Family Functioning and Career Decision-Making Self-efficacy: A Study of First Year Malaysian Undergraduate Students

Melati Sumari
Western Michigan University

Follow this and additional works at: http://scholarworks.wmich.edu/dissertations
Part of the Counseling Commons, and the Counseling Psychology Commons

Recommended Citation
http://scholarworks.wmich.edu/dissertations/993
FAMILY FUNCTIONING AND CAREER DECISION-MAKING SELF-EFFICACY: A STUDY OF FIRST YEAR MALAYSIAN UNDERGRADUATE STUDENTS

by

Melati Sumari

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Counselor Education and Counseling Psychology
Dr. Donna M. Talbot, Advisor

Western Michigan University
Kalamazoo, Michigan
December 2006
INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI

UMI Microform 3243172
Copyright 2007 by ProQuest Information and Learning Company.
All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
ACKNOWLEDGEMENTS

The journey of my PhD research was a difficult stage of my life. Therefore, first and foremost, all praise and thanks are certainly due to Allah (God), who has given me strength and patience to overcome the difficult time and continue the academic journey. I could not reach this academic stage of life without His blessings.

Finishing this dissertation was also not possible without the help and support of many individuals to whom I am indebted for their assistance and insight. First and foremost, I would like to take this opportunity to send a heartfelt thank you to Dr. Donna Talbot, my Dissertation Committee chair, who provided timely insight and encouragement that helped me to progress at every stage of the dissertation process. I would also like to thank the two members of my doctoral committee, Dr. Gary Bischof and Dr. Liliana-Rodriguez Campos, for their advice, encouragement, and support. My sincere gratitude is extended to Dr. John Geisler, for assistance and valuable input in Dissertation Seminar class. My sincere thanks also go to Barbara Shouse and Sheena Bolton for making my internship a wonderful and memorable experience. I also want to extend my gratitude to my graduate school colleagues for enriching my life with friendship and making me feel at home in Michigan. I am grateful to have wonderful friends who have been with me through the adventure of graduate experience.
Special thanks must go to my loving husband, Mohd Ishak, who willingly left his career so that I can fulfill my dream, and whose unconditional love, patience, and unwavering support allowed me to be a wife while being a student in a foreign country. My dream to complete the doctoral degree would not have been completed without him. He not only left his work and family to be with me in the United States, but also encouraged me during very hard times. Thanks also to my children, Iman and Ikmal, for lighting up my life. I am fortunate and grateful to be in the company of my amazing husband and children, who have enriched my life in many ways.

Finally, I would also like to dedicate this dissertation to the memory of my late father, who taught me the values of hard work, and my mother, who never failed to be supportive and believe in my ability to complete my study. Thank you both for bringing me into this world, raising me, and supporting me.

Thank you all very much for being important persons in this professional journey.

Melati Sumari
# TABLE OF CONTENTS

ACKNOWLEDGMENTS .......................................................................................... ii
LIST OF TABLES ...................................................................................................... x

CHAPTER

I. INTRODUCTION

<table>
<thead>
<tr>
<th>Background of the Problem</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Malaysian Context</td>
<td>1</td>
</tr>
<tr>
<td>Family Role in the Formation of Self-Efficacy Beliefs</td>
<td>4</td>
</tr>
<tr>
<td>Malaysian Families</td>
<td>6</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>11</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>13</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>13</td>
</tr>
<tr>
<td>Research Questions</td>
<td>15</td>
</tr>
<tr>
<td>Assumptions</td>
<td>16</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>16</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>17</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>17</td>
</tr>
<tr>
<td>Career Decision-Making Self-Efficacy</td>
<td>17</td>
</tr>
<tr>
<td>Family Functioning</td>
<td>18</td>
</tr>
<tr>
<td>Public University</td>
<td>18</td>
</tr>
</tbody>
</table>
Table of Contents – Continued

CHAPTER

Tertiary Education................................................................. 18
Ethnicity............................................................................. 19
Faculty............................................................................... 19
Academy............................................................................. 19
Academic Major................................................................. 19

Summary .................................................................................. 20

II. REVIEW OF RELATED LITERATURE

Overview .............................................................................. 22
Self-Efficacy Theory .............................................................. 22
Sources of Self-Efficacy ......................................................... 25
Mastery Experiences ............................................................... 25
Vicarious Experiences ............................................................ 26
Verbal Persuasion ................................................................. 27
Emotional Arousal ................................................................. 28

Self-Efficacy in Career Development ....................................... 28
Career Decision-Making Self-Efficacy ....................................... 33
Studies with Western Population ............................................. 34

Studies with People with Disabilities and Nontraditional College Students........................................... 44
Table of Contents – Continued

CHAPTER

Studies with Non-Western Populations ............................................ 46
Summary of Literature on Career Decision-Making
Self-Efficacy ........................................................................................ 47
Family Influence on Career Development .............................................. 49
Relationship between Family Functioning and Career Development... 54
Vocational Identity .............................................................................. 54
Career Planning .................................................................................... 57
Career Exploration ............................................................................... 58
Career Interest ..................................................................................... 59
Career Decision-Making ..................................................................... 60
Career Maturity .................................................................................... 62
Career Self-Efficacy ........................................................................... 63
Career Decision-Making Self-Efficacy ............................................ 64
Limitations of Reviewed Studies .................................................... 68
Summary ................................................................................................... 68

III. METHODOLOGY

Overview ................................................................................................... 70
Research Design ................................................................................................ 71
Dependent and Independent Variables ............................................... 73
Instrumentation .......................................................................................... 73
<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Information Sheet</td>
<td>74</td>
</tr>
<tr>
<td>Family Assessment Device (FAD)-Malay Version</td>
<td>74</td>
</tr>
<tr>
<td>Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) - Malay Version</td>
<td>80</td>
</tr>
<tr>
<td>Research Hypotheses</td>
<td>85</td>
</tr>
<tr>
<td>Research Question 1</td>
<td>85</td>
</tr>
<tr>
<td>Research Question 2</td>
<td>86</td>
</tr>
<tr>
<td>Research Question 3</td>
<td>86</td>
</tr>
<tr>
<td>Research Question 4</td>
<td>87</td>
</tr>
<tr>
<td>Population, Setting and Sample</td>
<td>89</td>
</tr>
<tr>
<td>Data Collection Procedure</td>
<td>91</td>
</tr>
<tr>
<td>Statistical Procedures</td>
<td>92</td>
</tr>
<tr>
<td>Preliminary Analyses</td>
<td>92</td>
</tr>
<tr>
<td>Research Questions Analyses</td>
<td>94</td>
</tr>
<tr>
<td>Summary</td>
<td>96</td>
</tr>
</tbody>
</table>

IV. ANALYSIS OF THE DATA AND FINDINGS

| Introduction                                                           | 97   |
| Participants’ Profile                                                 | 97   |
| Research Questions Analyses                                           | 102  |
Table of Contents – Continued

CHAPTER

Correlation Analysis................................................................. 102

Regression Analysis................................................................. 108

Two-Way Analyses of Variance.................................................... 111

Summary...................................................................................... 120

V. SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Introduction.................................................................................. 122

Summary of the Study................................................................. 122

Conclusion of the Findings......................................................... 124

Discussion..................................................................................... 129

Family Functioning and Career Decision-Making
Self-Efficacy ............................................................................... 129

Relationship between Family Functioning and Career Decision-
Making Self-Efficacy...................................................................... 132

Differences in Family Functioning.............................................. 135

Differences in Career Decision-Making Self-Efficacy.................. 139

Recommendations....................................................................... 143

Recommendations for Practice................................................. 143

Recommendations for Future Research....................................... 147

Summary...................................................................................... 149
APPENDICES

A. Approval Letter from the Human Subjects Institutional Review Board.... 151
B. Consent Document - English Version.............................................. 153
C. Consent Document – Malay Version............................................... 155
D. Demographic Information Sheet – English Version.......................... 157
E. Demographic Information Sheet – Malay Version............................. 159
F. McMaster Family Assessment Device Permission Letter............... 161
G. Career Decision Self-Efficacy Scale Permission Letter............... 164
H. Permission Letter from Deputy Vice Chancellor
   (Academic and Internationalization), University of Malaya.............. 166
I. Distribution of Participants by Faculty/Academy............................ 168
J. Distribution of Participants by Parents’ Educational Level and
   Type of Residential Setting.................................................................. 170
K. Means and Standard Deviations of General Family Functioning by
   Gender, Ethnicity, and Academic Major................................................ 172
L. Means and Standard Deviations of Career Decision-Making
   Self-Efficacy by Gender, Ethnicity, and Academic Major.................... 174
M. Interaction Plots to Display the Effects of Gender and Ethnicity on
   Career Decision-Making Self-Efficacy.................................................. 176
N. One-Way ANOVA between Two Academic Majors on
   Career Decision-Making Self-Efficacy.................................................. 179
O. Interaction Plots to Display the Effects of Academic Major and Ethnicity
   on Career Decision-Making Self-Efficacy............................................. 181

BIBLIOGRAPHY......................................................................................... 184
LIST OF TABLES

1. Means and Standard Deviations of the Scores of All Participants on the FAD and the CDSE-SF Subscales .................................................. 101
2. Pearson Correlations between Family Assessment Device (FAD) and Career Decision-Making Self-Efficacy Scale-Short Form (CDSE-SF) .... 104
4. A Two-Way ANOVA between Gender and Ethnic Groups on General Family Functioning ................................................................. 112
5. A Two-Way ANOVA between Gender and Academic Major on General Family Functioning ................................................................. 114
6. A Two-Way ANOVA between Academic Major and Ethnic Groups on General Family Functioning ........................................................ 115
8. A Two-Way ANOVA between Gender and Academic Major on Career Decision-Making Self-Efficacy .................................................... 118
CHAPTER I

INTRODUCTION

Background of the Problem

*The Malaysian Context*

Since the setting of this study falls outside the United States, the following provides some important contextual information to help frame the study. Malaysia is a culturally and religiously diverse country with about 26.26 million people consisting of 65.1% Malays and other indigenous groups, 26% Chinese, and 7.7% Indians (Malaysian Department of Statistic, 2005). As revealed in the Malaysian Population and Housing Census 2000, religion is also highly correlated with ethnicity. Most Malays are Muslims; most Chinese are Buddhists; and most Indians are Hindu. Being a multi-religious nation, Malaysia also has a fair share of those embracing other religions, such as Christianity, Taoism and other traditional Chinese religions (Malaysian Department of Statistics, 2005). In East Malaysia, many of the indigenous people are Christians, although traditional beliefs are also widely practiced. Because of its cultural mix, many Malaysians are multilingual. Many can speak at least two languages; Malay as a first language and English as a second language. Other languages used by Malaysians include Chinese and Tamil.

Malaysia is also well-known as one of the most dynamic and fastest growing countries in Asia (Camdessus, 1996). A report by the Malaysian Industrial
Development Authority (2005) indicates that Malaysian economy has performed remarkably well over the years due to its political stability and financial and economic policies adopted by the government. The report also shows that in 2005, Malaysia was the world’s 18th leading exporter and 20th leading importer. The growing economy has created a demand for skilled professionals, especially in science fields (Badawi, 2003). To address the issue, the Malaysian government has invested in a high quality education system (Economic Planning Unit, 2005). Substantial progress was also made to provide the citizens the opportunity to pursue tertiary education and training by opening new public universities and allowing foreign universities to set up their branch campuses in Malaysia. Today, many Malaysians are well educated with a large number of people with university degrees. A Labor Force Survey showed that the proportion of the labor force with tertiary education increased from 13.9% in 2000 to 17.1% in 2003 (Malaysian Department of Statistics, 2005).

As the country is set to become an industrialized nation in 2020, the need for skilled professionals, especially in science and technical fields, has increased significantly. In a speech on the 8th Malaysian Plan, Adullah Ahmad Badawi (2003), the 5th Prime Minister of Malaysia, mentioned that the country faces critical shortages of professionals in science and technology. Even though the percentage of those with higher education has increased, there are more graduates in art and social science fields than in science or technical fields. Based on the data issued by the Malaysian Ministry of Higher Education, local universities turn out at least 50,000 graduates.
every year. Of that figure, more than 60% are graduates in art and social science fields (Malaysian Ministry of Higher Education, 2005a). About 16% of graduates fail to get a job (Nagu, 2005) and many of them are art and social science graduates ("Graduan sains,", 2004).

Along with the shortage of professionals in science fields comes an interesting development in the employment of women. The preliminary report of the latest population census shows a tremendous increase in the number of women entering the paid labor force since independence in 1957, from 30.8% to 47.7% in 2003 (Malaysian Department of Statistics, 2005). The large number of employed women is the result of educational policy, which provides equal opportunity to both male and female students (Kling, 1995). In fact, female students outnumber male students in higher education level. A recent statistic provided by the Malaysian Ministry of Higher Education (2005b) shows that in 2003, there were more than 120,000 female students in contrast to 70,457 male students at the undergraduate level in all public universities. However, female students continue to overrepresented in arts and social sciences at 65% compared to 35% in the technical fields. Obviously, female students have outdone male students in the tertiary level, but the trend seems to indicate a pattern of choice in the art and social science fields. In terms of employment in professional fields, a statistic issued by the Malaysian Ministry of Women, Family, and Community Development (2005) showed that the percentage of registered female professionals in 2004 was much lower than male professionals, particularly in
engineering and surveying. This could be the result of the low number of female students in science fields.

The shortage of professionals in science-related fields and the tendency of students to choose certain fields could be the result of many different factors. One of these factors is the self-efficacy beliefs in career decision-making, or the belief that influence people to successfully perform tasks necessary to making career decision. In order to understand the role of self-efficacy beliefs in career decision-making, it is important to know how the beliefs are formed. This information is discussed in the section that follows.

Family Role in the Formation of Self-Efficacy Beliefs

According to Bandura (1995), self-efficacy beliefs are learned through four sources of information: (1) performance accomplishment; (2) vicarious learning; (3) verbal persuasion; and (4) emotional arousal. Parents or families are the salient providers of these sources of information (Turner & Lapan, 2002). In a recent article, Hall (2003) described how an individual’s career self-efficacy had been shaped by the rules, values, and climate of the family. He noted that children make academic and career choices as a result of interactions that occur within the family. Parents’ ratings of their children’s career-related abilities contribute to the children’s perceptions of their own career related-abilities. Within a family systems framework, people develop their abilities or confidence when they develop the skills needed to succeed, when they believe that they will succeed and achieve their goals, and when significant
others give affirmation that they not only have certain skills but they are also expected to succeed (Hall, 2003). Bandura, Barbaranelli, Caprara, and Pastorelli’s (2001) findings support the positive link between parental aspirations and children’s perceived self-efficacy. They also found that self-efficacy is the key determinant of academic and occupational self-efficacy. Since there are family variables (e.g., parental aspirations) that are associated with children’s feeling efficacious, it is assumed that there may be a relationship between certain dimensions of family functioning and career decision-making self-efficacy.

Understanding family’s role in career decision-making self-efficacy is needed, especially in a society that emphasizes the importance of family and connectedness of relationships among family members. Generally, Malaysians view family as a primary source of reference for educational and career choices. Hence, assessing career decision-making in relation to family functioning would provide a better understanding of the influence of the family of origin on young adults’ career development. How family functioning relates to career decision-making self-efficacy will be the focus of this study. In addition, there is also an examination of differences in family functioning and career decision-making self-efficacy by gender, ethnicity, and academic majors. It is hoped that the findings will help policy makers understand the effects of students’ backgrounds on career decision-making. It is also believed that results of this study will have important implications for those working with young Malaysian adults who experience career decision problems.
Malaysian Families

Ethnic Composition in Malaysia

Malaysia is a country of cultural and religious diversity because its population consists of people from many different cultures. Among them are Malay, Chinese, Indian, and the indigenous tribal groups, who mostly reside in the East Malaysia. Like many other Asian societies, Malaysian is also a collectivist society, which emphasizes the values of group over the individual. Although each ethnic group has its own cultural traditions and community structures, their cultures have blended together as a result of socialization. For instance, many elements of the Indian culture have been adopted into the Malay culture. The most obvious example is the Malay marriage ceremony, which was adopted from Indian marriage ceremony. The Malays have also adopted a Chinese custom of giving "ang pow" or money gift wrapped in colored envelopes to children during "Syawal", which is a celebration held to commemorate the completion of the fasting month of "Ramadhan".

The Malays are the majority and they make up more than half (65%) of the population (Malaysian Department of Statistics, 2005). Most of the Malays are Muslims. Under the Malaysian Federal Constitution, the term “Malay” is defined as a person who practices Malay culture and professes the religion of Islam, speaks Malay language, and whose ancestors are Malay (Wikipedia, 2006).

The Chinese constitute about 26% of the population. Most of them are descendants of Chinese immigrants who arrived between the 17th and 19th century.
The Chinese are a mixture of Buddhists, Taoists, Confucians, and Christians. Some Malaysian Chinese speak English as their first language although the majority of them are Chinese speaking (Wikipedia, 2006)

The Indians are the third largest ethnic group, which form about 7.7% of the population. The majority of Indians descended from those who migrated from South India during the British colonization. Most Indians speak Tamil as a first language. Approximately, 80% of Indians identify themselves as Hindus (Wikipedia, 2006) while the others are Muslims or Christians (Storz, 1999).

The oldest inhabitants of Malaysia are the indigenous groups, who mostly reside in East Malaysia, and the aborigines of the Peninsular Malaysia. The groups account for about 5% of the population. These groups generally share a strong spiritual tie to the rainforest (Malaysia Tourism Promotion Board, 2006). There are more than 95 different indigenous and aboriginal groups, each with their own cultural identity, and are marginalized culturally and socio-economically (Malaysian Charter on Human Rights, 2006). The indigenous people and the aborigines, who form only a small percentage of the population and consist of different subgroups, were not included in the study because it is inappropriate to group them under one category, which may lead to misunderstanding of their cultures.

Malaysia’s three main ethnic groups have their own cultures with regards to interactions and socialization among family members. In the section that follows, the family culture of each main ethnic group is discussed.
Malay Family

Malays culture, which is native to the country, is considered the base of national culture (Malaysian Ministry of Information, 2006). Since almost all Malays are Muslim, Islamic values have a great influence on Malay culture. However, norms, values and ways of pre-Islam were grouped together and they are called “adat” (Kling, 1995). The “adat” and Islamic values function as dual principles that guide daily life. Relationships among family members are also influenced by Islamic values and the “adat”. Traditionally, the family is organized on the patriarchal principle in which men play a major role and through them, kinship links are accounted for and recognized (Kling, 1995). Most Muslim Malays accepted these patriarchal elements and incorporated them into the bilateral kinship system for the purpose of marriage rituals, property division, leadership selection and religious function (Kling, 1995). In other words, Islamic elements play a great role in Malay family systems although traditional Malay “adat” that are not against the Islamic teaching are still accepted and practiced.

In the Muslim Malay family, filial piety is greatly emphasized. Serving one’s parents by showing respect and following their decisions are expected regardless of the children’s ages. Children are also expected to take care of their aging parents and it is considered a big sin to ignore them or to express irritation. Besides, Malay families also stress the importance of hierarchy and seniority in family systems. As noted in Karim (1992), hierarchy exists between generations and by seniority in birth order among one’s own siblings and those of parents. Kinship is also extended to
elders outside of the original family. For instance, uncles are considered important figures especially after the father dies. Hierarchy is also related to marital status. Older siblings who are married play a greater influence on the family’s decisions than unmarried young siblings.

Kling (1995), in his writing about the Malay family, noted, that the patrilineal hierarchy became the basis for guardianship, political leadership, and social control in Malay society. To the Muslims, these elements are religious injunctions and parts of divine revelation. Muslim Malays have accepted and incorporated the elements into their family structure and kinship system.

*Chinese Family*

The Chinese Malaysian culture is influenced by Taoism, Confucianism, and Buddhist teachings (Storz, 1999). Traditional Chinese family structure is patrilineal and patriarchal, in which sons are preferred over daughters in order to maintain the family surname through descent (Encarta Encyclopedia, 2006). Like Malays, the Chinese also emphasize filial piety and strong respect for elders. The influence of filial piety, respect for elders, and a cultural norm of support between parents and sons create a strong bond of social and economic commitment between different generations of Chinese Malaysians (Family Issues Encyclopedia, 2003). This also leads to a higher proportion of parent-adult child living arrangements within the Chinese community. In a study by Johnson and DaVanzo (1998), the researchers found Chinese sons, especially first-born sons, are less likely to leave home than
Malays. In addition, Chinese daughters are more likely to leave home as the number of younger same-sex siblings increase.

Like other Malaysian ethnics, Chinese are also a collectivist culture. Great emphasis is placed on the welfare of in-group members. In order to conform to society, a person is expected to do what is the best for the group. Refusal to co-operate or striving towards interdependence is considered shameful. However, some of these values are disappearing with the influence of modernization.

_Indian Family_

The Malaysian Indians are the smallest of the three major ethnic groups and often regarded as a minority race. Indians are often as industrious and entrepreneurial as the Chinese. However, they still retain much of their values and cultural traditions and closeness and community awareness. To the Indian community, filial piety is of paramount importance and ties to the family and their community are extremely strong and must be persevered.

Like other traditional Asian Indians, Indian Malaysians tend to be allocentric, where the self and the family are integral, rather than separate concepts. Individuals of all ages are expected to sacrifice for the group (Farver, Narang, & Bakhtawar, 2002). The need and the welfare of the family supercede individual needs and self-identity. Emotional dependency is fostered within the family and across the life span (Sodowsky, Kwan, & Pannu, 1995). Children are expected to show respect for elders through their verbal and non-verbal behaviors (Krishnan, 2004); women are expected
to be dependent on males; and children remain physically close to their parents long after marriage, gainful employment, and leaving home (Sodowsky et al., 1995). According to Krishnan (2004), Indian family structure also subscribes to rigid, hierarchical organization of its members by age, gender, and generational status, which determine the behavior and role relationships. Roles of family members are clearly defined and their communication and interaction patterns are restrictive and rule-bound.

Statement of the Problem

Like many other Asian societies, Malaysian society is traditionally seen as being collectivistic in which the needs of the group are put before the needs of the individual. As pointed out by Leong (2002), the type of society in which individuals live and grow up, may affect their life, including the way they communicate, solve problems, and make decisions. For most Malaysians, the family is the primary source for teaching children how to behave and how to make decisions in life. Cohesion and relational interdependency among family members are greatly emphasized. Discussion with family members and consultations with the head of the family before making any decisions are highly recommended to maintain the unity of the family. Until a person is married, the family-of-origin continues to dominate an individual’s life. Moving out from the parents’ home is uncommon unless there are acceptable reasons such as furthering studies, work, or marriage. Because there is a strong influence from extended family towards decision making, children are expected to always consider their family as the main source of reference. The need to respect
family desires may be more important than individual interests. Making educational and vocational choices are some of the decisions usually influenced by the family.

According to Way and Rossmann (1996), family contributes to career decisions in a number of ways. Among them are interactions about careers and participation in their children's schooling. In particular, family functioning or family dynamics play a crucial role in career development. Previous studies have provided evidence of the influences of different aspects of family functioning on career decision-making, such as quality of relationships (Guerra & Braungart-Rieker, 1997), family interaction patterns (Hargrove, Creagh, & Burgess, 2001; Lee, 2003; Whiston, 1996) and parents' support (Turner & Lapan, 2002).

Since traditional Malaysian culture emphasizes the connectedness among family members, the relative contributions of family functioning to the career decision-making self-efficacy needs to be explored further. While a number of studies have been conducted in the United States to explore the potential relationships between family functioning and career decision-making, research on Malaysian students have a limited scope and have been centered on the role of family demographic backgrounds only (e.g., parents' educational and income levels and occupational status) (Ahmad, 1994; Salleh, 1994). The role of self-efficacy in career decision-making also has not received attention by Malaysian researchers. No study has been conducted so far to examine the relationship between family functioning and career decision-making self-efficacy. In light of this information gap, the current study was designed to examine the relationship between family members' perceptions
of family functioning and career decision making. It is hoped that the study leads to an understanding of the possible relationship between family functioning and career decision-making self-efficacy.

Purpose of the Study

The primary purpose of this study was to examine the possible relationships between family functioning and career decision-making self-efficacy for Malaysian undergraduate students. This will identify to what extent patterns of family functioning relate to career decision-making self-efficacy.

In addition, the study also examined whether there are differences in family functioning and career decision-making self-efficacy by students’ demographic backgrounds (i.e., gender, ethnic groups, and academic major). Examination of these differences may reveal the influence of demographic backgrounds on family functioning and career decision-making self-efficacy.

