# Financial Literacy of Hong Kong Chinese Adolescent: Testing the Validity of a Scale and

**Evaluating Two Conceptual Models** 

by

ZHU Yue Feng Alex

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## **Statement of Originality**

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#### **Thesis Examination Panel Approval**

Members of the Thesis Examination Panel approved the thesis of ZHU Yue Feng Alex defended on 09 NOV 2016.

Principal Supervisor Prof CHOU Kee Lee Chair Professor Department of Asian and Policy Studies

The Education University of Hong Kong

Associate Supervisor Dr CHEUNG Chi Kin Kelvin Assistant Professor Department of Asian and Policy Studies The Education University of Hong Kong

Associate Supervisor Prof MOK Ka Ho Joshua Chair Professor Department of Sociology & Social Policy Lingnan University Internal Examiner Prof XIAO Jing Jian Professor Department of Human Development and Family Studies University of Rhode Island

External Examiner Dr SERIDO Joyce Associate Professor Department of Family Social Science University of Minnesota

External Examiner Dr KIM Jinhee Associate Professor Department of Family Science University of Maryland



#### Abstract

Financial literacy is important because it can positively direct human financial behaviors and strengthen financial status. Measuring and improving the financial literacy of adolescents in Hong Kong is associated with special significance. Financial literacy plays the important role underlying intergenerational poverty, and can be transmitted between generations. However, financial literacy may not be the cause. Family poverty status may influence the financial literacy of next generations, and the financial literacy of next generation may further impact their poverty status when achieving adulthood. With a convenience sample of 789 Hong Kong students, current research validated the Financial Fitness for Life test among Hong Kong Chinese adolescents. With another convenience sample of 200 paired parents and students, current research adopted the FFFL test to measure the financial literacy of adolescents and adopted structural equation modeling to explore mechanisms explaining the impact of family income on the financial literacy of adolescents, namely the models of socialization and general poverty. International comparison demonstrates that the financial literacy of Hong Kong Chinese adolescents is worse, compared to that of the U.S., New Zealand and Japan. The results of the model of socialization show that parental financial behavior can explain the link between family income and the financial literacy of adolescents. The results of the model of general poverty show that the same link can be mediated by both parental stress and positive parenting behavior.

*Keywords:* financial literacy, family income, Hong Kong Chinese adolescents, parental financial socialization, general poverty



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# **Table of Contents**

Statement of Originality	i
Abstract	iii
Acknowledgments	iv
Table of Contents	v
List of Abbreviations	xi
List of Figures	xii
List of Tables	xiv
Introduction	1
Chapter 1: Defining and Measuring Financial Literacy	5
Chapter 2: The Vital Role of Financial Literacy	21
2.1 Financial Literacy at the Micro Level	21
2.1.1 Retirement savings and investment.	21
2.1.2 Spending and credit.	34
2.1.3 Others.	35



2.2 Financial Literacy at the Macro Level	36
2.3 The Significant Role of Financial Literacy in Adolescents	38
Chapter 3: The Financial Literacy of Youth Worldwide and in Hong Kong	42
3.1 Financial literacy of Youth Worldwide	42
3.2 Financial Literacy of Hong Kong Residents	44
3.3 The Test Adopted to Measure the Financial Literacy of Hong Kong Chinese	
Adolescents	48
Chapter 4: The Development of Financial Literacy: Parental Perspective	50
4.1 Parental Socialization	50
4.1.1 Theories.	50
4.1.2 Contributions of the previous model and the current study contribution.	52
4.2 General Poverty	60
4.2.1 Theories.	60
4.2.1.1 Link between family income and material hardship	60
4.2.1.2 Link between poverty status and youth developmental outcomes by the r	nodel
of parental stress.	62

4.2.1.3 Link between poverty status and youth cognitive developmental outcomes by

the model of parental investment.	65
4.2.2 Contributions of the previous model and current study.	66
Chapter 5: Validation Study for the FFFL Test	72
5.1 Literature	72
5.2 Sampling	74
5.2.1 Sampling method.	74
5.2.2 Procedures.	75
5.2.3 Sample.	75
5.3 Measurement	75
5.3.1 Financial literacy.	75
5.3.2 Financial attitude.	77
5.3.3 Financial self-efficacy.	77
5.3.4 Parental subjective norms.	77
5.3.5 Relation with parents in the financial management.	78
5.3.6 Other measurements.	78
5.4 Data Analysis	79
5.5 Results	79
5.5.1 Descriptive statistics.	79



5.5.2 Internal consistency and convergent and concurrent validity.	85
5.5.3 Sensitivity analysis.	85
Chapter 6: Main Study	88
6.1 Sampling	88
6.1.1 Sampling method.	88
6.1.2 Procedures.	88
6.1.3 Sample.	88
6.2 Measurement: Model of Parental Financial Socialization (from Adolescents) (Figur	e 3,
pp. 59)	89
6.2.1 Financial literacy.	89
6.2.2 Direct parental teaching.	89
6.2.3 Adoption of parental financial role modeling.	90
6.3 Measurement: Model of Parental Financial Socialization (from Parents)	90
6.3.1 Family income.	90
6.3.2 Parental financial behavior.	91
6.4 Measurement: Model of General Poverty (from Parents) (Figure 5, pp. 71)	91
6.4.1 Material hardship.	91
6.4.2 Parental stress.	92



6.4.3 Parental investment.	92
6.4.4 Positive parenting behavior.	93
6.5 Measurement: Others	93
6.6 Data Analysis	94
6.7 Results	94
6.7.1 Descriptive statistics.	94
6.7.2 Family income and financial literacy.	104
6.7.3 Model of parental financial socialization.	104
6.7.4 Model of general poverty.	112
Chapter 7: Discussion	120
7.1 Validation Study	120
7.2 Financial Literacy of Hong Kong Adolescents	122
7.3 Main Study	125
7.3.1 Model of socialization	125
7.3.2 Model of general poverty.	135
7.3.3 Conclusion of main study.	140
7.3.4 Post-hoc analysis	141
7.4 Limitation	145



7.4.1 Validation study	145
7.4.2 International comparison	146
7.4.3 Main study	147
Chapter 8: Policy Implications	152
References	159
Appendix I: Questionnaire for Adolescent Students (Validation Study)	198
Appendix II: Questionnaire for Adolescent Students (Main Study)	208
Appendix III: Questionnaire for Parents (Main Study)	218
Appendix IV Frequency Distribution of Response Items	224

