, exploration out of individual pursuits is not favoured particularly. Leung (2002) emphasized that with the collectivistic orientation of the Hong Kong society, local career counsellors needed to help their clients to maintain a balance between personal goals and social loyalty. As Chinese societies are high in hierarchy/ power distance, approval from significant others and encouragement from people in authority are likely to trigger more exploration behaviour as compared to the West. There are cases in Chinese societies in which exploration behaviour is supported and encouraged by the family and the social clans. For instance, in



some deprived rural areas in Mainland China, in order to improve economic conditions, families may encourage their sons and daughters to explore vocational or business opportunities in their immediate or more distant environments. In the process, the family and clans are often involved in encouraging and arranging for young people to seek opportunities and relocate. If the latter succeed in making a fortune, the family and relatives are also expected to be honoured and benefit economically.

The cultural differences between the East and the West might account very much for their respective mindsets on exploration. It seems to me that while the West tends to explore for personal ideals, the East inclines to explore as an adaptation for the good or recognition of the family and social groups. However, we should note that this is only a broad cultural generalization. Nowadays, many Chinese people are already modernized or Westernized to different degrees.

From this study, both individual-oriented and social oriented achievement motivation did not predict much of career exploration in Hong Kong. From a cultural point of view, it is understandable that IOAM does not predict exploration well in a relatively collectivistic society. As for SOAM not predicting exploration, it may signal that the social and contextual factors do not support career exploration very much. To understand this, we shall revisit some local economic, social and educational conditions in Hong Kong.

Economically, Hong Kong has been booming in the 1980s and the 1990s, with plenty of career development opportunities for university graduates locally. In the past, getting a university degree and entering a profession had been the formula of success and the aspiration of the young people. Further career exploration and preparation did not seem to bring additional benefits and differences. Naturally, exploring career opportunities beyond Hong Kong, say in Mainland China, was not the consideration then for the majority of the graduates. Moreover, the context of career exploration is different between Hong Kong and the West. In some



Western countries, many would think about opportunities and mobility beyond hometown, in many cases across regions and national boundaries for their career development. Hong Kong was a British colony. Though linked with Mainland China geographically, it had been separated politically. In the past, university graduates were a small elite group with very attractive local graduate opportunities waiting for them in industries and professions. According to Leung (2002), the Hong Kong education system had followed a British model, requiring students to take a lot of school and public examinations before securing a place in the university, and with its layers of schooling, its structure could be compared to a pyramid. In this light, university students had been elitists at the top of the pyramid well received by employers. Such deep-rooted mentality might not have changed even with growing mass university education. Therefore, the attitude and mindset for extensive environment exploration had not been emphasized previously as compared to the West. In fact, in the previous chapter, the mean scores of both self and environment exploration in this study are lower than those in the previous study in the United States by Stumpf and his colleagues (1983), which reflects the lower exploration of the Hong Kong students.

If social-oriented achievement motivation triggers environmental exploration, then actively exploring the environment for career opportunities is likely to be a means of gaining approval from family and significant others. SOAM was not found to be a factor in environment exploration in this study. This suggests that students might not see environmental exploration as instrumental to gaining approval from family and significant others.

In sum, while university students tended to regard academic achievement as instrumental in gaining recognition from family and significant others (e.g. Lee, 1996; Tao & Hong, 2000), they did not see environmental exploration in the same way as reflected from this study. Academic achievement has always been valued highly in Chinese societies as a means to glorify the family name as well as a channel to move up the social hierarchy. As summarized by Gow, Balla, Kember



and Hau (1996), various studies showed that Chinese people valued children's education achievements more as compared to Americans or British. For many local families, it was already prestigious to have their son and daughter admitted into university. A university degree is expected to lead naturally to good career prospects. In this light, the parents, especially those of first generation university students, may not see the additional value of career exploration for their sons and daughters.

## 6.2. Relational Factors of Career Exploration

In testing the relational factors in this study, I had two objectives. First, I aimed at examining whether relational support is related to career exploration. Moreover, whether there are significant differences between teacher and peer support in relating to career exploration will be investigated. From the results, self exploration at Time 1 is found to be significantly correlated with career support of teachers, but not with career support of peers. Environment exploration at Time 1 is found, in turn, correlated with career support of teachers and career support of peers. At Time 2, self exploration is correlated with career support of teachers and not correlated with career support of peers. Environment exploration is also correlated with career support of teachers and not correlated with career support of peers. In the research framework, family support, peer support and teacher support were all conceptualized as antecedents of career exploration. Career support of family was shown in this study not to be correlated with self and environment exploration at Time 1, but with both self and environment exploration at Time 2. From the multiple regression analyses in this study, relational support accounted for 3.8% of the variance of self exploration and 8.7% of environment exploration at time 1 after background and motivational factors were controlled. It also accounted for 8.2% of self exploration and 13.2% of environment exploration at time 2 after the same factors were controlled. At time 1, standardized coefficients were found significant for teacher support but not for



peer and family for both self and environment exploration. At time 2, the standardized coefficients were not significant for family, peers and teacher support for both self and environment exploration. Career support of family was not correlated with self and environment exploration at Time 1, but with both self and environment exploration at Time 2.

#### 6.2.1. The Extent Relational Support Explained Career Exploration

From the above, we find that relational support has emerged as a sound and more reliable predictor of career exploration as compared to achievement motivation. In other words, in the Hong Kong context, it is inadequate to look at career exploration just from the motivational perspective. Emphasis has to be put on social relationships. From a broader perspective, the discussion can be linked to the “agency” versus “communion” career development approaches. Marshall (1989) quoted Bakan’s concepts of the two fundamental human functioning, agency and communion. She explained that in coping with changes and uncertainties, the “agency” approach emphasized self assertion and changing the environment, while the “communion” approach meant acceptance and union with others, as well as personal adjustment. As discussed earlier, local career research has been focusing mostly on vocational interests, especially Holland’s hexagon, which is broadly inclined to personal agency or individual motivation. Future work on relational support would be highly desirable to redress the balance.

#### 6.2.2. Impact of Teacher as Compared to Other Supportive Relationships

Another theme to investigate is whether there are significant differences between teacher and peer support in relating to career exploration. Hypothesis 3A stated that career exploration is more strongly correlated with career support of teachers than with career support of peers. In the results, career support of teachers in this study did indeed show higher correlations with career exploration variables as compared to career support of peers. However, T-Tests have showed that



differences between the correlation “r”s were not significant. Career support for teachers did not show significantly stronger correlations with career exploration than career support of peers. Hypothesis 3B stated that career support of teachers explains more variance in career exploration than career support of peers does after other relevant variables are accounted for. Again, on face value, career support of teachers generated significant beta values in the regression as compared to the insignificant beta of career support of peers. However, t-tests conducted between beta values did not provide sufficient support for the hypothesis.

Moreover, career support of family did not prove to be a predictor of career exploration as well. It was related to career exploration only at Time 2 but not Time 1. In multiple regressions, the standardized coefficient of family support was not significant for either self and environment exploration at either Time 1 or Time 2. In a previous study Ketterson and Blustein (1997) demonstrated through canonical correlations that parental attachment was related to both self and environmental activities. Parental attachment and support were established as a factor of career exploration and development (Flum, 2001). As reflected in this study, the relation between parent support and career exploration in the local context is not so clear. Obviously, causal relationship is not established. It was estimated that about 90% of the local new entrants were first generation university students and 60% with parents who received primary education only (Chan & Yue, 1997). As compared to the past generation of the cream, the new entrants have limited exposure and many lack access to middle-class professionals as role models in their background. As highlighted earlier, local parents expect a university degree to lead naturally to good career prospects and they may not see the additional value of career exploration for their sons and daughters. Therefore, it is unlikely that parents would motivate their sons and daughters to active career exploration. However, it is plausible that when students face difficulties in exploring their career, they can rely on the support and encouragement of their parents. This may explain why an association is found between parent support and career exploration at Time 2.



In sum, the relation of teacher support with career exploration is clearly established in this study. Career support of teachers was shown not only correlated to, but also predictive of career exploration in multiple regressions. Previous literature about relational support of career exploration focused primarily on parental attachment, peer relationship and mutuality. This study has established teacher support as a valid factor of career exploration and thus enriched the conceptualizations of relational support in the study of career exploration. Kram (1996) proposed that supportive relationships were characterized by interdependence, mutuality and reciprocity. Accordingly, Flum (2001) also regarded relational support as a secure attachment base. That is to say, so long as students are securely attached to parents and peers emotionally, they will feel free and confident to explore the environment for career opportunities. Felsman and Blustein (1999) proposed that adolescents with intimate, mutual relationships tended to engage in a greater level of career exploration. Previous studies also found career exploration related to parental attachment (Ketterson & Blustein, 1997) and peer attachment (Felsman & Blustein, 1999).

How to account for the significance of relational support? In the Western context, relational support is often conceptualized as a secure relational base (Flum, 1999; Felsman & Blustein, 1999). By the same token, teacher and peer support can be conceptualized as a support base in the Hong Kong context. However, for close relationships and attachment to facilitate career exploration, supporting contextual factors are important. The United States, for instance, is a society that inclines to individualism and low power distance (Hofstede, 1984). Social relationships are non-hierarchical while updated and well-researched vocational information is made freely available. If an adolescent wishes to search for vocational information, or explore different career opportunities, resources and supportive systems are easily available. So all he or she needs is the personal maturity and emotional support to do so. As explained in the first chapter, the development of theory and practices in career guidance in Hong Kong are yet to be improved as compared to



the United States (Leung, 2002). Moreover, the society as a whole emphasizes and values academic achievements and pays much less attention to the promotion of career exploration. Against such a background, it is still questionable if a highly achievement motivated student with strong social support base will channel his or her energy into career exploration.

Hong Kong, like other Chinese societies, is regarded as more hierarchical when compared with the West (e.g. Hofstede, 1980; Bond, 1991), and hierarchy affects the nature of social relationships. Traditionally, Chinese societies are characterized by unequal social interactions, emphasizing reciprocal moral obligations in key role relations (Goodwin & Tang, 1996). Children are socialized by families and significant others to take up social obligations and responsibilities (Bond, 1991). Traditionally, teachers enjoy very high status and recognition. As compared with the West, Hong Kong teachers stressed more their moral role to guide students' behaviour (e.g. Biggs & Watkin, 2001) and personal development in addition to the instruction role (Gao & Watkins, 2001). In this light, teachers in the university can play an important part in facilitating career exploration of students. They are, as compared to peers, more knowledgeable in career opportunities and in a better position to give advice, guidance or even act as mentor of students for the latter's career development.

### 6.3. The Development and Evolution of the Career Exploration Process

In this section, I shall discuss results relating the development and evolution of career exploration over time. The first theme is the change of career exploration over time and the second is the impact of prior exploration. Then, I will explore the process of career exploration in relation to development of identity status as well as the career interventions of career seminars and work internships.

#### 6.3.1. Change of Career Exploration Over Time



Hypothesis 5A stated that career exploration measured at an earlier time is positively correlated with career exploration measured at a subsequent time. Hypothesis 5B stated that career exploration measured at an earlier time explains significant variance in career exploration measured at a subsequent time even after other relevant variables are accounted for. The hypotheses were supported. Hypothesis 4 stated that career exploration as measured at time 2 is significantly higher than career exploration measured at time 1. It is also supported by the results in Paired T-Test. The results have shown that career exploration will increase with the passage of time and supports the developmental theorists' view of career exploration as a natural process of development and evolution (Super, 1990; Super, Savickas & Super, 1996). Of course, a further question is how to enhance the developmental process through career interventions. To investigate this will require controlling for maturation effects to examine the intervention effects through proper research designs in future studies. For instance, a longitudinal design with comparisons between results of intervention and control groups should serve this purpose.