Significance of the Study

The application of Bandura’s self-efficacy theory to the understanding of career development was first suggested by Hackett and Betz (1981). Since then, the concept has received extensive study and researchers have demonstrated that it plays an important role in career development. However, use of the theory with other than Western populations is still limited, particularly in developing countries like Malaysia. This study relates career decision-making self-efficacy variables to family
functioning. The study replicates and extends research on the role of family in career
decision-making self-efficacy by using a large sample which was selected among first
year undergraduate students in one public university in Malaysia. Investigation of
family functioning in relation to career decision-making self-efficacy in other cultures
is needed because it will add to a better understanding of the role of family in young
adults' career development in other cultures.

Although a few studies have been conducted to investigate the role of
Malaysian families in career development (Ahmad, 1994; Salleh, 1994), several
aspects have been ignored. For example, the relative strength of relationships between
dimensions of family functioning and career decision-making remains uninvestigated.
This study will provide a framework for understanding the relationship of young
adults to their family members. A focus on family processes related to family
functioning is needed because it will enable practitioners (e.g., teachers, counselors)
to understand the existing strengths of the family, which could be utilized to help
students achieve their career goals.

The study will also help policy makers in Malaysia understand the influence
of gender, ethnicity, and academic major on family functioning and career decision-
making self-efficacy. In other words, findings from the present study will reveal
insights regarding differences in family functioning and career decision-making self-
efficacy with respect to students' demographic backgrounds.

The concept of family functioning and career decision-making self-efficacy
used in this study are based on the works of Western scholars. Family functioning
was measured by the Family Assessment Device (FAD) developed by Epstein, Baldwin, and Bishop (2000), while career decision-making self-efficacy was measured by the Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) developed by Betz and Taylor (2000). Examining family functioning and career decision-making self-efficacy with Malaysian students will enhance the validity of the concepts and assess their suitability across different cultures. In addition, adaptation of the FAD and the CDSE-SF will provide more psychometric evidence for both scales in cross-cultural studies.

Research Questions

Consistent with the statement of the problem and the purpose of the study, the answers to the research questions stated below will assert the role of family functioning in career decision-making self-efficacy among first year undergraduate students enrolled at the University of Malaya, in Kuala Lumpur, Malaysia. Specifically, the study addressed the following research questions:

1. What is the relationship between family functioning and career decision-making self-efficacy?

2. What are the relative effects of family functioning on career decision-making self-efficacy?

3. Will there be differences in family functioning among students by gender, ethnicity, and academic major?
4. Will there be differences in career decision-making self-efficacy among students by gender, ethnicity, and academic major?

Assumptions

Two basic assumptions are considered necessary for this study. First, it is assumed that participants will respond honestly when responding to these self-report instruments. Second, since passing the Malay language paper is a prerequisite for entry into Malaysian public universities, the researcher assumed that the participants understand the content of the instruments which were translated to the Malay language.

Limitations of the Study

This study has two limitations. First, the researcher examined the relationship between family functioning and career decision-making self-efficacy using a Malaysian population. The concepts and the instruments used are based on the works of Western scholars. Although the FAD and the CDSE-SF have been proven to work well in some cultures, as shown by internal consistency findings (See Chapter III), the culture in which the instruments were developed is different than Malaysian culture. Even if the results of this study show that both scales are adaptable to the Malaysian culture, the fact remains that they were not originally developed for a Malaysian population. Hence, their content may be culturally biased because the concept of
family functioning and career decision-making self-efficacy may differ across cultures.

Second, the population of this study was limited to first year undergraduate students. In addition, participants came from one public university only, namely the University of Malaya (UM). Although there were a large number of participants, the findings and the conclusions drawn from this study may have limited generalizability to second, third, or final year students, or other students in private higher education institutions, which have different entry requirements than public universities.

Definition of Terms

Self-Efficacy

Self-efficacy refers to people's perception of their abilities to perform certain tasks successfully. This belief influences how people think, feel, and motivate themselves (Bandura, 1977, 1995). High self-efficacy expectations regarding certain behaviors would lead people to perform tasks necessary to those behaviors. On the other hand, low self-efficacy would lead people towards avoidance behaviors.

Career Decision-Making Self-Efficacy

The term refers to the degree of confidence to successfully perform tasks necessary in career decision-making (Betz, Klein, & Taylor, 1996). The degree of confidence in five different dimensions is measured by the CDSE-SF. The five
dimensions of the CDSE-SF are Self-Appraisal, Occupational Information, Goal Selection, Career Planning, and Problem Solving.

*Family Functioning*

Family functioning refers to social climate or interaction patterns of the family. There are seven dimensions of family functioning as measured by the FAD. The dimensions are Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, Behavior Control, and General Functioning (Epstein et al., 2000).

*Public University*

Public universities refer to higher education institutions owned by the federal government. As of 2005, there are 17 public universities in Malaysia. Admission to undergraduate programs at these universities is restricted to Malaysian citizens. Applicants to public universities must have completed the pre-university program run by public institutions or have a *Sijil Tinggi Pelajaran Malaysia* grade (Malaysian Certificate of Education), which is equivalent to General Certificate of Education ‘A’ Level in Britain.

*Tertiary Education*

Tertiary education is the educational level following the completion of secondary school (high school). It is also referred to as higher education. Tertiary
education in Malaysia may be obtained from public and private colleges and universities, or vocational training institutes, like polytechnics.

*Ethnicity*

Ethnicity refers to the three main ethnic groups (i.e., Malay, Chinese, and Indian) of first year undergraduate students enrolled at the University of Malaya at the time of data collection. These three groups are the main ethnic groups in Malaysia. Each group adheres to its religious and cultural beliefs. Because of that, the interactions that occur within the family may also differ across ethnic groups.

*Faculty*

Faculty is a term equivalent to college or school in most universities in the United States.

*Academy*

Academy is another term used by some public universities in Malaysia. Like faculty, academy is a term equivalent to college or school in most universities in the United States.

*Academic Major*

Academic major refers to two primary undergraduate academic majors offered by the University of Malaya: (1) Sciences; and (2) Arts and Social Sciences. Science majors are offered through six faculties: (1) Faculty of Built Environment; (2) Faculty
of Engineering; (3) Faculty of Dentistry; (4) Faculty of Medicine; (5) Faculty of Science; and (6) Faculty of Computer Science and Information Technology. Art and social science majors are offered through two academies and six faculties. The two academies are: (1) Academy of Islamic Studies; and (2) Academy of Malay Studies. The six faculties are: (1) Faculty of Language and Linguistics; (2) Faculty of Economy and Administration; (3) Faculty of Education; (4) Faculty of Business and Accountancy; (5) Faculty of Art and Social Science; (6) and Faculty of Law.

Summary

The relationship between family functioning and career decision-making self-efficacy of college students is not a new phenomenon. There seems to be a growing interest in incorporating family systems perspectives in the understanding of career development of young adults, particularly in Western societies. Family systems perspectives emphasize the need to consider family interaction patterns and emotional interdependencies in understanding individual career development. However, there has been little empirical investigation of such issues relative to young adults in Malaysia. Since Malaysian society, in general, values connectedness in the family system, it is assumed that students' career decision processes may be influenced by interaction patterns that occur within the family.

This study examined the empirical link between career decision-making self-efficacy and family functioning among first year undergraduate students at the University of Malaya. In addition, this study also examined if there are any
differences in family functioning and career decision-making self-efficacy with respect to gender, ethnicity, and academic major. In moving the focus from an individual to a system, a broader and clearer perspective will be obtained in understanding the career development processes of undergraduate students in Malaysia. A review of the conceptual and empirical literature related to self-efficacy, career decision-making self-efficacy, and family functioning will be discussed in Chapter II.
CHAPTER II

REVIEW OF RELATED LITERATURE

Overview

This literature review is divided into seven primary sections: (1) Self-Efficacy Theory; (2) Sources of Self-Efficacy; (3) Self-Efficacy in Career Development; (4) Career Decision-Making Self-Efficacy; (5) Family Influence on Career Development; (6) Relationship between Family Functioning and Career Development; and (7) Summary. The first section of this chapter begins with an overview of Bandura's (1986) self-efficacy theory. The role of cognition in people's ability to perform behaviors is discussed. The second section outlines the four primary sources of self-efficacy beliefs. The third section focus on the studies related to the self-efficacy role in the process of career development and is followed by a discussion of career decision-making self-efficacy in the fourth section. The major studies on the research regarding the relationship between family functioning and career decision-making self-efficacy are reviewed in the fifth and sixth sections, followed by the summary of the chapter in the final section.

Self-Efficacy Theory

The concept of self-efficacy was originally proposed by Bandura (1977) in *Self-Efficacy: Toward a Unifying Theory of Behavioral Change*. Since then, the concept has been widely studied and applied to different areas and domains.
Bandura's self-efficacy theory is "one of the most theoretically, heuristically, and practically useful concept in modern psychology" (Betz & Taylor, p. 3). Bandura (1977, 1986, 1995, 1997) defined self-efficacy as people's judgments or beliefs relative to their abilities to perform certain tasks or specific behaviors. These beliefs are regulated by their cognitive processes, which play a critical role in what people choose to do and not to do. Lent, Brown, and Hackett (1994) stated that self-efficacy is a dynamic set of beliefs that "determine one's choice of activities and environments, as well as one's effort expenditure, persistence, thought patterns, and emotional reactions when confronted by obstacles" (p. 83).

Self-efficacy theory is based on the assumption that "psychological procedures serve as means of creating and strengthening expectations of personal efficacy" (Bandura, 1977, p. 193). Bandura further distinguished between efficacy expectation and response-outcome expectations. Outcome expectations refer to people's judgment that certain behaviors will produce certain outcomes. An efficacy expectation is defined as the belief that one can perform successfully the behavior needed to produce the outcomes. Efficacy expectation or perceived self-efficacy plays a crucial role and acts as a major determinant in people's performance. Low self-efficacy expectations regarding behavior would lead people to avoid those behaviors. On the other hand, high self-efficacy expectations would lead people to perform the behaviors. In particular, self-efficacy beliefs determine how much effort people invest to face obstacles and difficulties. The ability to overcome fear and threatening
experiences will reinforce the level of self-efficacy (Bandura, 1977, 1986, 1995, 1997).

Self-efficacy beliefs regulate people's functioning through four major processes: cognitive, motivational, affective, and selection (Bandura, 1992). The beliefs regulate people's functioning through the cognitive process by influencing their thought patterns that can enhance or undermine their performance. Those who perceive themselves as efficacious are more inclined to see things positively by visualizing success scenarios that guide them to success. Through the motivational process, "people motivate themselves through the exercise of forethought" (Bandura, 1992, p. 18). With motivation, they will form beliefs about their abilities to do things, expect certain outcome of future actions, set goals, and plan courses of action to achieve their goals. Through the affective process, self-efficacy beliefs "create attentional biases and influence how emotive life events are construed and cognitively presented, operate in the exercise of control over perturbing thought patterns, and sponsor courses of actions that transform environment that change their emotive potential" (Bandura, 1992, p. 24). Through the selection process, self-efficacy beliefs influence people's selection of activities and situations. Activities that are beyond their perceived abilities will be avoided, while activities that they can handle will be selected. People with high self-efficacy beliefs will have more options to consider than those with low beliefs (Bandura, 1992).
Sources of Self-Efficacy

There are four major sources of self-efficacy (Bandura, 1986, 1994, 1995, 1997): (1) mastery experience; (2) vicarious experience; (3) verbal persuasion; and (4) emotional arousal. These sources of information are not only important for the initial development of efficacy expectations but can also be used as a guideline for designing interventions needed to build, enhance, and strengthen perceived self-efficacy (Betz, 2004).

Mastery Experiences

According to Bandura, mastery experiences are the most influential sources of efficacy information because “they provide the most authentic evidence of whether one can master whatever it takes to succeed” (Bandura, 1997, p. 80). Outcomes interpreted as successful will raise human efficacy. By contrast, any failure experience will lower the level of self-efficacy, especially before it is firmly established. However, some difficulties and obstacles are required to develop a resilient sense of self-efficacy. Bandura (1986, 1997) emphasized that people who experience successes tend to expect quick results and can easily feel discouraged by failures only. Thus, both the success and the failure experiences help a person to have a resilient sense of efficacy. Once established, any occasional failures will enhance self-motivated persistence and are unlikely to undermine individuals’ judgments about their abilities. Therefore, the effects of failure are partly influenced...
by the timing and the total patterns of experiences in which the failures happen (Bandura, 1977).

*Vicarious Experiences*

The second source of self-efficacy is vicarious experience, provided by observing and modeling after others. The influence of modeling depends on the perceived similarity to the models. By observing others' successes and failures, people are able to judge their own abilities. They learn to make at least some improvement in their performance by seeing others' successes. On the other hand, seeing other people similar to them fail despite their efforts will undermine their judgment about their abilities.

Bandura (1986) suggested several conditions under which self-efficacy expectations are affected by vicarious information. The extent to which an individual perceives his or her own capabilities is the first factor (Bandura, 1986). Level of self-efficacy can be changed if people have had prior experiences on which to evaluate their performance. The lack of knowledge regarding their own abilities will lead people to depend solely on modeled indicators. People who have undergone experiences that have undermined their efficacy will improve their self-efficacy through social modeling. The second factor is the criterion by which abilities are evaluated (Bandura, 1986). People need clear and sufficient information that can be used as a basis for judging their abilities. The third factor is perceived similarity to the models (Bandura, 1986, 1995). Vicarious experience is meaningful by observing
others perceived to have similarities in some attributes. The greater the assumed similarities, the more people learn about their abilities. Self-efficacy beliefs are not influenced much by observing models that are personally irrelevant to the observers.

Self-efficacy beliefs created from vicarious experiences are weaker than beliefs developed from mastery experiences. However, this source of information is very meaningful when people are uncertain about their own abilities and have limited prior experiences (Pajares, 2002).

**Verbal Persuasion**

Verbal or social persuasion is the third source of self-efficacy beliefs. Others’ persuasive efforts and suggestions may lead people to believe that they have certain skills and abilities. However, Bandura (1995) reminded his readers that persuasion can also undermine peoples’ self-efficacy when it is used to convince them that they lack abilities. As a result, they may avoid any challenging activities and give up easily when facing difficulties. Efficacy expectations developed from this source are less powerful than those established from mastery experiences because they “do not provide an authentic experiential base for them” (Bandura, 1977, p. 198). It is also more difficult to enhance self-efficacy with verbal persuasion alone than undermine it. Successful efficacy builders are those who structure situations for people within their realistic bounds and avoid placing them in situations where they are likely to fail. Therefore, realistic persuasion is crucial because unrealistic beliefs of performances only lead to failure and will further undermine perceived self-efficacy.
Emotional Arousal

People also rely on the physiological and emotional states such as stress and tension (Bandura, 1995), or aches and pains (Ewart, 1992) when making judgments regarding their capabilities. Their bodily states may drive them to think that they are not able to perform certain tasks. Mood also influences people’s judgment about their capabilities to succeed. Positive mood will promote self-efficacy. In contrast, negative mood will diminish it (Bandura, 1994, 1997). However, Bandura (1994) emphasized that it is not the intensity of emotional and physical states that determine people’s beliefs but rather their perceptions and interpretations about the stressors. In order to improve their beliefs, people must enhance the physical and emotional states that help them judge their abilities positively (Bandura, 1986, 1994, 1997).

Self-Efficacy in Career Development

The application of Bandura’s (1977) self-efficacy theory to the study of educational and career behaviors has become “one of the most heuristic and useful practices in career development” (Betz & Voyten, 1997, p. 197). The applicability of the theory to career development was first suggested by Hackett and Betz (1981). The proponents of this approach stressed the interaction of personal attributes, external environmental factors, and behaviors in career development (Kerka, 1998). If people believe that they have the ability to perform certain tasks and have positive expectations regarding their outcomes, they will try their best to achieve their goals.
Low self-efficacy regarding such behaviors will lead people to avoid those behaviors and they will tend to give up when faced with failure experiences.

Hackett and Betz (1981) suggested that the concept of career self-efficacy could be used to understand the career development of women. They hypothesized that lack of personal self-efficacy in relation to career-related behaviors limit women's career choices. As a result of gender-role socialization, males and females attain different self-efficacy for competencies in career pursuits. They called for further research to test the validity and utility of the construct in career development. Hackett and Betz listed the following questions that require empirical investigation (p. 344):

1. To what extent are expectations of self-efficacy related to the individual's perceived range of career options, to effective career decision-making and effective and persistence pursuit of desired alternatives?

2. To what extent do sex differences in the level, strength, and generality of career-related efficacy expectations contribute to the understanding of sex differences in vocational behavior?

3. Do counseling interventions focused on increasing career-related self-efficacy expectations change vocational behavior, including satisfaction with and success in occupational pursuits?

Career self-efficacy refers to efficacy expectations regarding some aspect of career-related behaviors (Betz & Hackett, 1986). Since 1981, career self-efficacy has received extensive empirical attention and researchers have demonstrated that it also
has an important role to play in career development. In 1994, Lent, Brown, and Hackett (1994) developed the social cognitive career theory (SCCT) by extending Hackett and Betz’s (1981) framework. This theory integrates self-efficacy with two other mechanisms: outcome expectations and goal representations. Within the SCCT, self-efficacy receives the most attention in career literature (Lent et al., 1994) and is considered an important variable in career counseling (Betz, 2000). Lent et al. hypothesized that outcome expectations are partly determined by self-efficacy beliefs. These two mechanisms directly or indirectly influence educational and vocational choices. More specifically, people develop interests in activities about which they most feel efficacious and in which they expect positive outcomes. People with high self-efficacy beliefs but low outcome expectations are less likely to develop interests because the latter provide limited potential for reinforcement. Finally, goal attainment creates self-satisfaction and promotes self-efficacy, which in turn encourages interest.

According to Hackett and Byars (1996), career self-efficacy and outcome beliefs are “influenced by early and ongoing learning experiences” (p. 324). Specifically, self-efficacy and outcome beliefs interact, which in turn “influence interest, goals, and choices” (p. 324). In addition to the role of interest, the influence of individual (e.g., gender, race, socioeconomic status, and ethnicity) and contextual factors (e.g., the nature and the quality of educational opportunities, gender role stereotyping) in academic and career experiences should also be acknowledged (Betz, 2004; Lent & Brown, 1996; Lent et al., 1994).
There are three consequences of perceived self-efficacy on career choice: (1) choice behavior (approach versus avoidance); (2) performance; and (3) persistence (Betz, 2000a; Betz, 2000b). People with low self-efficacy may limit their choices and avoid non-traditional career fields or avoid taking courses related to nontraditional careers. For example, women may avoid choosing traditional male-dominated careers. The effect of self-efficacy on performance refers to performance on the test necessary to complete education or performance in coursework required in non-traditional majors. Persistence issues may arise when people enter or enroll in nontraditional careers or majors, where there is either a lack or very little support for them. Occasional failures, and gender and racial discrimination or harassment are among the dissuading factors that have impact on persistence (Betz, 2000a).

Career self-efficacy has two domains, career selection content and career selection process (Betz, 2000a, 2000b; Betz & Luzzo, 1996). Career selection content refers to content domains such as mathematics, accounting, and sciences. Low self-efficacy in content domains will lead people to avoid careers that require the content. For example, low self-efficacy in science courses will lead people to avoid choosing science based careers. Career selection process refers to “confidence with respect to the process of career decision making” (Betz, 2004, p. 344). Examples of selection or choice domains are self-efficacy in job search, self-efficacy in combining home and family, and self-efficacy in career decision-making. However, career decision self-efficacy is the most obvious example (Betz & Luzzo, 2000) and is strongly related to difficulties in making and implementing career decisions (Betz & Taylor, 2000a).
People may avoid making career decisions or implement a decision that has been made if they have low perceptions of self-efficacy in career selection process. Low self-efficacy expectations regarding a process of career decision making are also related to “career indecision, problems in developing a clear vocational identity, and floundering” (Betz, 2004, p. 344).

The first study on career self-efficacy was conducted by Betz and Hackett (1981). They investigated the relationship of career self-efficacy expectations to the perceived career options of 235 college students. Participants were asked to complete the Occupational Self-Efficacy Scale (OSES), which consists of 20 occupations. The occupations were divided into two groups: traditional occupations (with a high percentage of women employed) and nontraditional occupations (with a low percentage of women involved). They were asked to rate their level of confidence in completing the educational and job requirements of those occupations. The results revealed that men’s self-efficacy was equivalent across traditional male and female dominated occupations. To the contrary, women demonstrated lower levels of self-efficacy in traditionally male-dominated occupations and higher levels for traditionally female-dominated occupations. The results were consistent with their earlier hypothesis that underrepresentation of women in many male-dominated careers was partly due to low career self-efficacy.

Subsequent studies have replicated and extended Betz and Hackett’s initial study (Hackett, 1995). Many studies have confirmed the importance of self-efficacy in career development. It appears that career self-efficacy can be applied to the
understanding of a wide range of career behaviors from early high school through college and beyond (Hackett & Lent, 1992), although most studies were conducted on college students. While many studies have been conducted to explore career self-efficacy with regards to content domains, career self-efficacy with regard to process domains has received most attention by career researchers and practitioners (Betz & Luzzo, 2000). Judging from the amount of research, Betz, Klein, and Taylor (1996) claimed that the study of career decision-making self-efficacy is one of the most popular applications of self-efficacy theory in career development.

Career Decision-Making Self-Efficacy

Although the concept of career self-efficacy was adapted from Bandura’s theory, Crites’s (Crites & Savickas, 1995) model of career maturity provides a framework for skills definition required in the career decision process (Betz & Luzzo, 2000; Betz & Taylor, 2000a). Five career choice competencies in Crites’ model were used as a basis to define competencies in career decision-making (Betz & Luzzo, 2000; Betz & Taylor, 2000). Subsequently, these five parts became the subscales in the Career Decision Self-Efficacy scale. Hence, Bandura’s self-efficacy theory and Crites’ career maturity theory were used to form a concept of career decision-making self-efficacy (Betz & Luzzo, 2000; Betz & Taylor, 2000).

Taylor and Betz (1983) extended the original model of career self-efficacy proposed by Hackett and Betz (1981) by applying the model to the realm of career decision-making. Career decision-making self-efficacy is defined as an individual’s
beliefs that he or she can successfully perform tasks necessary to making career
decisions (Betz & Taylor, 2000a). Taylor and Betz (1983) developed the Career
Decision Self-Efficacy Scale (CDSE) to assess career decision-making self-efficacy
expectations and its relation to career indecision. The CDSE consists of five subscales
derived from five career competencies in Crites's career maturity model (Crites &
Savickas, 1995): (1) Self-Appraisal; (2) Occupational Information; (3) Goal
Selection; (4) Career Planning; and (5) Problem Solving. Many studies on career
decision-making self-efficacy have been conducted, especially on Western
populations and traditional-aged college students, while only few studies have been
conducted on minority populations. These studies are discussed in the following
sections.

*Studies with Western Population*

Many studies were conducted to examine the relationship between career
decision-making self-efficacy and other career-related tasks. Findings from some of
these studies are discussed in the following section.

*Career decision-making self-efficacy, career indecision, and outcome
expectancies*

The first study using the model was conducted by Taylor and Betz (1983). In
combining the original CDSE with the Career Decision Scale (CDS; Osipow, 1987),
they examined the relationship between career decision-making self-efficacy and
career indecision. A total of 154 students at a private liberal arts college and 193
students at a large university participated in the study. The results indicated that levels of self-efficacy were significant predictors of levels of career indecision. Students who were more indecisive reported less confidence in their abilities to perform tasks necessary to make career decisions. No gender differences were noticed for the CDSE total score and for all subscales except for Career Planning and Goal Selection, where females scored higher than males.

Following these early studies, other researchers have attempted to examine career decision-making self-efficacy in relation to career-related tasks. A considerable amount of past research has indicated the importance of self-efficacy in career development. Taylor and Popma (1990) investigated the relationships among career decision-making self-efficacy, vocational indecision, career salience, and locus of control. A total of 407 subjects were utilized in their study. The results supported the earlier findings (Taylor & Betz, 1983) that level of career decision-making self-efficacy is related negatively to career indecision. Students who scored lower were more undecided about career choices than students who scored higher on the career decision-making self-efficacy scores. The results also indicated that career decision-making self-efficacy was negatively related to locus of control. Specifically, the more external a person's locus of control, the less confident he or she was in career decision-making. No gender differences in career decision-making self-efficacy were noted.

In a related investigation with 124 college students, Bergeron and Romano (1994) found that students who reported having decided a college major had higher
career decision-making self-efficacy scores than students who had tentatively decided on a major as well as students who were undecided. Students who were less confident in their abilities to complete the tasks necessary for career decision making were more likely to report being vocationally undecided. However, no gender differences were found in career decision-making self-efficacy.