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## **List of Abbreviations**

ANZ	Australia and New Zealand Banking Group Limited
DB	Defined Benefit
DC	Defined Contribution
EdUHK	The Education University of Hong Kong
FFFL	Financial Fitness For Life
HKD	Hong Kong Dollar(s)
HSBC	Hong Kong and Shanghai Banking Corporation Limited
MPF	Mandatory Provident Fund
NFI	Network Financial Institute
NLSFT	Non-means-tested Loan Scheme for Full-time Tertiary Students
OECD	Organization for Economic Co-operation and Development
PISA	The Program for International Student Assessment
SFC	Securities and Futures Commission
SD	Standard Deviation



## **List of Figures**

Figure 1. Previous findings of the model of socialization, adopted from the study of	
Jorgensen and Savla (2010).	57
Figure 2. Previous findings of the model of financial socialization, adopted from the study	' of
Shim et al. (2010).	58
Figure 3. Model of parental financial socialization, tested in the current study, constructed	
based on the previous finding of Allen et al. (2007), Clarke et al. (2005), Jorgensen an	nd
Savla (2010), and Shim et al. (2010).	59
Figure 4. Model of general poverty, adopted from the study of Gershoff et al. (2007).	70
Figure 5. Model of general poverty, tested in the current study, constructed based on the	
finding of Gershoff et al. (2007), Kim (2007) and Sonuga-Barke and Webley (1993).	71
Figure 6. SEM result of the model of parental financial socialization ( $N = 200$ ).	109
Figure 7. SEM result of the model of parental financial socialization (15-year-old adolesce	ents
only, N = 81).	111
Figure 8. SEM result of the model of general poverty ( $N = 200$ ).	117
Figure 9. SEM result of the model of general poverty (15-year-old adolescents only, $N = 8$	31).
	119

Figure 10. Change in direct parental teaching (by family income)131

Figure 11. Change in the adoption of parental financial role modeling (by family income) 131



Figure 12. Change in the adoption of parental financial role mode	eling (by parental financial
behavior)	134
Figure 13. Results of combined model	143
Figure 14. Direction for future studies	144



### List of Tables

Table 1. Compilation of Studies with the Measures of Financial Literacy	6
Table 2. Descriptive Statistics I	81
Table 3. Test of Validity	87
Table 4. Descriptive Statistics II	97
Table 5: Comparison of common variables	103
Table 6. Correlation of Constructs in the Model of Parental Financial Socialization (N	= 200)
	108
Table 7. Correlation of Constructs in the Model of Parental Financial Socialization	
(15-year-old adolescents only, $N = 81$ )	110
Table 8. Correlation of Constructs in the Model of General Poverty ( $N = 200$ )	116
Table 9. Correlation of Constructs in the Model of General Poverty (15-year-old Adole	escents
only, N = 81)	118
Table 10. International Comparison of FFFL Test Results	124



#### Introduction

Financial literacy has been recognized to direct human financial behaviors positively and strengthen financial status, as financially literate individuals normally perform better in financial planning and managing their financial resources, including savings and spending budgets, taking part in financial markets by creating mortgages, managing debts and investing in financial products and marketable securities, and making use of new financial tools, including mobile and cyber-banking, to reduce transaction costs (Brown & Graf, 2013; Hastings & Mitchell, 2011; Klapper, Lusardi, & Panos, 2013; Lusardi & Mitchell, 2014; Lusardi & Tufano, 2015). Financially literate individuals are more likely to amass wealth (Jappelli, & Padula, 2015; Mottola, 2013; Stango & Zinman, 2007; Yoong, 2011a).

Measuring and improving financial literacy in Hong Kong has special significance. Hong Kong's economic prosperity depends considerably on its continued success in maintaining its status as an international financial center (Bauhinia Foundation Research Center, 2012). Financially literate consumers are able to stabilize and facilitate market development by motivating markets to create more competitive and effective financial products (Braunstein & Welch, 2002; OECD, 2016). Besides, with the population aged 65 or above projected to reach 2.58 million by 2064, or 33.0% of the entire population, both individuals and society must rise to the challenge of meeting the financial needs of elderly people in the decades to come (Census and Statistics Department, 2015; Chou, Chow, & Chi,



2004). The role of financial literacy in directing the financial behaviors of working adults, including accumulating private retirement savings, engaging in investments, and managing debt to reduce the repayment burden after retirement may all have positive effects on establishing financial security in retirement, one of the greatest challenges faced by an aging society.

Moreover, since the 1990s, Hong Kong has evolved from an industrial colony into a service-driven economy, gaps in terms of income and wealth have grown substantially, and social mobility has become harder to achieve (Forrest, La Grange, & Yip, 2004). For youth, residing in low-income families means limited opportunities to attend well-funded schools and live in the advantaged neighborhood, which can be labeled as intergenerational poverty (Brooks-Gunn, Duncan, & Aber, 1997; Moore, 2005). Youth without sufficient education are likely to become unemployed or employed with low income, which can be labeled as lifecourse poverty (Moore, 2005). This is what happens in Hong Kong, as most lower-class residents are not able to escape from the low-income-poverty cycle trap (Lee, Wong, & Law, 2007). Low financial literacy might work underlying this vicious cycle because family income has been shown to be positively correlated with the financial literacy of youth (Mandell, 2008a; OECD, 2005a; OECD, 2013b), and their financial literacy is correlated with their incomes when achieving adulthood (Lusardi & Mitchell, 2007b; Miles, 2004).

In light of the important issues outlined above, the Hong Kong Investor Education



Center was established in 2012 as a subsidiary of the Securities and Future Commission (SFCHK) after public consultation with the government for the purpose of improving financial literacy and security in Hong Kong. A robust and effective measurement of financial literacy is an important detail to have before developing strategies to improve financial literacy. In Hong Kong, three surveys have been conducted to measure financial literacy, targeting both the general population and college students, but none have been validated. Moreover, 15 is considered the critical age to make key financial decisions and the best target for conducting financial education programs (Hastings, Madrian, & Skimmyhorn, 2013; Mandel & Klein, 2009), but there is no validated measurement of the financial literacy of Hong Kong Chinese adolescents around that age. Therefore, the first objective of the current study is to validate the Financial Fitness for Life (FFFL) test among adolescents around 15 years old in Hong Kong.