### 6.3.2. Impact of Prior Exploration

In the results, it was found that prior level of career exploration predicted subsequent level. The more one explores previously, the more he or she is likely to do it again in a subsequent stage. In the hierarchical regression in time 2, prior environment and self exploration in time 1 explained respectively 8.8 % of environment exploration and 6.5 % of self exploration. Similar to studies in the West (Ajzen, 1991; Millar & Shevlin, 2003), prior behaviour was confirmed as a valid predictor of career exploration behaviour in Hong Kong. In terms of theory building, the theory of planned behaviour (Ajzen, 1991) can further be applied to the study of vocational behaviour in the local context. In Ajzen's (1991) framework, besides prior behaviour, salient beliefs (including behavioural beliefs, normative beliefs and control beliefs) are all determinants of behaviour intentions and actual behaviour. Given the initial application of the construct of prior



behaviour in this study as well as proven validity of TPB in the West, it is worthwhile to further test the TPB framework on vocational behaviour in the Hong Kong context.

Ajzen (1991) admitted that past behaviour affected the performance of the behaviour in future, and he doubted if the relation between past and later behaviour was really causal. He opposed treating past behaviour simply a single determinant of habit, but regarded it as a reflection of the impact of all relevant factors. In this study, it seems to me that there were two groups of students with differences in career exploration. First, those who were actively exploring tended to engage in more exploration when they had opportunities at a subsequent time. They made more career development progress which contributed to further progress. The other group explored less and made less progress at a subsequent time. In fact, additional analyses were conducted to explore this. The respondents were divided into a high and a low self exploration group on the basis of self exploration at Time 1. Then a T-Test showed that the two groups had a significant difference on their self exploration at Time 2. Likewise, a T-Test also showed that the high and low environment exploration groups at Time 1 had a significant difference on their environment exploration at Time 2. To explain such a finding, I draw upon the theory of career salience (Greenhaus, 1983; Super, Savickas & Super, 1996), in which an adolescent engages himself or herself in career exploration if career is perceived as important. That is why those with higher career salience will start and keep on exploring. To further understand why only certain students are motivated to explore, I have also adopted the theory of intrinsic and extrinsic motivation (Deci & Ryan, 1985; Flum & Blustein, 2000) in Chapter 3 on the research hypotheses. Under this theory, one is motivated to explore either by intrinsic motives or extrinsic benefits instrumental to long term goals one desires. In this light, past exploration behaviour tends to predict present exploration unless one's motivation to explore has changed significantly by intervening variables. Admittedly, the passage of time may not bring about significant changes in the motivation to explore.



### 6.3.3. Career Exploration and Identity Status

As career exploration involves a process of gradual evolution and maturation, how it is related to the process of identity formation in late adolescence? This study also examined the relation between identity status and career exploration. ANOVA results demonstrated that identity status at both Time 1 and Time 2 were associated with respectively amount of career exploration (both self and environment exploration) in the three months preceding. From the posteriori tests, scores for environment exploration of identity achievers were significantly higher than scores of respondents of other statuses at both Time 1 and Time 2. Scores for self exploration of those in diffusion status were significantly lower than scores of respondents in other statuses at both Time 1 and Time 2. The results are consistent with theories on exploration and identity status. Previous studies have established identity status as a predictor of career exploration (Schmitt-Rodermund & Vondracek, 1999; Blustein, Devenis & Kidney, 1989; Bartley & Robitschek, 2000). From the theory of identity status (Marcia, 1966), the active explorers are in the moratorium and identity achievement statuses. Blustein and Philips (1990) found that adolescents in the moratorium identity status engaged in more exploration as compared to those in diffusion or foreclosure status. Schmitt-Rodermund and Vondracek (1999), moreover, found in a sample of German adolescents that identity achievers were most engaged in career exploration and those in diffusion least.

There are conclusions to be drawn in this study. Firstly, the relation was established, similar to studies in the West, that those in identity achievement tend to be more active in career exploration. Secondly, the causal relation between career exploration and identity statuses is still difficult to ascertain. As pointed out by Flum and Blustein (2001), career exploration and identity development are two inter-related processes in late adolescence. In this study, identity status was found related to career exploration three months preceding. Career exploration could



have led to certain identity status. Alternatively, the identity achievement status could have caused career exploration. In this study, career exploration for the past three months was found to be related to perceived identity status at the moment and identity achievers are found to be more active explorers at both Time 1 and Time 2. In this light, there are some grounds to propose career exploration as a predictor of identity status achievement. In previous canonical studies (Blustein, Devenis and Kidney, 1989; Bartley and Robitschek, 2000), identity statuses were included as predictors of career exploration, while Flum and Blustein (2000) also regarded identity formation as a core *outcome* of career exploration. The relation between career exploration and identity status is complex. Summing up from results of previous research and this study, the relations seem to be bi-directional, with the two variables affecting each other. Moreover, there may be intervening variables affecting them both. From a sociological perspective, moreover, the environmental factors (Johnson and Mortimer, 2002) might influence both identity development and career exploration. Robert (1997) argued that the changing environment opportunity structure has resulted in the prolonged transition of youth from study to work, influencing their personal and career development. Johnson and Mortimer (2002) also proposed that career development is determined by social structures and classes. No doubt, the causal relation between career exploration and identity status needs to be further investigated in future studies.

#### 6.3.4. Career Exploration and Intervention Types

Hypothesis 10 stated that participants in an Internship would show a significantly greater increase in career exploration over time than participants in career seminars. Significant time effects were found for both self and environment exploration and a type of intervention effect for environment exploration only. However, these effects did not prove significant differences of type over time. To prove the hypothesis, the interaction effects of time and intervention type have to be significant. As there was no significant interaction effect, the hypothesis was



not supported. Whether the differences in environmental exploration were due to intervention type or prior expectation of students could not be ascertained. From the results of this study, participants in the work internship scored higher in both self and environment exploration prior to joining respective interventions. Thus, participants in work internships had more experience of, and perhaps stronger preference for, career exploration as compared to their counterparts in career seminars. The influence of prior experience and preference further complicates the comparison of the two intervention types.

In future theory building, a broader framework of intervention, beyond mere intervention type, is suggested here. Feldman and Weitz (1990) highlighted factors of successful internship experience as students' expectations about the internship, the socialization procedures used, the design of internship work, attitude and expectations of internship supervisors, as well as how far the internships fit into students' career plans. Arnold, Auburn and Ley (1995) emphasized that work placements have to be carefully designed if they were to enhance the career development of students. I think the above comments are also applicable to career education programmes. Therefore, in comparing career interventions, emphasis should be put on the prior expectations of concerned parties, the socialization processes, as well as the programme designs. Each of these might be related to career exploration activities in different ways. In general terms, based on rich research findings, Pascarella and Terenzini (1991) advocated that in the study of the impact of the college experience, outcomes are related to student background and prior college experience. In assessing the former, the latter two have to be controlled for. In future theorizing, a comprehensive model integrating more prior variables would be needed. Exposing students to the workplace does not automatically mean that they will have a higher level of environment exploration. Likewise, participation in career education does not restrict the students to self exploration only. To induce exploration behaviour, it is important to orientate and facilitate the learners. For learning in certain directions to take place, it is not adequate just to rely on a single variable. The learning experience needs to be



structured with reference to learning objectives and the nature of learners and the environment, attending to both the learning process and the transfer of learning.

#### 6.4. Outcomes of Career Exploration

In this study, the career exploration outcomes of self clarity, amount of information, CDMSE, decisiveness, decidedness and intention to develop career in Mainland China (IDC) were included in the hypotheses testing. First, the outcomes were tested on their changes with the passage of time. Self clarity and amount of information, decisiveness and CDMSE were found to increase significantly with the passage of time by Paired T-Tests. The change could have come with maturation or learning experience. Jones ( 1989) defined decisiveness as how far a person perceives that he or she can make career decisions without delay, difficulty and dependence on others, and decidedness as how decided one is about his or her career or occupational choice. The result suggested that one's perception of own ability to make appropriate decision without delay may increase over time due to maturation and perhaps participation in a career intervention programme. Decidedness is defined as how decided is one about own career or occupational choice. In this study, decidedness is not found changed over time. From the multiple regressions significant variance in decidedness is explained by individual orientated achievement motivation as well as relational support. In other words, career decidedness is shown to be influenced by achievement motivation, career support of family and teachers rather than career exploration. Also, the intention to develop career in Mainland China (IDC) was not affected by time. As maturation or existing leaning experience did not change IDC, other factors like prior China experience may be explored in future research.

From the results of multiple regressions, self exploration was found not to predict self clarity at either Time 1 or Time 2. Therefore, self exploration did not further explain variance in self clarity after relevant factors are controlled for.

Environment exploration for the past three months was found to be correlated



with amount of information and self clarity at Time 1. Environment exploration explained the variance of amount of information at Time 1 but not Time 2 after relevant factors are controlled for. Moreover, measures of career exploration were found correlated with CDMSE at both Time 1 and 2. Other than that, only environmental exploration was found correlated with decisiveness at Time 1. In the multiple regressions, career exploration additionally accounted for 12.6% of variance in CDMSE but not decisiveness and decidedness at Time 1. It also additionally accounted for 9.7% of the variance of CDMSE but explained neither variance decisiveness nor decidedness after relevant factors are controlled for. Finally, career exploration did not explain the intention to develop career in Mainland China.

In sum, multiple regressions showed that career exploration was related to amount of information and career decision making self efficacy, but not to self clarity, decisiveness or decidedness. While reaffirming findings of previous literature, these results also shed some new light. Stumpf et al (1983) linked the process of exploration to increases in both amount and satisfaction level of occupational information. Blustein and his colleagues (1989, 1994) found that career exploration activities had an impact on progress in career decision making, including self concept crystallization, vocational commitment and planning. This study also supports that career exploration is related to outcomes of amount of information and progress in career decision making. However, it distinguished between the outcomes of decisiveness, decidedness and career decision making self efficacy in relation to career exploration. In terms of career self understanding, it also differentiates the respective relations of self clarity and career decision making self efficacy. I shall elaborate on the implications for the understanding of career decision making, career self understanding as well as career development in Mainland China.

#### 6.4.1. Career Self Understanding



The results in this study have shown that career exploration was found predictive of career decision making self efficacy but not self clarity. This seems not to be consistent with previous studies in the West, which found career exploration resulted in self concept crystallization (Blustein et al, 1994).

To understand the differences, the conceptualization and operationalization of related constructs should be discussed. In Blustein's (1994) study, vocational self concept crystallization is measured by the Vocational Rating Scale (VRS; Barret & Tinsley, 1977), which operationalized vocational self concept crystallization as "the degree to which the separate vocationally relevant self-concepts possess clarity and certainty for the individual, and as a whole the constellation of self attributes possess internal differentiation or structure." (p. 308). In this study, the construct of self clarity is as defined by Jones (1989): how far one understands his or her interest, personality and abilities and the extent to which one can fit these characteristics into relevant occupations. In contrast to the self clarity scale, the VRS (Barret & Tinsley, 1977) measures more of the metadimensions of self concepts. As defined originally by Super (1963),

"A self concept is the individual's picture of himself, the perceived self with accrued meaning. Since a person cannot ascribe meaning to himself in a vacuum, the concept of self is generally a picture of the self in some role, some situation, in a position, performing some set of functions, or in some web of relations." (p. 18)

According to Super, the metadimensions of the self concepts are "the characteristics of the traits which people attributes to themselves." (Super, 1963; p. 24). In VRS, the metadimension of clarity, certainty and structure of self concepts were included. As for the self clarity scale, the focus is on clarity, as well as a practical concern fitting one's own attributes to occupations. In this sense, while the results on self clarity can be contrasted with Blustein's findings relating



to vocational self concept crystallization, it may not be appropriate to over-generalize. Different constructs were employed in different studies. It would definitely help to further test the vocational self concept crystallization process of local students with different constructs.