Research by Betz et al. (1996) also provided evidence of the relationship between career decision-making self-efficacy and career indecision. They used the CDSE-SF, CDS, and My Vocational Situation (MVS) to examine the relationship between career decision-making self-efficacy, career indecision, and the vocational identity of 180 college students. The results from this study showed that CDSE-SF was negatively correlated with career certainty \( r = -.56 \) and career indecision \( r = -.56 \) and positively correlated with vocational identity \( r = .58 \). No gender differences in the total score of CDSE-SF and its subscales were found. Betz et al. concluded that the lack of gender differences in career decision-making self-efficacy is consistent with the results of previous studies (Taylor & Betz, 1983; Taylor & Popma, 1990).

The relationships among career decision-making self-efficacy, career indecision and outcome expectations were studied by Betz and Voyten (1997). The CDSE-SF (Betz & Taylor, 2000), the CDS, and the Career Decision Making Outcome Expectancies and Exploratory Interventions, designed by the researchers, were given to 350 college students. Outcome expectation refers to “the beliefs regarding long term consequences in specific educational or career decision-making behaviors” (Betz & Voyten, 1997, p. 181). Multiple regression analysis showed that

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
self-efficacy beliefs were the better predictors of career indecision than outcome expectations and career exploration. The analysis indicated that career decision-making self-efficacy was negatively related to career indecision and positively related to outcome expectations. The relationship between career decision-making self-efficacy and career indecision was stronger among male ($r = -.53$) than female students ($r = -.42$). On the other hand, the relationship between career decision-making self-efficacy subscales scores and outcome expectations subscales scores were stronger among male student (ranging from $r = .35$ to $r = .53$) than female students (ranging from $r = .12$ to $r = .33$). The authors stated that their findings highlight the essential relationship between thought and behavior. They further recommended counselors assess outcome expectations and discuss with their clients about their avoidance of necessary career exploratory behaviors.

Using a posttest-only delayed posttest control group design, Kraus and Hughey (1999) reported significant negative correlation ($r = -.40$) between career decision-making self-efficacy and career indecision at the delayed posttest. No significant correlation was found at the posttest. The study also reported a significant treatment by gender interaction on career decision-making self-efficacy scores. Specifically, the males in the control group had higher career decision-making self-efficacy mean score ($M = 178.6$) than females ($M = 154.07$) in the control group after the intervention. In addition, females in the treatment group demonstrated higher levels of career decision-making self-efficacy ($M = 179.5$) than females in the control group ($M = 154.07$).
Career decision-making self-efficacy and patterns of career choice

Another study has suggested that career decision-making self-efficacy is related to different patterns of career choice. Gianakos (1999) examined four patterns of career choice development in relation to career decision-making self-efficacy among 172 undergraduate students: (1) stable pattern; (2) conventional pattern; (3) multiple-trial pattern; and (4) unstable pattern. A stable pattern was designated when the individual's career choice during the later teenage years and early adulthood was the same. A conventional pattern was designated when the individual’s career choice during late teenage years differed from early adulthood. A multiple-trial pattern was designated when the individual’s career choice was the same during the later teenage and early adulthood years, and the person was in training for a second career. Finally, the unstable pattern was designated when a person reported uncertainty in career choice at both the later teenage and early adulthood years. The findings revealed that persons in the stable and multiple-trial patterns groups reported significantly higher levels of career decision-making self-efficacy than persons in the conventional and unstable patterns groups.

Career decision-making self-efficacy and career decision-making difficulties

Morgan and Ness (2003) were interested in examining the relationship between career decision-making self-efficacy and career decision-making difficulties. One hundred and forty nine first year students from an urban university in Canada were selected for the study. The researchers found that there was a significant and
negative relationship between career decision-making self-efficacy and the taxonomy of career decision-making difficulties. Students who changed their career plans during their first year were more likely to experience difficulties and lower self-efficacy in career decision-making compared to those who did not change their career plans. Morgan and Ness further suggested the need to develop specific activities and interventions that help first year students increase their career decision-making self-efficacy and decrease their career decision-making difficulties.

Career decision-making self-efficacy, locus of control, and vocational congruence

Luzzo and Ward (1995) investigated the relationship among career decision-making self-efficacy, career locus of control, and vocational congruence. Participants included 45 female and 16 male undergraduate students in a small liberal arts university in the Midwest. Career locus of control refers to an individual's self-appraisal regarding their career development, while vocational congruence refers to a match between people's personality and their occupational environment. Two measures were given to participants: the original CDSE (Taylor & Betz, 1983) and the Career Locus of Control (Trice, Haire, & Elliot, 1989). Vocational congruence was measured by coding the career aspiration and current part-time occupation provided by the participants on the demographic forms. The results of the multiple regression analysis indicated that career decision-making self-efficacy was not related to career locus of control or aspiration-occupation congruence. The author concluded that the absence of a significant relationship between career decision-making self-
efficacy and vocational congruence might be caused by three factors: (1) the difficulties experienced by many students in obtaining part time jobs congruent with their aspirations; (2) low levels of confidence in the ability to make effective career decision; and (3) some students do not consider the importance of the congruency between their aspirations and their part-time jobs.

In the following year, Luzzo and his colleagues (Luzzo, Funk, & Strang, 1996) used the attributional retraining procedure as an intervention for increasing the career decision-making self-efficacy of 60 college students who had an external career locus of control. The results revealed that career decision-making self-efficacy was negatively related to career locus of control ($r = -.28$). These findings did not coincide with the findings from a previous study (Luzzo & Ward, 1995), which revealed no relationship between the two career variables. Regarding gender differences, the results indicated that women and men reported similar levels of career decision-making self-efficacy.

_Career decision-making self-efficacy and career maturity_

Research also suggests that career decision-making self-efficacy is positively related to career maturity. Luzzo (1995) examined career decision-making self-efficacy as a predictor of career maturity in 113 college students. The results indicated that career decision-making self-efficacy was related to career decision-making attitudes and skills. Results from the regression analysis showed that career decision-making self-efficacy scores surpassed career decision skills and locus of
control as predictors of career decision-making attitudes. Because of the power of
career decision-making self-efficacy in predicting career attitudes, Luzzo (1995)
suggested that career counselors might help students increase their career maturity by
conducting interventions designed to increase self-efficacy.

Career decision-making self-efficacy and decision-making styles

A study conducted by Niles, Erford, Hunt, and Watts, Jr. (1995) has provided
evidence of the relationship between career decision-making self-efficacy and
decision-making styles. Subjects were 332 undergraduate students. A positive
relationship was reported between the systematic decision-making style and adaptive
vocational behavior. Students who relied on internal decision-making styles were less
confident in their abilities to complete career development tasks than those who relied
more on a systematic-external style.

Career decision-making self-efficacy and career commitment

When examining the relationship between career decision-making self-
efficacy and career commitment among 165 college students at a large southern
university, Chung (2002) found a positive correlation between career decision-
making self-efficacy scores and career commitment scores. Career commitment was
assessed by the Career Commitment Scale (CCS; Farmer, 1985). Students with higher
career decision-making self-efficacy tended to be more committed to career planning
and goal setting. Males and females did not differ from each other. This finding is
consistent with the previous research using a college sample (Betz et al., 1996; Taylor & Popma, 1990). In terms of ethnic differences, Black respondents scored significantly higher than White respondents on career decision-making self-efficacy and career commitment. These results did not support Gloria and Hird's (1999) findings in which White students scored higher than minority students. Chung concluded that his findings provided evidence of the importance of career decision-making self-efficacy to an individual’s career commitment across genders and ethnicities.

**Career decision-making self-efficacy and academic confidence**

In a more recent study, Paulsen and Betz (2004) examined the relationship between career decision-making self-efficacy and confidence in six academic dimensions, namely Mathematics, Science, Using Technology, Writing, Leadership, and Cultural Sensitivity. Measures used in the study of 627 undergraduate students included The Expanded Skill Confidence Inventory (ESCI) and the CDSE-SF. Findings from the study indicated that all six basic confidence dimensions contributed significantly to career decision-making self-efficacy, which accounted for 49% of the variance of the total score on the CDSE-SF. Analysis within gender and race indicated that confidence in Leadership and Cultural Sensitivity were the most important predictors for women and European Americans, whereas confidence in Leadership, Math, Science, and Technology were the most important predictors for men and African Americans’ career decision-making self-efficacy. They concluded
that career indecision or lack of confidence in career decision-making skills might indicate lack of confidence in basic academic skills.

_Career decision-making self-efficacy among men_

Research also suggests that men may have low self-efficacy in selecting women-dominated occupations (Giles & Rea, 1999). Giles and Rea (1999) employed a theory of planned behavior to investigate whether men are less willing to choose sex-atypical careers than women. A theory of planned behavior is a model that incorporates a self-efficacy measure together with measures of attitude and subjective norm, in order to predict and increase understanding of human behavior. Participants in their study were randomly selected from secondary schools in Ireland. A final sample consisted of 98 males and 114 females with an average age of 16. The results of this study revealed that men were less confident about their ability to pursue sex-atypical careers. Moreover, they were also less likely to intend pursuing these careers than women. Interestingly, no such differences were noted among women. Giles and Rea concluded that gender differences in the career decision-making process could be explained by men’s attitudes towards traditionally female occupations. Men were less inclined to adopt egalitarian roles than women partly because they did not possess the qualities needed to do such work. Giles and Rea called for a change in research focus by exploring unwillingness of men to involve or to choose female-dominated occupations.
Summary

The findings of the studies discussed in this section show the role of self-efficacy in career development and its relationship with many career variables. However, most of these studies were conducted on traditional-aged college students in Western countries. There are few studies that focus on non-Western and minority populations, like student with disabilities, nontraditional college students, and populations outside of the United States. In the following sections, some studies that focus on these populations are discussed.

Studies with People with Disabilities and Nontraditional College Students

The concept of career decision-making self-efficacy has also been used with people with disabilities and nontraditional college students. In combining the CDSE-SF with the Assessment of Attributions for Career Decision Making (AACDM), Luzzo, Hitchings, Retish, and Shoemaker (1999) compared career decision-making self-efficacy of students with disabilities and those without disabilities. Participants included 75 students who had a disability and 45 students without a disability. The analysis indicated that students with disabilities reported significantly lower levels of career decision-making self-efficacy and exhibited more pessimistic attributional style for career decision making than students without disabilities. The authors recommended that career counselors who work with students with disabilities develop strategies that can enhance their self-efficacy in making career decisions and encourage them to adopt an optimistic attributional style career decision making.
Quimby and O'Brien (2004) attempted to explore the nature of student self-efficacy, career decision-making self-efficacy, perceived career barriers, and perceived social support among 354 nontraditional college women who were 25 years and older. Measures used in this study were the CDSE-SF, the Self-Efficacy Expectations for Role Management, the Career Barriers Inventory, and the Social Provision Scale. The findings supported their hypotheses that career barriers and social support are related to students' self-efficacy and career decision-making self-efficacy. Career barriers and social support explained 32% of the variance in career decision-making self-efficacy for nontraditional college women with children and those without children. In the regression model predicting students' self-efficacy, career barriers and social support accounted for 26% of the variance for nontraditional college women without children, and 38% for those who had children. Based on their findings, Quimby and O'Brien suggested career counselors assist nontraditional students in their academic and career paths by eliminating barriers, enhancing social support, and strengthening their career decision-making self-efficacy.

The findings discussed in this section show that people with disabilities have lower career decision-making self-efficacy than people without disabilities. Research also suggests the need for enhancing career decision-making self-efficacy of nontraditional college students.
Studies with Non-Western Populations

Research concerning the relationship between career decision-making self-efficacy and other career variables were also conducted with non-Western populations. Mau (2000) used the CDSES-SF along with other instruments to investigate the differences in career decision-making styles and self-efficacy between American and Taiwanese undergraduate students. The American participants consisted of 540 students while the Taiwanese participants consisted of 1062 students. Significant differences in career decision-making style and career decision-making self-efficacy were found as a function of nationality and gender. As hypothesized, Taiwanese students were more likely to adopt a dependent decision-making style and reported lower levels of career decision-making self-efficacy than American students. In terms of gender, females were more likely to adopt a dependent decision-making style than males regardless of their nationality. However, male Taiwanese students scored significantly higher than female Taiwanese students in career decision-making self-efficacy, but no significant gender difference was found for American students. The absence of gender differences has also been documented in a study conducted by Eaton, Watson, Foxcroft, and Patton (2004) in South Africa. Based on these findings, Eaton and his colleagues further suggested that programs related to career decision-making interventions in high school need not be sex-specific in content.

In Saudi Arabia, Aleidan (2002) examined the connection between career decision-making self-efficacy to occupational preference and gender among 800
undergraduate students at King Saud University. Consistent with the earlier studies with Western groups, no significant relationship was found between gender and career decision-making self-efficacy. The findings also indicated that the general level of career decision-making was low for both male and female students in Saudi Arabia.

The relationship between career decision-making self-efficacy and non-career variables has also been studied in non-Western populations. For instance, Abdalla (1995) found that career decision-making self-efficacy was positively related to self-esteem, locus of control, and sex role identity among 234 Kuwaiti students. In another study with three samples of Arab college students, which consisted of 95 Qatari men, 145 Qatari women, and 89 Kuwaiti women, Abdalla (1995) found that sex-role self-concepts had a stronger influence on career decision-making self-efficacy than gender.

In conclusion, the concept of career decision-making self-efficacy and its relationship with career and non-career variables have been studied in non-Western populations. These studies show that career decision-making self-efficacy has received attention by researchers in countries other than United States.

Summary of Literature on Career Decision-Making Self-Efficacy

The concept of career decision-making self-efficacy has been seen to be associated with several career variables, such as career indecision (Betz et al., 1996; Betz & Voyten, 1997; Taylor & Popma, 1990), vocational congruence (Luzzo &
Ward, 1995), career maturity (Luzzo, 1995), career locus of control (Luzzo et al., 1996), career decision outcome expectancies and career exploration (Betz & Voyten, 1997), career decision-making styles (Mau, 2000; Niles et al., 1995) patterns of career choice (Gianakos, 1999), career commitment (Chung, 2002), and career decision-making difficulties (Morgan & Ness, 2003). These relationships show that self-efficacy has an important role to play in the career decision-making process. The effects of some demographic variables (e.g., gender, ethnicity, disability status) on career decision-making self-efficacy have also been studied by some researchers.

Other researchers have studied the relationship between career decision-making self-efficacy and non-career variables, such as sex role identity (Gianakos, 1995; Morgan & Ness, 2003), sources of efficacy information (Hird, 1995), ethnic identity and trait anxiety (Gloria & Hird, 1999), home and family commitment (Bright, 1996), acculturation (Arnott, 2000; Liu, 2003), adult student persistence (Sandler, 2000), and family interaction or family functioning patterns (Hargrove et al., 2002; Hartung, Lewis, May, & Niles, 2002; Whiston, 1996).

Earlier research appeared to support the contention that career decision-making self-efficacy is related to different patterns of career-related behavioral domains as well as to non-career variables. The construct has also been applied to non-Western groups. Most research on this concept has been done using the original CDSE and many studies have supported its validity and reliability (Betz et al., 1996).

Results from various studies have clearly demonstrated that self-efficacy beliefs play a highly influential role in the career decision-making process. It has been
suggested that the higher the individuals perceive their abilities to complete tasks necessary in career development, the better they prepare themselves to enter different careers, and “the greater their staying power in challenging career pursuits” (Bandura et al., 2000, p.188). Highly self-efficacious individuals are more likely to see demands as challenges rather than obstacles and therefore are more likely to prepare themselves to achieve their educational and career aspirations.

Family Influence on Career Development

Family involvement in children’s education and career development has received considerable attention in the career literature. Studies on family-of-origin influences on career development have provided evidence regarding different influences of family factors. The studies appear to fall along three dimensions: (1) family demographic background; (2) family structure and birth order; and (3) family relationship factors. Studies on the role of family relationship factors have taken one of two primary directions, an application of attachment theory to career development (Blustein, Prezioso, & Schultheiss, 1995; Ketterson & Blustein, 1997; O’Brien, 1996; Wilson, 2000) or an application of a family systems perspective to career development (Johnson, Buboltz, & Nichols, 1999; Penick & Jepsen, 1992; Suyun, 1999; Whiston, 1996).

Proponents of family systems theory suggest that the family operates as a system, where interaction patterns are learned. The family as a system is more than the sum of separate individuals (Nichols & Schwartz, 2004). Simply stated, each
family member is not just an individual, rather he or she is embedded in a network of relationships (Hall, 2003). The behaviors of family members are influenced and maintained by the way other members in the system interact with them. Horne and Horne (2000) added that problems experienced by the individual are an indication of difficulty within the family. In other words, individuals' behaviors should be interpreted within the context of their relationship with their family (Lopez & Andrew, 1987; Zingaro, 1983).

Family systems theory is a perspective well suited for examining career development because it accounts for the dynamic forces within the family unit as a whole. According to Kinnier, Brigman, and Noble (1990), family systems theories are "a promising new perspective for research and practice in career counseling" (p. 311). From a family systems perspective, interaction patterns among family members are likely to have an impact on their life. For instance, Roe (1957), an early career theorist, proposed that the interactions that occur within families affect the ultimate career selection of the individual. Roe speculated that "persons brought up in rejecting homes may develop intense defensive awareness of others; if so, they will probably have aggressive tendencies which may most readily find acceptable expression in occupational terms" (p. 217). Roe further theorized that early parent-child interactions are the primary determinant of occupational choices. Although Roe's work has been criticized because of the absence of longitudinal research to support her theory (Brown, 1990), the influence of family in career development continues to receive attention by career researchers. A number of researchers
(Bradley & Mims, 1992; Bratcher, 1982; Hall, 2000; Lopez & Andrews, 1987; Morrow, 1995; Zingaro, 1983) have advocated the use of a family systems perspective to understand the role of family functioning or family interaction patterns in career development.

Bratcher (1982) suggested that rules, boundaries, and homeostasis are the most influential issues in the family that are likely to affect career choices. Bratcher argued that using a family systems perspective is important because individuals may continue to be influenced by relationships with their family or any family issues that they were not able to deal with successfully in the past. The author believed that family rules and myths have a significant role in understanding family members’ behaviors. Family rules determine and guide beliefs and behaviors and serve as a norm (Broderick, 1990). Family myths are defined as a set of beliefs which are based on the distortion of historical reality and shared by each family member (Nichols & Schwartz, 2004). Bratcher also believed that dysfunctional family behaviors can deter children’s career development. Dysfunctional rules and myths may hamper family members’ functioning and limit their abilities to try new experiences. According to Bratcher, rules and myths are related to homeostasis or the tendency to return to a state of equilibrium. Families with dysfunctional rules and myths may resist change if this homeostasis is challenged. Those who become objects of dysfunctional rules and myths may have a lower level of differentiation of self, which may have an impact on their career development. They may have less flexibility in selecting a major or a career due to rigid rules, myths, and boundaries. In order to encourage young adults
to have personal autonomy while remaining connected to the family, the family may have to change and adjust some rules and myths that are dysfunctional.

Bratcher’s idea was supported by Bradley and Mims (1992), Zingaro (1983), and Lopez and Andrew (1987). Bradley and Mims recommended career counselors identify family messages, boundaries, rules, myths, roles and relationships to better understand their roles and influences on career development. Zingaro (1983) proposed that a lack of differentiation from parents contributes to career decision-making problems. People with low levels of differentiation from the family may not be able to differentiate their own expectations from their families. This notion was further extended by Lopez and Andrew (1987), who presented a family systems perspective that incorporates career indecision. The authors argued that even though the role of the family in career development has been acknowledged by career researchers, a clear statement on the association between family functioning and career decision-making has been neglected by researchers. Their view was that young adults’ career decisions should not be seen as individual achievements or personality traits, but rather as an outcome of transactions among family members. These transactions indicate the level of functioning in the family. They called for further research to evaluate the usefulness of the approach.

It is clear that from a family systems perspective, clear boundaries and high levels of differentiation help individuals develop their identities. College students who are not able to separate themselves from their family of origin may face difficulties in accomplishing career development tasks. Their choices may be limited
because they are controlled by others and are more likely to be sensitive to and attempt to fulfill their families' expectations. Conversely, others with low levels of differentiation might go out of their way to rebel against family wishes, yet lose sight of their own goals and desires.

However, in understanding career development from a family systems perspective, other factors, such as race, ethnicity, religious ideology, and social class that may have an impact on family functioning must also be considered. Most family systems literature stems from research and theories based on Western populations and perspectives. Some of the concepts discussed in this section may not be applicable to people from other cultural backgrounds. What is considered as healthy in Western culture may be harmful to the family systems in other cultures. In Western culture, differentiation of the self from the family of origin and open and direct communication among family members are valued and encouraged. In a collectivist culture, maintaining family relationships and harmony are more important than fulfilling personal needs. For instance, Latino and Asian families expect family members to respect and follow family desires (Brown, 2004). According to Daneshpour (1998), in a collectivist culture, individuation from the attachment figures may create problems to the systems because self-image is usually determined on the basis of individuals' relationships with their families.

The importance of preserving family ties among minority groups may have an impact on career development. Career decision-making is not considered as an individual decision. Sometimes individuals may choose a career that is against their
interests to fulfill family’s wishes. As Leong, Kao, and Lee (2004) pointed out, such decisions are not considered immature or lacking in personal autonomy, instead are regarded as a sign of respect and an attempt to achieve and maintain harmonious relationships within the family.

Relationship between Family Functioning and Career Development

Many empirical studies have been conducted to examine the relationship between family functioning and career-related behaviors, such as career indecision (Eigen, Hartman, & Hartman, 1987; Kinnier et al., 1990; Larson & Wilson, 1998), career development tasks (Penick & Jepsen, 1992), career exploration and decision-making processes (Schultheiss, Kress, Manzi, & Glasscock, 2001), vocational identity (Johnson et al., 1999; Hartung et al., 2002; Leong et al., 2004; Lopez, 1989), and career attitude maturity (Lee, 2003). In the next section, findings from several studies with regard to the influence of family functioning on specific career behaviors are discussed.

Vocational Identity

In a study with 299 college students, Lopez (1989) tested the applicability of a family systems perspective to career development by predicting vocational identity from traits such as anxiety, family dynamics, and academic adjustment. Family dynamics are defined by the nature of conflictual and emotional attachments to parents and the level of tension, conflict, and instability in the family. The results of
the study supported Lopez's contention that conflictual independence from opposite-sex parents was the most influential family-related predictor of vocational identity. This finding, however, showed the minimal contribution of emotional independence from parents to vocational identity. The author believed that perhaps the heightened level of tension in the relationships between parents and young adults contributes to emotional dependencies that were denied publicly by both parties. The author further speculated that young adults with low vocational identities might be more counter-dependent in their interactions with parents and may simultaneously seek and reject parents' input on vocational-related issues.

Johnson et al. (1999) investigated to what extent parental divorce and family functioning affect young adults' vocational identities. A total of 230 college students participated in the study. The authors used three family relationship subscales from the Family Environment Scale (FES) to assess social climate of families: (1) Cohesion; (2) Conflict; and (3) Expressiveness. The findings showed that vocational identity was negatively correlated with family conflict ($r = -.11$) and positively correlated with family cohesion ($r = .11$) and family expressiveness ($r = .17$). Although only the Expressiveness subscale appeared to be the most powerful predictor of vocational identity, the results of this study support the contention that family functioning has an important role to play in career development. Higher levels of family expressiveness indicated higher levels of vocational identity in college students. The results also indicated that families that encourage direct and open
communication among members more easily develop a clear and stable picture of vocational goals and interests.

In a more recent study, Hartung et al. (2002) used the circumplex model of marital and family systems (Olson, Russell, & Sprenkle, 1983) to examine how family interaction patterns related to work and family role salience and vocational identity. Two dimensions from the Circumplex model used in this study were family cohesion and family adaptability. Levels of cohesion and adaptability were operationally defined by the scores on the Family Adaptability and Cohesion Scales-III (FACES III; Olson, Portner, and Lavee, 1985). Family cohesion is defined as the emotional bonding and mutual dependence among family members. Family cohesion measures the degree to which family members are separated or connected from their family. Family adaptability refers to the ability of a marital or family system to change its power structure, roles, and relationships in response to stress. A well functioning family is indicated by balanced levels of cohesion and adaptability, while extreme levels represent problematic families over time. The results of Hartung et al.'s study did not support the contention that family functioning and career development are related. Neither the level of family adaptability nor cohesion appear linked to vocational identity. Hartung et al. believed that participants' age group, which ranged from 17 to 25 years, contributed to the findings. Individuals at this age usually are separating and individuating from parents and therefore try to establish their own vocational identities separate from their families.
Berrios-Allison (2005) was interested in examining the influences of the family on college students’ vocational identity. The Family Intervention Scale (FIS; Gavazzi & Sabatelli, 1990), the Occupational Identity Scale (OIS; Melgosa, 1987), and the Parent-Adolescent Communication Scale (PAC; Barnes & Olson, 1985) were administered to 232 college students. Results indicated that male students from intact families who received feedback from parents came from more differentiated families in contrast to male and female students from single parent families. The findings also suggest that families that were supportive encouraged occupational exploration and commitment.