To modify the current or to develop novel strategies for improving local financial literacy, tracking its developmental process is a crucial step. Considering the fact that family income is the important factor in the development of adolescent financial literacy, the current study robustly examines the correlation between financial literacy and family income with locally collected data and specifically how family income influences the development of financial literacy. Considering that there are several mechanisms that may connect family income to adolescents' financial literacy, the second objective of the current study is to fit the locally collected data into two models and determine whether any differences can be explained by the model of socialization (Kim & Chatterjee, 2013; Kim, LaTaillade, & Kim, 2011; Shim, Barber, Card, Xiao, & Serido, 2010; Shim, Serido, Bosch, & Tang, 2013), or the model of general poverty (Gershoff, Aber, Raver, & Lennon, 2007). The current study is expected to enrich the literature on the development of financial literacy and to offer a validated tool for measuring the financial literacy of local adolescents.



#### **Chapter 1: Defining and Measuring Financial Literacy**

Conceptualizing financial literacy plays a key role in the overall design of the current study because how one defines financial literacy conceptually may directly determine its operational measurement. Marcolin and Abraham (2006) identified the importance of measurement, as the effective measurement of financial literacy is a prerequisite of modeling its development. A series of individual studies published in the last decade with at least one component that measures financial literacy as a construct appears in Table 1. All the reviewed studies were carried out in Organization for Economic Co-Operation and Development (OECD) countries, but they adopted different datasets. Table 1 reviews them from the perspective of which aspects were chosen to establish the construct of financial literacy, such as knowledge, ability, outcome, etc.; whether different terms were adopted to indicate the same construct; whether the construct was conceptually defined before measurement; the content domains measured like saving, spending, and investing; the number of items; the data collection methods; whether they used a rating system to identify financial literacy or illiteracy; the sample population; and the sample size.



		Construct			Structure	2		Others		
References	Aspect <sup>1</sup>	FK=FL <sup>2</sup>	Definition	Content <sup>3</sup>	Items <sup>4</sup>	<b>Collection</b> <sup>5</sup>	Rating	Population <sup>6</sup>	Sample size	
ANZ (2015)	1,3,4,5,6	No	Yes	1,2,3,4	26 items	1	No	G	3,400	
Almeberg and										
Save-Soderbergh	1	Yes	No	1,3,4	3 items	2	No	G	1,300	
(2011)										
Bucher-Koenen and	1	V.	NI-	124	2 :4	2	N.	C	1 117	
Ziegelmeyer (2011)	1	res	INO	1,3,4	5 items	3	INO	G	1,117	

## Compilation of Studies with the Measures of Financial Literacy



	Construct			Structure				Others	
References	Aspect <sup>1</sup>	FK=FL <sup>2</sup>	Definition	Content <sup>3</sup>	Items <sup>4</sup>	Collection <sup>5</sup>	Rating	Population <sup>6</sup>	Sample size
Fornero and Monticone	1	V	N	1.4	2.4	2.4	N	C	2.002
(2011)	1	Yes	No	1,4	3 items	3,4	NO	G	3,992
Van Rooij, Lusardi, and		••	N	1.2.4	16			G	1.500
Alessie (2011a)	1	Yes	No	1,3,4	items	4	No	G	1,508
Fonseca, Mullen, Zamarro,	_				23			-	
and Zissimopoulos (2012)	1	Yes	Yes	1,3,4	items	4	No	G	2,500



	Construct			Structure				Others	
References	Aspect <sup>1</sup>	FK=FL <sup>2</sup>	Definition	Content <sup>3</sup>	Items <sup>4</sup>	Collection <sup>5</sup>	Rating	Population <sup>6</sup>	Sample size
Gathergood (2012)	1	Yes	Yes	2	3 items	4	No	G	3,041
Gustman, Steinmeier,	1	Vac	No	2	NS	NIS	No	C	NG <sup>5</sup>
and Tabatabai (2012)	1	ies	110	3	IND	INS	110	0	115
Babiarz and Robb	1.2	Vac	No	1234	6 items	NS	No	G	25 765
(2014)	1,2	Yes	INO	1,2,3,4	o nems	IND	INO	G	23,763
Letkiewicz and Fox	1	Vac	No	124	2 itoma	NIC	No	C	5 802
(2014)	1	Yes	110	1,3,4	5 items	IND	INU	U	5,892



	Construct			Structure				Others		
References	Aspect <sup>1</sup>	FK=FL <sup>2</sup>	Definition	Content <sup>3</sup>	Items <sup>4</sup>	Collection <sup>5</sup>	Rating	Population <sup>6</sup>	Sample size	
Karunarathne and Gibson	1	Vec	Na	4	Citama	1	No	C	<b>5</b> 00	
(2014)	1	Yes	INO	4	0 items	1	NO	G	300	
Xiao, Ahn, Serido, and Shim	1	Vac	Na	4	0::	4	Na	College	1 100	
(2014)	1	res	INO	4	o nems	4	INU	Students	1,100	
Calcagno and Monticone	1	Vac	No	124	9 itama	NIC	No	C	1 696	
(2015)	1	ies	INO	1,3,4	8 items	INS	NO	G	1,080	
Jappelli and Padula (2013)	1	Yes	No	3	4 items	NS	No	Elderly	18,741	



		Construct	ţ		Structur	re	Others						
References	A			G	Itomo <sup>4</sup>	C. II. <i>d</i> . 5	Rating	Domula tion 6	Sample				
	Aspect	FK=FL	Definition	Content	Items	Conection		Population	size				
NFI (2007)	2,4,5,6	No	Yes	1,2,3,4	NS	4	No	G	805				
Servon and Kaestner (2008)	1.5	N	N.	1.2.2	13	2	N	Low income	2.12				
	1,5	No	Yes	1,2,3	items	2	No	No	NO	NO	NO	adults	243
Robb and James (2007)	1	N/	N	1.2.2		4	ŊŢ	College					
	1	Yes	No	1,2,3	6 items	4	No	students	3,525				
Lusardi and Mitchell (2008)	1	Yes	No	1,3,4	3 items	2	No	Female adults	785				