On the other hand, the relation between career exploration and self clarity can also be discussed from a developmental perspective. From the results of multiple regressions, self exploration was found not to predict self clarity at either Time 1 or Time 2.

However, correlation was found between self clarity and environment exploration at Time 1. Moreover, self clarity had increased significantly from Time 1 to Time 2 as time passed. From a longitudinal view, I argue that the increase of self clarity needs time. From career exploration, one gains more information and knowledge about self and occupations. To achieve self clarity in the sense of fitting one's own attributes to appropriate occupations, one needs to process the related information in-depth. This can be done with meaningful career guidance on a personal level. Or, as evidenced from the results just mentioned, self clarity can be enhanced with the accumulated effects exploration and its outcomes, like occupational information, over time. This explanation is also consistent with Greenhaus' model in which exploration results immediately in awareness of self and environment, which in turn leads to the formulation of career strategies later.

While career exploration was not found to enhance self clarity, it has been shown to result in a significant increase of career decision making self efficacy immediately at both Time 1 and Time 2. In other words, exploration enhanced the confidence of the student in completing specific career related tasks.

Career-related self efficacy can be understood as a motivational aspect of self. Betz (1994) quoted Super's self concept as a constellation of personal attributes and constructs, including self efficacy. To explain the above difference, I draw from Lau's (1995) paper titled "Undergraduates' perceptions and evaluations of



career guidance activities: A Hong Kong study”. From the responses of 492 local undergraduate students, she found that counselling services had been perceived narrowly and instrumentally. The most popular career guidance activities were information based, externally focused, being regarded by students as practical and immediately useful. Lau observed that,

“students in the study may prefer a career assistance service which is ‘specific’ rather than ‘general’; ‘immediate’ rather than ‘long-term’; and external’ (tangible) rather than ‘internal’(intangible).”

Lau (1995) linked such help-seeking behaviour to the hierarchical social relations and pragmatism of Chinese culture. In a hierarchical society, students were expected to look for structure and concrete directions from who they regarded as authority people. She also explained Chinese pragmatism as the tendency to emphasize tangibles and immediate payoffs, which was originated from the historical economic hardships Chinese people had been experiencing previously. Lau opined that just tangible, immediate and directive career assistance was not adequate and advised career counsellors to guide students into in-depth, unstructured self-discovery through trusting relationships with the latter.

The structured, specific and pragmatic information-seeking style of the students should explain why their career exploration resulted in higher self efficacy in specific career related tasks but not in self clarity. To achieve self clarity in terms of awareness of interests, personality, personal strengths and weaknesses, a high level of self introspection is needed. Local university students incline to use an immediate, pragmatic approach to career information seeking, but self concept can only be explored in an in-depth, reflective approach.

In sum, the contrast between the outcomes self efficacy and self clarity highlighted a pragmatic and specific approach of local students in their



exploratory behaviour. As mentioned, Lau and Pang (1995) related the practical job seeking behaviour to the hierarchical nature of the society. On the other hand, in this study self clarity only evolved and developed gradually over time. Also, the levels of self clarity are likely to be improved by appropriate interventions targeting it. So, a longitudinal approach will enhance the development of self clarity. On a more theoretical level, vocational self concept is defined as the “constellation of self attributes considered by the individual to be vocational relevant” (Super, 1963, p20). The process of vocational self-concept crystallization of students can be better understood with more constructs and dimensions of vocational self concepts, such as VRS (Barret & Tinsley, 1977), applied locally. It would be interesting to further explore under what circumstances students will undergo changes in vocational self concept in future study of career exploration. Flum and Blustein (2000) regarded a core outcome of career exploration as self construction, or establishing meaningful identity. In this light, it is very worthwhile to investigate the meaning construction process of students in career exploration. To do this, qualitative studies in the local context are highly recommended.

#### 6.4.2. Career Decision Making

In term of career decision making, the results are explained in relation to both literature and contextual factors. In this study, career exploration was not related to decidedness or decisiveness. In fact, previous studies above did not relate exploration to reaching a specific career choice, but rather linked it with the commitment to further career searching or actions (e.g. Blustein, 1994).

Recapping Tiedeman and O’Hara’s (1963) perspective, career decision-making was a sequential progression through stages of exploration, crystallisation, choice, clarification, induction, reformation and integration. From this prescriptive approach, adequate self and career exploration leads naturally to career choice, and having a career decision is both desirable and preferable. A career choice will further give an individual a focus to prepare for job entry and adjustment. Thus,



the inability to make a career choice is often related to personal or career problems.

From his social learning perspective, reaching a career decision may not be so necessary. Krumboltz (1998) argued against decidedness. He realized that in an age of rapid technological change, young people find their career choices obsolete because both the individual and the world of work are changing. Instead of making a decision, he emphasized the wisdom of open mindedness, or treating each choice as an experiment to see if it yields life satisfaction, though he admitted that some experiments require much sustained effort and considerable time to assess the outcome. The prescriptive approach that university students must arrive at a career decision is under great challenge. In an ever-changing society, it makes a lot of sense to explore more career options than limiting oneself to a choice pre-maturely. So Krumboltz emphasized the wisdom to remain open to options and make full use of all possible chances.

Taking a developmental-contextual perspective in this study, I agree that career exploration activities may not necessarily target making the final career decision right away. However, they should help students to progress in career decision making. Exploration activities will accumulatively facilitate students to make a career choice. Practically, in the process of career development, it is important for students to establish a clear vocational direction in terms of establishing focus and priority amongst different career options, and perhaps remain open about the decision until a later stage. In this light, it is understandable that career exploration resulted in career decision making self efficacy rather than decidedness.

Distinction, however, should be made between students who are currently undecided or generally indecisive. Being undecided is a normal developmental state while generally indecisive persons may need more intensive counselling or intervention to improve decision skills.

In discussing the learning outcomes of career guidance, Killeen (1996b) also



distinguished different outcomes in terms of time. Immediate outcomes were proposed as changes in knowledge, skills and attitude and decision state, and intermediate outcomes as motivational commitment and career decision making and job search behaviour. Killeen did not further explain what he meant by immediate and intermediate. From a developmental perspective, the outcomes of exploration evolve over time. Greenhaus (1994) proposed that career exploration leads to awareness of self and environment, and such awareness, in turn, will lead to formulation of career strategies. In other words, the outcome of awareness may further lead to the outcome of career strategy formulation. In this study, exploration over the past 3 months resulted in career decision making self efficacy, and not decidedness and decisiveness. However, it is plausible that given a long period of evolution, the accumulative affects of career exploration, occupational information and CDMSE may have an effect on decidedness and decisiveness. As discussed earlier, the students tend to adopt a pragmatic way of occupational information seeking, and such behaviour is likely to lead to the confidence of tackling specific tasks related to career decision making but not to immediate decision making. The accumulative effects of such behaviour over time, however, may bring qualitative change in decision making.

From the multiple regressions, however, the variance in decidedness at Time 1 is explained significantly by individual orientated achievement motivation as well as relational support. The variance in decisiveness at Time 1 was explained by both individual-oriented achievement motivation (IOAM) and social-oriented achievement motivation (SOAM). In other words, career decidedness is shown to be influenced by motivational and relational factors while decisiveness is influenced by achievement motivation. In sum, to account for career decisiveness and decidedness, one has to take a developmental-contextual perspective of vocational development (Vondracek et al., 1986), taking into consideration behavioural, relational, motivational and longitudinal factors.

#### 6.4.3. Intention to Develop Career in Mainland China



Besides the above constructs, mobility was also examined as an outcome of exploration to be tested as follows: Hypothesis 11 stated that career exploration activities in Mainland China would enhance the subsequent intention for career development in exploration in Mainland China. However, the hypothesis was not tested in this study. The internships and career programmes originally scheduled in China were cancelled due to SARS. I still postulate that career exploration activities in China are related to career mobility. In this study, achievement motivation was found to be a significant predictor of intention for career development in Mainland China at Time 1 after demographic, motivational and relational factors were controlled. The standardized coefficient for IOAM was found significant. Hence, individual achievement motivation was shown to be related to the intention to develop career in Mainland China. In addition, the longitudinal data in this study revealed that prior level of intention for career development in the Mainland predicted subsequent level of the variable at Time 2. So, the intention for career development in Mainland China is a gradual evolutionary process. Both prior intention and career exploration contribute to its subsequent development. In Ajzen's (1991) theory of planned behaviour, besides prior behaviour, salient beliefs (including behavioural beliefs, normative beliefs and control beliefs) are also determinants of behavioural intentions and actual behaviour. This model can be applied to investigate how far salient beliefs and prior behaviour contribute respectively to the intention and behaviour of career mobility in Mainland China. Summing up, it is worthwhile to further test the impact of prior exploration activities in Mainland China on the intention to develop career in the Mainland, preferably with relevant motivational and attitudinal variables included.

## 6.5. General Implications of the Findings

### 6.5.1. Theoretical Implications



In the previous section, the findings of this study have been summarized and discussed under various themes. I have tested relationships among variables in an adapted framework of career exploration as described in the hypotheses chapter. With the meaningful relations established among the variables, the relevance and applicability of the framework in the local context is supported. Based on the results, I argue for the value of the research framework of career exploration (Flum & Blustein, 2000) in accounting for the complex career exploration behaviour in Hong Kong and other Chinese societies.

To recap, certain relations among career explorations were found by this study. Firstly, it demonstrated the relevance of IOAM and SOAM to the study of career exploration. Secondly, it highlighted the significance of relational support in accounting for career exploration, in which career support of teachers was shown as a predictor of career exploration. Thirdly, from a developmental perspective, career exploration was found to be an evolutionary process that changes with the passage of time and is influenced by prior exploration behaviour. The process of career exploration was also found to be related to development of identity status in late adolescence. Fourthly, on the outcomes of career exploration in self understanding and career decision making, this study differentiated, tested and compared different conceptualization of the outcomes. Fifthly, the two types of career interventions of career seminars and work internships were not found significantly different in affecting career exploration over time.

Taken in total, the study was found fruitful as an effort to extend the research framework of Flum and Blustein (2000) to the Hong Kong context. As explained in the hypotheses chapter, the research framework (Flum & Blustein, 2000) is actually a blueprint for the essential domains of variables related to career exploration. It outlines the key perspectives and broad directions of future career exploration research. The authors did not strictly prescribe a specific model of variables of career exploration to be tested in totality. Rather, there is plenty of



room to test different variables in the domains of antecedents, process and consequences of career exploration under this broad framework. The four perspectives of their framework were proved to be useful guidelines in the research design of this study. The perspective of identity formation guided the hypothesis testing about the relation between career exploration and perceived identity beliefs. The perspective of human motivation facilitated the understanding of intrinsic and extrinsic motivation as antecedents of career exploration. It also stimulated the inclusion of achievement motivation variables in hypotheses testing, which was found relevant in the local context. The contextual and historical perspectives had emphasised the importance of taking account of social changes, including mass university education, influence of Western-style educational system and Chinese culture in the local context, in formulating the hypotheses and explaining the findings.

In this study, I have adapted the original framework in this study by adding in culture-specific variables and new dimensions. In addition to IOAM and SOAM, prior exploration behaviour was also included to understand the process of evolution of exploration. With an emphasis on career exploration on participants of career intervention programmes, the study is also relevant to practitioners who are very much concerned with the effectiveness these types of interventions which are commonly employed. I have proved that the career exploration framework, either as conceived by Flum and Blustein (2000) as general guiding principles, or as adapted in this study in this study, is highly relevant to understanding career exploration behaviour in the Hong Kong context. Given the historical links and cultural similarities, the framework is expected to be relevant in other Chinese societies as well.