*Career Planning*

Findings from Penick and Jepsen’s (1990) study provided evidence of the importance of relationship between family systems processes and career development. In their study of 215 high school students and their parents, they examined the role of family functioning in predicting two career development tasks: active involvement in planning and certainty in choice. Instrument used in the study was the FES, the same instrument used by Johnson et al. (1999). Family functioning was measured by six relationship dimensions (Cohesion, Expressiveness, Conflict, Sociability, Idealization, and Disengagement) and six system maintenance dimensions (Organization, Locus of Control, Democratic Family Style, Authoritarian family style, Laissez-Faire Family Style, and Enmeshment). Results from hierarchical regression analysis showed that the family systems maintenance
dimensions (Locus of Control, Democratic, Authoritarian family style, and Enmeshment) and relationship dimensions (Expressiveness and Conflict) significantly predicted certainty in choice more powerfully than gender, SES, and educational achievement. Only two relationship dimensions (Sociability and Expressiveness) and three system maintenance dimensions (Locus of Control, Disengagement, and Democratic) predicted significantly active involvement in career planning. The results also revealed that system maintenance variables predicted more frequently and had the largest beta weight across dependent variables, suggesting that functions maintaining the family system may contribute more to career development than relationship factors. Given these findings, the authors suggested that career counselors use family systems theory and therapy as approaches and interventions to help clients build career awareness. The findings coincide with findings from other study using the FES (Johnson et al., 1999), which found relationship between family functioning and career development.

Career Exploration

Using a qualitative method, Schultheiss et al. (2001) assessed the association between family relationships and career exploration and career decision-making processes of a highly diverse group of college students. The results of the investigation showed that the relationship with family members was an important source of support in career development. In particular, family members play an influential role in providing emotional, network, esteem, and informational supports.
Tangible assistance, such as providing educational materials and the family's involvement in educational tasks, was evident in relational influences from mother. Financial support from father was a tangible resource provided by fathers. The researchers concluded that family support reduces stress experienced by young adults when dealing with challenging career tasks.

The importance of family support and encouragement in young adult career development was investigated by Turner and Lapan (2002). Two measures were given to 139 high school students: The Mapping Vocational Challenges (Lapan & Turner, 1997, as cited in Turner & Lapan, 2002) and the Career Planning and Exploration Efficacy Scale (Gybers, Multon, Lapan, & Lukin, 1992, as cited in Turner & Lapan, 2002). Results indicated that the interaction among career self-efficacy, career planning, career exploration, and parental support predicted interests in all Holland type careers. The authors stated that their findings suggest the importance of parental involvement in the career development of their children, especially when they are in the early adolescence stage.

**Career Interest**

Leong et al. (2004) recently conducted a study involving 128 European American and 55 Chinese American college students. The purpose of the study was to explore the relationship between family dynamics and career interests among these two groups, as well as the effects of acculturation on the two variables. The FES was used to measure family functioning. The study revealed that none of the family
dynamic variables (cohesion, expressiveness, and conflict) were related to career interest of Chinese Americans. For the European Americans, the three family dynamic variables were found to affect career interest. Students with more expressive, more conflictual and less cohesive families were more likely to have Social interests. Based on the findings, Leong et al. believed that the instrument used in the study (Family Environment Scale; FES) may not be a good measure of family dynamics for Asian Americans. The researchers emphasized the need to examine the cultural validity of the FES in future studies to establish valid measures for minority populations. The findings also did not coincide with findings of other studies obtained using the same instrument (Johnson et al., 1999; Penick & Jepsen, 1990), which found relationships between some family variables with career variables.

**Career Decision-Making**

The association between family functioning and career decision-making has also been empirically examined. Eigen et al. (1989) used the Circumplex model of marital and family systems (Olson, Russell, & Sprenkle, 1983) to examine how functional or dysfunctional family interaction patterns affect individual career decision making. The Family Adaptability and Cohesion Scale (FACES-II; Olson, Portner, & Bell, 1982) was administered to 197 college students. Eigen et al. found no evidence for the general hypothesis that career indecision is related to family interaction patterns. The authors concluded that their failure to demonstrate the utility of family systems in career development was more likely a result of the
measurements used. They further suggested future researchers develop an instrument that is consistent with family systems theory. The findings are consistent with Hartung et al.'s (2002) study which also used the FACES to measure the relationship between family functioning and career development.

Larson and Wilson (1998) tested the ability of Bowenian family-systems theory to explain career decision-making problems for college students. The students were given the Personal Authority in the Family System Questionnaire (PASFQ; Bray, Williamson, & Malone, 1982), the trait version of the State-Trait Anxiety Inventory (STAI; Speilberger, Gorschuch, & Lushene, 1983), and the Career Decision Diagnostic Assessment (CDDA; Bansberg & Sklare, 1986). According to Larson and Wilson, Bowenian theory asserts that anxiety is the mediator of dysfunctional family and career decision problems. Three Bowenian concepts (fusion, triangulation, and intimidation) were used to assess intergenerational family relationships. The findings showed that only intimidation was directly related to career decision problems, while fusion was indirectly related to career decision problems through anxiety. The authors stated that their findings supported the importance of family dynamics for career decision in young adults and the usefulness of Bowenian theory in career counseling. They concluded that family therapy is more useful compared to other forms of traditional career counseling that focus on providing information and testing.

Kinnier et al. (1990) examined the relationship between career indecision and family enmeshment and family individuation among 604 undergraduate and graduate students. The term enmeshment refers to a family environment in which the members
are overly dependent on each other (Minuchin, 1974), while individuation was
defined as a process whereby individuals try to develop their own identities while
trying to stay connected with significant others. Although the results revealed a very
small correlation between career indecision and family individuation \(r = -.14\) and
family triangulation \(r = -.16\), the findings supported the hypothesis that those who
were raised in enmeshed families experienced more career decision-making
difficulties than those who were not. Students who were more decisive were less
triangulated and more individuated than undecided students. Kinnier et al.
recommended that counselors explore clients’ family-of-origin issues that may help
clarify clients’ career decision-making difficulties.

**Career Maturity**

Lee (2003) examined the relationship of family functioning to career maturity
of 670 Korean high school students. The Family Cohesion and Adaptability Scale
(FACES III) – Korean version was used to measure career-attitude maturity. The
findings indicated that family adaptability and cohesion had a significant influence on
career attitude maturity. Overall, family adaptability and cohesion explained 47% of
the total variance in career attitude maturity. The findings are in contrast to other
studies’ findings obtained using the FACES (Eigen et al., 1989; Hartung et al., 2002)
that show no relationship between family functioning and career development.
Career Self-Efficacy

Some researchers have examined the extent to which family functioning or interaction patterns contribute to career self-efficacy (Ferry, Fouad, & Smith, 2000; Ryan, Brown, & Solberg, 1996). Findings from these studies are discussed in the following paragraphs.

In a study with 220 community college students, Ryan et al. (1996) found that the combination of family dysfunction and parental attachment significantly predicted career search self-efficacy. A negative relationship between family dysfunction and career search self-efficacy among women in the sample was also found. Higher levels of family dysfunction contributed to lower scores on career search self-efficacy beliefs among women. The findings supported the idea that parental attachment and family dysfunction may be more complex in their relationship to women's career development. The authors further concluded that the results show some aspects of family dynamics that are adaptive or maladaptive in relation to career self-efficacy.

In a more recent study, Ferry et al. (2000) examined the role of family context (i.e., parental involvement, parenting style, socioeconomic status, parental math/science proficiency, and family relationships) in career self-efficacy of 791 college students. Parental encouragement in math and science was found to significantly influence learning experiences and outcome expectancies. The results showed the importance of parental encouragement in their children's academic and career development. The more the parents were perceived as encouraging in math and science, the higher the individual's grade in those subjects and the higher the
possibilities of choosing math or science based careers. The findings also showed that parents must be aware of their role in facilitating their children’s career development.

*Career Decision-Making Self-Efficacy*

Researchers were also interested in examining the relationship between family functioning and career decision-making self-efficacy. Using the FES (Moos & Moos, 1990), the CDSE-SF (Betz & Taylor, 2000), and the CDS (Osipow, 1987), Whiston (1996) investigated the relationship among family interaction patterns, career indecision, and career decision-making self-efficacy. The participants were 214 undergraduate students recruited from freshman level classes. The findings showed that ‘intellectual-cultural orientation’ was the only significant predictor of career decision-making self-efficacy. In particular, students’ confidence in their abilities to use occupational information was positively related to families with an emphasis on intellectual-cultural activities and negatively related to families that stress independence and achievement orientation. Based on the findings, the authors recommended career counselors help students by facilitating exploration activities, like field trips to museums and libraries. They further reminded counselors to be more careful in selecting interventions.

Like Larson and Wilson (1998) described above, Dodge (2001) also used Bowenian theory as a framework to explore the relationship between family of origin and several career development outcomes, namely career decision self-efficacy, career thoughts, and vocational identity. The final sample of this study was 243
college students. The results of their study provided evidence of the applicability of Bowenian family systems to the realm of career development. The scores on Personal Authority in the Family System Questionnaire (PAFS-QVC; Bray & Harvey, as cited in Dodge, 2001) were correlated with vocational identity and career decision-making self-efficacy. Conflict in the family of origin was related to lower levels of career decision-making self-efficacy, lower levels of differentiation from the family of origin, and higher levels of dysfunctional career thoughts. Dodge further suggested that family systems therapy would have a positive impact on the career development of children and young adults.

In a study conducted by Rush (2002) with 320 African American college freshmen, family environmental dynamics were significantly and positively related to career decision-making self-efficacy. Positive relationships were reported between family adaptability scores and the domains of problem solving and occupational information in the career decision-making self-efficacy. Positive associations were also found between family cohesion and the domains of problem solving, future planning, self-appraisal, and occupational information. However, one domain (goal selection) had no relationship with either family adaptability or family cohesion. Overall findings supported the hypothesis that a supportive family environment has an impact on successful career decision making. The findings were consistent with findings from other study (Lee, 2003) that used the same instrument (i.e., FACES). In both studies (Lee, 2003; Rush, 2002), the researchers found that family functioning was related to career development.
A study conducted by Hargrove et al. (2002) also shows consistent findings on the relationship between family interaction patterns and career decision-making self-efficacy and vocational identity. The FES (Moos & Moos, 1990), the same instrument used by Johnson et al. (1999) and Whiston (1996), was given to 210 undergraduate students. Consistent with previous findings (Johnson et al., 1999; Penick & Jepsen, 1992), career decision-making self-efficacy was positively related to quality of family relationships. Specifically, the findings indicated that perceived quality of family relationships and family-supported goals play significant roles in college students' confidence in their abilities to engage in career planning activities and to formulate stable and clear career goals. Students with high confidence in their career decision-making tended to come from families that emphasized expression of feelings and problems, achievement in school and work, and an orientation to intellectual and cultural activities. On the contrary, students' low self-efficacy in career decision-making was associated with family conflict.

Wolfe and Betz (2004) investigated the relationship among attachment variables, fear of commitment, and career decision-making self-efficacy. They administered the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987), the Relationship Questionnaire (Bartholomew & Horowitz, 1991), the CDSE-SF (Betz & Taylor, 2000), and the Fear of Commitment Scale (Serling & Betz, 1993) to 304 undergraduate students. Findings indicated that the career variables (career decision-making self-efficacy and fear of commitment) were positively related to the quality of parental and peer attachments. The career variables were also found to be

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
associated with four attachment styles: (1) dismissive; (2) secure; (3) fearful; and (4) preoccupied. Dismissive people dismiss intimacy and strongly independent. Secure people are comfortable with intimacy and autonomy. People with fearful style are fearful to intimacy and socially avoidant. Finally, preoccupied people are those who preoccupied with relationships. In particular, the findings indicated that career decision-making self-efficacy was negatively related to the dismissive style while career indecisiveness was related to the secure, fearful, and preoccupied styles. The findings provided evidence of the importance of discussion of attachment bonds and assessment of attachment styles in career counseling.

It is apparent from the literature that there are different dimensions of family functioning that contribute to different aspects of career development. A number of studies also have furthered our understanding of some of the family functioning patterns and how these, in turn, influence self-efficacy that will shape the pathways on which career decisions are made. Models explaining family influences on career development have moved from focusing on specific family characteristics (e.g., parents’ educational level and occupational status) to a more comprehensive and thorough assessment of the multidimensional family context, that recognizes every member in the family and how they interact with each other. The inclusion of family functioning patterns that shape and affect individual’s behavior provides a better and clearer picture of the role of family in career development.
Limitations of Reviewed Studies

Although many studies have supported the idea that family functioning influences various aspects of career development, generalization from the studies should be made with caution. Most of the reported findings relied on predominantly White groups, while only a minimal number of research studies explored the relationship between family functioning and career development of minority college students. In addition to that, instruments used in the studies may not have been suitable for minority populations because the instruments were originally developed for the Western population. The content of the instruments may not be culturally sensitive because the concept of family functioning and career development may vary across cultures.

Summary

This review of literature is related to family functioning and career decision-making self-efficacy. The chapter begins with an overview of self-efficacy theory. The application of self-efficacy theory to the realm of career decision-making has been suggested by Taylor and Betz (1983). Many researchers have attempted to explore to what extent self-efficacy beliefs play a role in career decision-making. Most empirical studies have provided evidence of the contribution of career decision-making self-efficacy to other career behaviors. Thus, it is essential to examine how these beliefs are created and developed.
Recognizing that family plays a central role in children’s career development, some scholars suggest that career self-efficacy beliefs are shaped through interactions with other family members. Bratcher (1982), Zingaro (1983), Lopez and Andrews (1987), and Hall (2003) advocated the use of a family systems model in the understanding of career development and called for further research to test its applicability.
CHAPTER III

METHODOLOGY

Overview

The primary purpose of this study was to examine the relationship between family functioning and career decision-making self-efficacy for first year undergraduate students at the University of Malaya in Kuala Lumpur, Malaysia. Secondly, the researcher examined whether there were differences in family functioning and career decision-making self-efficacy by gender, ethnicity, and academic major. Students’ academic majors were identified based on the faculty or academy that they enrolled in (University of Malaya Academic & Record Section, 2006). Students enrolled in Faculty of Built Environment, Faculty of Engineering, Faculty of Dentistry, Faculty of Medicine, Faculty of Science, and Faculty of Computer Science and Information Technology were coded as science students. Students enrolled in the Academy of Islamic Studies, Academy of Malay Studies, Faculty of Language and Linguistics, Faculty of Economy and Administration, Faculty of Education, Faculty of Business and Accountancy, Faculty of Art and Social Science, and Faculty of Law were coded as art and social science students.

The chapter is organized into seven sections: (1) research design; (2) instrumentation; (3) research hypotheses; (4) population, setting, and sample; (5) data collection procedures; (6) statistical procedures; and (7) summary.
Research Design

This study used a quantitative approach. The instruments used were a demographic information sheet, the Family Assessment Device (FAD), and the Career Decision Self-Efficacy Scale-Short Form (CDSE-SF). The FAD (Epstein, Baldwin, & Bishop, 2000) and the CDSE-SF (Betz & Taylor, 2000) were originally developed by U.S researchers in English. However, both instruments have been used with non-English populations after being translated into several languages. The FAD has been translated into Dutch, Portuguese, Spanish, Afrikaans, Russian, Chinese, Hebrew, and Haitian (Sawin & Harrigan, 1994), and Hungarian (Keitner et al., 1991), while the CDSE and the CDSE-SF have been translated into Hebrew, Japanese, Arabic, and Spanish. The FAD has also been used with non-Euro ethnic groups (Hawaiian-Americans and Japanese Americans) in the United States and has appeared to be a suitable family assessment for Hawaiian Americans (Morris, 1990). The CDSE is the original measure that consists of 50 items, while the CDSE-SF is a shorter version that consists of 5-item scales, for a total of 25 items.

For this study, all data collection was done using the Malay language because it is considered the first language and recognized as the formal language of Malaysia. The Malay language is the medium of instruction in all public schools and public universities. Passing the Malay Language examination paper is a prerequisite for entry into all Malaysian public universities. Although English language is also used as a medium of instruction in several faculties at the University of Malaya (UM), it is only considered a second language.
The FAD and the CDSE-SF were adapted to Malay by back-translation method (Brislin, 1986) involving two steps. First, the original items of all the instruments were translated into Malay. Second, the Malay versions of the instruments were translated back into English. A translation team that included two native speakers who understand both English and the Malay language and are familiar with the Malaysian culture was formed. The first translator reviewed the instruments for their relevance for the Malaysian culture. Items that were considered incomprehensible or irrelevant in the Malay language were highlighted. The instruments then were translated into the Malay language.

The translation and back-translation were carried out by two native Malay speakers, both are fluent in English and Malay and have completed their studies in Malaysian schools. The first translator has obtained a doctoral degree in a university in the United States while the second translator has obtained a master’s degree from a university in the United Kingdom and is completing her doctoral degree in the same country.

The researcher and the first translator found that item 27 (We have no clear expectation about toilet habits) is not relevant to Malaysian culture. To resolve the issue, the researcher consulted Malaysian undergraduate students in the United States. They were asked to check for clarity, understanding, and suitability of the items in the instruments within Malaysian culture. Most students questioned the suitability of item 27 on the FAD. On the basis of the feedback provided by those students, the researcher and translator made some modifications to the Malay version. Item 27 (We...
have no clear expectation about toilet habits) in the original FAD was changed to (We
do not have a clear expectation about maintaining our personal hygiene and toilet
cleanliness). The change was made to ensure that it is culturally relevant. The authors
of the instrument were notified about the modification and they deemed this
modification appropriate. The Malay version that had been modified was back-
translated into English by the second translator. The two translators then reviewed the
Malay and the back-translated versions to ensure that the intent of the instrument did
not change.

*Dependent and Independent Variables*

The dependent variables of the study are family functioning and career
decision-making self-efficacy. The independent variables are (a) gender, (b) ethnicity,
and (c) two coded academic majors. Other variables included in the demographic
questionnaire are (a) father’s educational level, (b) mother’s educational level, and (c)
type of residential setting.

*Instrumentation*

The instruments used in this study were a demographic information sheet
purposely designed for this study, the Family Assessment Device (FAD) - Malay
Version, and The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) –
Malay Version.
Demographic Information Sheet

The first instrument gathered data on the demographics of the sample. Participants completed a 6-item demographic questionnaire reporting their gender, ethnicity, faculty or academy that they enrolled in, residential setting, father’s educational level, and mother’s educational level.

Family Assessment Device (FAD) – Malay Version

The second instrument (FAD) is a 60-item measure assessing perceptions of the social climate of the family. The original English version was developed by Epstein et al. (2000). It has seven subscales: (1) Problem Solving; (2) Communication; (3) Roles; (4) Affective Responsiveness; (5) Affective Involvement; (6) Behavior Control; and (7) General Functioning. The FAD is based on the McMaster model of family functioning, which consists of 53 items (Epstein, Baldwin, & Bishop, 1983). The instrument was modified recently to increase its reliability with seven new items added (Epstein et al., 2000). The new scale that consists of 60 items was used for this study. The FAD takes approximately 15 to 20 minutes to complete.

The first subscale, Problem Solving, has 6 items. The subscale assesses the family’s ability to resolve problems, which is conducive to effective family functioning. The Communication subscale has 9 items. The subscale refers to the effectiveness and content information exchange among family members. The third subscale, Roles, which consists of 11 items, focuses on whether the family has developed patterns of behavior for handling family functions. The fourth subscale,
Affective Responsiveness, which has 6 items, refers to the family’s ability to experience appropriate affect to environmental stimuli. The fifth subscale, Affective Involvement, which consists of 6 items, refers to the degree of interest and affection placed on each other. The sixth subscale, Behavior Control, has 9 items. The subscale assesses the way the family expresses and maintains standards governing individual behaviors. In addition to the six subscales, the General Functioning subscale, which assesses the overall functioning of the family, is also included in the FAD. The 12-item General Functioning subscale is derived from the full scale.

FAD Items were scored 1 = Strongly Agree, 2 = Agree, 3 = Disagree, and 4 = Strongly Disagree. The FAD includes both positive and negative statements that require reverse scoring. Items that describe healthy functioning are reverse scored. Thus, higher scores indicate more family relationship difficulties in each area. The scores for items that describe unhealthy family functioning were transformed by subtracting them from 5. As a result of this transformation, the items of each subscale were averaged to provide seven subscale scores, each having a possible range from Healthy (1.00) to Unhealthy (4.00). Since the FAD response categories range from 1 to 4, a mean score of 2.00 or more indicates that more items have been endorsed in an unhealthy direction than in a healthy direction (Miller, Epstein, Bishop, & Keitner, 1985; Miller, Ryan, Keitner, Bishop, & Epstein, 2000). In other words, a score of 2.00 or more suggests that the family is having difficulties with this area of functioning (Miller et al., 1985). Total score for each subscale was obtained by
summing the endorsed responses and dividing the sum by the items in the subscale that were answered.

**Reliability**

According to Tutty (1995), “the FAD has consistently shown solid psychometric data” (p.102) and has demonstrated an estimated internal consistency of reliability. Coefficient alpha was the highest for the General Functioning Scale (.92) and lowest for the Roles scale (.72) on the basis of the normative sample (Epstein et al., 1983). Another psychometric investigation with three types of families: (1) nonclinical families \( n = 627 \); (2) families with a member with a psychiatric diagnosis \( n = 1138 \); and (3) families with a member with a medical disability \( n = 298 \), showed that alpha were highest for the General Functioning scale (.83 to .86) and lowest for the Roles scale (.57 to .69) (Miller et al., 1985). In a study with 2,679 children residing in 1,869 families in Ontario, Canada, Byles, Byrne, Boyle, and Offord (1988) reported an internal consistency of .86 for the FAD General Functioning. There is also evidence for test-retest reliability of the FAD. Miller et al. reported test-retest coefficient that ranged from .66 (Problem Solving) to .76 (Affective Responsiveness) at one week interval on data from a nonclinical sample.

Information about the reliability of the FAD in other cultures was reported for the Dutch, Italian, Chinese, and Arabic versions only. For the Dutch version, the internal consistency reliability ranged from .66 (Roles) to .81 (Affective Responsiveness) and .94 for the total score (Wenniger, Hageman, & Arrindell, 1993).
A psychometric investigation of the FAD (Italian version) was conducted by Roncone et al. (1998), who reported a test-retest reliability for the total score based upon a nonclinical sample of 30 subjects that ranged from .69 (Behavioral Control) to .91 (Problem Solving). An estimated internal consistency for the total score of the Italian version was high (.88).

The reliability of the Chinese version was reported by Shek (2001, 2002) based on two different studies. In the first study, the estimated coefficient alpha was .91, while in the second study the coefficient alpha was .92. The internal consistency reliability ranged from .44 (Affective Responsiveness) to .91 (General Functioning) in the first study and from .61 (Roles and Affective Responsiveness) to .84 (General Functioning) in the second study. The scale was also found to be temporally stable (test-retest reliability coefficients = .77).

The reliability of the Arabic version was reported by Al-Krenawi, Graham, and Slonim-Nevo (2002) based on a study with 101 Arab Muslim adolescents in Israel. The different subscales were translated into Arabic by a professional translator, and they exhibited satisfactory levels of internal consistency (.72 to .92). Also, a test-retest analysis to assess reliability revealed good results (.66).

Validity

There is extensive evidence for the validity of the FAD (Epstein et al., 2000). Inter-correlation coefficients among six subscales were analyzed using Cronbach's alpha that resulted in correlations ranging from .83 to .90. The most highly inter-
correlated items were selected to create the seventh subscale, General Functioning Scale, which measures the overall functioning of the family. A factor analysis of the six subscales shows that 92% of the items loaded highest on the General Functioning factor. The General Functioning subscale was highly correlated with the principal component of the other 48 items, which supports its use as a global measure of family functioning (Epstein et al., 2000).

To assess the discriminant validity, Epstein et al. (1985) compared individuals from nonclinical groups (n = 218) and clinical groups (n = 98). Results showed successful discrimination between groups. Families with ill members showed more family dysfunction (M = 2.36) than the nonclinical families (M = 2.03). Concerning its concurrent validity, the FAD subscale scores have been found to be significantly related to other measures of family functioning, such as the Family Unit Inventory (FUI) and the Family Adaptability and Cohesion Scale II (FACES –II) (Miller et al., 1985). The FUI is an 80-item instrument designed to assess a number of family dimensions (Van der Veen & Olson, 1981), while the FACES-II is a 30-item scale designed to measure the dimensions of family adaptability and cohesion (Olson, Russell, & Sprenkle, 1983). Substantial relationships were reported between the FUI Family Integration and the FAD scales of General Functioning (r = -.75), Problem Solving (r = -.67), Communication (r = -.66), Affective Involvement (r = -.51). Relationships were also found between FACES II Adaptability and the FAD Problem Solving (r = -.53) and General Functioning (r = -.61). Regarding its construct validity, the FAD scores were significantly correlated with measures that are related
to family functioning, such as psychological well-being (Al-Keranawi, 2002; Kazarian, 2005) and parenting style (McFarlen, Bellissimo, & Norman, 1995).