	Construct				Structure	<u>)</u>		Others		
References	Aspect <sup>1</sup>	FK=FL <sup>2</sup>	Definition	Content <sup>3</sup>	Items <sup>4</sup>	Collection <sup>5</sup>	Rating	Population <sup>6</sup>	Sample size	
Müller and Weber	1	V	NI-	2	0.1	4	NI-	Mutual fund	2.096	
(2010)	I	Yes	NO	3	8 items	4	INO	customers	3,086	
Lusardi and Tufano	1.2	Vac	Vac	2	2 itama	2	No	C	1.000	
(2009)	1,2	ies	res	2	5 items	2	INO	G	1,000	
Mandell (2008a)	1	V	Ver	1024	21 :	2	NI-	High school	5 775	
1	res	ies	1,2,3,4	31 items	3	100	students	5,775		



	Construct				Structure	9		Others	
References	Aspect <sup>1</sup>	FK=FL <sup>2</sup>	Definition	Content <sup>3</sup>	Items <sup>4</sup>	Collection <sup>5</sup>	Rating	Population <sup>6</sup>	Sample size
Lusardi, Mitchell and	1	V	NT-	124	2	1	N.	Youth (23-28	7 417
Curto (2010)	1	Yes	INO	1,3,4	3	Ι	INO	years old)	/,41/
OECD (2014a)	1,4	No	Yes	1,2,3,4	20	3	Yes	Adolescents	29,000
Cameron, Calderwood,									
Cox, Lim, and Yamaoka	1	Yes	No	1,2,3,4	50	3	Yes	Adolescents	335
(2013a)								(15-year-old)	



(Continued)

	Construct				Structure	e		Others		
References	Aspect <sup>1</sup>	FK=FL <sup>2</sup>	Definition	Content <sup>3</sup>	Items <sup>4</sup>	Collection <sup>5</sup>	Rating	Population <sup>6</sup>	Sample size	
SFC (2013)	1	Yes	No	2,3,4	6	3	No	G	2,062	
Yu, Wu, Chan, and	1	Vac	No	124	2	2	No	G	066	
Chou (2015)	1	ies	INO	1,3,4	3	Z	INO	U	900	

*Note*. <sup>1</sup>Categories of construct: 1, Objective financial knowledge; 2, Subjective financial knowledge; 3, Financial attitudes; 4, Financial efficacy;

5, Financial behavior; 6, Financial awareness. <sup>2</sup>FL: Financial literacy; FK: Financial knowledge. <sup>3</sup>Categories of content: 1, Money basics; 2,

Borrowing; 3, Investing; 4, Protecting resources.<sup>4</sup>NS means Not Specified. <sup>5</sup>Categories of data collection methods: 1, Face to face interviewed; 2,

Phone call interviewed; 3, Paper based self-administered survey; 4, Internet survey; NS means Not Specified. <sup>6</sup>G: General population.



The financial literacy construct in a majority (76.9%) of the studies reviewed contains only objective knowledge elements; all these studies use the terms "financial literacy" and "financial knowledge" interchangeably. In the remaining 23.1% of studies, financial literacy constructs are extended to include one or more of the following elements beyond objective financial knowledge: subjective financial knowledge and financial attitude, efficacy, behavior, and awareness. All these elements of construct, if measured, should be clearly stated in the conceptual definition (Hung, Parker, & Yoong, 2009; Huston, 2010), and this principle is followed well in the 30.8% of the studies reviewed that offer a clear definition of financial literacy. In these studies, the elements of financial literacy are exactly the same as the elements reflected in the conceptual definition of financial literacy. However, in the majority of studies reviewed (69.2%), financial literacy has not been conceptually defined. Therefore, additional clear definitions of financial literacy are reviewed to assess how financial literacy has been differently defined to reflect diverse elements.

Kim (2001) and Bowen (2002) define financial literacy only as the understanding of basic objective financial knowledge and concepts that people need to survive in a modern society. Courchane and Zorn (2005) clearly indicate that the definition of financial literacy should be a combination of both subjective and objective financial knowledge. As an extension, financial literacy is defined as the performance of acquiring, understanding, and making confident use of financial concepts (Huston, 2010; Servon & Kaestner 2008). On this basis, more studies claim that a financial literacy definition should also contain financial outcomes, so that high levels of financial literacy should include not only the effective management of financial resources, but also achieving life-long financial wellbeing (Bannister, Heckman, & Sharky, 2015; Department of Treasury, 2007). More inclusively, the definition given by Hung et al. (2009) adds elements that include specific financial knowledge, the ability to apply that knowledge, subjectively perceived financial knowledge, good financial behavior, and financial satisfaction (financial wellbeing).

After reviewing a number of papers published since the beginning of the 21<sup>st</sup> century, Remund (2010) summarized financial literacy as including five elements: financial concepts, the ability to communicate about financial concepts, an aptitude in managing personal finances, skills in making appropriate financial decisions, and confidence in planning effectively for future financial needs, within which the ability to apply financial literacy in managing personal finances can be broken down into the short-term capability of making a sound financial decisions and a long-term sense and faith in financial management. Atkinson and Messy (2012) broadly categorized the elements of financial literacy as follows: (a) awareness; (b) knowledge and skills; (c) the attitude and behavior needed to make sound financial decisions. It is notable that some of the conceptual definitions generated above include the financial outcomes as an element of financial literacy, while all the empirical studies reviewed in Table 1 exclude the financial outcomes, most likely because the purpose of most of those studies was to explore the association between financial knowledge and outcome-related constructs like wealth, savings, debt level, etc., and thus excluded the overall financial outcome as an aspect of their constructs.

The content domains measured in the empirical studies listed in Table 1 can be categorized as the basics of money (time value of money, inflation, etc.) (69.2%), borrowing (credit cards, debt management, etc.) (42.3%), investing (saving, participation in financial markets for investment, etc.) (80.8%), and protecting resources (risk management, insurance, etc.) (80.8%). The percentages of studies measuring money basics, investing, and protecting resources as content domains of financial literacy are obviously much higher than those dealing with borrowing. The number of items adopted for measurement falls between three and 50, while the percentage of studies collecting data through Internet surveys was highest at 38.1%, followed by telephone interviews (23.8%), paper-based surveys (28.6%), and face-to-face interviews (14.3%); the total is over 100% because some surveys used more than one approach. Over 90% of all studies reviewed did not have a rating system to indicate a numerical cutoff that defines financial literacy; all of them rely more on between- or within-group comparisons to differentiate the relatively financially literate from the financially illiterate. Unlike those approaches, the FFFL test adopted by Cameron et al. (2013a) sets a 60% percentage of correct answers as the benchmark of literacy, based on the 60% benchmark also applied in the Jump\$tart program (Mandell, 2008b). The Program for

International Student Assessment (PISA) test of financial literacy adopted by the OECD (2014a) differentiated students into five levels and set scores ranging between 400 and 475 as the baseline of understanding and applying basic financial knowledge. Of all the empirical studies reviewed and listed in Table 1, 61.5% target the general population instead of being focused on specific groups.