On a more general theoretical level, Flum and Blustein (2000)'s framework can be classified as a process theory developed from a developmental perspective (Jordaan, 1963; Super, 1990). Influenced by the developmental-contextualism (Vondracek, Blustein, 1997), it attended to both developmental and contextual



variables of career development. In the literature review chapter, I have discussed the major theoretical approach of career development and pinpointed that local theory building concentrated heavily on Holland's hexagon, which is a content approach to career development. This study has demonstrated the relevance of a process approach in two ways. Firstly, under a broad conceptualization of self (Super, 1963; Flum & Blustein, 2000) in the developmental approach, as compared to the trait-factor and the social learning approaches, more constructs of self could be introduced and examined. In this study, the constructs of self clarity, career decision making self efficacy and identity status have been included to generate data for comparison. Secondly, the developmental- contextual perspective (Vondracek et al., 1986; Flum & Blustein, 2000) was proved very useful in both unfolding the evolutionary nature of exploration and evaluating impact of contextual factors.

#### 6.5.2. Applied Implications

In this study, achievement motivation explained only limited career exploration. In other words, those who seek achievement are not likely to channel their energy into career exploration. However, relational support counts. Students are more likely to engage in career exploration with relational support, especially support from teachers. Moreover, prior exploration behaviour predicted subsequent exploration behaviour. Those who had explored before were found more likely to explore again, while those had not were less so. In terms of outcomes of career interventions, it is found that interventions are related to more occupational information and higher career decision making self efficacy. However, it is questionable if interventions will change the motivation to explore and facilitate on-going career exploration critical for career preparation and employment transition. In sum, these results seem to centre around the lack of motivation and initiative of a substantial number of students to engage career exploration on their own. Reasons for this, including a number of historical, social factors and the pragmatic attitude of students, have been discussed. Form a practitioner's point of



view, the natural concern will be what can be done. In this light, the following points are suggested.

First of all, there are policy implications for the management of local universities. The key point, as advocated by theorists (e.g. Rayman, 1999; Gore, 2005), is to make career development an integral part of the education process in higher education. Career development of university students, in this approach, should not be shouldered merely by career services and job placement offices, but championed and coordinated by senior management as a concerted effort from both academics and student affairs professionals. Watts and Van Esbroeck (1998) studied the guidance and counselling systems in higher education institutions in the member states of the European Union. From their analyses on the trends in higher education and labour market, they proposed a “holistic student-centred model of guidance’. In the model, first-in-line guidance is provided by university teachers, second-in-line guidance by faculties and academic departments while third-in-line guidance by specialized student and careers services outside faculties. This model seems capable of both involving academics and students in a comprehensive system, as well as soliciting relational support of teachers for the students. While these calls are not new, they have special relevance to the changing scene in higher education and graduate employment in Hong Kong.

In promoting career exploration among university students who might not be so keen, it is inadequate to count on their voluntary participation in career services and programmes. It is desirable to build elements of career exploration into the formal curriculum (Law, 1996). This can be a general education credit-bearing course on career planning either for all students or tailored for specific disciplines. Moreover, work internships can also enhance career exploration among students. Research data from this study, as well as previous studies (Savickas, 1990; Peng & Herr, 1999; Taylor, 1985) tend to support the value of both career education courses and work internships in promoting career exploration. In this light, both career education courses and work internships can be incorporated into the formal



curriculum as a necessary component.

Moreover, in designing careers services and interventions, more consideration should also be given to fostering relational support. Traditional interventions like information giving, career testing and individual counselling focus primarily on equipping students for self understanding, goal setting and action planning to achieve their individual career plans, usually rendered by professional counsellors. As relational support was found to be a strong predictor of career exploration, career practices should also aim at soliciting career support of teachers. This may include providing the atmosphere and different opportunities to foster such support, ranging from casual career discussion to formal mentoring programmes. As mentioned before, teachers play a special role in socializing and guiding proper behaviour of students in Chinese culture. They can act as resource person, mentor, guide or role model in motivating students into career exploration. In this consideration, there are also other people who are capable of providing such support. Along this line, relational support from other people can be brought in. For instance, alumni and employers are also resourceful and rich in experience, often well received by students if they offer relational support. Therefore, in addition to professional counsellors, teachers, graduates and employers can participate to give career support, role modelling and coaching to students.

To foster career support for local university students, it is inadequate to rely on discrete career programmes. Kidd, Hirsh & Jackson (2004) pointed out that in research literature career support in organizations had focused on discrete interventions like career workshops and less attention was paid to on-going support. They summarized that in organizations, informal mentoring relationships appeared to be more effective than formal mentoring relationships. They (2004) also demonstrated that informal career discussions at the workplace produced positive career outcomes. It appears that more informal career discussions can be encouraged between students and their teachers or mentors to strengthen relational support. Efforts should also be made to help the students to establish networks of



supportive relations. Academic and student services departments should collaborate to create opportunities for creating meaningful relations and career discussions. In this light, practitioners may think beyond one-to-one mentoring programmes and provide a variety of opportunities for the students to engage in meaningful interactions with teachers, alumni, employers and students through career discussion, mentoring, coaching and networking. Meaningful personal contacts will contribute to better career support for students

Moreover, given the low interest of career exploration of a substantial number of students, career interventions can be designed to enhance the motivation to explore. As Flum and Blustein (2000) emphasized, the core outcome of career exploration should be self construction. Therefore, in providing interventions like career courses and work internships, it is highly desirable to build in opportunities to induce curiosity, vocational interests and critical self reflections. Lau and Pang (1995) pinpointed that local students generally adopt a pragmatic attitude to vocational information seeking. The self reflection exercises and encounters with teachers, employers and mentors in the intervention programmes, if properly designed, can facilitate the participants to engage into in-depth exploration and make meaning out of their experience. As a result, the relevance of exploration will be felt by the explorers and the motivation to on-going exploration enhanced. In this light, designers of the interventions should not focus only on arranging the best learning opportunities, but also facilitating the participants to consolidate and make meaning out of their learning through well thought out self reflection assignments as well formal and informal discussion, guidance and counselling sessions throughout and after the intervention period.

### 6.5.3. Future Research Implications

The implications for future research can be drawn at different levels. First of all, meaningful relations were established among variables. Follow-up investigation can be made on the ways these variables affect career exploration, especially for



SOAM and teacher support. Secondly, additional variables can be introduced into the framework of exploration for testing, especially culture-specific and longitudinal variables. Finally, using Flum and Blustein's (2000) research framework as blueprint and guidelines and given the efforts and results of adapting the framework in this study, this line of career exploration research can be readily extended into other Chinese societies. I shall elaborate as follows.

The impact of SOAM on career exploration deserves further examination. In this study, correlation was found between SOAM and environment exploration while the multiple regressions did not prove SOAM to be a predictor of exploration. It is premature to conclude that social-orientated achievement motivation does not predict environmental exploration in other Chinese societies beyond Hong Kong. The relation between social-oriented achievement motivation and career exploration should be further investigated perhaps in other Chinese societies with higher levels of SOAM and favourable contextual factors. For instance, areas like Chaozhou of Guangdong Province and Wenzhou of Zhejiang Province are renowned for the entrepreneur spirit and business success of the people. They have a tradition of encouraging their people to move beyond their hometown and look for business fortune and success within China and overseas. Moreover, in some deprived rural areas in Mainland China, in order to improve economic conditions, families may encourage their sons and daughters to explore vocational or business opportunities in their immediate or more distant environments. In the process, the family and clans are often involved in encouraging and arranging for young people to seek opportunities and relocate. If the latter succeed in making a fortune, the family and relatives are also expected to be honoured and benefited economically. Possibly, it is a case of SOAM triggering environment exploration as the seeking of possibilities in the environment is out of the common good of the family. There is no investigation of this and it seems worthwhile doing so.

Moreover, it is interesting to further understand the nature of teacher support. In this study, relational support of teachers is measured by one item on the level of



career support offered by teachers. Subsequently, teacher support appeared to be a predictor of exploration. I have explained this by the traditional role of teachers in guiding proper behaviour of students. Moreover, given the fact that over 90 % of local university students were first-generation university students (Chan & Yue, 1997), university teachers seem in better position to facilitate the occupation information seeking of students. Western theories conceptualized relationships as an attachment and supportive base for career exploration. In a more hierarchical society like Hong Kong, teachers tend to be more directive in their relationship with students. Therefore, follow-up studies may focus on the nature of teacher support and the roles teachers can play in facilitating career exploration like informing giving, advising, mentoring and networking etc. Differences among respective roles played by teachers, peers and parents can be examined. This can preferably be achieved by qualitative study in Hong Kong and other Chinese societies.

This study also contributed by adding in culture-specific factors the research model. The adoption of the Chinese indigenous constructs of IOAM and SOAM was found relevant to the study of career exploration behaviour. This is a response to the call for the adoption of emic (or cultural-specific) constructs in addition to etic (or universal) ones as advocated in the study of Chinese psychology (e.g. Yang, 1986; Bond & Hwang, 1986). It also endeavoured to consider cultural-specific variables in application of Western vocational theories as urged by vocational psychologists (e.g. Leong & Serafica, 2001; Fouad, 1993). In the study of career exploration, Chinese achievement motivation should be further examined. Moreover, in further theorizing about of career exploration, other indigenous variables can be brought into the study of career exploration. For instance, Farh, Leong and Law (1998) found the indigenous construct of traditionality affecting vocational interests of Hong Kong students, and “traditionality” might be further examined.

From the developmental perspective, the process of career development and



commitment in late adolescence is gradually evolving from higher education to graduate employment. In discussing the learning outcomes of career guidance, Killeen (1996b) also distinguished different outcomes in terms of time. Immediate outcomes were proposed as changes in knowledge, skills and attitude, and intermediate outcomes as motivational commitment and career decision making and job search behaviour. Labour and job entry were included as long term outcomes. However, he did not specify an exact duration of time for each category of outcomes. Generally, more longitudinal studies will further enable us to understand the evolution of career exploration over time. A longitudinal design with 4 to 6 months between Time 1 and Time 2 was adopted in this study and its longitudinal data was found useful in understanding the evolution of career exploration. To enhance the understanding of the career development process for university students, longitudinal studies, preferably over longer periods and with measurements at more points of time, are suggested to examine the impact of prior career exploration activities of the students on their subsequent entry and adjustment in graduate employment as outcomes of career exploration. Longitudinal studies of university graduates in their career exploration and commitment in their graduate employment is another interesting theme to explore given prior work (Greenhaus, 1983; Stumpf & Hartman, 1984) on the application of career exploration in the workplace. Such studies will be highly relevant to the local context.

This study has adopted a quantitative approach of investigation. As Blustein (2003) proposed, quantitative and qualitative methods can be used interchangeably in a line of inquiry to complement each other. As for career exploration, a qualitative approach will give an account of exploration experience as perceived by the explorers. Flum and Blustein (2000) regarded the core outcome of career exploration as self construction. In this light, qualitative study is recommended to capture the process self construction and meaning making as perceived by students as they committed themselves to career exploration activities. In addition, as mentioned, qualitative research on students and their teachers and mentors will



also shed light on the nature of supportive relationships as perceived by concerned parties.

Last but not the least, given the cultural similarities, the line of career exploration behaviour can be extended to other Chinese societies, especially Mainland China. Like Hong Kong, higher education is also expanding, only at a higher pace and much huger scale. Zhou (2006) reported that the total number of regular undergraduate students in China had increased from about two million in 1990 to over seven million in 2004, and the total number of tertiary students (including undergraduate and junior college students) exceeded thirteen million in 2004. Research data on the career exploration behaviour of university students is much needed for theorists and practitioners alike.