The validity studies of the FAD in non-English speaking contexts showed mixed results. Studies conducted by Shek (2001, 2002) showed that the Chinese version of the FAD possesses an acceptable degree of validity (Shek, 2001; 2004). Evidence of concurrent or convergent validity of the General Functioning subscale was provided by its significant relationships with three other translated family functioning measures scores: (1) Family Report Inventories ($r = .84$); (2) Family Awareness Scale ($r = -.79$); and (3) Family Assessment Instrument ($r = .83$).

Regarding its discriminant validity, the Chinese version of the FAD was administered to a clinical ($n = 281$) and a nonclinical group ($n = 451$). There were significant mean differences between the clinical and the nonclinical groups. The clinical group showed more family dysfunction ($M = 2.44$) than the nonclinical group ($M = 2.32$). In the same study, positive relationships were found between the FAD and factor based FAD scales, which suggest that the scales possess adequate construct validity.

However, a psychometric investigation of the Italian version (Roncone et al., 1998) showed that factor analysis did not provide support for the hypothesized structure of the instrument. Only the Problem Solving, Affective Involvement, and General Functioning scales were able to discriminate clinical and nonclinical families. The authors concluded that the instrument needs major improvement in the Italian setting. In summary, the discriminant validity of the FAD in non-English speaking context remains to be demonstrated (Shek, 2002).
The original CDSE that consisted of 50 items was developed by Taylor and Betz (1983). Because the original version of the CDSE is considered too long for research purposes, especially for individual assessment, intervention in counseling, and program evaluation, Betz et al. (1996) evaluated and developed a short form of the CDSE by eliminating five of the 10 items from each five subscales in the original CDSE. The final short version or the CDSE-SF contained 25 items. The 25 items “were those satisfying criteria of (a) substantive generality (versus content specificity or narrowness), (b) item-own scale correlation equal to or above .50, (c) loading on appropriate factor (only) in Taylor and Popma (1990) factor analysis, and (d) a recommendation of retention on the basis of Gati, Osipow, and Fassa’s (1994) split scale analysis of the subscale structure” (Betz & Taylor, 2000, p. 8). Similar to the original form, the short form also assesses the degree of confidence in the ability to successfully complete career decision-making tasks. The subscales of CDSE-SF include Self-Appraisal, Occupational Information, Goal Selection, Career Planning, and Problem Solving. Self-Appraisal refers to the confidence to assess the ability to make career related-decisions. Occupational Information refers to the ability to find job information. Goal Selection refers to the confidence in deciding upon a major, occupation, or career. Career Planning refers to the ability to make career plans. Finally, Problem Solving refers to the confidence to face and to solve career-related problems.
Each subscale consists of five items. Each subscale score is the sum of responses given by the students to the five items on that subscale. Responses are made on a 5-point scale from 1 (No confidence at all) to 5 (Complete confidence). Total subscale scores can range from 0 to 45. The overall score is the sum of the five subscale scores or the sum of all 25 items. The maximum overall score is 225. Average scores for the total may be computed by dividing the sum by 25. For the subscale, average score may be computed by dividing the sum by 5. Higher scores reflect higher self-efficacy expectations for career decision-making.

Reliability

Like the FAD, much of the psychometric evidence for the CDSE-SF was also obtained from Western samples that were primarily White. However, the instrument has been used in cultures other than the United States and has been translated into several languages. The internal consistency reliability of the CDSE-SF ranged from .73 (Self-Appraisal) to .83 (Goal Selection) for the five subscales and .94 for the 25-item total score (Betz, Klein, & Taylor, 1996). In a subsequent study, Betz and Voyten (1997) reported that the reliabilities of the short form ranged from .69 (Problem Solving) to .83 (Goal Selection) for the subscales and .93 for the total score. The most recent study (Betz, Hammond, & Multon, 2005) based on three samples of college students totaling 1,832 participants showed that the values of coefficient alpha ranged from .80 to .84 (Sample 1), .81 to .87 (Sample 2), and .78 to .85 (Sample 3).
The total score is highly reliable with .94 in Sample 3 and .95 in Sample 1 and Sample 2.

The original CDSE and the CDSE-SF have been used in other cultures and reported to be highly reliable. The original CDSE has been translated into Hebrew (Gati, Osipow & Fassa, 1994) and Japanese (Tomiyasu, 1997). The CDSE-SF has been translated into Chinese (Hampton, 2005; Mau, 2000), Arabic (Aleidan, 2002), and Spanish (Arce-Ferrer & Ketterer, 2003). The estimated coefficient alpha of the original CDSE score was .92 for the Hebrew version and .97 for the Japanese version. The estimated alpha value of the CDSE-SF score was .91 (Hampton, 2005) and .92 (Mau, 2000) for the Chinese version, .95 for the Spanish version, and .87 for the Arabic version.

The English version of the CDSE-SF has also been used with people outside the United States with some modifications. In a sample of South African university students, Watson, Brand, Stead, and Ellis (2001) reported that the coefficient for the total scale was .53. The internal reliability ranged from .30 to .64 for the subscales. In another study, Creed, Patton, and Watson (2004) reported the reliability of the CDSE-SF for the Australian and South African sample. For the Australian sample, the internal reliability coefficient ranged from .70 (Occupational Information) to .78 (Career Planning) for the five subscales and .94 for the total score. The corresponding reliability coefficients for the South African sample ranged from .70 (Problem Solving) to .79 (Career Planning) for the subscales and .94 for the total score.
Validity

Betz et al. (1996) reported evidence for the content, concurrent, and construct validity of the CDSE-SF. Principal component analysis shows that the five factor solution based on the original CDSE was supported by factor analysis. The five factors solution accounted for 62% of the total variance with Factors 1 through 5 accounting for 16%, 14%, 12%, 11%, and 9% of the variance respectively. Factor 1 (16%) included all the Goal Selection items, three Career Planning items and one Self-Appraisal item. Factor 2 (14%) included all the Occupational Information items and two Career Planning items. Factor 3 and 5 consisted of all Problem Solving and Self-Appraisal items, and Factor 4 consisted of one Self-Appraisal item.

Evidence of concurrent or convergent validity was provided by correlations between CDSE-SF scores and My Vocational Situation (MVS) Identity scores, and the total CDSE-SF score and Career Decision Scale (CDS) score (Betz et al., 1996). The CDS is a measure of the extent and nature of career indecision (Osipow, 1987). The measure consists of two subscales, CDS Certainty and CDS Indecision. The MVS is a measure that provides a clear indication of the level of career assistance an individual might need (Holland, Daiger, & Power, 1980). The measure contains an 18-item Vocational Identity scale, four items assessing the need for occupational information, and four items assessing barriers to occupational goals. The correlation between the MVS Identity total score and the CDSE-SF total score was $r = .58$. The correlations between the MVS Identity and CDSE-SF subscales scores ranged from $r = .37$ (Problem Solving) to $r = .62$ (Goal Selection). A relationship was also found
between the CDSE-SF total score and the CDS Certainty \((r = -.56)\) and CDS Indecision \((r = -.56)\).

Concerning its construct validity, a psychometric investigation in a sample of 92 students by Betz and Serling (1993) showed the relationship between the CDSE-SF and the Fear of Commitment Scale (FCS). The FCS assesses the chronic indecisiveness element of decisional difficulties. The results showed that CDSE-SF was significantly and negatively correlated \((r = -.50)\) with fear of commitment. Lower score on career self-efficacy indicates higher levels of fear of commitment. The CDSE-SF total score was also positively related to the Career Beliefs Inventory (CBI) subscale scores (Luzzo & Day, 1999). In particular, correlations between the CDSE-SF total score and the CBI Control, Responsibility, and Work Hard subscales were .43, .47, and .36 in a sample of 99 college students. The CBI is a measure designed to examine the beliefs that may prevent individuals from achieving career goals (Krumboltz, Fuqua, Newman, & Walsh, 1994).

However, in a study of cross cultural equivalence of the CDSE-SF that compared Australian and South African high school students (Creed et al., 2002) the researchers found that the results failed to support the hypothesized five-factor structure of the CDSE-SF, suggesting cross-cultural differences in the construct. Creed et al. concluded that their findings raise questions about the applicability and usefulness of the CDSE-SF outside the United States. Hampton (2005), who investigated the validity of the CDSE-SF among Chinese college students, also found similar results. Hampton concluded that although the CDSE-SF appears to be a
reliable and valid instrument that could be used in Chinese college students, continued evaluation of the applicability of several items in the instruments is necessary before it can be used in applied settings.

Despite some concerns regarding the validity of the CDSE-SF in cross cultural studies, the researcher of the present study believes that using the scale on Malaysian population will enhance and provide more insight into its validity and reliability and assess their suitability across different cultures. In addition, adaptation of the instrument will provide more psychometric evidence for the scale in cross-cultural studies.

Research Hypotheses

There are four major research questions and 18 hypotheses, which guided this study. Statistical analysis for this study was set at an alpha level of .05. Research Question 1 and Research Question 2 did not involve any formulation of the hypotheses.

Research Question 1

What is the relationship between family functioning and career decision-making self-efficacy?
Research Question 2

What are the relative effects of family functioning (i.e., Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, and Behavior Control) on career decision-making self-efficacy?

Research Question 3

Will there be differences in family functioning among students of different gender, ethnicity, and academic major? Specifically, the study attempted to answer the following sub-questions:

3.1. Will there be differences in family functioning among students by gender and ethnicity?

3.2. Will there be differences in family functioning among students by gender and academic major?

3.3. Will there be differences in family functioning among students by academic major and ethnicity?

Research Question 3.1 was answered through three hypotheses:

1. There is no significant interaction effect between gender and ethnicity on family functioning.

2. There is no significant difference in family functioning between male and female students.

3. There are no significant differences in family functioning among Malay, Chinese, and Indian students.
Research Question 3.2 was answered through the following hypotheses:

1. There is no significant interaction effect between gender and two coded academic majors on family functioning.

2. There is no significant difference in family functioning between male and female students.

3. There is no significant difference in family functioning between students in science majors and students in art and social science majors.

Research Question 3.3 was answered through the following hypotheses:

1. There is no significant interaction effect between ethnicity and two coded academic majors on family functioning.

2. There is no significant difference in family functioning between students in science major and students in art and social science major.

3. There are no significant differences in family functioning among Malay, Chinese, and Indian students.

Research Question 4

Will there be differences in career decision-making self-efficacy among students by gender, ethnicity, and academic major? Specifically, the study attempted to answer the following sub-questions:

4.1. Will there be differences in career decision-making self-efficacy among students by gender and ethnicity?
4.2. Will there be differences in career decision-making self-efficacy among students by gender and academic major?

4.3. Will there be differences in career decision-making self-efficacy among students by academic major and ethnicity?

Research Question 4.1 was answered through three hypotheses:

1. There is no significant interaction effect between gender and ethnicity on career decision-making self-efficacy.

2. There is no significant difference in career decision-making self-efficacy between male and female students.

3. There are no significant differences in career decision-making self-efficacy among Malay, Chinese, and Indian students.

Research Question 4.2 was answered through the following hypotheses:

1. There is no significant interaction effect between gender and the two coded academic majors on career decision-making self-efficacy.

2. There is no significant difference in career decision-making self-efficacy between male and female students.

3. There is no significant difference in career decision-making self-efficacy between students in science major and students in art and social science major.

Research Question 4.3 was answered through the following hypotheses:

1. There is no significant interaction effect between ethnicity and two coded academic majors on career decision-making self-efficacy.
2. There is no significant difference in career decision-making self-efficacy between students in science major and students in art and social science major.

3. There are no significant differences in career decision-making self-efficacy among Malay, Chinese, and Indian students.

Population, Setting, and Sample

The population for this study consisted of first year students enrolled in 12 faculties and two academies at the UM during the 2005/2006 academic session. The setting was chosen because of the researcher's affiliation with the university, which provided convenience for the researcher to obtain the necessary permission for collecting data. First year students were selected because they often experience career indecision and related career decision-making difficulties compared to other students. There were 19,345 undergraduate students enrolled at the university during the 2005/2006 academic year. First year students accounted for 30.04% \((n = 5811)\) of the total undergraduate students; 46.48\% \((n = 2701)\) of first year students enrolled in science majors, while 53.52\% \((n = 3110)\) enrolled in art and social science majors. Regarding gender, 35.76\% \((n = 2078)\) of first year students were males and 64.33\% \((n = 3738)\) were females. A breakdown of the students according to ethnicity could not be obtained (UM Academic & Record Section, 2006).

Participants were recruited using a modified, stratified random sampling procedure. Using this procedure, one class of first year students from each faculty and academy were selected from the first year class list provided by the dean or deputy
dean of each faculty and academy. In some faculty where there was only one class of first year students (e.g., faculty of dentistry and faculty of law), all students from the class were invited to participate. In other faculties, where there was more than one class of first year students, the first class on each list was selected. Based on this sampling procedure, a number of 1,103 potential participants were selected to participate in this study. Of that number, 1,028 participants responded. The total respond rate was 93.20%, a rate that reflects good participation.

From 1028 questionnaires received, there were 62 questionnaires that were not included in the final sample for the following reasons: 34 participants did not belong to the ethnic groups being studied; 26 participants failed to complete one or both of the standardized instruments (FAD and CDSE-SF); and two participants did not complete the demographic section. The regression diagnostic used to identify outliers and influential data also led to a loss of 41 more subjects. This process is described later in this chapter. An examination of the outliers indicated that 17 of them were males and 24 were females. In terms of ethnicity, 28 of them were Malays and 13 were Chinese. Regarding major, 12 outliers were participants in science majors and 29 were in art and social science majors. The final sample that was used for this study was 925 (83.86% of the total potential participants). Detailed explanations of the participants’ profiles are presented in Chapter IV.
Data Collection Procedure

Permission to conduct the study at the UM was obtained from the Deputy Vice Chancellor for Academic and Internationalization. After getting the official permission letter, the researcher submitted the research draft to Human Subjects Institutional Review Board (HSIRB), Western Michigan University. Once the approval from HSIRB was secured, the researcher requested the deputy dean for undergraduate programs of each faculty and academy to provide a list of first year classes.

Once the classes were selected, the researcher contacted the class instructors to inform them about the study. Due to time and travel constraints, the questionnaires were administered by a research assistant who has a master’s degree from a public university in Malaysia and has research experience. The class instructors were informed that a research assistant would contact them to discuss the possible dates of the administration of surveys. On the agreed dates, the research assistant distributed the consent documents to each potential participant prior to the survey administration. The purpose of the research project, the procedures for administration, the benefits accrued for their participation, procedures for maintaining confidentiality and privacy, and any anticipated risks were explained to the potential participants. Questions about the procedures and items on the questionnaires were solicited and answered. The assistant was also responsible for collecting the answered and unanswered questionnaires. Administration of the questionnaires required about 40 minutes. Completed questionnaires were coded and the raw data was entered into
Statistical Package of Social Science (SPSS) and sent to the researcher, who then conducted analyses.

Statistical Procedures

This section is divided into two parts. The first part describes the preliminary analysis including treatment of unusual and influential data or outliers, normality and transformation of data, and reliability of the standardized instruments. The second part presents the research results including descriptive statistics and statistical analyses used to answer the research questions. The SPSS was used to analyze the data.

Preliminary Analyses

Data Preparation

Data preparation involved entering the data into a computer, checking it for accuracy, and transforming the FAD data according to its manual. After the data was entered, descriptive statistics were run to verify the accuracy of data entry. The range of values of each variable was examined to ensure that they were correctly entered. Following this, negative items in the FAD that describe unhealthy family functioning were transformed by subtracting each score from 5. There were 35 negative items that were recoded. Descriptive statistics were run again on the entire sample to ensure the accuracy of data.
Outliers and Influential Data

As recommended by Tabachnick and Fidell (1996), the shape of the distribution was inspected using a histogram and box plot to examine the normality of the data. Visual inspection showed a fairly normal distribution of the data. For the FAD, the skewness ranged from -.016 to .262 and the kurtosis ranged from .003 to .542. For the CDSE-SF, the skewness ranged from -.144 to -.389 and the kurtosis ranged from the -.172 to .290. However, descriptive statistics showed that there were outliers. Outliers can have deleterious effects on statistical analysis (Osborne & Overbay, 2004). Also, their presence may be a signal that the model fails to capture important characteristics of the data. Outliers are extreme cases on criterion (dependent) variable or a combination of criterion variables given its value on predictor variables. An observation is said to be influential when removing the observation changes the results. Since further analyses involved statistical procedures that were sensitive to outliers, identification and examination of data for influential points was necessary. The process is called a regression diagnostic procedure (Fox, 1991). Using this procedure, the outliers and influential points were identified as those that exceed the Leverage, studentized deleted residuals, Cook’s Distance, Mahalanobis’s distance, DFFITS, and DFBETAS values (Fox, 2001, 2005; Osborne & Overbay, 2004; Tabachnick & Fidell, 1996).

Through this identification process, the sample was reduced to 925 for final analysis. Visual inspection of the distribution plots indicated that they were fairly normal. Descriptive statistics were run again and the analysis indicated that the
distribution of FAD and CDSE-SF scores were also reasonably normal (<1.0). The skewness and the kurtosis values were close to zero. For the FAD subscales, the skewness ranged from -.241 to .233 and the kurtosis ranged from -.321 to .425. For the CDSE subscales, the skewness ranged from -.219 to -.436 and the kurtosis ranged from -.118 to .348.

Reliability of the Instruments

Reliability coefficients were computed to find the internal consistency of the instruments. In the present study, the internal reliability coefficients for the FAD subscales were .43 (Behavior Control), .51 (Affective Involvement), .55 (Affective Responsiveness), .57 (Problem Solving), .63 (Roles), .68 (Communication), and .80 (General Functioning). The corresponding reliability coefficients for the CDSE-SF were .69 (Problem Solving), .74 (Goal Selection), .75 (Occupational Information), .81 (Self-Appraisal), .83 (Career Planning), and .91 (total scale). The analyses indicate that the Malay versions of the FAD and the CDSE-SF have good internal consistency and scale reliability.

Research Questions Analyses

Means and standard deviations were computed to describe the subscales of FAD and CDSE-SF. Inferential statistics were used to answer the research questions. Pearson product-moment correlation \( r \) was used to assess the degree of relationship between family functioning and career decision-making self-efficacy.
functioning subscales scores were correlated with career decision self-efficacy subscales scores. The correlation coefficient is a measure of the degree of linear relationship between two variables. The coefficient has a value between -1.00 to +1.00, which indicates the strength and direction of relationship. The correlation between the FAD and CDSE-SF was calculated for the whole sample.

In order to assess the relative contributions of family functioning patterns to career decision-making self-efficacy, simultaneous multiple regression analysis was used. The criterion variable (total score of the CDSE-SF) was analyzed in relation to the predictor variables (the six dimensions of the FAD). The regression analysis measures the direction and size of the effect of predictor variables on the criterion variable.

Two-way Analysis of Variance (ANOVA) was employed to determine the differences and interactions among independent variables (i.e., gender, ethnicity, and academic major) on the total score of career decision-making self-efficacy and general family functioning score. Significant ANOVAs were followed up with post-hoc analyses using the Scheffe method to find mean differences among the three groups. Findings were examined to assess if the data supports the hypotheses. All decisions on the statistical significance of the findings were made using an alpha level of .05 (commonly used in educational research) and a confidence level of 95%.
Summary

The study examined the relationship between family functioning and career decision-making self-efficacy for first year undergraduate students, the relative effects of family functioning patterns on career decision-making self-efficacy, and possible gender, ethnic, and academic major differences in family functioning and career decision-making self-efficacy. The Malay version of the FAD was used to measure family functioning and the Malay version of the CDSE-SF was used to measure career decision-making self-efficacy. Pearson product-moment correlation coefficient, multiple regressions, and the two-way Analysis of Variance (ANOVA) were the three measures that were employed to answer the research questions. In the following chapter, the results of this investigation are presented as they relate to the research questions posed.
CHAPTER IV

ANALYSIS OF THE DATA AND FINDINGS

Introduction

This chapter is devoted to the analyses of the data gathered for this study and is organized into three sections. The first section of this chapter describes the sample in terms of its demographics. The second section describes the means and the standard deviations of family functioning and career decision-making subscales. The third section presents analyses of the four research questions.

Participants’ Profile

The descriptive data reported in this study are based on the final sample of 925 participants. Breakdown of the participants are presented according to gender, ethnic group, major, faculty or academy, parents’ educational level, and residential setting. Participants were 74.6% (n = 690) females and 25.4% (235) males. The sample also represents 64.5% (n = 597) Malays, 31.1% (n = 288) Chinese, and 4.3% (n = 40) Indians. To identify students’ major field of study, participants were asked to indicate the college that they enrolled in. The majority of the participants (67.1%, n = 621) were in art and social science majors, in comparison to 32.3% (n = 304), who were in science majors. The distribution of the participants according to gender and academic major is not similar to the distribution of the total first year students. Based on the data provided by the UM Academic and Record Section (2006), 35.76% (n =
2078) of total first year students were males and 64.33% \( (n = 3738) \) were females. Regarding academic major, 46.48% \( (n = 2701) \) of total first year students enrolled in science majors, while 53.52 % \( (n = 3110) \) enrolled in art and social science majors. A detailed breakdown of the participants according to their faculty or academy is shown in Table 10 (Appendix I).

An examination of the parents' education level indicated that there was a wide range in educational backgrounds varying from primary education to post graduate level. In Malaysia, students spend six years in primary school (Standard 1-6), three years at the lower secondary level (Form 1-3), and two to four years in upper secondary school (Form 4, Form 5, Lower Sixth Form, and Upper Sixth Form). Lower and Upper Sixth Form are equivalent to pre-university programs and they are not mandatory for all students. Only 24.1% of the fathers had post-secondary (college) educations compared to more than 40% who had a secondary level of education. For mothers, only 17.3% had college educations compared to more than 50% who completed upper secondary education. These data show that most participants were first-generation college students. These data also show that more fathers than mothers had college educations. Finally, the majority of the participants (54.6%, \( n = 505 \)) were from rural or small towns, in comparison to 45.2% \( (n = 418) \) who were from big cities. Detailed information about parents' educational level and participants' residential setting are shown in Appendix J.
Means and Standard Deviations of Family Functioning and Career Decision-Making Self-Efficacy Subscales

The mean scores are used to determine which of the subscales of the FAD and the CDSE-SF are of uppermost concern and which are of least. The results are presented in Table 1. For the FAD, a cut-off score of 2.00 (Miller et al., 1985) was used to determine the level of family relationship difficulties.

As shown in Table 1, the total group of participants have a mean score of 2.37 with a standard deviation of .34 in Affective Responsiveness, a mean score of 2.21 with a standard deviation of .33 in Behavior Control, a mean score of 2.17 with a standard deviation of .37 in Communication, a mean score of 2.15 with a standard deviation of .30 in Roles, a mean score of 2.14 with a standard deviation of .37 in Affective Involvement, and a mean score of 2.06 with a standard deviation of .36 in Problem Solving.

Based on this data, it is inferred that participants view their families as having less difficulties in solving family-related problems. The mean score for Problem Solving is slightly higher ($M = 2.06$) than the cut-off score ($M = 2.00$) suggested by Miller et al. (1985). This is followed by Affective Involvement, Roles, Communication, and Behavior Control, and Affective Responsiveness. The means for these subscales are also higher than the recommended cut-off score, suggesting that participants perceive their families as unhealthy across all areas of functioning. The findings also show that participants perceive their families as having more difficulties in responding to a given stimulus with an appropriate quality and quantity of feelings.
(Affective Responsiveness) than expressing and maintaining standards for the behavior of its member (Behavior Control), exchanging information among them (Communication), establishing patterns of behavior for handling family functions, (Roles), showing interest and affection on each other (Affective Involvement), and resolving family issues (Problem Solving).