In the modernized financial market offering standardized financial products and service, individuals have to be equipped with standardized knowledge to make a choice regardless of their own particular characteristics (Huston, 2010), which requires the adoption of a standardized approach of measuring financial literacy. The studies summarized above fail to provide such a standardized definition and measurement approach. In terms of construct clarification, 23.1% of studies' elements included not only objective knowledge, but also at least one from subjective knowledge, awareness, attitude, efficacy and behavior. This multi-elemental construct of financial literacy is problematic because these elements in the actual measurement might be mutually contradictive. Individuals with high financial literacy might be associated with unhealthy financial behavior and a negative financial attitude because behavioral biases, self-control problems, and family, peer, economic, community, and institutional factors might also influence the development of financial behavior and financial attitude (Huston, 2010). Besides, recent literature also supported differentiating financial literacy from financial behavior. Specifically, financial capacity was used to refer to financial literacy, and financial capacity was indicated to have different components including financial literacy, subjective financial literacy, desirable financial behavior and perceived financial capacity (Xiao & O'Neill, 2016). Adopting another perspective, the current study targets 15-year-old adolescents with few financial resources to manage, so financial efficacy, attitude, behavior, and other elements closely related with actually managing personal finances should also be dropped from elements of financial literacy. Thus, the current study limits the financial literacy construct to the element of financial knowledge.

Another barrier demonstrated in the reviewed studies is the unclear interpretation of knowledge elements, resulting in the inconsistent criterion of measuring financial knowledge. Some studies focus financial knowledge on financial concepts only (Letkiewicz & Fox, 2014; Lusardi et al, 2010, Yu et al., 2015), and others are also concerned with whether individuals are able to communicate and interpret financial concepts and whether they can apply these concepts in a new context (Cameron et al., 2013a; OECD, 2013b, 2016). When measuring literacy, the Educational Testing Service of the U.S. emphasizes that the measure should capture how one is able to understand and use information. Therefore, the current study elaborates upon financial knowledge as understanding financial concepts and applying these financial concepts in a new context.

In terms of measurement, most of the studies reviewed do not have a rating system to differentiate between the financially literate and financially illiterate. Although Cameron et al.

(2013a) and OECD (2014a) established rating systems to label individuals with different financial literacy scores, Cameron et al. (2013a) failed to provide specific evidence to argue how the critical correct percentages is confirmed and how it can be used as the threshold to identify financially literate and financial illiterate individuals. Comparatively, OECD (2014a) elaborated upon the statistical evidence of their rating system. The degree of financial literacy the item represents can be identified after calibrating the difficulty of each item. Then, the system is able to define the level of students' financial literacy based on their proficiency on the same scale (OECD, 2014a).

Moreover, in terms of content domains, Kim and Mueller (1978) indicated each content domain measured should be associated with at least three to five items to establish factorial validity. In a number of studies reviewed, including those of Lusardi and Mitchell (2008), Lusardi et al. (2010), Barbiaz and Robb (2014), and SFC (2013), the number of items adopted was obviously insufficient, considering the number of content domains they claimed to measure. Furthermore, among all the studies reviewed, only 23.1% comprehensively and completely covered four content domains of money basics, investing, borrowing, and protecting resources, which were all content domains measured in the studies reviewed.

In general, the current study focuses on measuring the financial literacy of adolescents as understanding financial knowledge covering four content domains and the performance of applying this knowledge in the simulated contexts. Based on this criterion of measurement, the financial literacy of adolescents in the current study is conceptually defined as the knowledge and understanding of financial concepts and the performance of applying such knowledge and concepts in the simulated contexts as a preparation for participating in economic life in the near future. An appropriate measurement tool is selected and described after further review in Chapter 3 of recent studies that evaluate the financial literacy of adolescents worldwide and in Hong Kong.


### **Chapter 2: The Vital Role of Financial Literacy**

### 2.1 Financial Literacy at the Micro Level

The literature demonstrates that financial literacy plays a key role in personal financial capacity development. It is able to positively direct financial behaviors, including planning and executing savings, investing, and debt and credit management (Banks, O'Dea, & Oldfield, 2010; Hastings & Mitchell, 2011; Lusardi & Mitchell, 2007a; Lusardi & Tufano, 2009; Van Rooij, Lusardi, & Alessie, 2011b). In particular, individuals with higher levels of financial literacy normally have higher tendencies to engage in retirement planning (Lusardi & Mitchell, 2011a; Van Rooij, Lusardi, & Alessie, 2012), save for emergency needs (Babiarz & Robb, 2014; Robb & Woodyard, 2011), be wise and responsible in creating and managing mortgages (Duca & Kumar, 2014; Gerardi, Goette, & Meier, 2010; Lusardi & Tufano, 2009), use credit cards for transactions (Robb, 2011; Robb & Woodyard, 2011; Xiao, Ahn et al., 2014), be likely to use securities as tools of maintaining value or a means of investment (Christelis, Jappelli, & Padula, 2010; Van Rooij et al., 2011b; Yoong, 2011b), select efficient mutual funds (Hastings & Tejeda-Ashton, 2008), and ultimately accumulate more wealth and manage it effectively to respond to financial and economic risks (Bucher-Koenen & Ziegelmeyer, 2014; Stango & Zinman, 2007; Van Rooij et al., 2012).