#### 6.6. Limitations of This Study

Although career exploration research has made much process in the West (Swanson & Gore, Jr., 2000; Blustein, 1997; Flum & Blustein, 1999), this study is a first endeavour to extend the line of career exploration research to the Hong Kong context. From standpoints of either extending previous research or investigating local situations, there are immense possibilities of doing it. To the best of my understanding, there is no prior example to follow locally. As the potential and possibilities of doing career exploration research in Chinese societies are so great, any pioneer study is bound to be exploratory and confined to testing certain specific issues and variables rather than all-embracing. Efforts are made in this study to include a number of relevant variables to test, but the variables are by no means exhaustive.

In terms of research design, I have selected the quantitative approach because it is most appropriate to test the specific hypotheses for this research. On the other hand, I also see generally the value of both qualitative and quantitative approaches



in vocational psychology (Savickas, 1995). Considering the value of both cross sectional and longitudinal data in the study of career exploration (Flum & Blustin, 1999; Vondracek, Lerner & Schulenberg, 1986), I have adopted both in this study to generate data about the antecedents, processes and outcomes of exploration. Such data will be used to test the relations among variables in the framework through multivariate statistics. The good thing is that I can test relations among a number of variables in a relatively systematic framework of career exploration. Having clarifying and establishing such relations would be useful to both theory building and career practice. Especially from a quantitative etic approach, I can compare the results with those from prior studies. To understand the impacts of local contexts, some emic, or cultural -specific factors are also included. Moreover, using a longitudinal approach with a 4 to 6 months interval, I can trace the development and evolution over time.

However, the limitations of such a design should also be noted. First of all, to understand career exploration, both quantitative and qualitative studies are needed. While quantitative methods work well in testing theories, qualitative methods identify how individuals interpret the social world (Bryman, 2001). Quantitative method is selected in this study because it meets the objectives of this research. However, to fully understand the process of career exploration as the students construe and interpret it, qualitative methods are required. From a social constructive view, Flum and Blustein (1999) regarded career exploration in the 21<sup>st</sup> Century as a process of self construction in changing contexts. In this light, the qualitative approach is in better position to discover to understand how students construe themselves and make meaning in the process of exploration. Therefore, future studies in the local context may include qualitative designs to shed light on how the students make sense of career exploration, especially on their identity change and self constructions.

As there is a general lack of validated career assessment tools in the local context (Leung 2002), I have mainly used established Western measures with proven



reliability and validity. In this study, evidence of reliability and validity was gained for most of the measures. However, some measures had to be dropped due to low reliability, including the “comfort” and “importance” scales from the Career Decision Profile (CDP; Jones, 1989), as well as the “planfulness” scale (Reitzle, Vondracek & Silbereisen, 1998). The exclusion of data from these few measures did not affect the hypotheses testing in this study very much. However, had these measures been reliable and valid, there would have been useful data to further understand more about the affective and attitude changes in relation to career exploration. In future studies, it is very worthwhile to develop measures of the above constructs either by re-writing existing items or creating new scales in the local context. In addition, identity status is measured by Silbereisen, Vondracek and Berg’s (1997) one-item measure of identity belief. Respondents’ identity statuses are determined by their choice one from four descriptions. As explained earlier in Chapter 4, this measure proved reliable in a large scale youth study in Germany (Schmitt-Rodermund & Vondracek, 1999; Silbereisen, Vondracek and Berg 1997; Reitzle, Vondracek & Silbereisen’s, 1998) as well as in this study. Although it serves the purpose as a simple instrument for initial hypothesis testing, it is a general measurement of the beliefs of the respondents. From the cross tabulation of Time 1 identity beliefs and Time 2 identity beliefs in the last chapter, the beliefs seemed unstable and varied considerably during the time interval. Therefore, more elaborate and objective multi-dimension measures are suggested to further understand the relation between identity statuses and career exploration. In this light, the Extended Objective Measure of Ego Identity Statues (EOM-EIS; Bennion & Adams, 1986), a 64-item scale with 8 subscales on different identity areas, and the Identity Status Interview (ISI: Marcia & Archer, 1993), a semi-structured interview tool, are possible choices. These measures may shed more light on the causal relation between career exploration and identity status, as well as the complexity of the latter.

As explained in Chapter 4, the characteristics and limitations of the sample and data collection should be acknowledged. The sample in this study is drawn from



voluntary participants of career programmes and an internship. Therefore, they represent the relatively motivated students more than the general student population. Moreover, the data collection was affected by the outbreak of SARS in Hong Kong and Mainland China in 2003. First, all internships and business orientation programmes to Mainland China were cancelled. Therefore, Hypothesis 10 about the relation with career exploration and career exploration activities Mainland China could not be tested. Second, when the internships to Mainland China were cancelled, additional data had to be collected from students participating in internships in Hong Kong by the Faculty of Business. Third, the career education programme of the Career Centre originally was to have two parts, namely career seminars and business orientation programme in Mainland China. With SARS, it was reduced to career seminars only. The programme might have had bigger impact with the part in Mainland China. Finally, with cancellation of internships and programmes by the Career Centre and the additional data collection from the Business Faculty, the author and his colleagues from the Career Centre were deprived many face-to-face contacts with the respondents. From past experience, such face-to-face sessions were most effective in data collection. Had there not been SARS, a higher response rate at Time 2 might have been achieved.

Despite the above limitations, the cross-sectional and longitudinal samples were selected from students who were self motivated to participate in an internship or career programme in a university in Hong Kong in the same academic year. They completed the questionnaires before and after a period of 4 to 6 months in which they had either attended career education seminars or undertaken a work internship. In this light, the sample is still appropriate and useful for testing the hypotheses. To further our understanding of career exploration of local students, I suggest future studies should include data of their exploration activities in Mainland China. In general terms, more studies of career exploration of university students in both Hong Kong and Mainland China will provide more data for validation and comparison of results.



## 6.7. Conclusions

In this study, I started by seeking to apply Western theory of career exploration in the Hong Kong context. The developmental-contextual frameworks (Vondracek et al. 1986; Flum & Blustein, 2000) of career exploration were not to be tested as a whole, but served as a guide for selecting individual and ecological factors for career research. Based on the perspectives of Flum and Blustein (2000), I hypothesized specific relations among antecedent, process and outcome variables for testing in this study. As shown earlier, evidence was obtained to support the impact of both motivational and relational factors of exploration. The process of exploration was also linked to the exploration outcomes of occupational information and career decision-making self efficacy. Moreover, contextual factors like teacher career support and social-oriented achievement motivation were applied and their implications discussed. In short, this study, as a first endeavour to apply the developmental-contextual perspective of career exploration in Hong Kong, turned out to be very fruitful in applying Western constructs as well as explaining local situations. Hong Kong is where East meets West. To further career exploration research, it is very desirable to extend this perspective in Hong Kong and other Chinese societies.

In earlier discussion, the importance of contextual considerations in understanding career exploration in Hong Kong students is highlighted. Facing rapid changes in education reforms and the economic link with Mainland China, the Hong Kong society is still very much influenced by its own history and the Chinese culture. In this study, the career exploration of local university students was characterized by pragmatic information-seeking behaviour, as well as its relation with career support of university teachers. In terms of local research in vocational behaviour, effort has been focusing on testing vocational interests, especially testing Holland's hexagon. More studies are needed on the implications of contextual factors. On the "agency" versus "communion" continuum, more research input



into the “communion” side would be necessary given the unique historical and cultural environment in Hong Kong. Other Chinese societies, to differing extents, are also highly contextual with emphasis on social harmony. In this light, in accounting for their vocational behaviour, social relations will be an important factor to consider.

Moreover, the longitudinal data of this study shed light on the impact of prior career exploration on subsequent career exploration, as well as the inter-relation between the two processes of identity development and career exploration. A lot of past studies of the career exploration of college students used cross-sectional designs, and causal relationships among variables were hard to establish. In this study, the longitudinal data enabled me to be a little more confident about causal relations. By collecting data at two different points of time, I traced the possible impact of antecedents on the outcomes, and examined the prior effects of a variable in a subsequent period. The longitudinal and cross-sectional data have proved useful in accounting for the variance of dependent variables. In this study, I have tested the construct of prior exploration following Millar & Shevlin’s (2003) application of the Theory Planned Behaviour (TPB) to vocational study. The further application of TPB in Hong Kong and other Chinese societies seems promising.

In sum, to explore into the career exploration process, I have first introduced to Hong Kong a contextual-developmental approach from the West, adding in cultural-specific variables. This is just a beginning for extending this line of research. Given the cultural similarities of Hong Kong and Mainland China, I see great potential for future study along this line of investigation in Hong Kong and Mainland China to enhance theory building and guide career practices.



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## APPENDIX 1

### MEASURES OF ACHIEVEMENT MOTIVATION\*

Please indicate the extent you agree with the statement.

A= Strongly Disagree

B= Disagree

C= Neutral

D=Agree

E=Strongly Agree

#### Social-Oriented Achievement (SOAM)\*

1. Before I do anything, I first consider whether my goals fit my parents' expectations.
2. I would feel regretful to my ancestors if I do not achieve more than most of other people.
3. I work hard to achieve the standards set by my classmates and friends.
4. I try my best to meet my parents' expectations so as not to disappoint them.
5. I always pursue the goals my parents intended for me.
6. I usually try my best to do things my parents think valuable.
7. One of my life's main goals is to make my parents proud.
8. I prefer the quality of my accomplishments to be determined by others.
9. I want to pursue the goals that people in general consider valuable.

#### Individual-Oriented Achievement Motivation (IOAM)\*

1. I try to do my best if I consider the task worth doing.
2. When I encounter difficulties, I would rather search for my own alternative solutions than ask others for help.
3. I set high expectations and standards for myself.



4. I work diligently for my personal success.
5. I like working because work itself provides me with a sense of meaning in life.
6. Completing a task is itself delightful; any pay for the work is secondary.
7. I continue to work on a task until I am satisfied with the result.
8. I feel a sense of accomplishment after finishing a task even if no one knows about it.
9. I determine my life goals and value.

\* Measures of SOAM & IOAM (Tao & Hong, 2000) adapted and used with permission.

## APPENDIX 2

### MEASURES OF RELATONAL SUPPORT

Please indicate the level of support for your career from the following persons.

A	B	C	D	E
No Support				Maximum Support

#### Career Support of Family

- 1 Please rate the level of support for your career from your family.

#### Career Support of Peers

2. Please rate the level of support for your career from your friends and classmates.

#### Career Support of Teachers

3. Please rate the level of support on your career from your teachers in the university.





5. Obtained information on the labour market and general job opportunities in your career area.
6. Sought information on specific areas of career interest.

Number of Occupation\*

How many occupational areas are you investigating?

A	B	C	D	E
0	1-2	3-4	5	Over 5

Frequency of Exploration\*

On average, how many times per week have you specifically sought information on careers within the last few months?

A	B	C	D	E
5 or less	6-10	11-15	16-20	21 and over

\* Measures of career exploration (Stumpf, Colarelli & Hartman, 1983) used with consent.





3. A = I currently have very limited information on how I'll fit into various career paths.

E = I have thoroughly explored myself and know what to seek and what to avoid in developing a career path.

You are at:    A                    B                    C                    D                    E

\* Measures of Self Clarity (Jones, 1989) and Amount of Information (Stumpf, Colarelli & Hartman, 1983) used with consent.



## APPENDIX 5

### MEASURES OF CAREER DECISION MAKING

Please indicate the extent you agree with the statement.