For the CDSE-SF subscales, the total group of participants have a mean score of 3.58 with a standard deviation of .63 in Self-Appraisal, a mean score of 3.55 with a standard deviation of .68 in Career Planning, a mean score of 3.45 with a standard deviation of .64 in Goal Selection, a mean score of 3.39 with a standard deviation of .61 in Occupational Information, and a mean score of 3.34 with a standard deviation of .59 in Problem Solving. Among the five subscales studied, the findings show that participants have the highest confidence in Self Appraisal, followed by Career Planning, Goal Selection, and Occupational Information. The lowest ranked subscale is Problem Solving, indicating that they have the lowest confidence in solving career-related problems. In summary, the analysis indicates that participants have more confidence in assessing their abilities to make career related-decisions than making career plans, selecting or deciding upon a major or a career, finding job information, and solving career-related problems.
Table 1

Means and Standard Deviations of the Scores of All Participants on the FAD and CDSE-SF Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FAD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Solving</td>
<td>2.06*</td>
<td>.36</td>
</tr>
<tr>
<td>Communication</td>
<td>2.17*</td>
<td>.37</td>
</tr>
<tr>
<td>Roles</td>
<td>2.15*</td>
<td>.30</td>
</tr>
<tr>
<td>Affective Responsiveness</td>
<td>2.37*</td>
<td>.34</td>
</tr>
<tr>
<td>Affective Involvement</td>
<td>2.14*</td>
<td>.37</td>
</tr>
<tr>
<td>Behavior Control</td>
<td>2.21*</td>
<td>.33</td>
</tr>
<tr>
<td><strong>CDSE-SF</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Appraisal</td>
<td>3.58**</td>
<td>.63</td>
</tr>
<tr>
<td>Occupational Information</td>
<td>3.39**</td>
<td>.61</td>
</tr>
<tr>
<td>Goal Selection</td>
<td>3.45**</td>
<td>.64</td>
</tr>
<tr>
<td>Career Planning</td>
<td>3.55**</td>
<td>.68</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>3.34**</td>
<td>.59</td>
</tr>
</tbody>
</table>

* Lower means indicate higher level of family functioning
** Higher means indicate higher level of career decision-making self-efficacy
Research Questions Analyses

This section reports results of the data analyzed using three statistical measures: (1) Pearson product-moment correlation coefficient; (2) Multiple regression; and (3) Two-way Analyses of Variance. Pearson product-moment correlation was used to measure the relationship between family functioning and career decision-making self-efficacy. Multiple regression analysis was used to determine the relative effects of family functioning on career decision-making self-efficacy. Finally, two-way analyses of variance involved testing hypotheses to determine if there are any differences between means among students by gender, ethnicity, and academic major. The alpha level was set at .05.

Correlation Analysis

Correlation analysis was used to answer Research Question 1: What is the relationship between family functioning and career decision-making self-efficacy? As indicated earlier, Pearson product moment correlation was used to measure the strength of association between the FAD subscales and the CDSE-SF subscales. The FAD and the CDSE-SF were scored in opposite directions. High scores on the FAD scales indicate low levels of family functioning, while low scores indicate high levels of functioning. On the other hand, high scores on the CDSE-SF subscales indicate high levels of career decision-making self-efficacy while low scores indicate low levels of career decision-making self-efficacy. High correlations between the FAD subscales and the CDSE-SF subscales indicate that healthy functioning are associated
with high levels of career decision-making self-efficacy. Since the FAD the CDSE-SF was scored in opposite directions, negative correlations were observed between all the FAD and CDSE-SF subscales.

Table 2 presents the matrix of Pearson correlations computed to examine relationships between each of the family functioning subscales scores and career decision-making self-efficacy subscales scores. Except for the relationship between the FAD Affective Responsiveness and CDSE-SF Problem Solving subscales and the relationship between the FAD Affective Involvement and the CDSE-SF Occupational Information and Problem Solving subscales, all other relationships were significant.

Specifically, moderate, negative correlations were observed between the FAD Problem Solving and self-efficacy expectations related to self-appraisal ($r = -.30, p < .001$) and career planning ($r = -.30, p < .001$). The results suggest that participants’ perspectives toward their families’ abilities to solve family issues are related to their confidence in assessing their abilities to make career decisions and career plans. Small negative correlations were also observed between the FAD Problem Solving and the CDSE-SF Occupational Information ($r = -.27, p < .001$), Goal Selection ($r = -.24, p < .001$), and Problem Solving ($r = -.25, p < .001$). Participants’ perspectives regarding their families’ abilities to solve family issues are also related to confidence in finding job information, selecting a major or a career, and solving career-related problems.

Small, negative correlations were found between the FAD Communication and the CDSE-SF Self-Appraisal ($r = -.24, p < .001$), Occupational Information ($r = -
.19, p < .001), Goal Selection (r = -.21, p < .001), Career Planning (r = -.26, p < .001), and Problem Solving (r = -.19, p < .001). These results indicate that family communication patterns are related to confidence in assessing the ability to make career decisions, finding job information, selecting a major or a career, and solving career-related problems.

Table 2

Pearson Correlations between Family Assessment Device (FAD) and Career Decision-Making Self-Efficacy Scale-Short Form (CDSE-SF)

<table>
<thead>
<tr>
<th>FAD</th>
<th>CDSE-SF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SA</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>-.30*</td>
</tr>
<tr>
<td>Communication</td>
<td>-.24*</td>
</tr>
<tr>
<td>Roles</td>
<td>-.25*</td>
</tr>
<tr>
<td>Affective Responsiveness</td>
<td>-.11*</td>
</tr>
<tr>
<td>Affective Involvement</td>
<td>-.12*</td>
</tr>
<tr>
<td>Behavior Control</td>
<td>-.21*</td>
</tr>
<tr>
<td>General Functioning</td>
<td>-.26*</td>
</tr>
</tbody>
</table>

* Correlation is significant at the .01 level (2-tailed)
** Correlation is significant at the .05 level (2-tailed)

Note: Career Decision-Making Self-Efficacy (SA = Self-Appraisal; OI = Occupational Information, GS = Goal Selection; CP = Career Planning; PS = Problem Solving)
Small, negative correlations were found between the FAD Roles and the CDSE-SF Self-Appraisal ($r = -.25, p < .001$), Occupational Information ($r = -.21, p < .001$), Goal Selection ($r = -.23, p < .001$), Career Planning ($r = -.26, p < .001$), and Problem Solving ($r = -.15, p < .001$). The findings show that the patterns of behaviors that handle family functions are associated with family members' confidence in assessing their abilities to make career decisions, finding occupational information, selecting a major or a career, and solving career-related problems.

Weak, negative correlations were observed between the FAD Affective Responsiveness and the CDSE-SF Occupational Information ($r = -.08, p < .05$) and Goal Selection ($r = -.09, p < .01$). The weak correlations suggest that the relationships were negligible. Small, negative correlations were observed between the FAD Affective Responsiveness and the CDSE-SF Self-Appraisal ($r = -.11, p < .001$) and Career Planning ($r = -.15, p < .001$). Although the relationships were small, the results suggest that perceived family's ability to experience appropriate affect to environmental stimuli are related to participants' confidence in assessing their abilities to make career decisions and making career plans.

Small, negative correlations were also found between the FAD Affective Involvement and the CDSE-SF Self-Appraisal ($r = -.12, p < .001$), Goal Selection ($r = -.12, p < .01$), and Career Planning ($r = -.10, p < .001$). The findings suggest that the degree of interest and affection placed on each family member is related to participants' confidence in assessing their abilities to make career decisions, selecting a major or a career, and making career plans.
Small, negative correlations were revealed between the FAD Behavior Control and CDSE-SF Self-Appraisal ($r = -.21, p < .001$), Occupational Information ($r = -.21, p < .001$), Goal Selection ($r = -.17, p < .001$), Career Planning ($r = -.25, p < .001$), and Problem Solving ($r = -.14, p < .001$). Although the correlations were small, the findings show that the patterns adopted for handling family members’ behaviors are associated with confidence in assessing their abilities to make career decisions, finding job information, selecting a major or a career, and making career plans.

A moderate relationship was observed between the FAD General Functioning and the CDSE-SF Career Planning ($r = -.30, p < .01$). There were also relationship between the FAD General Functioning and other four CDSE-SF subscales. Specifically, the study found small relationships between the FAD General Functioning and the CDSE-SF Self-Appraisal ($r = -.26, p < .01$), Occupational Information ($r = -.21, p < .01$), Goal Selection ($r = -.23, p < .01$), and Problem Solving ($r = -.19, p < .01$). The results indicate that overall functioning of the family is related to confidence in assessing the ability to make career decisions, finding occupational information, selecting a career or a major, and solving career-related problems.

In summary, the analyses indicate that there are moderate relationships between the ability to solve family-related problems and self-efficacy expectations related to self-appraisal and career planning. A moderate relationship is also found between the overall functioning of the family and confidence in making future or career plans. Small relationships are observed between perceived family’s ability to
solve family-related problems and confidence in finding occupational information, selecting a major or a career, and solving career problems. The analyses also show that the exchange of verbal communication within a family (Communication), the patterns of behavior by which family members fulfill family functions (Roles), the patterns adopted for handling family members’ behaviors (Behavior Control) are related to participants’ confidence in finding occupational information, selecting a major or a career, making career plans, and solving career-related problems. However, the relationships are small. There are also small relationships between perceived family’s ability to experience appropriate affect to environmental stimuli (Affective Responsiveness) and the confidence in assessing the ability to make career decisions and making career plans. Small relationships are also found between the degree of interest and affection placed on each family member (Affective Involvement) and self-efficacy in assessing the abilities to make career decisions, finding occupational information, and selecting a major or a career. Small relationships are also observed between the overall functioning of the family and confidence in assessing the ability to make career decisions, finding occupational information, selecting a major or a career, and solving career-related problems. The correlation coefficient values for these variables are between $r = .10$ to $r = .30$. Cohen (2000) suggests that as a rule of thumb for estimating the size of correlation, an $r$ value of .10 to .29 (or -.10 to -.29) indicates a small correlation and an $r$ value of .30 to .49 (or -.30 to -.49) indicates a moderate correlation. Thus, the findings show that for the most part, family functioning variables are related to career decision-making.
self-efficacy. However, the correlations are not strong enough to establish family functioning as a reliable predictor of career decision-making self-efficacy. The analyses also show that the correlation between perceived family's ability to experience appropriate affect to environmental stimuli (Affective Responsiveness) and self-efficacy expectations related to occupational information and goal selection are very small. These findings suggest that there are weak relationships between perceived family's ability to experience appropriate affect to environmental stimuli and confidence in finding occupational information and selecting a career or a major.

Regression Analysis

Simultaneous multiple regressions were used to answer Research Question 2: What are the relative effects of family functioning (i.e., Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, and Behavior Control) on career decision-making self-efficacy? Each family functioning subscale was treated as a separate predictor variable. Career decision-making self-efficacy was measured by the combination of the five CDSE-SF subscales. Results of the multiple regression analyses are presented in Table 3.

As shown in Table 3, all family functioning subscales make a statistically significant unique contribution to the equation. The largest beta coefficient (β) is for Problem Solving (-.31). This means Problem Solving makes the strongest unique contribution to explain career decision-making self-efficacy. The value of the coefficient of determination ($r^2$) was .10. This indicates that 10% of the variance in
Problem Solving was associated with variance in career decision-making self-efficacy. Although accounting for 10% only, the results suggest that students’ perspectives regarding their family’s abilities to resolve family issues contribute most significantly to their confidence in making career decisions.

Table 3

Summary of Simultaneous Regression Analysis Assessing the Unique Effects of the Six Family Functioning Subscales Predicting Career Decision-Making Self-Efficacy

<table>
<thead>
<tr>
<th>Family Functioning Subscales</th>
<th>B</th>
<th>β</th>
<th>F</th>
<th>r²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving</td>
<td>-11.73</td>
<td>-.31*</td>
<td>99.11</td>
<td>.10</td>
</tr>
<tr>
<td>Communication</td>
<td>-9.23</td>
<td>-.26*</td>
<td>64.19</td>
<td>.07</td>
</tr>
<tr>
<td>Roles</td>
<td>-11.63</td>
<td>-.26*</td>
<td>67.06</td>
<td>.07</td>
</tr>
<tr>
<td>Affective Responsiveness</td>
<td>-4.44</td>
<td>-.11*</td>
<td>11.49</td>
<td>.01</td>
</tr>
<tr>
<td>Affective Involvement</td>
<td>-3.80</td>
<td>-.10*</td>
<td>10.36</td>
<td>.01</td>
</tr>
<tr>
<td>Behavior Control</td>
<td>-9.52</td>
<td>-.23*</td>
<td>51.83</td>
<td>.06</td>
</tr>
</tbody>
</table>

* Significant at p <.01

The second largest beta coefficients (β) are for Communication and Roles subscales (-.26). The value of the coefficient of determination (r²) for each of the subscale was .07. This indicates that only 7% of the variance in career decision-making self-efficacy was contributed by each of the subscale (Communication and...
The results also suggest that the effectiveness and content of information exchange among family members (Communication) and patterns of behavior that handle family functions (Roles) contribute to students' confidence in their abilities to make career-related decisions. However, the contributions are small suggesting that factors other than communication and roles may also contribute to their confidence.

The third largest beta coefficient ($\beta$) is for Behavior Control (-.23). The value of the coefficient of determination ($r^2$) was .06. This indicates that only 6% of the variance in career decision-making self-efficacy was contributed by Behavior Control. The finding indicates that norms or standards governing individuals' behaviors (Behavior Control) contribute to students' confidence in career decision-making even though the contribution is small.

Affective Responsiveness and Affective Involvement had the lowest beta coefficient ($\beta$). Affective Responsiveness had -.11, while Affective Involvement had -.10. The value of the coefficient of determination ($r^2$) for each of subscale was .01, indicating that each of them accounted for only 1% of the variance in career decision-making self-efficacy. This means that the effects of family members' ability to respond with appropriate affect to environmental stimuli and the amount of affection family members place on each other on students' career decision-making self-efficacy are very small.

In conclusion, the analyses show that family's ability to solve family-related problems makes the largest contribution (10%) to career decision-making self-efficacy. This is followed by the effectiveness and content of information exchange.
among family members and patterns of behavior that handle family functions (each contributes 7%), norms and standards governing individuals' behaviors (Behavior Control (6%). Finally, family members' ability to respond with appropriate affect to environmental stimuli and the amount of affection family members place on each other contribute only 1% to career decision-making self-efficacy. Overall, the total variance of six family functioning areas accounted for career decision-making self-efficacy is 32% only. Although the findings are statistically significant, the results suggest that factors other than family functioning may also contribute to students' confidence in making career decision.

*Two-Way Analyses of Variance*

This section reports the results of the hypotheses that were tested to determine if there were significant mean differences in overall quality of family functioning score and the total score of CDSE-SF. Two-way Analyses Of Variance (ANOVA) were used to test the interaction effect between two independent variables on the dependent variables and to examine whether there are differences in family functioning and career decision-making self-efficacy among students by gender, ethnicity, and academic major. Significant ANOVAs were followed up with post-hoc comparison using the Scheffe method to know where these differences occur when there were more than two groups. All hypotheses were tested using .05 level of significance.
Research Question 3.1: Will there be differences in family functioning among students by gender and ethnicity? As shown in Table 4, the two-way interaction ANOVA on General Functioning is not significant ($F (2, 919) = 1.79, p = .17$). The analysis indicates that there is no interaction between gender and ethnicity on General Functioning. Since $p = .17$ is larger than the alpha level set at .05, the null hypothesis is not rejected.

Table 4

A Two-Way ANOVA between Gender and Ethnic Groups on General Family Functioning

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.17</td>
<td>1</td>
<td>.17</td>
<td>1.17</td>
<td>.30</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1.462</td>
<td>2</td>
<td>.73</td>
<td>5.47</td>
<td>.01*</td>
</tr>
<tr>
<td>2-way Interactions</td>
<td>.53</td>
<td>2</td>
<td>.26</td>
<td>1.79</td>
<td>.17</td>
</tr>
<tr>
<td>Total</td>
<td>135.49</td>
<td>919</td>
<td>.15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at alpha .05

However, the observed main effect value of ethnicity is significant, $F (2, 919) = 5.47, p = .01$. Since the probability is less than the alpha level set at .05, the null hypothesis for difference is rejected. This effect means that there are differences among students of three main ethnic groups in their perspectives towards family functioning. A post-hoc analysis using the Scheffé method demonstrates significant
mean differences between Malay and Chinese students, and between Chinese and Indian students in general family functioning. Chinese students reported a higher mean score on General Functioning ($M = 1.93$) than Malay ($M = 1.82$) and Indian students ($M = 1.75$) (Appendix K). The finding indicates that Chinese students perceive their families as more dysfunctional than Malay and Indian students.

*Research Question 3.2: Will there be differences in family functioning among students by gender and academic major?* As shown in Table 5, the two-way interaction ANOVA on General Functioning is not significant ($F(1, 921) = .52, p = .47$). The analysis indicates that there is no interaction between gender and academic major on General Functioning. Since the probability value is larger than the alpha level set at .05, the null hypothesis is not rejected. No conclusion can be drawn about the interaction between gender and academic major on family functioning.

However, there is a significant main effect of gender on family functioning, $F(1, 921) = 7.96, p = .01$. Since the probability is less than the alpha level set at .05, the null hypothesis is rejected. This effect means that male students differ significantly from female students in their perspective towards family functioning. Male students had a higher mean score on family functioning ($M = 1.92$) than female students ($M = 1.82$) (Appendix K). This indicates that male students perceive their family as more dysfunctional than female students.

The observed main effect value of academic major is also significant, $F(1, 921) = 9.06, p = .00$. Since the probability value is less than the alpha level set at .05, the null hypothesis for difference is rejected. This effect means that science students
significantly differ from art and social science students in perceived family functioning. Science students reported a higher mean score on General Functioning ($M = 1.92$) than students in art and social science majors ($M = 1.81$) (Appendix K). The finding suggests that science students rate their family as more dysfunctional than did students in art and social science majors.

Table 5
A Two-Way ANOVA between Gender and Academic Major on General Family Functioning

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.18</td>
<td>1</td>
<td>1.18</td>
<td>7.96</td>
<td>.01*</td>
</tr>
<tr>
<td>Major</td>
<td>1.34</td>
<td>1</td>
<td>1.34</td>
<td>9.06</td>
<td>.00*</td>
</tr>
<tr>
<td>2-way Interactions</td>
<td>.08</td>
<td>1</td>
<td>.08</td>
<td>.52</td>
<td>.47</td>
</tr>
<tr>
<td>Total</td>
<td>136.48</td>
<td>921</td>
<td>.15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
* Significant at alpha .05

Research Question 3.3: Will there be differences in family functioning among students by academic major and ethnicity? As shown in Table 6, the two-way interaction ANOVA on General Functioning is not significant, $F (2, 919) = .55, p = .58$. The analysis indicates that there is no interaction between academic major and ethnicity on General Functioning. Since $p = .58$ exceeds the alpha level set at .05, the
null hypothesis is not rejected. No conclusion can be drawn about the interaction between academic major and ethnicity on family functioning.

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>.97</td>
<td>1</td>
<td>.97</td>
<td>6.58</td>
<td>.01*</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1.739</td>
<td>2</td>
<td>.87</td>
<td>5.85</td>
<td>.00*</td>
</tr>
<tr>
<td>2-way Interactions</td>
<td>.16</td>
<td>2</td>
<td>.08</td>
<td>.55</td>
<td>.58</td>
</tr>
<tr>
<td>Total</td>
<td>135.91</td>
<td>919</td>
<td>.15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at alpha .05

However, the observed main effect value of academic major $F(1, 919) = 6.58$, $p = .01$, and ethnicity $F(2, 919) = 5.85$, $p = .00$, are significant at the alpha .05 level.

Since the probability is less than the alpha level set at .05, the null hypotheses for difference are rejected. These results are consistent with the results produced by the previous two-way ANOVA (Table 5) to determine mean differences in family functioning among students of different academic major.

Research Question 4.1: Will there be differences in career decision-making self-efficacy among students by gender and ethnicity? As shown in Table 7, the two-way interaction ANOVA on career decision-making self-efficacy total score is
significant $F(2, 919) = 3.33, p = .04$. The observed main effect value of gender, $F(1, 919) = 5.55, p = .00$, and ethnicity $F(2, 919) = 8.75, p = .01$, are also significant, at the alpha .05 level. Since these values are less than the alpha level, the null hypotheses are rejected. When an interaction is present and one or both main effects are significant, the interaction plots must be examined to find out whether the main effects can be interpreted separately (Chen, 1997; Keppel & Wickens, 2004). An examination of the interaction plots show that ordinal interactions are present (Appendix M). When an ordinal interaction is present, the main effects can be interpreted separately from the interaction (Chen, 1997; Keppel & Wickens, 2004).

The significant interaction suggests that in combination, gender and ethnicity factors do have significant effects on career decision-making self-efficacy. Analysis of simple main effects shows that the mean CDSE-SF score for Malay females is higher ($M = 87.23$) than Chinese females ($M = 82.35$). This indicates that female students from the Malay ethnic group have more confidence in career decision-making than female students from the Chinese ethnic group.

The significant main effect of ethnicity indicates that there are significant mean differences in career decision-making self-efficacy among students of three ethnic groups. A post hoc analysis using the Scheffe method demonstrates significant mean differences in career decision-making self-efficacy between Malay and Chinese students, and between Chinese and Indian students (Appendix L). Malay students had a higher mean career decision-making self-efficacy score ($M = 87.47$) than Chinese students ($M = 84.03$). Indian students had a higher mean career decision-making self-
efficacy score ($M = 90.40$) than Chinese students ($M = 84.03$) (Appendix L). This suggests that Malay and Indian students have more confidence in making career decisions than Chinese students.

Research Question 4.2: Will there be differences in career decision-making self-efficacy among students by gender and academic major? As shown in Table 8, the two-way interaction ANOVA on career decision-making self-efficacy total score
is not significant $F(1, 921) = 1.13, p = .29$. The analysis indicates that there is no interaction between gender and academic major on career decision-making self-efficacy. Since the probability value is larger than the alpha level set at .05, the null hypothesis is not rejected. No conclusion can be drawn about the interaction between gender and academic major on career decision-making self-efficacy.

Table 8

A Two-Way ANOVA between Gender and Academic Major on Career Decision-Making Self-Efficacy

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1919.93</td>
<td>1</td>
<td>1919.93</td>
<td>10.61</td>
<td>.00*</td>
</tr>
<tr>
<td>Major</td>
<td>258.54</td>
<td>1</td>
<td>285.54</td>
<td>1.43</td>
<td>.21</td>
</tr>
<tr>
<td>2-way Interactions</td>
<td>1029.23</td>
<td>1</td>
<td>230.17</td>
<td>1.27</td>
<td>.29</td>
</tr>
<tr>
<td>Total</td>
<td>167677.78</td>
<td>927</td>
<td>180.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at alpha .05

However, the observed main effect value of gender is significant, $F(1, 927) = 10.61, p = .00$. Since the probability value is less than the alpha level set at .05, the null hypothesis is rejected. This result is consistent with the result produced by the previous two-way ANOVA (Table 7) to determine a mean difference in career decision-making self-efficacy among students of different gender.
Research Question 4.3: Will there be differences in career decision-making self-efficacy among students by academic major and ethnicity? As shown in Table 9, the observed probability value for the two-way interaction ANOVA on career decision-making self-efficacy total score is significant $F(2, 919) = 4.43, p = .01$. Since the probability value is less than the alpha level set at .05, the null hypothesis for interaction is rejected. The main effect of ethnicity is also significant, $F(2, 919) = 4.94, p = .01$. However, the observed probability value for academic major ($p = .05$) is only marginally significant. One-way ANOVA was conducted to determine whether there was a significant mean difference in career decision-making self-efficacy between students in science majors and students in art and social science majors. The result shows that the probability value is .08 and this exceeds the alpha level set at .05 (Appendix N). Therefore, the null hypothesis is not rejected. No conclusion can be drawn about the difference in career decision-making self-efficacy between students in art and social science majors and students in science majors.

The interaction plot was examined to find out whether the significant main effect of ethnicity can be interpreted separately from the interaction. The result shows that the interaction is disordinal (Appendix O). Therefore, the significant main effect of ethnicity is ignored.

This significant interaction effect suggests that in combination, academic majors and ethnicity do have significant effects on career decision-making self-efficacy. Analysis of simple main effects indicate that there is a difference in career decision-making self-efficacy between Malay ($M = 88.05$) and Chinese students ($M = \ldots$)
who are majoring in art and social sciences. There is also a significant
difference between Chinese (M = 82.98) and Indian students (M = 93.73) who are
majoring in art and social sciences. The findings indicate that Chinese students in art
and social science majors are less confident to make career decisions than Malay and
Indian students who are in the same major.