**2.1.1 Retirement savings and investment.** The standard economic framework indicates that people make economic decisions based on a lifelong course in which the



proportions of earning, spending, and saving in different life stages should be well adjusted to balance overall income and expenditure throughout life and achieve consistent utility (Browning & Crossley, 2001). The steps to create retirement savings are calculating future needs (simple planning), developing saving plans (serious planning), executing saving plans (successful planning), and ultimately accumulating adequate wealth to achieve retirement income security (Lusardi, 2008; Lusardi & Mitchell, 2011a; Lusardi & Mitchell, 2011b; Lusardi & Mitchell, 2007a; Mayer, Zick, & Marsden, 2011). The literature demonstrates that high financial literacy may positively and directly influence each of these four retirement saving planning procedures (Alessie, Van Rooij, & Lusardi, 2011; Fernandes, Lynch & Netemeyer, 2014; Huston, 2010; Lusardi and Mitchell, 2011a; Lusardi & Mitchell, 2011b).

With panel data collected before the financial crisis in 2005 and after it in 2010 from 1,665 adults aged 25 or older in the Netherlands, Alessie et al. (2011) found that when Dutch pension funds suffered from solvency problems, citizens with higher levels of financial knowledge expected lower replacement rates after retirement and estimated a more likely need to boost personal retirement planning. On the basis of cross-sectional data collected from the 2004 Health and Retirement survey, Lusardi and Mitchell (2011a) also verified that people who calculate their retirement needs have a higher tendency to have basic inflation, compound interest, and risk diversification knowledge than non-planners. In the conceptual framework proposed by Huston (2010) describing the interrelations among financial literacy.



knowledge, education, behavior, and wellbeing, financial literacy is also directly linked to personal finance behaviors, including calculating retirement needs. This positive effect was also identified by Fernandes et al. (2014). With cross-sectional data collected from a nationally representative sample of 506 English-speaking adults aged 21–65 in the U.S., calculating retirement needs was regressed on financial literacy when controlling for demographic information, psychological factors, and generalized self-efficacy (Chen, Gully, & Eden, 2001), delayed gratification (Hoerger, Quirk, & Weed, 2011), and restraint and impulsivity (Maloney, Grawitch, & Barber 2012). They found that financial literacy was still positively associated with calculating retirement needs after controlling for all these variables.

After retirement needs are calculated and a savings plan is developed, the key to successful retirement planning is whether the developed retirement savings plan can be executed. Campbell (2006) reported that financial literacy in terms of understanding complex financial instruments and financial products promotes the execution of savings plans, while for financially deprived families with low financial literacy, any savings plans developed could scarcely be executed well.

Financial literacy has been also proven to shape retirement savings outcomes directly. Using the 2009 wave of nationally representative microeconomic data of Chileans including slightly over 14,000 respondents, Hastings and Mitchell (2011) found that test scores in financial literacy with the content domains of simple numeracy and numeracy in the investment context (compound interest, inflation, and risk diversification) were still positively correlated with the amount of retirement savings accumulated after controlling for a series of demographic and economic factors. With the 2006 wave of the same survey of just over 13,000 prime-age (men aged 24-65 and women aged 24-60) respondents, Behrman, Mitchell, Soo, and Bravo (2012) adopted the instrumental variables approach to find that the instrumental variable of financial literacy had a stronger effect on wealth accumulation and that financial literacy has been proven to be positively correlated with wealth outcome, controlling for age-related factors (public policies and the macroeconomic situation), family backgrounds, and personal traits. With two samples (4,580 people aged between 51 and 56 interviewed in 1992 and 2,653 respondents of similar ages but interviewed in 2004) drawn from the U.S. Health and Retirement Study, Lusardi and Mitchell (2007a) linked financial literacy to accumulated wealth by showing that financial literacy was strongly correlated with financial planning and that financial planning was still strongly correlated with accumulated wealth after controlling for demographic, social, and economic factors. On the whole, the literature above demonstrates that financial literacy has significant effects on each sector of retirement financial planning: calculating retirement financial needs, developing retirement saving plans, adhering to and executing saving plans, and accumulating adequate retirement savings.



After accumulating retirement savings, effective investment is recognized as being able to maintain or increase the value of accumulated wealth. Financial literacy has been linked to wise investment decision-making in a number of studies (Cartwright, 2004; Fox, Bartholomae, & Lee 2005; Hastings & Tejeda-Ashton, 2008; Hastings & Mitchell, 2011; Howells, 2005; Lusardi & Mitchell, 2011b; Müller & Weber, 2010). Using data collected from 763 subjects in a survey with an embedded experiment in Mexico's privatized social security system, Hastings and Tejeda-Ashton (2008) found that financial literacy was able to reduce the information cost of investment, induce investors to choose funds with low management costs, increase the demand for fund elasticity, reduce market equilibrium management charges to competitive levels, and expand overall gains for investors. Specifically, the empirical findings of Hastings and Tejeda-Ashton (2008) demonstrated that when presenting fees in pesos (Mexico's official currency) instead of the rate of the total investment amount to make management fees more transparent, the demand elasticity of investment funds increased by 25% to 55%, as for financially illiterate investors, fees presented in pesos compared to the rate of the total investment amount are more straightforward and easier to adopt as a reference when changing fund choices. Hastings and Tejeda-Ashton's (2008) findings also indicate that if all investors in a sample are financially literate, the demand elasticity of investment funds will increase by 74% to 134%, establishing a link between financial literacy and understanding management costs. Additionally,



compared to financially literate investors, the financially illiterate preferred to choose funds based on easy-to determine characteristics, such as the fund name rather than past returns and management fee information, thus reducing the demand elasticity of investment funds with different management fees and returns (Hastings & Tejeda-Ashton, 2008). Consequently, market competiveness decreases, as different investment funds are not motivated to compete for improved investment returns while lowering management fees, and the investment wellbeing of investors declines accordingly (Hastings & Tejeda-Ashton, 2008).

However, the behavior of participating in actively managed funds itself has been questioned as being ineffective due to the associated substantial management costs compared to passively managed funds with very low fees, such as index funds and exchange-traded funds (Khorana, Servaes, & Tufano, 2009). Müller and Weber (2010) further indicated that financial literacy had little effect on decreasing participation in actively managed funds and that financially literate investors tended to participate enthusiastically in actively managed funds and pay high management fees. A positive correlation has been detected between financial literacy and overconfidence, and it is overconfidence that promotes the participation rate of financially literate investors in actively managed funds, which results in their expansion and associated substantial costs (Müller & Weber, 2010). Thus, there might be an optimal level of financial literacy, and the financial literacy exceeding the optimal level might level to the expansion of actively managed funds and high management cost.