A= Strongly Disagree

B= Disagree

C= Neutral

D=Agree

E=Strongly Agree

#### Decidedness \*

1. I have an occupational field in mind that I want to work in.
2. I have decided on the occupation I want to enter.

#### Decisiveness \*

1. I feel relieved if someone else makes a decision for me.
2. I am an indecisive person; I delay deciding and have difficulty making up my mind.
3. I frequently have difficulty making decisions.

#### Career Decision Making Self Efficacy\*

Please read carefully and indicate how much confidence you have that you could accomplish each of these tasks.

A = no confidence at all

B = very little confidence

C = moderate confidence

D = much confidence

E = complete confidence

Note: The questions ask about your confidence. It does not matter whether you have actually completed the tasks or not.

1. Find information in the library about occupations you are interested in.
2. Select one potential major from a list of majors you are considering.
3. Make a plan of your goals for the next five years.
4. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.
5. Accurately assess your abilities.
6. Select one occupation from a list of potential occupations you are considering.
7. Determine the steps you need to take to successfully complete your chosen major.
8. Persistently work at your major or career goal even when you get frustrated.
9. Determine what your ideal job would be.
10. Find out the employment trends for an occupation over the next ten years.
11. Choose a career that will fit your preferred lifestyle.
12. Prepare a good resume.
13. Change majors if you did not like your first choice.
14. Decide what you value most in an occupation.
15. Find out about the average yearly earnings of people in an occupation.
16. Make a career decision and not worry about whether it was right or wrong.
17. Change occupations if you are not satisfied with the one you enter.
18. Figure out what you are and are not ready to sacrifice to achieve your career goals.
19. Talk with a person already employed in the field you are interested in.
20. Choose a major or career that will fit your interests.



21. Identify employers, firms, and institutions relevant to your career possibilities.
22. Define the type of lifestyle you would like to live.
23. Find information about graduate or professional schools.
24. Successfully manage the job interview process.
25. Identify some reasonable major or career alternatives if you are unable to get your first choice.

\* Measures of Decidedness and Decisiveness (Jones, 1989) and Career Decision Making Self Efficacy (Betz, Klein & Taylor, 1996) used with consent.

APPENDIX 6

MEASURES OF IDENTITY STATUS

Identity Beliefs\*

From the four statements below, choose one that best describes your current situation:

- A. I am currently not sure about what I want to do with my life; I simply let things happen.
- B. I know pretty well what I want to do with my life, because I usually follow well-established paths.
- C. I am currently not sure about what to do with my life, but I am investing much effort and time to find out.
- D. I know pretty well what to do with my life, because I have spent a great deal of time and effort to find out.

\* Measure of perceived identity status (Reitzle, Vondracek & Silbereisen, 1998) used with consent.



## APPENDIX 7

### Measure of Intention to Develop Career in Mainland China

1. I would like to explore my career opportunities in Mainland China.
2. I seek to participate in study tours or exchange activities to Mainland China.
3. To understand its recent development, I visit places in Mainland China.
4. I think the development of China provides a lot of opportunities for my future career.
5. I seek to work in Mainland China in some stages in my future career.
6. I welcome a graduate job that provides opportunity to travel or station in Mainland China.

APPENDIX 8

Consent Form and Answer Sheet

**Consent Form**

*(To be completed by student and return with answer sheet and questionnaire)*

I agree to participate in the research of Career Exploration by Mr. Raysen Cheung of the Student Development Services.

I agree that data and profiles from my completion of the attached Career Assessment Questionnaire will be used for academic study and programme assessment.

I understand that only group data will be presented, and my individual profile and data will not be presented in any article(s) that will be written in relation to this research study.

I understand that this is a pre-and-post study and I will be contacted to complete the questionnaire again after the internship.

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_



# Answer Sheet



## Marking Instruction

- Use black or blue ball pen.
- Make no stray marks.
- Do not staple.

Example:

- right
- ⊗ ⊘ ⊚ wrong

Student No.									
0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

## Student Development Services

Name: \_\_\_\_\_

Programme Code: \_\_\_\_\_

Date: \_\_\_\_\_

- |                                 |                                 |                                  |                                  |                                  |
|---------------------------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 1. (A) (B) (C) (D) (E) (F) (G)  | 36. (A) (B) (C) (D) (E) (F) (G) | 71. (A) (B) (C) (D) (E) (F) (G)  | 106. (A) (B) (C) (D) (E) (F) (G) | 141. (A) (B) (C) (D) (E) (F) (G) |
| 2. (A) (B) (C) (D) (E) (F) (G)  | 37. (A) (B) (C) (D) (E) (F) (G) | 72. (A) (B) (C) (D) (E) (F) (G)  | 107. (A) (B) (C) (D) (E) (F) (G) | 142. (A) (B) (C) (D) (E) (F) (G) |
| 3. (A) (B) (C) (D) (E) (F) (G)  | 38. (A) (B) (C) (D) (E) (F) (G) | 73. (A) (B) (C) (D) (E) (F) (G)  | 108. (A) (B) (C) (D) (E) (F) (G) | 143. (A) (B) (C) (D) (E) (F) (G) |
| 4. (A) (B) (C) (D) (E) (F) (G)  | 39. (A) (B) (C) (D) (E) (F) (G) | 74. (A) (B) (C) (D) (E) (F) (G)  | 109. (A) (B) (C) (D) (E) (F) (G) | 144. (A) (B) (C) (D) (E) (F) (G) |
| 5. (A) (B) (C) (D) (E) (F) (G)  | 40. (A) (B) (C) (D) (E) (F) (G) | 75. (A) (B) (C) (D) (E) (F) (G)  | 110. (A) (B) (C) (D) (E) (F) (G) | 145. (A) (B) (C) (D) (E) (F) (G) |
| 6. (A) (B) (C) (D) (E) (F) (G)  | 41. (A) (B) (C) (D) (E) (F) (G) | 76. (A) (B) (C) (D) (E) (F) (G)  | 111. (A) (B) (C) (D) (E) (F) (G) | 146. (A) (B) (C) (D) (E) (F) (G) |
| 7. (A) (B) (C) (D) (E) (F) (G)  | 42. (A) (B) (C) (D) (E) (F) (G) | 77. (A) (B) (C) (D) (E) (F) (G)  | 112. (A) (B) (C) (D) (E) (F) (G) | 147. (A) (B) (C) (D) (E) (F) (G) |
| 8. (A) (B) (C) (D) (E) (F) (G)  | 43. (A) (B) (C) (D) (E) (F) (G) | 78. (A) (B) (C) (D) (E) (F) (G)  | 113. (A) (B) (C) (D) (E) (F) (G) | 148. (A) (B) (C) (D) (E) (F) (G) |
| 9. (A) (B) (C) (D) (E) (F) (G)  | 44. (A) (B) (C) (D) (E) (F) (G) | 79. (A) (B) (C) (D) (E) (F) (G)  | 114. (A) (B) (C) (D) (E) (F) (G) | 149. (A) (B) (C) (D) (E) (F) (G) |
| 10. (A) (B) (C) (D) (E) (F) (G) | 45. (A) (B) (C) (D) (E) (F) (G) | 80. (A) (B) (C) (D) (E) (F) (G)  | 115. (A) (B) (C) (D) (E) (F) (G) | 150. (A) (B) (C) (D) (E) (F) (G) |
| 11. (A) (B) (C) (D) (E) (F) (G) | 46. (A) (B) (C) (D) (E) (F) (G) | 81. (A) (B) (C) (D) (E) (F) (G)  | 116. (A) (B) (C) (D) (E) (F) (G) | 151. (A) (B) (C) (D) (E) (F) (G) |
| 12. (A) (B) (C) (D) (E) (F) (G) | 47. (A) (B) (C) (D) (E) (F) (G) | 82. (A) (B) (C) (D) (E) (F) (G)  | 117. (A) (B) (C) (D) (E) (F) (G) | 152. (A) (B) (C) (D) (E) (F) (G) |
| 13. (A) (B) (C) (D) (E) (F) (G) | 48. (A) (B) (C) (D) (E) (F) (G) | 83. (A) (B) (C) (D) (E) (F) (G)  | 118. (A) (B) (C) (D) (E) (F) (G) | 153. (A) (B) (C) (D) (E) (F) (G) |
| 14. (A) (B) (C) (D) (E) (F) (G) | 49. (A) (B) (C) (D) (E) (F) (G) | 84. (A) (B) (C) (D) (E) (F) (G)  | 119. (A) (B) (C) (D) (E) (F) (G) | 154. (A) (B) (C) (D) (E) (F) (G) |
| 15. (A) (B) (C) (D) (E) (F) (G) | 50. (A) (B) (C) (D) (E) (F) (G) | 85. (A) (B) (C) (D) (E) (F) (G)  | 120. (A) (B) (C) (D) (E) (F) (G) | 155. (A) (B) (C) (D) (E) (F) (G) |
| 16. (A) (B) (C) (D) (E) (F) (G) | 51. (A) (B) (C) (D) (E) (F) (G) | 86. (A) (B) (C) (D) (E) (F) (G)  | 121. (A) (B) (C) (D) (E) (F) (G) | 156. (A) (B) (C) (D) (E) (F) (G) |
| 17. (A) (B) (C) (D) (E) (F) (G) | 52. (A) (B) (C) (D) (E) (F) (G) | 87. (A) (B) (C) (D) (E) (F) (G)  | 122. (A) (B) (C) (D) (E) (F) (G) | 157. (A) (B) (C) (D) (E) (F) (G) |
| 18. (A) (B) (C) (D) (E) (F) (G) | 53. (A) (B) (C) (D) (E) (F) (G) | 88. (A) (B) (C) (D) (E) (F) (G)  | 123. (A) (B) (C) (D) (E) (F) (G) | 158. (A) (B) (C) (D) (E) (F) (G) |
| 19. (A) (B) (C) (D) (E) (F) (G) | 54. (A) (B) (C) (D) (E) (F) (G) | 89. (A) (B) (C) (D) (E) (F) (G)  | 124. (A) (B) (C) (D) (E) (F) (G) | 159. (A) (B) (C) (D) (E) (F) (G) |
| 20. (A) (B) (C) (D) (E) (F) (G) | 55. (A) (B) (C) (D) (E) (F) (G) | 90. (A) (B) (C) (D) (E) (F) (G)  | 125. (A) (B) (C) (D) (E) (F) (G) | 160. (A) (B) (C) (D) (E) (F) (G) |
| 21. (A) (B) (C) (D) (E) (F) (G) | 56. (A) (B) (C) (D) (E) (F) (G) | 91. (A) (B) (C) (D) (E) (F) (G)  | 126. (A) (B) (C) (D) (E) (F) (G) | 161. (A) (B) (C) (D) (E) (F) (G) |
| 22. (A) (B) (C) (D) (E) (F) (G) | 57. (A) (B) (C) (D) (E) (F) (G) | 92. (A) (B) (C) (D) (E) (F) (G)  | 127. (A) (B) (C) (D) (E) (F) (G) | 162. (A) (B) (C) (D) (E) (F) (G) |
| 23. (A) (B) (C) (D) (E) (F) (G) | 58. (A) (B) (C) (D) (E) (F) (G) | 93. (A) (B) (C) (D) (E) (F) (G)  | 128. (A) (B) (C) (D) (E) (F) (G) | 163. (A) (B) (C) (D) (E) (F) (G) |
| 24. (A) (B) (C) (D) (E) (F) (G) | 59. (A) (B) (C) (D) (E) (F) (G) | 94. (A) (B) (C) (D) (E) (F) (G)  | 129. (A) (B) (C) (D) (E) (F) (G) | 164. (A) (B) (C) (D) (E) (F) (G) |
| 25. (A) (B) (C) (D) (E) (F) (G) | 60. (A) (B) (C) (D) (E) (F) (G) | 95. (A) (B) (C) (D) (E) (F) (G)  | 130. (A) (B) (C) (D) (E) (F) (G) | 165. (A) (B) (C) (D) (E) (F) (G) |
| 26. (A) (B) (C) (D) (E) (F) (G) | 61. (A) (B) (C) (D) (E) (F) (G) | 96. (A) (B) (C) (D) (E) (F) (G)  | 131. (A) (B) (C) (D) (E) (F) (G) | 166. (A) (B) (C) (D) (E) (F) (G) |
| 27. (A) (B) (C) (D) (E) (F) (G) | 62. (A) (B) (C) (D) (E) (F) (G) | 97. (A) (B) (C) (D) (E) (F) (G)  | 132. (A) (B) (C) (D) (E) (F) (G) | 167. (A) (B) (C) (D) (E) (F) (G) |
| 28. (A) (B) (C) (D) (E) (F) (G) | 63. (A) (B) (C) (D) (E) (F) (G) | 98. (A) (B) (C) (D) (E) (F) (G)  | 133. (A) (B) (C) (D) (E) (F) (G) | 168. (A) (B) (C) (D) (E) (F) (G) |
| 29. (A) (B) (C) (D) (E) (F) (G) | 64. (A) (B) (C) (D) (E) (F) (G) | 99. (A) (B) (C) (D) (E) (F) (G)  | 134. (A) (B) (C) (D) (E) (F) (G) | 169. (A) (B) (C) (D) (E) (F) (G) |
| 30. (A) (B) (C) (D) (E) (F) (G) | 65. (A) (B) (C) (D) (E) (F) (G) | 100. (A) (B) (C) (D) (E) (F) (G) | 135. (A) (B) (C) (D) (E) (F) (G) | 170. (A) (B) (C) (D) (E) (F) (G) |
| 31. (A) (B) (C) (D) (E) (F) (G) | 66. (A) (B) (C) (D) (E) (F) (G) | 101. (A) (B) (C) (D) (E) (F) (G) | 136. (A) (B) (C) (D) (E) (F) (G) | 171. (A) (B) (C) (D) (E) (F) (G) |
| 32. (A) (B) (C) (D) (E) (F) (G) | 67. (A) (B) (C) (D) (E) (F) (G) | 102. (A) (B) (C) (D) (E) (F) (G) | 137. (A) (B) (C) (D) (E) (F) (G) | 172. (A) (B) (C) (D) (E) (F) (G) |
| 33. (A) (B) (C) (D) (E) (F) (G) | 68. (A) (B) (C) (D) (E) (F) (G) | 103. (A) (B) (C) (D) (E) (F) (G) | 138. (A) (B) (C) (D) (E) (F) (G) | 173. (A) (B) (C) (D) (E) (F) (G) |
| 34. (A) (B) (C) (D) (E) (F) (G) | 69. (A) (B) (C) (D) (E) (F) (G) | 104. (A) (B) (C) (D) (E) (F) (G) | 139. (A) (B) (C) (D) (E) (F) (G) | 174. (A) (B) (C) (D) (E) (F) (G) |
| 35. (A) (B) (C) (D) (E) (F) (G) | 70. (A) (B) (C) (D) (E) (F) (G) | 105. (A) (B) (C) (D) (E) (F) (G) | 140. (A) (B) (C) (D) (E) (F) (G) | 175. (A) (B) (C) (D) (E) (F) (G) |