Table 9
A Two-Way ANOVA between Academic Major and Ethnic Groups on
Career Decision-Making Self-Efficacy

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>702.90</td>
<td>1</td>
<td>702.90</td>
<td>3.95</td>
<td>.05**</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1756.96</td>
<td>2</td>
<td>878.48</td>
<td>4.94</td>
<td>.01*</td>
</tr>
<tr>
<td>2-way Interactions</td>
<td>1576.22</td>
<td>2</td>
<td>788.11</td>
<td>4.43</td>
<td>.01*</td>
</tr>
<tr>
<td>Total</td>
<td>163526.94</td>
<td>919</td>
<td>177.94</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at alpha .05
** Marginally significant

Summary

This chapter presents the results of this study based on the research questions
posed. The results indicate that the relationships between seven family functioning
subscales and five career decision-making subscales were between low and moderate.
The results also show that the contribution of family functioning to career decision-
making self-efficacy was small. Although the findings are statistically significant, the results suggest that factors other than family functioning may also contribute to students' confidence in making career decision. Two-Way Analyses of Variance indicate that there were differences in family functioning among students by gender, academic major, and ethnicity. There were also significant interaction effects between gender and ethnicity and between ethnicity and academic major on career decision-making self-efficacy. A detailed discussion of the research findings and their implications are discussed in Chapter V.
CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Introduction

This chapter is divided into four sections. The first section provides a summary of the study, which includes its purpose and its method of data collection. Following this summary are the conclusions of the research findings. The third section presents the discussion of the research findings based on the analyses of data. The final section consists of recommendations for practice and future research.

Summary of the Study

The main purpose of this study was to identify and examine the relationship between family functioning and career decision-making self-efficacy of first year undergraduate students enrolled at a public university in Malaysia in 2005/2006 academic session. The examination of the relationship between family functioning and career decision-making self-efficacy explains which family functioning areas correlate with students' confidence in career decision-making. A related purpose was to examine the unique effects of family functioning dimensions on career decision-making self-efficacy. Finally, the study also examined the differences in family functioning and career decision-making self-efficacy among students by gender, ethnicity, and academic major.
A total of 1,028 first year undergraduate students were selected using a modified-stratified random sampling. Of that number, 103 were dropped from the final analysis for various reasons: 34 participants did not belong to the ethnic groups being studied; 26 failed to complete one or both of the standardized instruments; two participants did not complete the demographic section; and 41 participants were considered outliers that could have deleterious effects on statistical analysis if they were included in the study. The final sample consists of 925 participants.

The FAD, developed by Epstein et al. (2000) and the CDSE-SF, developed by Betz and Taylor (2000) were used to gather information regarding family functioning and career decision-making self-efficacy. The FAD is a 60-item measure designed to assess perceptions of the social climate of the family, while the CDSE-SF is a 25-item instrument assessing the degree of confidence in the ability to successfully complete career decision-making tasks.

Responses to the demographic questionnaire and the standardized instruments (FAD and CDSE-SF) were coded and processed using the SPSS. Frequencies and percentages are reported on demographic characteristics. Mean scores and standard deviations were computed for the total participants on the six family functioning subscales and on the five career decision-making self-efficacy subscales. Pearson product-moment correlation coefficient was used to examine the relationship between family functioning subscales and career decision-making self-efficacy subscales. To assess the unique effects of family functioning on career decision-making self-efficacy, simultaneous multiple regressions was used and each family functioning
subscale was treated as a separate predictor variable. Two-Way ANOVA was utilized to assess for differences in family functioning and career decision-making self-efficacy with respect to gender, ethnicity, and academic major. To avoid Type I error, an alpha level of .05 is established for all comparisons.

Conclusion of the Findings

Many previous studies have found evidence of the relationship between family functioning or family dynamics and career decision-making self-efficacy. Most of the studies were conducted on college student populations in the United States, while limited data existed on Malaysian students. Malaysians are greatly influenced by traditional Asian cultures, which are characterized by placing high values on collectivism, interdependence, respect to authority and older people, family traditions, and conformity with group norms (Moy, 1992). Therefore, the researcher assumes that family plays a significant role in the career decision-making of young adults. The following conclusions are drawn from the study.

First, the study indicates that Affective Responsiveness constitutes the highest mean of family functioning, suggesting that students report that their families have greater difficulties in the ability to experience appropriate affect to environmental stimuli than in other functioning areas. This is followed by the way in which a family expresses and maintains standard for the behavior of its member (Behavior Control), the exchange of information among family members (Communication), patterns of behavior for handling family functions (Roles), and the extent to which family
members are interested in and place value on each others’ activities and concerns (Affective Involvement). Problem Solving has the lowest mean, indicating that participants perceive their families as having fewer difficulties in the ability to solve family-related problems. The mean scores for all these functioning areas are greater than the cut-off score of 2.00. This suggests that participants report having some level of family relationship difficulties in all areas.

The study also indicates that among five subscales of career decision-making self-efficacy, Self-Appraisal constitutes the highest mean while Problem Solving constitutes the lowest mean. This suggests that participants have more confidence in assessing their abilities to make career-related decisions than in other four areas (i.e., planning career goals, selecting a major, finding job information, and solving career-related problems). Examples of self-efficacy expectations related to self-appraisal include determining an ideal job, deciding what is valued most in an occupation, and figuring out what to or not to sacrifice to achieve career goals. Although students have less confidence in making plans for the future, deciding upon a major, occupation, or a career, finding occupational information and solving career-related problem than assessing their abilities to make career decisions, the results show that their level of confidence in these five areas do not differ much (between moderate and much confidence). Factors that may cause them to have only between moderate and much confidence need further investigation.
Second, the study indicates that there are relationships between six family functioning areas and five career decision-making self-efficacy areas. Specifically, the analyses show:

1. Perceived family’s ability to solve family-related issues is moderately related to confidence in assessing the ability to make career decisions and making a career plan for the future.

2. There are small relationships between perceived families’ abilities to solve family issues and confidence in finding job information, selecting a career, and solving career-related problems.

3. There are small relationships between the exchange of verbal communication within a family and confidence in assessing the ability to make career decisions, finding occupational information, deciding upon a major or a career, making future plans, and solving career problems.

4. There are small relationships between the patterns of behavior that handle family functions and confidence in assessing the ability to make career decisions, finding occupational information, deciding upon a major or a career, making future plans, and solving career problems.

5. There are also small relationships between perceived family’s ability to experience appropriate affect to environmental stimuli and confidence in assessing the ability to make career decisions and making future plans.

6. The relationships between the degree of interest and affection placed on each family member and self-efficacy expectations related to the ability to make
career decision, find occupational information, and decide a major or a career are also small.

7. There are small relationships between the patterns adopted for handling family members’ behaviors and confidence in assessing the ability to make career decisions, finding occupational information, deciding upon a major or a career, making future plans, and solving career problems.

8. The overall functioning of the family is moderately related to confidence in making future plans.

9. There are small relationships between the overall functioning of the family and confidence in assessing the ability to make career decisions, finding occupational information, deciding upon a major or a career, and solving career problems.

Third, the study indicates that perceived family’s ability to solve family-related problems makes the largest contribution (10%) of the total variance in career decision-making self-efficacy. This is followed by the perspectives regarding the exchange of information among family members and patterns of behaviors for handling family functions (each contributes 7% of the variance in career decision-making self-efficacy). Perspectives regarding the way family expresses and maintains standards governing individual behaviors also have little effect on confidence in career decision-making (6%). Finally, the family’s ability to experience appropriate affect to environmental stimuli and the degree of interest and affection placed on each other have the smallest effect (each contributes 1%) on confidence in career decision-making. These findings indicate that the six family functioning areas

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
cumulatively accounts for 32% of the variance in career decision-making self-efficacy. This suggests that these six areas have little effect on career decision-making self-efficacy.

Fourth, the study indicates that male students perceive their families as more dysfunctional than female students. In terms of differences among ethnic groups, the study indicates that Chinese students appraise their families as more dysfunctional than Malay and Indian students. The study also shows that students in science majors and students in art and social science majors are different in their appraisal of the general functioning of the family in that art and social science students perceive their families as more functional than science students.

Fifth, the present study indicates that in combination, gender and ethnicity factors affect career decision-making self-efficacy. A post-hoc analysis shows that female students from the Malay ethnic group are more confident to make career decisions than female students from the Chinese ethnic group. The study also indicates that there is a difference in career decision-making self-efficacy between males and females, in which male students have more confidence in career decision-making than female students. Also, there are differences in career decision-making self-efficacy among the three ethnic groups. Specifically, Chinese students have less confidence in career decision-making than Malay and Indian students while Malay and Indian students do not differ from each other in their career decision-making self-efficacy.
Finally, the study also indicates that in combination, academic major and ethnicity factors affect career decision-making self-efficacy. Analyses of simple effects indicate that Chinese students in art and social science majors have less confidence in career decision-making self-efficacy than Malay and Indian students who are in the same major.

Discussion

Family Functioning and Career Decision-Making Self-Efficacy

This study indicates that the mean scores for the total sample in six family functioning areas (i.e., Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, Roles, and Behavior Control) exceed the cut-off score ($M = 2.00$) suggested by the developers of the instrument. Affective Responsiveness has the highest mean score ($M = 2.37$) while Problem Solving has the lowest mean score ($M = 2.06$). This suggests that participants perceive their families as having difficulties in all areas. The mean scores and standard deviations of all six areas are not very different. There is not much variability in the scores. The closeness of the mean scores and standard deviations suggest that Malaysian families, on average, regardless of their ethnic backgrounds share the same values and beliefs regarding their family interaction patterns. It is interesting to find that the Problem Solving dimension (family’s abilities to solve family problems) has the lowest mean score while Affective Responsiveness, which examines families’ abilities to respond to a given stimulus with the appropriate quality and quantity of feelings, has the
highest mean score. A low score in the Problem Solving dimension suggests that families are focusing more effort on finding solutions and making decisions when a problem situation occurs in the family. A high score in the Affective Responsiveness dimension indicates that affective responses are given less attention by families compared to other dimensions. These results may imply that for Malaysian families, solving problems is considered important to maintain healthy family functioning. However, from the McMaster Model of Family Functioning perspective, they still have low ability to resolve most problems efficiently and easily because their average score exceeds the cut-off score. On the other hand, the finding that Malaysian families give less attention to Affective Responsiveness is not surprising because it is not part of Malaysian culture to show feelings through action. As Asians, traditional culture would influence many of them to think that it is improper to display their feelings and they should mask their emotional responses. This response does not mean that they are insensitive; they may prefer to convey their responses in nonverbal ways.

Like the FAD, the mean scores and the standard deviations of all CDSE-SF subscales are also close to each other. Specifically, the mean scores show that their confidence in making career decisions are between moderate and much confidence, with confidence in assessing their abilities to make career-related decisions being the highest and confidence in facing and solving career-related problems being the lowest. The findings indicate that first year students are confident that they can accurately assess their abilities in making career decisions, determine the ideal
occupation and what they value most in an occupation, and figure out what they are ready or not ready to sacrifice to achieve their career goals which will define the lifestyle they will like to live. In Malaysia, admission to public universities is very competitive. This may lead some students to believe that once they accept the offer to further their study at a public university, they will have the qualifications to enter their dream career or occupation. The belief may explain why their confidence in self-appraisal is the highest among other four areas. On the other hand, their confidence in facing and solving career-related problems is not as high as confidence in other career decision-making areas because generally for many first year students in Malaysia, they still depend on others (e.g., family, friends) to resolve any career issues that they may face. Examples of career related problems include changing majors if they do not like the first choice, changing occupations if they are not satisfied, and identifying some major or career alternatives if they are unable to get their first choice. Some of these problems, such as changing major, usually cannot be resolved because it is not allowed in public universities. The only way to resolve the problem is by furthering their studies in private institutions, which most students are reluctant to do. The limited options may explain why their confidence in solving career-related problems is lower compared to confidence in other four areas. Some of the career related problems may be resolved if they seek help from professionals, such as counselors and academic advisors. However, seeking professional help is not common among students in Malaysia.
Relationship between Family Functioning and Career Decision-Making Self-Efficacy

The results of this study show that certain family experiences impact the confidence level of college students in making career decisions. The results also reveal some similarities with the other findings of previous research on the relationship between family functioning and career decision-making self-efficacy. In most of those studies, family systems theory has been used to understand the role of family functioning or family dynamics in career development (Bratcher, 1982; Hall, 2003; Lopez & Andrews, 1987; Zingaro, 1983). Along with previous studies (Hargrove et al., 2001; Johnson et al., 1999; Whiston, 1996), the findings of this study provide support to the theoretical contention that family functioning plays a role in the career development process. Specifically, the results indicate that students’ perspectives regarding their family’s abilities to solve family problems, the effectiveness and content information exchange among family members, the patterns of behavior for handling family functions, family’s ability to experience appropriate affect to environmental stimuli, and the degree of interest and affection placed on each other are related to five career decision-making self-efficacy areas. Those areas are confidence in assessing the ability to make career-related decisions, finding occupational information, selecting career goals, making a career plan, and solving career-related problems. However, the relationship between family’s ability to experience appropriate affect to environmental stimuli and the confidence in finding occupational information and deciding upon a major are negligible.
Problem Solving or the ability to resolve family problems are necessary for effective family functioning. The relationship between the ability to resolve the family’s problems and the confidence in making career decisions and career plans suggests that families’ abilities to deal effectively with problems are crucial for young adults’ future decisions. Family problems can be divided into two types: instrumental and affective (Epstein, Ryan, Bishop, Miller, & Keitner, 2003). Examples of instrumental problems are problems related to food, money, transportation, and shelter. Examples of affective problems are any issues related to emotion or feelings such as anger and depression. A healthy family must be able to deal effectively with these problems in order to help the children plan for their future. Although not all issues become the family’s problem, any issues that threaten the function of the family should be resolved. The finding also suggests that if families are able to deal effectively with the problems, children may learn effective problem solving skills from the process. They may apply the skills to solve other real life problems, such as making career plans and career decisions.

Collectively, these findings suggest that perceived quality of family functioning may play a small, yet significant role in college students’ confidence in engaging in developmentally appropriate career developmental tasks. These small relationships also suggest that factors other than family functioning variables may also contribute to individual differences in the career decision-making self-efficacy. The analysis also indicates that the effect of the six family functioning areas on career decision-making self-efficacy is small. One question remaining is: What is the main
factor that may have contributed to this outcome? While it might be true that their families are having difficulties in the six functioning areas, there are several questions remaining open: Does each item measure family functioning from a Malaysian perspective? Do negative items that are considered negative from Euro-American perspective considered negative from Malaysian perspective? One possibility to consider is that the particular instrument (FAD) may not be suitable for Malaysian culture. In other words, the FAD may not be a good measure of family functioning for Malaysians. Although the FAD has been used in cultures other than United States (Keitner et al., 1991), there were some concerns that its validity in cross-cultural study remains to be demonstrated (Roncone et al., 1998; Shek, 2002). There is no specific discussion on the psychometric properties of the FAD in the Malaysia culture. In fact, there have been few published studies on family assessment tools in the Malaysian culture. Obviously, an examination of the psychometric properties of the FAD in the Malaysian context is an important step to determine the cultural validity of the FAD. As pointed out by Leong et al. (2004), appropriate measures that are culturally sensitive should be explored and established rather than reevaluating the existing measures. Specifically, the cultural validity of the instruments for Malaysians should be further examined in future studies. Once valid measures are established, the attempt to incorporate cultural context into career development can continue. In other words, more effort should be directed towards developing a measure of family functioning that is consistent with the population being studied.
Finally, although the findings suggest that family functioning contributes to career decision-making self-efficacy, other important family variables that may also play an important role in career decision-making self-efficacy from a Malaysian perspective are not addressed by the FAD. Examples of family variables that might be considered in future studies are parental marital status, standard of living, and attachment and relationships with siblings and extended family members, family composition, and birth order. These variables are considered important to Malaysian families because they can affect the way a family functions. The FAD also has never been used in a study that links career development with family functioning. Future research on the topic of career development and family functioning (or family dynamics) must address the measurement issue.

Differences in Family Functioning

Results from this study suggest that there is a difference in perceived family functioning between male and female students who participated in the study. Male students indicate that they perceive their families as more dysfunctional than female students. The finding coincides with an earlier study reported by Kazarian (2005) using a college sample in Lebanon in which male students perceive their families as more dysfunctional than female students. The fact that female students perceive or rate their family as more functional than male students may be influenced by Malaysian culture, which puts more pressure on males than females. Malaysian families, regardless of their ethnicity, emphasize patrilineal hierarchy. Although
Malaysian families treat their children equally in many other aspects, such as education and marriage, generally males are given more power and responsibilities than females. On the other hand, in traditional Malaysian culture, females are expected to depend on males. Despite the fact that women have taken on an increased role in providing income to their families while men have not taken up responsibilities in family life, male siblings usually have a greater influence on family’s decisions than female siblings. Even though males are dropping out of secondary and tertiary education, with females outnumbering the males with a high margin as reported by the United Nations Development Program (United Nation Development Program, 2004), the role of men and women in society has not changed much. These patrilineal elements (e.g., men are given more autonomy and power than women) may have affected males’ and females’ perceptions towards their family functioning. Men may feel empowered by the patrilineal elements, but they may also feel pressure to fulfill their families’ expectations. Although they usually have more freedom than females in decision-making, males are expected to take care of their family-of-origin even after marriage. Males are expected to provide financial support to their parents and unmarried siblings. Once the parents die, they will replace the parents in taking care of other family members. As for females, Malaysian families in general put less burden on them and their responsibilities toward their family-of-origin are not as great as males’ responsibilities. The pressure may be a possible reason for the men to perceive their family functioning as unhealthy. Further investigation is needed to better understand this issue.
The results from the study show that Chinese students appraise their families as more dysfunctional than Malay and Indian students. One possible reason for the unhealthy perceived family functioning among Chinese is the conflicts between younger generations and their parents. Chinese families usually place high values on hard work and success. Chinese parents also place greater expectations on their children than Malay and Indian parents. It is not surprising that Chinese students in Malaysia perform better academically than students of other races (Alfan & Othman, 2005). Some Malay and Indian parents even send their children to Chinese schools because they believe their children will do better academically in those schools. A report issued by the Malaysian Chinese Association (2001) shows that there were 60,000 Malay students enrolled in Chinese schools. The pressure to achieve and succeed may lead to parent-child conflict among Chinese, which in turn may influence children’s perspectives towards their family functioning. As reported by Yau and Smetana (1996), homework and academic achievement were involved in the conflicts faced by Chinese children with their parents. The need for greater autonomy than their parents granted them is one of the factors that may cause children to perceive their family as having unhealthy family functioning.

Finally, results from the study also show that art and social science students perceive their family as having better functioning than science students. This finding could be attributed to the educational system. In most Malaysian secondary schools, students are grouped into two main curriculums based on their examination results. High achievers are grouped into science curriculum, while those who score lowest on
the national examination are relegated in the art and social science curriculums. It is interesting to examine why family functioning is higher among students in art and social science majors and lower among students in science majors. No study has been conducted so far to study the issue. One possible explanation could be attributed to the streaming practice itself. To major in science, students must do well academically. Science majors are valued more than art and social science majors. Since science majors are valued more than art and social science majors, some parents are reluctant to support their children if they want to change their majors. At the college level, admission to science based majors is more competitive than admission to art and social science based majors. Every year, most of the top students in the national public examination consist of those in science curriculum. Perhaps students in science based majors, who do better academically than students in art and social science based majors, perceive their families as more dysfunctional because of the pressures to achieve put on them by the families. Although there have been no studies to explore this issue, some students have expressed their dissatisfaction in the local newspaper for not being allowed to change their major from science to art or social science (Chin, 2006). Not only do they feel more pressure to achieve, they may also feel more pressure to make academic and career decisions that are accepted by the families.
Differences in Career Decision-Making Self-Efficacy

Gender differences have been the focus of a number of researchers. Numerous studies have reported the absence of gender differences in career decision-making self-efficacy (Aleidan, 2002; Betz & Taylor, 1996; Chung, 2002; Eaton et al., 2004; Taylor & Popma, 1990). Contrary to these previous findings, the results of this study indicate that there is a difference between Malaysian males and females in career decision-making self-efficacy. Specifically, the findings show that the general level of confidence in making career decisions is higher among males than among female students. It is interesting to examine why female students have lower career decision-making self-efficacy than males even though recent developments have shown that female students are performing better than male students in their national examinations (Abdul Jalil, 2005). One possible reason is the attitude of female students who choose to depend on others (e.g., family) to make a decision. In many traditional Malaysian families, the dependent decision-making style could be attributed to the family culture that encourages boys to be more independent than girls. Commenting on Asian culture, Mohd Ishak (1999) noted that females are not expected to voice their opinions to their parents and are taught to pursue a "less complicated life" because everything has been determined for them. They must also realize that their life was meant to compliment the lives of significant others. This unspoken rule has been in practice for decades and it will not be easy to challenge the traditional culture. As reported by Mau (2000), female students were more likely to
adopt a dependent decision-making style than male students. This decision-making style might also lead a large number of female students to pursue traditional subjects.

Among the three major ethnic groups, results indicate that Chinese students are less confident about their abilities in career decision-making than Malay and Indian students. Malay and Indian students do not significantly differ from each other in career decision-making self-efficacy. This finding is interesting given the fact that Chinese students generally have better academic achievement than students from other races. Results from an earlier study conducted by O'Brien et al. (2000) show that career decision-making self-efficacy is related to academic achievement. Why did the Chinese students have lower career decision-making self-efficacy than the Malays and the Indians, even though most of them perform better academically? Selecting a career can be a challenging process for the Chinese students especially if their families believe that only certain careers or jobs can lead to success. For the students, they must try to balance their interests with what is acceptable by the families, especially the parents. Over the years, most Chinese in Malaysia have been actively involved in business and have succeeded in many industries. Upon graduation, children are expected to help expand the family business. Unlike the majority of Chinese, whose work force is in business and entrepreneurship, most Malay and Indian’s work force is in clerical, service, production and agriculture sectors, while only a small proportion are involved in business (Asian Economic History, 2005; Wikipedia, 2006). This fact may explain why the Malays and the Indians students are more confident to make career decisions than Chinese students.
Their families may give them more freedom to make decisions in contrast to the Chinese students, who may have limited freedom to make decisions that are against their family's wishes. In other words, Malays and Indians may have greater freedom to make decisions and choose a wider range of occupations as long as the decisions are accepted by the family.

Results from this study also indicate that female students from the Malay ethnic group report higher confidence in making career-related decisions than female students from the Chinese ethnic group. This difference could also be attributed to the cultural differences between Malay and Chinese families. Chinese families usually practice differentiation in parenting of sons and daughters. Sons are preferred over daughters because sons are expected to take care of the family and maintain the family surname. Because sons are favored over daughters and have greater responsibilities toward their families, they experience restrictive treatment and stronger autocratic discipline than daughters (Krishnan, 2004). According to Hannum and Kong (2002), the traditional attitudes in Chinese culture that are overtly discriminatory towards girls may harm girls' opportunities. These attitudes include perception towards girls' abilities in education and the workplace. Because of the gender differences in parenting, girls may feel less confidence in their abilities, which include the ability in making career-related decisions.

Since Malay culture is influenced by Islamic teachings, which require parents not to differentiate between sons and daughters, parenting differentiation is less practiced in Malay families, except for certain issues that challenge their religious
values. In other words, the difference is usually intended to supervise and protect the daughters because they believe that girls can easily become victims. For instance, the negative effects of globalization have led many Malay parents to put more supervision on girls. Hok-Tong (1997), in his writing on globalization and its effects on Malay families and community noted that the negative effect of globalization, such as unwed pregnancy, pre-marital sex, abortion, and other forms of social problems that are on the rise in Malaysia, have caused parents and leaders to express concern over the exposure of their traditional values to global culture. Females from the Malay group also have a strong attachment bond with their families, especially their parents. Previous research (Mohd Ishak, 1999) showed that female students, especially the younger ones, felt comfortable sharing their personal information with their parents although the sharing depends on the importance of the issues. Perhaps the cultural differences between the Malay and the Chinese families in their relationships with their daughters have contributed to the results of this study, which found differences in career decision-making self-efficacy between Malay and Chinese females. Besides the possible interpretation that cultural differences contribute to this finding, one should be mindful of other possibilities that may also play a significant role. Therefore, future research should investigate this area further.

Finally, the results from the study indicate that Malay and Indian students who are majoring in art and social science have more confidence in career decision-making than Chinese students in the same majors. As indicated previously, science majors are valued more than art and social science majors. Admission to science
majors is more competitive than admission to art and social science majors. Detailed statistics regarding admission to science and art and social science majors by ethnicity could not be obtained from the UM Record Office. Chinese students usually have positive attitudes towards science and mathematics. One probable reason for that attitude is the high value placed on science and mathematics by their parents. Before the introduction of the quota system in 1970 (Faaland, 2005; Means, 1972; Selvaratnam, 1988), which requires Malaysian public universities to admit students based on their ethnicity (55% for the Malays and 45% for the non-Malays), public universities had low enrollment of Malay students. Malay students were also underrepresented in science-related majors. As for Malay and Indian parents, admission to a university is an achievement itself, especially if their children are first-generation college students. Children may feel more confident of their abilities to make a career decision without pressure from parents. On the contrary, Chinese students in the art and social science majors may feel inferior by not majoring in science. They may not get the full support of parents, which in turn affect their confidence in decision making. This fact may explain why Chinese students report lower career decision-making self-efficacy than Malay and Indian students.