To avoid the costs associated with managing investment funds, some investors enter the stock market directly for their investment needs. The literature demonstrates that high financial literacy may motivate individuals to participate in the market and hold stock as a form of assets (Van Rooij et al., 2011b) and that stock market participation as a means of investment decision-making can lead to considerable wealth (Cocco, Gomes, & Maenhout, 2005). Using data from 1,373 respondents from a combination of the 2005 and 2006 Dutch Household Surveys, Van Rooij et al. (2011b) found that stock market participation is still positively associated with advanced financial literacy after controlling for demographic, economic, and other potential factors influencing stock market participation. Similarly, with merged data collected from a sample of older adults over multiple waves of the American Life Panel Monthly Surveys, Yoong (2011b) found that stock-related knowledge is able to increase the propensity for holding stock after controlling for other factors. However, advanced financial literacy in Van Rooij et al.'s (2011b) study and stock-related knowledge in Yoong's (2011b) study may themselves not be exogenous, as they are likely to be accumulated in the process of holding stocks and making transactions.

Furthermore, individuals who stay in the stock market are probably those with high financial literacy and satisfactory investment outcomes, resulting in sample selection bias. Van Rooij et al. (2011b) adopted economics education, defined as financial knowledge acquired before participating in the stock market, as the instrumental variable for advanced financial literacy, while Yoong (2011b) adopted the knowledge of bonds as the instrumental variable of stock-related knowledge to solve the endogeneity problems of these two key independent variables. The significant coefficients of instrumental variables estimated in both studies confirm the association between financial literacy and stock market participation (Van Rooij et al., 2011a; Yoong, 2011b). The findings of Hassan Al-Tamimi and Annod Bin Kalli (2009) further explain why financially literate individuals tend to participate in the market, as they prefer to obtain advice from financial professionals and publications, while financially illiterate individuals usually depend on information from families and friends, the former of whom usually favor active participation in the market (Hassan Al-Tamimi & Annod Bin Kalli, 2009).

To link stock market participation and wealth accumulation, the findings of Cocco et al. (2005) reveal that the loss of not participating in the market is great, as large as 1.5–2% of consumption in life cycle models, and that this phenomenon is strengthened in times of zero or negative interest rates in developed economies. This demonstrates that financial literacy may directly increase wealth accumulation through the mediation of participation in the stock market. The framework proposed by Lusardi and Mitchell (2014), after reviewing recent theoretical and empirical research in both the U.S. and worldwide, indicates that financially literate people can earn above-average expected returns on their investments, establishing a direct association between financial literacy and investment outcomes.

All the above literature demonstrates the important role of financial literacy in motivating the need for retirement financial planning, establishing and adhering to saving plans, increasing saving levels, and maintaining or increasing the value of savings accumulated through investments. Policy reforms for financing retirement are expected to strengthen this role for financial literacy. Defined benefit (DB) programs, previously the dominant method in pension programs, are being gradually modified and even replaced by defined contribution (DC) programs, particularly in the U.S. and the U.K.; DC plans now account for the majority of invested assets in private-sector occupational pension plans (Broadbent, Palumbo, & Woodman, 2006; Munnell & Soto, 2007). The shift from DB to DC plans is widely believed to be driven by the following factors. First, DB plans guarantee employees a lifelong annuity that begins at retirement age and is calculated as a multiple of years of service and earnings at retirement. Thus, an aging population will place enormous financial burdens on DB plans, the financial sustainability of which will come at the costs of future generations (Clark & Monk, 2008; Iams, Butrica, Smith, & Toder, 2009). Second is the increasing phenomenon of labor force mobility as a result of industrial and demographic transformation, as DC plans are portable and the value accumulated is easily transferred, compared to the possible loss of all funds associated with DB plans when changing jobs (Iams et al., 2009). Third is the increased regulatory burden on DB funds, as when more employees voluntarily join companies' DC plans, insufficient enrollment in DB plans makes



the management risk more obvious than ever before (Broadbent et al., 2006; Kruse, 1995). The dominance of DC plans inevitably forces employees to shoulder the responsibilities of risk management that had previously been shouldered by employers. It also transfers the burden of ensuring adequate retirement savings from employers to employees, both of which require employees to be equipped with financial strategies to make better investment decisions, which in turn demands high levels of financial literacy (Choi, Laibson, Madrian, & Metrick, 2002; Poterba, Rauh, Venti, & Wise, 2007).

Before 2000 in Hong Kong, when the DC-style Mandatory Provident Fund had not yet been enacted, only one third of the labor force, mainly public servants and professionals, were entitled to a formal DB plan and had ensured retirement benefits, while the remaining two thirds of the labor force generally resorted to family support to guarantee retirement income security, aided by social welfare and personal savings (Siu, 2002). However, there are a number of demographic and industrial changes weakening this retirement income financing pattern. As a result of Hong Kong's rapidly aging population and reliably low birth rate, the elderly dependency ratio—the number of persons aged 65 or over per 1,000 persons aged 15 to 64—is projected to increase from 211 in 2014 to 658 in 2064, which puts enormous pressure on the traditional pattern of elderly residents' receiving regular support from younger family members (Census and Statistics Department, 2015; OECD, 2014b). Additionally, with the change from a production-oriented to a service-orientated economy



and Hong Kong society itself being continuously modernized, fewer people are willing to or able to support retired family members financially (Lee & Law, 2004). The retirement income security of two thirds of the population without a DB plan is in peril, increasing the demand for Hong Kong's social security, which is financed entirely by taxation (Chan, 2003).

To manage the pressure of an aging population without upsetting the existing social, economic, and political stability of Hong Kong, the Mandatory Provident Fund (MPF) was launched in 2000 by the Hong Kong government as a major reform to establish retirement income security while keeping taxes low and limiting the role of government (Chan, 2003). The goal of the MPF is to promote the creation of a second pillar of retirement income protection, such as privately managed mandatory occupational or private contributory pension plans, as proposed by the World Bank in 2005 (Holzmann, Hinz, & Dorfman, 2008). Under the MPF Schemes Ordinance, an employee aged between 18 and 64 is not only entitled but also required to join an MPF scheme, while a self-employed citizen in the same age group is required to join (Chou, 2008). The employer and employee are each required to contribute 5% of the gross salary to an MPF account and the self-employed contribute 10% of their monthly income (Chou, 2008). Under the latest arrangement, employees and self-employed citizens do not have to make any contributions if their monthly income is below HKD 7,100, but the employer is still required to contribute 5% (MPF Authority, 2014). When monthly income is above HKD 30,000, both employer and employee are only required



to contribute HKD 1,500 each, or HKD 3,000 monthly (MPF Scheme Authority, 2014). The Mandatory Provident Fund Schemes Authority (MPFSA) was established to supervise MPF operations, under which the employer chooses from one of 38 MPF schemes and the employee chooses from 457 constituent funds (Commission on Poverty, 2015). The trustee of funds is responsible for appointing financial managers to create internal controls to ensure that management is complying with MPFSA regulations (Chan, 2003).