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APPENDIX 9

Testing Differences between Correlation Coefficients (Calculations for

Hypothesis 3A)

A. Testing if self exploration at Time 1 is more strongly correlated with career support of teachers than career support of peers at a significant level. The significance of the differences between  $r$ 's can be calculated by the following formula (Cohen & Cohen, 1983, p.57):

$$t = \frac{(r_{XY} - r_{VY})\sqrt{(n-1)(1+r_{XY})}}{\sqrt{2\left(\frac{n-1}{n-3}\right)|R| + \bar{r}^2(1-r_{XY})^3}}$$

$$\bar{r} = \frac{r_{XY} + r_{VY}}{2} \quad |R| = 1 - r_{XY}^2 - r_{VY}^2 - r_{XV}^2 - 2r_{XY}r_{VY}r_{XV}$$

Let: X = career Support of Teachers    V = career Support of Peers

Y = self exploration at Time 1     $n = 250$

$$r_{XY} = 0.17 \quad r_{VY} = 0.09 \quad r_{XV} = 0.31$$

$$\bar{r}^2 = \left(\frac{0.26}{2}\right)^2 = 0.0169 \quad |R| = 0.8764$$

$$t = \frac{(0.17 - 0.09)\sqrt{(240-1)(1+0.31)}}{\sqrt{2\left(\frac{250-1}{250-3}\right)0.8764 + 0.0169(1-0.17)^3}}$$

$$= \underline{\underline{1.0257}} \text{ (for df = 247, difference not significant)}$$

B. Testing if environment exploration at Time 1 is more strongly correlated with career support of teachers than career support of peers at a significant level. The significance of the differences between  $r$ 's can be calculated by the following formula (Cohen & Cohen, 1983, p.57):

$$t = \frac{(r_{XY} - r_{VY})\sqrt{(n-1)(1+r_{XY})}}{\sqrt{2\left(\frac{n-1}{n-3}\right)|R| + \bar{r}^2(1-r_{XY})^3}}$$



$$\bar{r} = \frac{r_{XY} + r_{VY}}{2} \quad |R| = 1 - r_{XY}^2 - r_{VY}^2 - r_{XV}^2 - 2r_{XY}r_{VY}r_{XV}$$

Let: X = career support of teachers      V = career Support of Peers

Y = environment exploration at Time 1  $n = 250$

$$r_{XY} = 0.25 \quad r_{VY} = 0.14 \quad r_{XV} = 0.31 \quad n = 250$$

$$\bar{r}^2 = \left( \frac{0.26}{2} \right)^2 = 0.0380 \quad |R| = 0.8435$$

$$t = \frac{(0.25 - 0.14)\sqrt{(250-1)(1+0.25)}}{\sqrt{2\left(\frac{250-1}{250-3}\right)0.8435 + 0.0830(1-0.17)^3}}$$

$$= \underline{\underline{1.4827}} \text{ (for } df = 247, \text{ difference not significant)}$$

C. Testing if self exploration at Time 2 is more strongly correlated with career support of teachers than career support of peers at a significant level. The significance of the differences between  $r$ 's can be calculated by the following formula (Cohen & Cohen, 1983, p.57):

$$t = \frac{(r_{XY} - r_{VY})\sqrt{(n-1)(1+r_{XY})}}{\sqrt{2\left(\frac{n-1}{n-3}\right)|R| + \bar{r}^2(1-r_{XY})^3}}$$

$$\bar{r} = \frac{r_{XY} + r_{VY}}{2} \quad |R| = 1 - r_{XY}^2 - r_{VY}^2 - r_{XV}^2 - 2r_{XY}r_{VY}r_{XV}$$

Let: X = career support of teachers V = career Support of peers

Y = self exploration at Time 2  $n = 98$

$$r_{XY} = 0.22 \quad r_{VY} = 0.01 \quad r_{XV} = 0.19$$

$$\bar{r}^2 = \left( \frac{0.23}{2} \right)^2 = 0.0132 \quad |R| = 0.9162$$

$$t = \frac{(0.22 - 0.01)\sqrt{(98-1)(1+0.19)}}{\sqrt{2\left(\frac{98-1}{98-3}\right)0.9162 + 0.0132(1-0.19)^3}}$$

$$= \underline{\underline{1.6457}} \text{ (for } df = 95, \text{ difference not significant)}$$

D. Testing if environment exploration at Time 2 is more strongly correlated with career support of teachers than career support of peers at a significant level. The significance of the differences between  $r$ 's can be calculated by the following formula (Cohen & Cohen, 1983, p.57):

$$t = \frac{(r_{XY} - r_{VY})\sqrt{(n-1)(1+r_{XY})}}{\sqrt{2\left(\frac{n-1}{n-3}\right)|R| + \bar{r}^2(1-r_{XY})^3}}$$

$$\bar{r} = \frac{r_{XY} + r_{VY}}{2} \quad |R| = 1 - r_{XY}^2 - r_{VY}^2 - r_{XV}^2 - 2r_{XY}r_{VY}r_{XV}$$

Let: X = career Support of Teachers    V = career support of peers

Y = environment exploration at Time 2     $n = 98$

$r_{XY} = 0.29$        $r_{VY} = 0.20$        $r_{XV} = 0.19$

$$\bar{r}^2 = \left(\frac{0.23}{2}\right)^2 = 0.0600 \quad |R| = 0.8618$$

$$t = \frac{(0.29 - 0.20)\sqrt{(98-1)(1+0.19)}}{\sqrt{2\left(\frac{98-1}{98-3}\right)0.8618 + 0.0600(1-0.19)^3}}$$

= 0.7975 (for df = 95, difference not significant)



**APPENDIX 10 Testing Differences between Partial Regression Coefficients (Calculations for Hypothesis 3B)**

**A. Testing Differences between partial regression coefficients of relational IV for the Dependent of Self Exploration at Time 1**

1. Computing the Inverse Matrix where  $X_1 =$  Career Support of Teacher,  $X_2 =$  Career Support of Peers,  $X_3 =$  Career Support of Family and  $Y =$  Self Exploration at Time 1 ( $n = 268$ ). Correlation Matrix listed under  $R_{ij}$  from line A to C.

Table A1 Computing the inverse of the Relational IV Correlation Matrix for Self Exploration at Time 1

Line	$R_{ij}$			I			Check
	$r_1$	$r_2$	$r_3$	$r^{13}$	$r^{23}$	$r^{33}$	
A	1	0.3115	0.22695	1	0	0	2.53845
B	0.31150	1	0.5228	0	1	0	2.8343
C	0.22695	0.52280	1	0	0	1	2.74975
Copy A	1	0.31150	0.22695	1	0	0	2.53845
$D \times r_{12}$		0.09703	0.07069	0.3115	0	0	0.79073
B - E		0.90297	0.45211	-0.3115	1	0	2.04357
F/F2		1	0.50069	-0.34497	1.10746	0	2.26317
$D \times r_{13}$			0.05151	0.22695	0	0	0.5761
$F \times G_3$			0.22636	-0.15596	0.50069	0	1.0232
C - H - I			0.72213	-0.07099	-0.50069	1	1.15045
J/J <sub>3</sub>			1.0091	-0.09919	-0.69966	1.397401	1.60764

From Line G:  $r^{22} = 1.107461 - 0.50069(-0.69966) = 1.45778$   $r^{21} = -0.34497 - 0.50069(-0.099190) = -0.29531$

From Line D:  $r^{11} = 1 - 0.3115(-0.09919) - 0.22695(-0.09919) = 1.05341$

3. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s are worked out from the inverse in Table A1. (DV: Self Exploration at Time 1)

Table A2. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s

	EX		
	$X_1$	$X_2$	$X_3$
$X_1$	1.05341	-0.29531	-0.09919
$X_2$	-0.29531	1.45778	-0.69966
$X_3$	-0.09919	-0.69966	1.3974

$$\beta_1 = 1.053412 (0.16897) - 0.29531 (0.10363) - 0.09919 (0.05709) = 0.14173$$

$$\beta_2 = -0.29531 (0.16897) + 1.45778 (0.10363) - 0.69966 (0.05709) = 0.06122$$

$$\beta_3 = -0.09919 (0.16897) - 0.69966 (0.10363) + 1.3974 (0.05709) = -0.00949$$

3. Differences between  $\beta$ s of career support teachers and career support of peers are tested by applying the following formula.

$$t = \frac{\beta_i - \beta_j}{SE_{\beta_i - \beta_j}} \quad \text{To obtain } t, SE_{\beta_i - \beta_j} \text{ need to be found by: } SE_{\beta_i - \beta_j} = \sqrt{\frac{1 - R_y^2}{n - k - 1} (r^{ii} + r^{jj})} \quad \text{As } n = 268, k = 3 \text{ and } R_y^2 = 0.02975,$$

$$SE_{\beta_1 - \beta_2} = \sqrt{\frac{1 - 0.02975}{268 - 3 - 1} [1.05341 + 1.45778 + 2 \times (-0.29531)]} \quad \text{and } t = \frac{0.14173 - 0.06122}{\sqrt{0.00706}} = 0.9595 \text{ (for df = 264, difference not significant)}$$



B. .Testing Differences between partial regression coefficients of relational IV for the **Dependent of Environment Exploration at Time 1**

1. Computing the Inverse Matrix where  $X_1 = \text{Career Support of Teacher}$ ,  $X_2 = \text{Career Support of Peers}$  and  $X_3 = \text{Career Support of Family}$  and  $Y = \text{Environment Exploration at Time 1}$  ( $n = 268$ ). Correlation Matrix listed under  $R_{ij}$  from line A to C.