Recommendations

Recommendations for Practice

The findings of the study indicate that students' confidence in their ability to perform career decision tasks are between moderate and high. The results suggest that
there is a need for enhancing students' career decision-making self-efficacy because numerous studies have found that the confidence was significantly associated with career indecision (Betz et al., 1996; Betz & Voyten, 1997; Taylor & Popma, 1990), vocational congruence (Luzzo & Ward, 1995), career maturity (Luzzo, 1995), career locus of control (Luzzo et al., 1996), career decision outcome expectancies and career exploration (Betz & Voyten, 1997), career decision-making styles (Niles et al., 1997; Mau, 2000), patterns of career choice (Gianakos, 1999), career commitment (Chung, 2002), and career decision-making difficulties (Morgan & Ness, 2003). These relationships show the importance of self-efficacy in the career decision-making process. Since academic major at the university level is determined by students' academic program at the secondary school level, any steps to improve students' confidence in career decision-making should not ignore the role of school counselors. An information database that provides information about academic major and occupations related to the major should be established at the school level to promote awareness and improve students' confidence in making career related-decisions. Currently, information regarding academic major and job market is not sufficiently provided in Malaysia to secondary school students, especially students in the rural areas.

Although most secondary schools that are fully funded by the government provide counseling services to students, career counseling is not among these important services. Government financial support to improve career counseling is
needed at the school level. This is necessary since students are not able to change their majors once they are accepted by public higher education institutions.

This study shows that the relative contribution of family functioning variables to career decision-making self-efficacy is relatively small. Despite this limitation, the results support the influential role of family functioning in the career development of traditionally aged college students. Undergraduate students struggling with career and vocational issues may benefit from career interventions that take into account the family dynamics that affect the decision-making process. In addition to the traditional form of career counseling, it is recommended that college counselors use family systems theory to assess any functional or dysfunctional functioning patterns that are likely to affect career choices. As proposed by Whiston (1989), the formation of groups, comprised of traditional career counseling and family therapy techniques, in which parents are invited to participate, is one of the techniques that counselors can use. Such a group could provide techniques for parents to facilitate their children's career development process. The process will also help students understand how their families encourage or discourage their career choices. The formation of the group is also useful if counselors want to interview and observe the family directly. Observation during the group sessions helps counselors find clues about the quality of family functioning (Morrow, 1995).

Sometimes it may be difficult to invite family members to attend such counseling sessions. Many students are first-generation college students who come from rural areas and going to the university counseling center is an obstacle to their
families. In that case, counselors should consider sending questionnaires that are systemic in nature and unique to family members. At the same time, students are asked to complete a questionnaire that is designed to assess the kinds of issues related to students’ family functioning. One recommendation for counselors is to consider other methods of obtaining information, such as utilizing genograms (Bradley & Mims, 1995; Chope, 2002), family lifeline, and family homework (Morrow, 1995). The genogram allows for the exploration of current, historical, and mutigenerational career development patterns (Chope, 2002). Family lifeline is a single line drawn horizontally where major life events are marked along the line chronologically. As homework, students are asked to interview their family members about their work and career experiences. The information collected should then be discussed in individual sessions and enables counselors to help their clients in making meaningful career decisions. Small group counseling can also be conducted to discuss the information in which students help each other in dealing with family related issues that may affect their confidence in making career decisions.

Results of the current study suggest that the quality of family functioning, especially the ability to solve family-related problems, has an important role in students’ career decision-making self-efficacy. Thus, it may be advisable for counselors to explore the problem-solving skills of their clients’ families. If family members agree to join any of the counseling sessions, students and their families may discuss further steps to improve their abilities in problem solving, which will facilitate the students’ career development process.
In summary, counselors may obtain a clearer picture of the factors influencing students’ career development by understanding the family functioning. Counselors’ ability to think systemically will assist clients who are unconsciously bound by family forces to choose a career that “can provide independence and autonomy as well as satisfaction and fulfillment” (Bratcher, 1982, p. 91) to themselves and their families. These functioning patterns may interact with other cultural factors, such as ethnicity and social class. Counselors are recommended to take into account these cultural factors because culture plays a major role in the Malaysian society.

Recommendations for Future Research

The present study has several limitations that may prove constructive in directing future research. First, the amount of variance related to career decision-making self-efficacy that was accounted for by the six family functioning dimensions was relatively small. As indicated previously, the strongest predictor (Problem Solving) accounted for only 10% of the variance. Other predictors contributed less than 10% of the variance. The total variance accounted for by the six subscales was only 32%. Therefore, although the findings suggest that family functioning is related to confidence in making career decisions, the level of importance needs to be studied further. Future researchers should also investigate whether or not additional mediating variables are affecting this relationship.

Second, the present study used a standardized instrument (i.e., FAD), that measures only six dimensions of family functioning. Although the instrument seems
to measure a wide range of aspects of family functioning, there may be other family functioning variables that play an important role in Malaysian undergraduate career development that have been ignored. If we add other family variables, such as parental marital status, standard of living, and attachment and relationships with siblings and extended family members, into further studies, more outcomes that help us understand the role of family dynamics may be revealed. Family composition and family member configurations (e.g., birth order) also merit further inquiry.

Third, the findings of the present study reinforce the need to validate Western assessment measures when they are translated into other languages and used in a non-Western population. This is important because the dimensions of family functioning in Malaysian culture might differ from those listed in the original English version.

Fourth, the present study focused only on the role of family functioning on career decision-making self-efficacy. The role of family functioning on other factors, such as career decision-making difficulties and vocational identity, could be investigated by future researchers.

Fifth, the study used self-report methodology without any external corroboration. Thus, the findings are limited to what were included in the self-report measures. Future research needs to address this limitation. Longitudinal studies using self-report measures combined with other research methods, including qualitative methods (e.g., interviewing family members, observations of family interaction patterns), would be likely to reveal more outcomes that may be useful in understanding career development process of young adults. Future studies might also
gather information from both students and parents to gain a multi-perspective view on family functioning.

Sixth, only first year undergraduate students were included as participants in this study. Future research should include participants prior to their attendance at the tertiary or post-secondary level, as well as participants in various stages of their education. It is also important to include students beyond first year university. Future researchers may also consider investigating the impact of family functioning on the career development of other young adults who may not have the opportunity to further their studies at the college level. Although it is important to understand the role of family functioning in the career development of a college population, this group of young adults may not be representative of those affected by unhealthy family functioning (Johnson et al., 1999).

Finally, participants of this study consisted of students from the three main ethnic groups (i.e., Malay, Indian, and Chinese). Future research might consider studying other minority groups in Malaysia, such as the indigenous people and the aborigines. Qualitative approaches might be used because there may be only a small number of these students in Malaysian public universities.

Summary

The present study described here provides evidence of the relationship between family functioning and confidence in career decision-making. Confirmation of the effect of family functioning on career decision-making self-efficacy would be
important to professionals working with college students; thus, additional research in this area would be warranted. The researcher is hopeful that the findings of this study, which identify variables that significantly impact the family functioning and career decision-making self-efficacy of Malaysian undergraduate students, provide a step in improving counseling services for this group. In addition, the findings should validate the importance of using family systems approach in career counseling as suggested in this study.
Appendix A

Approval Letter from the Human Subjects Institutional Review Board
Date: November 29, 2005

To: Donna Talbot, Principal Investigator
   Melati Sumari, Student Investigator

From: Mary Lagerwey, Ph.D., Chair

Re: HSIRB Project Number: 05-11-16

This letter will serve as confirmation that your research project entitled "Family Functioning and Career Decision-Making Self-Efficacy: A Study of First Year Malaysian Undergraduate Students" has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: November 29, 2006
Appendix B

Consent Document - English Version
Dear Student,

You are invited to participate in a research project entitled "Family functioning and career decision-making self-efficacy: A study of first year Malaysian undergraduate students". Melati Sumari, a doctoral student in Counselor Education and Supervision, is conducting this study under the supervision of Dr. Donna Talbot, an associate professor in the Department of Counselor Education and Counseling Psychology, Western Michigan University. Melati Sumari will be using information collected from this study as the basis for her dissertation. The primary purpose of this study is to determine the relationship between family functioning and career decision-making self-efficacy.

This survey consists of three sections. Section 1 has six questions, section 2 has 60 questions, and section 3 has 25 questions. Participation in this study will take approximately 30 to 40 minutes. Your responses will be completely anonymous, so do not write your name anywhere on the form. You may choose not to answer any question and simply leave it blank. If you choose not to participate in this study, you can work quietly on other things and return the blank survey or you may discard it in the box provided. Returning the survey indicates your consent for use of the answers you supply.

One potential risk of your participation in this study is you may feel uncomfortable by the content of the questionnaires. If you feel uncomfortable, we encourage you to see any counselors at the Career Development and Counseling Unit, University of Malaya with no cost. However, no compensation or additional treatment will be made available to you except otherwise stated in this document. A list of counselors and their contact information will be given to you before the administration of the survey.

One way in which you can benefit from this study is you may have the chance to reflect on your family interaction patterns and its impact on your career development.

If you have any questions or concerns regarding the study, you may contact Dr. Donna Talbot at donna.talbot@wmich.edu (1-269-387-5122), or Melati Sumari at melati.sumari@wmich.edu (1-269-387-7381). You may also contact the Human Subjects Institutional Review Board at 1-269-387-8293 or the Vice President for Research at 1-269-387-8293 at Western Michigan University.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) at Western Michigan University as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.
Appendix C

Consent Document - Malay Version
Penyelidik Utama: Dr. Donna Talbot
Pembantu Penyelidik: Melati Sumari

Iklim Keluarga dan Keyakinan Membuat Pemilihan Kerjaya: Kajian ke atas Pelajar Ijazah Dasar Tahun Pertama di Malaysia


Satu risiko yang mungkin anda hadapi apabila menyertai kajian ini ialah anda mungkin berasa tidak seselsa dengan soalan-soalan yang terdapat dalam soal selidik. Sekiranya perkara yang tidak diingini berlaku, kami mengesyorkan anda untuk berbincang dengan pihak berwajib di Pusat Kaunseling dan Pengembangan Kerjaya, Universiti Malaya tanpa sebarang kos. Tiada sebarang pampasan lain yang akan diberikan selain yang dinyatakan di atas kertas ini.

Penyertaan dalam kajian ini boleh memberi manfaat kepada anda kerana ia memberi peluang kepada anda untuk membuat refleksi terhadap iklim keluarga anda dan kesannya ke atas perkembangan kerjaya anda.

Sekiranya anda mempunyai sebarang kemusykilan yang berkaitan dengan kajian ini, sila hubungi Dr. Donna Talbot di donna.talbot@wmich.edu (1-269-387-5122) atau Melati Sumari at melati.sumari@wmich.edu (1-269-387-7381). Anda juga boleh menghubungi Human Subjects Institutional Review Board (HSIRB) di 1-269-38708293 atau Naib Presiden untuk Penyelidikan di 1-269-387-8293 di Western Michigan University.

Dokumen kebenaran ini hanya boleh digunakan dalam tempoh setahun dari tarikh yang ditunjukkan di sebelah kanan borang ini dan telah ditandatangani oleh penegar HSRIB. Anda tidak seharusnya menyertai kajian ini sekitar sebelum tarikh tersebut sudah melebihi setahun dari tarikh yang ditunjukkan.
Appendix D

Demographic Information Sheet - English Version
SECTION I: DEMOGRAPHIC INFORMATION SHEET

Dear Students,

Please place an (X) next to the appropriate category listed below or write in the information requested.

1. Gender
   Male ( ) Female ( )

2. Ethnic Group
   Malay ( ) Chinese ( ) Indian ( )
   Others ____________ (please specify)

3. What faculty/academy are you currently enrolled in?
   ( ) Malay Studies
   ( ) Engineering
   ( ) Medicine
   ( ) Art and Social Science
   ( ) Business and Accountancy
   ( ) Language and Linguistic
   ( ) Economic and Administration
   ( ) Computer Science and Information Technology
   ( ) Islamic Studies
   ( ) Dentistry
   ( ) Science
   ( ) Built Environment
   ( ) Education
   ( ) Law
   ( ) Built Environment
   ( ) Higher Secondary School (STPM or SPM)
   ( ) Lower Secondary School (SRP or PMR)
   ( ) Primary School
   ( ) Others ______________ (please specify)

4. Father’s highest educational level
   ( ) Graduate Degree (Masters or PhD)
   ( ) Undergraduate Degree
   ( ) Diploma
   ( ) Higher Secondary School (STPM or SPM)
   ( ) Lower Secondary School (SRP or PMR)
   ( ) Primary School
   ( ) Others ______________ (please specify)

5. Mother’s highest educational level
   ( ) Graduate Degree (Masters or PhD)
   ( ) Undergraduate Degree
   ( ) Diploma
   ( ) Higher Secondary School (STPM or SPM)
   ( ) Lower Secondary School (SRP or PMR)
   ( ) Primary School
   ( ) Others ______________ (please specify)

6. Type of residential setting
   ( ) Village/ Small town
   ( ) City/ Urban
Appendix E

Demographic Information Sheet - Malay Version
BAHAGIAN I: MAKLUMAT LATTERBELAKANG

Pelajar yang dihormati,
Sila tandakan (X) di ruangan yang disediakan atau tulis maklumat di ruangan yang disediakan jika perlu.

1. Jantina
   Lelaki ( ) Perempuan ( )

2. Bangsa
   Melayu ( ) Cina ( ) India ( )
   Lain-lain __________ (sila nyatakan)

3. Tandakan fakulti/ akademi di mana anda belajar sekarang
   ( ) Akademi Pengajian Melayu ( ) Akademi Pengajian Islam
   ( ) Kejuruteraan ( ) Pergigian
   ( ) Perubatan ( ) Sains
   ( ) Sastera dan Sosial Sains ( ) Alam Bina
   ( ) Perniagaan dan Perakaunan ( ) Pendidikan
   ( ) Bahasa dan Linguistik ( ) Undang-undang
   ( ) Ekonomi dan Pentadbiran
   ( ) Sains Komputer dan Teknologi Maklumat

4. Tahap pendidikan tertinggi BAPA
   ( ) Ijazah Tinggi (Masters atau PhD)
   ( ) Ijazah Dasar (Sarjana Muda)
   ( ) Diploma
   ( ) Menengah Tinggi (STPM or SPM)
   ( ) Menengah Rendah (SRP or PMR)
   ( ) Sekolah Rendah
   ( ) Lain-lain ______________ (sila nyatakan)

5. Tahap pendidikan tertinggi IPU
   ( ) Ijazah Tinggi (Masters atau PhD)
   ( ) Ijazah Dasar (Sarjana Muda)
   ( ) Diploma
   ( ) Menengah Tinggi (STPM or SPM)
   ( ) Menengah Rendah (SRP or PMR)
   ( ) Sekolah Rendah
   ( ) Lain-lain ______________ (sila nyatakan)

7. Anda berasal dari
   ( ) Luar Bandar (Kampung atau pekan)
   ( ) Bandar
Appendix F

McMaster Family Assessment Device Permission Letter
Enclosed please find the McMaster assessment/manuals that you ordered from the Brown University Family Research Program. These instruments are copyrighted. You have permission, however, to duplicate the Family Assessment Device (FAD), the Family Information Form, the McMaster Clinical Rating Scale (MCRS), and McMaster Structured Interview of Family Functioning (McSiff) for your own clinical/research/teaching purposes.

In addition to a bibliography of our own work, we have recently added a listing of published articles in which one or more of the McMaster instruments are used. If you know of any articles we have omitted, we would be happy to add them to our list.

Please do not hesitate to call or e-mail if you have any questions.

Sincerely,

Christine E. Ryan, Ph.D.
Director, Family Research Program
Assistant Director, Mood Disorders Program
Rhode Island Hospital
Assistant Professor,
Department of Psychiatry & Human Behavior
Brown University School of Medicine

Tel. 401-444-3534
FAX 401-444-3298
e-mail Christine_Ryan@Brown.edu
October 14, 2005

This is to confirm that Melati Sumari submitted a back-translation of the Family Assessment Device (FAD) to the Brown University Family Research Program in order to use the FAD in her research project on family functioning and career decision-making.

After forwarding the back-translation and receiving comments from the developers and executive committee of the Family Research Program, the Malay FAD was revised and problem items re-translated to accurately reflect the questions being asked.

Although we cannot verify the Malay translation itself, we feel confident that the iterations of the back-translations represent a valid version of the FAD.

Please do not hesitate to call or e-mail if you need more information.

Sincerely,

Christine E. Ryan, Ph.D.
Appendix G

Career Decision Self-Efficacy Scale Permission Letter

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
June 29, 2004

Melati Sumari
Counselor Education and Counseling Psychology
Western Michigan University
Kalamazoo MI

Dear Melati:

You have our permission to reproduce the CDMSES and to translate it into Malaysian. Please share with me the results of your study and the translated version of the scale.

Best wishes in your research.

Most Sincerely,

[Signature]
Nancy Betz, Ph.D.
Professor
(Also on behalf of Karen M. Taylor, PhD, co-author).
Appendix H

Permission Letter from Deputy Vice Chancellor
(Academic and Internationalization), University of Malaya
25 October 2005

Ms. Melati Sumari
1940 Howard St.,
Apt. 270, Kalamazoo,
MI 49008-1217
United States of America

Fax: 1-269-3874461 Telephone: 1-269-3877381

Dear Madam,

PERMISSION TO CONDUCT A STUDY AT THE UNIVERSITY OF MALAYA,
KUALA LUMPUR, MALAYSIA

With regards to the above, I am very happy to grant you permission to use first year students at the University of Malaya, Kuala Lumpur, as the subjects of your doctoral research:

"Family Functioning and Career Decision-Making Self-Efficacy: A Study of First Year Malaysian Undergraduate Students"

Please do not hesitate to seek additional information about any area of your research and I wish you all the very best in your doctoral studies.

Thank you.

Sincerely,

PROFESSOR DATUK DR. A. HAMID A. HADI
Deputy Vice-Chancellor (Academic and Internationalization)
Appendix I

Distribution of Participants by Faculty/Academy
Table 10
Distribution of Participants by Faculty and Academy

<table>
<thead>
<tr>
<th>Faculty/ Academy</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Art and Social Science Majors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay Studies</td>
<td>215</td>
<td>23.2</td>
</tr>
<tr>
<td>Business and Accountancy</td>
<td>91</td>
<td>9.8</td>
</tr>
<tr>
<td>Language and Linguistic</td>
<td>19</td>
<td>2.1</td>
</tr>
<tr>
<td>Economy and Administration</td>
<td>80</td>
<td>8.6</td>
</tr>
<tr>
<td>Art and Social Science</td>
<td>26</td>
<td>2.8</td>
</tr>
<tr>
<td>Islamic Studies</td>
<td>49</td>
<td>5.3</td>
</tr>
<tr>
<td>Education</td>
<td>54</td>
<td>5.8</td>
</tr>
<tr>
<td>Law</td>
<td>87</td>
<td>9.4</td>
</tr>
<tr>
<td><strong>Science Majors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>57</td>
<td>6.2</td>
</tr>
<tr>
<td>Medical</td>
<td>21</td>
<td>2.3</td>
</tr>
<tr>
<td>Computer Science and Information Technology</td>
<td>41</td>
<td>4.4</td>
</tr>
<tr>
<td>Dentistry</td>
<td>52</td>
<td>5.6</td>
</tr>
<tr>
<td>Science</td>
<td>93</td>
<td>10.1</td>
</tr>
<tr>
<td>Built Environment</td>
<td>40</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Appendix J

Distribution of Participants by Parents’ Educational Level and Type of Residential Setting
Table 11
Distribution of Participants by Parents’ Educational Level

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Father %</th>
<th>(n)</th>
<th>Mother %</th>
<th>(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Formal Education</td>
<td>1.00</td>
<td>(1)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Primary Education</td>
<td>24.90</td>
<td>(232)</td>
<td>28.50</td>
<td>(265)</td>
</tr>
<tr>
<td>Lower Secondary (Form 1 to 3)</td>
<td>18.80</td>
<td>(174)</td>
<td>20.50</td>
<td>(190)</td>
</tr>
<tr>
<td>Upper Secondary (Form 4 to 6)</td>
<td>30.70</td>
<td>(284)</td>
<td>31.70</td>
<td>(293)</td>
</tr>
<tr>
<td>Diploma</td>
<td>7.50</td>
<td>(69)</td>
<td>6.70</td>
<td>(62 )</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>10.10</td>
<td>(93)</td>
<td>6.10</td>
<td>(56)</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>4.60</td>
<td>(43)</td>
<td>1.70</td>
<td>(16)</td>
</tr>
<tr>
<td>Technical Training</td>
<td>1.90</td>
<td>(18)</td>
<td>2.80</td>
<td>(27)</td>
</tr>
</tbody>
</table>

Table 12
Distribution of Participants by Type of Residential Setting

<table>
<thead>
<tr>
<th>Residential Setting</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Area</td>
<td>418</td>
<td>45.2</td>
</tr>
<tr>
<td>Rural Area (including small town)</td>
<td>505</td>
<td>54.6</td>
</tr>
</tbody>
</table>
Appendix K

Means and Standard Deviations of General Family Functioning by Gender, Ethnicity, and Academic Major
Table 13

Means and Standard Deviations of General Family Functioning by Gender, Ethnicity, and Academic Major

<table>
<thead>
<tr>
<th>Participants' Background</th>
<th></th>
<th>M</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>235</td>
<td>1.92</td>
<td>.41</td>
</tr>
<tr>
<td>Female</td>
<td>690</td>
<td>1.82</td>
<td>.38</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>597</td>
<td>1.81</td>
<td>.38</td>
</tr>
<tr>
<td>Chinese</td>
<td>288</td>
<td>1.93</td>
<td>.39</td>
</tr>
<tr>
<td>Indian</td>
<td>40</td>
<td>1.75</td>
<td>.47</td>
</tr>
<tr>
<td>Academic Major</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>304</td>
<td>1.92</td>
<td>.38</td>
</tr>
<tr>
<td>Art and Social Science</td>
<td>621</td>
<td>1.81</td>
<td>.39</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Appendix L

Means and Standard Deviations of Career Decision-Making Self-Efficacy by Gender, Ethnicity, and Academic Major
Table 14

Means and Standard Deviations of Career Decision-Making Self-Efficacy
by Gender, Ethnicity, and Academic Major

<table>
<thead>
<tr>
<th>Participants' Background</th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>235</td>
<td>88.60</td>
<td>13.72</td>
</tr>
<tr>
<td>Female</td>
<td>690</td>
<td>85.82</td>
<td>13.35</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>597</td>
<td>87.47</td>
<td>12.24</td>
</tr>
<tr>
<td>Chinese</td>
<td>288</td>
<td>84.03</td>
<td>13.06</td>
</tr>
<tr>
<td>Indian</td>
<td>40</td>
<td>90.40</td>
<td>16.94</td>
</tr>
<tr>
<td><strong>Academic Major</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>304</td>
<td>88.60</td>
<td>13.72</td>
</tr>
<tr>
<td>Art and Social Science</td>
<td>690</td>
<td>85.82</td>
<td>13.35</td>
</tr>
</tbody>
</table>
Appendix M

Interaction Plots to Display the Effects of Gender and Ethnicity on Career Decision-Making Self-Efficacy
Figure 1

Interaction Plot between Gender and Ethnicity on Career Decision-Making Self-Efficacy - The Effect of Gender
Figure 2

Interaction Plot between Gender and Ethnicity on Career Decision-Making Self-Efficacy – The Effect of Ethnicity
Appendix N

One-Way ANOVA between Two Academic Majors on Career Decision-Making Self-Efficacy
Table 15
One-Way ANOVA between Two Academic Majors on Career Decision-Making Self-Efficacy

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>577.73</td>
<td>1</td>
<td>577.73</td>
<td>3.18</td>
<td>.08</td>
</tr>
<tr>
<td>Within Groups</td>
<td>167632.80</td>
<td>923</td>
<td>181.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>168210.50</td>
<td>924</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix O

Interaction Plots to Display the Effects of Academic Major and Ethnicity on Career Decision-Making Self-Efficacy
Figure 3

Interaction Plots between Academic Major and Ethnicity on Career Decision-Making Self-Efficacy - The Effect of Academic Major
Figure 4

Interaction Plots between Academic Major and Ethnicity on Career Decision-Making
Self-Efficacy - The Effect of Ethnicity
BIBLIOGRAPHY


University of Malaya Academic and Record Section. (2006). *Statistics of undergraduate and graduate students at the University of Malaya for the Academic Year 2005/2006*. Kuala Lumpur, Malaysia.


Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.