Table B1 Computing the inverse of the Relational IV Correlation Matrix for Environment Exploration at Time 1

Line	$R_{ij}$			I			Check
	$r_1$	$r_2$	$r_3$	$r^{13}$	$r^{23}$	$r^{33}$	
A	1	0.3115	0.22695	1	0	0	2.53845
B	0.31150	1	0.5228	0	1	0	2.8343
C	0.22695	0.52280	1	0	0	1	2.74975
Copy A	1	0.31150	0.22695	1	0	0	2.53845
D $\times r_{12}$		0.09703	0.07069	0.3115	0	0	0.79073
B - E		0.90297	0.45211	-0.3115	1	0	2.04357
F/F2		1	0.50069	-0.34497	1.107461	0	2.26317
D $\times r_{13}$			0.05151	0.22695	0	0	0.5761
F $\times G_3$			0.22636	-0.15596	0.50069	0	1.0232
C - H - I			0.72213	-0.07099	-0.50069	1	1.15045
J/J <sub>3</sub>			1.0091	-0.09919	-0.69966	1.397401	1.60764

From Line G:  $r^{22} = 1.107461 - 0.50069(-0.69966) = 1.45778$   $r^{21} = -0.34497 - 0.500689(-0.0992) = -0.29531$

From Line D:  $r^{11} = 1 - 0.311503(-0.0992) - 0.22695(-0.09919) = 1.05341$

2. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s are worked out from the inverse in Table B1. (DV: En. Exploration at Time 1)

Table B2. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s

	EX		
	$X_1$	$X_2$	$X_3$
$X_1$	1.053412	-0.29531	-0.0992
$X_2$	-0.29531	1.45778	-0.6997
$X_3$	-0.09919	-0.6997	1.3974

Since:  $\beta_i = r^{i1}r_{Y1} + r^{i2}r_{Y2} + r^{i3}r_{Y3}$

$$\beta_1 = 1.053412 (0.246521) - 0.29531(0.14152) - 0.0992 (0.014203) = 0.21649$$

$$\beta_2 = -0.29531 (0.246521) + 1.45778 (0.14152) - 0.69966 (0.014203) = 0.12357$$

$$\beta_3 = -0.09919 (0.246521) - 0.6997 (0.14152) + 1.3974 (0.014203) = 0.10362$$

3. Differences between  $\beta$ s of career support teachers and career support of peers are tested by applying the following formula.

$$t = \frac{\beta_i - \beta_j}{SE_{\beta_i - \beta_j}} \text{ To obtain } t, SE_{\beta_i - \beta_j} \text{ need to be found by: } SE_{\beta_i - \beta_j} = \sqrt{\frac{1 - R_Y^2}{n - k - 1} (r^{ii} + r^{jj} + 2r^{ij})} \text{ As } n = 268, k=3 \text{ and } R_Y^2 = 0.06938,$$

$$SE_{\beta_1 - \beta_2} = \sqrt{\frac{1 - 0.06938}{268 - 3 - 1} (1.05341 + 1.45778 + 2(-0.29531))} \text{ and } t = \frac{0.21649 - 0.12357}{\sqrt{0.00677}} = 1.13902 \text{ (for df = 264, difference not significant)}$$



C. Testing Differences between partial regression coefficients of relational IV for the **Dependent of Self Exploration at Time 2**

1. Computing the Inverse Matrix where  $X_1 = \text{Career Support of Teachers}$ ,  $X_2 = \text{Career Support of Peers}$ ,  $X_3 = \text{Career Support of Family}$  and  $Y = \text{Self Exploration at Time 2}$  ( $n = 98$ ). Correlation Matrix listed under  $R_{ij}$  from line A to C.

Table C1 Computing the inverse of the Relational IV Correlation Matrix for Self Exploration at Time 2

Line	$R_{ij}$			I			Check
	$r_1$	$r_2$	$r_3$	$r^{13}$	$r^{23}$	$r^{33}$	
A	1	0.18454	0.2404	1	0	0	2.424946
B	0.184542	1	0.49587	0	1	0	2.680409
C	0.240404	0.49587	1	0	0	1	2.736271
Copy A	1	0.18454	0.2404	1	0	0	2.424946
$D \times r_{12}$		0.03406	0.04436	0.18454	0	0	0.447499
B - E		0.96594	0.4515	-0.18454	1	0	2.23291
F/F2		1	0.46742	-0.19105	1.035261	0	2.311644
$D \times r_{13}$			0.05779	0.2404	0	0	0.582957
$F \times G_3$			0.21104	-0.08626	0.46742	0	1.043707
C - H - I			0.73117	-0.15414	-0.46742	1	1.109607
J/J <sub>3</sub>			1	-0.21082	-0.63928	1.36768	1.517588

From Line G:  $r^{22} = 1.035261 - 0.467423(-0.63928) = 1.33408$   $r^{21} = -0.19105 - 0.467423(-0.21082) = -0.09251$

From Line D:  $r^{11} = 1 - 0.184542(-0.21082) - 0.2404(-0.21082) = 1.08959$

2. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s are worked out from the inverse in Table C1. (DV= Self Exploration at Time 2)

Table C2. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s

	$X_1$	$X_2$	$X_3$	$r_{Y1}$
$X_1$	1.08959	-0.09251	-0.21082	0.21924
$X_2$	-0.09251	1.33408	-0.63928	0.00714
$X_3$	-0.21082	-0.63928	1.36768	0.19827

Since:  $\beta_i = r^{i1}r_{Y1} + r^{i2}r_{Y2} + r^{i3}r_{Y3}$

$$\beta_1 = 1.08959 (0.21924) - 0.09251 (0.00714) - 0.21082 (0.19827) = 0.19642$$

$$\beta_2 = -0.09251 (0.21924) + 1.334076 (0.00714) - 0.63928 (0.19827) = -0.13751$$

$$\beta_3 = -0.21082 (0.21924) - 0.63928 (0.00714) + 1.36768 (0.19827) = 0.220385$$

3. Differences between  $\beta$ s of career support teachers and career support of peers are tested by applying the following formula.

$$t = \frac{\beta_i - \beta_j}{SE_{\beta_i - \beta_j}} \quad \text{To obtain } t, SE_{\beta_i - \beta_2} \text{ need to be found by: } SE_{\beta_i - \beta_2} = \sqrt{\frac{1 - R_Y^2}{n - k - 1} (r^{ii} + r^{jj} + 2r^{ij})} \quad \text{As } n = 98, k = 3 \text{ and } R_Y^2 = 0.08578,$$

$$SE_{\beta_1 - \beta_2} = \sqrt{\frac{1 - 0.08578}{98 - 3 - 1} (1.08959 + 1.33407 + 2(-0.09251))} \quad \text{and } t = \frac{0.19642 - (-0.13751)}{\sqrt{0.02177}} = 2.02812 \text{ (for df = 94, } p < .05 \text{ significant)}$$



D. Testing Differences between partial regression coefficients of relational IV for the **Dependent of Environment Exploration at Time 2**

1. Computing the Inverse Matrix where  $X_1 = \text{Career Support of Teacher}$ ,  $X_2 = \text{Career Support of Peers}$ ,  $X_3 = \text{Career Support of Parents}$  and  $Y = \text{Self Exploration at Time 2}$  ( $n = 98$ ). Correlation Matrix listed under  $R_{ij}$  from line A to C.

Table D1 Computing the inverse of the Relational IV Correlation Matrix for Environment Exploration at Time 2

Line	$R_{ij}$			I			Check
	$r_1$	$r_2$	$r_3$	$r^{13}$	$r^{23}$	$r^{33}$	
A	1	0.18454	0.2404	1	0	0	2.424946
B	0.184542	1	0.49587	0	1	0	2.680409
C	0.240404	0.49587	1	0	0	1	2.736271
Copy A	1	0.18454	0.2404	1	0	0	2.424946
$D \times r_{12}$		0.03406	0.04436	0.18454	0	0	0.447499
B - E		0.96594	0.4515	-0.18454	1	0	2.23291
F/F2		1	0.46742	-0.19105	1.035261	0	2.311644
$D \times r_{13}$			0.05779	0.2404	0	0	0.582957
$F \times G_3$			0.21104	-0.08626	0.46742	0	1.043707
C - H - I			0.73117	-0.15414	-0.46742	1	1.109607
J/J <sub>3</sub>			1	-0.21082	-0.63928	1.36768	1.517588

From Line G:  $r^{22} = 1.035261 - 0.467423(-0.63928) = 1.33408$   $r^{21} = -0.19105 - 0.467423(-0.21082) = -0.09251$

From Line D:  $r^{11} = 1 - 0.184542(-0.21082) - 0.2404(-0.21082) = 1.089586$

2. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s are worked out from the inverse in Table D1. (DV= En. Exploration at Time 2)

Table D2. Inverse of IV Correlation Matrix, Validity Coefficients and  $\beta$ s

	$X_1$	$X_2$	$X_3$	$r_{Y1}$
$X_1$	1.08959	-0.09251	-0.21082	0.29278
$X_2$	-0.09251	1.334076	-0.63928	0.19451
$X_3$	-0.21082	-0.63928	1.36768	0.33312

$$\beta_1 = 1.08958 (0.29278) - 0.09251 (0.19451) - 0.2108 (0.33312) = 0.23078$$

$$\beta_2 = -0.09251(0.29278) + 1.334076 (0.19451) -0.6393 (0.33312) = 0.019457$$

$$\beta_3 = 0.21082 (0.29278) -0.63928 (0.19451) + 1.36768 (0.33312) = 0.269529$$

3. Differences between  $\beta$ s of career support teachers and career support of peers are tested by applying the following formula.

$$t = \frac{\beta_i - \beta_j}{SE_{\beta_i - \beta_j}} \quad \text{To obtain } t, SE_{\beta_i - \beta_2} \text{ need to be found by: } SE_{\beta_i - \beta_2} = \sqrt{\frac{1 - R_Y^2}{n - k - 1} (r^{ii} + r^{jj} + 2r^{ij})} \quad \text{As } n = 98, k=3 \text{ and } R_Y^2 = 0.16114,$$

$$SE_{\beta_1 - \beta_2} = \sqrt{\frac{1 - 0.16114}{98 - 3 - 1} (1.08959 + 1.33407 + 2(-0.09251))} \text{ and } t = \frac{.23078 - .01946}{\sqrt{0.01997}} = 1.4946 \text{ (for df = 94, difference not significant)}$$