The level of financial literacy might have an impact on MPF returns, which are mediated by people's capacities to make wise investment decisions. By the end of 2015, about 2.55 million employees have joined MPF schemes, together with another 210,000 self-employed citizens. Since the implementation of MPF, the annualized rate of return has fluctuated from -25.9% to 30.1%, with an annualized rate of return of 3.4% (net of fees and charges) for 2015, exceeding the inflation rate of 1.8% in the same year, thus maintaining and increasing the monetary value (Commission on Poverty, 2015). The Commission on Poverty (2015) describes the MPF scheme as the core component of the retirement income protection system and believes its role will be further strengthened as more funds are accumulated in the coming decades, as the strong MPF scheme has been proven to be able to reduce the burden of the publicly funded social security scheme, sustain the affordability of the whole system, and maintain the free nature and low taxes of the of Hong Kong economy. The Commission on Poverty (2015) also insists on the need to refine the current MPF scheme by implementing



an Employee Choice Arrangement to strengthen employees' control over MPF investments, which would entail even higher requirements of financial literacy among local citizens.

As a complementary move to mandatory contributions, in recent years more and more Hong Kong citizens have undertaken voluntary savings and increased the value of their savings through investment. One prior study by our team found that slightly more than two thirds of local workers between ages 30 and 59 have prepared for retirement through savings (HSBC, 2006). Similarly, the statistics of the Thematic Household Survey on Retirement Planning and the Financial Situation in Old Age reveal that 50.9% of future retired citizens have made preparations for retirement through savings and investment, compared to 39.1% of currently retired people (Census and Statistics Department, 2012). Consistently, the results from a survey conducted among Hong Kong workers demonstrated that about 58% of sample workers have saved privately for retirement (Chou, Yu, et al., 2014). Moreover, after reviewing a number of previous survey results, Chou et al. (2015) indicated that voluntary saving is a preferred alternative to secure retirement income in the foreseeable future. Furthermore, MPF statistics demonstrate that general voluntary contributions related to employment to MPF accounts rose from 4.1 million in 2007 to 12.8 billion HKD in 2014, while special voluntary contributions, not related to employment, increased significantly from 0.56 to 5.07 billion HKD in the same period (Commission on Poverty, 2015). With the extended scale of accumulated savings, understanding financial products and markets is



crucial to make wise investment decisions and maintain and increase the value of accumulated savings against inflation and macroeconomic uncertainties, requiring local residents to be equipped with high financial literacy.

**2.1.2 Spending and credit.** The role of financial literacy in consumption and credit lies in how it is able to influence consumption levels to affect the level of debt. In an era when the banking industry is deregulated as a result of market innovation, credit is easier to obtain, which means that insufficient financial literacy may lead to overspending with credit cards, accepting a mortgage obligation over-optimistically, and finally falling into heavy debt (Beal & Delpachitra, 2003; Murray, 2000). Braunstein and Welch (2002) argued that credit scoring technology and the proliferation of non-bank providers in lending service prompted by market competition have largely reduced creditors' costs. Additionally, the seemingly legal predatory lending behavior of credit providers is likely to make financially illiterate customers who know little about the implications of loan terms fall into serious credit predicaments (Braunstein & Welch, 2002). In terms of the transformation of marketing patterns, Braunstein and Welch also claim that technological advances associated with marketing strategies targeting customers, questionable marketing and sales tactics, communication advances, and the innovative delivery of products (such as over the Internet) will likely make financially illiterate consumers shop excessively and become burdened with serious debts (Braunstein & Welch, 2002).



From the customers' perspective, there are other studies that empirically prove that financial literacy is negatively correlated with high credit costs, which is likely to result in over-indebtedness (Agarwal, Skiba, & Tobacman, 2009; Gathergood, 2012; Gross & Souleles, 2001; Lusardi & Tufano, 2009). By matching the measurement of financial literacy with the objective data of repayment performance in the U.S. subprime mortgage market, Gerardi et al. (2010) found that the foreclosure rate of contracts was almost two thirds lower for financially literate customers than for those with poor financial literacy. A number of other studies indicate that a lack of familiarity with mortgage terms as a result of low financial literacy leads to making the mistake of taking subprime mortgages when customers were qualified for taking ordinary mortgages at a lower cost, refinancing too slowly, and unwisely distributing repayment over the entire mortgage period (Campbell, 2006; Lax, Manti, Raca, & Zorn, 2004; Schwartz, 2006). Another mistake likely being made by financially illiterate borrowers is clearing the balance of mortgage too early (long before the deadline) while leaving the balance in the tax account to be not cleared (Amromin, Huang, & Sialm, 2007). In general, poor financial literacy might drive the overuse of credit, unwise choices in the mortgage process, high delinquency and default rates in mortgages, and finally make customers fall into serious predicaments caused by excessive debt.

**2.1.3 Others.** The finding of Fernandes et al. (2014) questions the role of financial literacy in positively directing financial behaviors. It shows that when controlling for more

variables (like confidence in financial information search, propensity to plan, willingness to take financial risks, and numeracy), effects of financial literacy on shaping financial behaviors became much smaller, compared to the situation when these variables were not controlled (Fernandes et al., 2014). Similarly, when adopting instrumental variable to replace financial literacy to avoid the negative influence of omitted variables, the effect of financial literacy also decreases to a large extent (Fernandes et al., 2014). The meta-analysis produces the similar conclusion that effects of financial literacy diminish dramatically when one attempts to control for omitted variables bias (Fernandes et al., 2014). Additionally, Fernandes et al. (2014) found the effect of financial literacy improvement as a result of financial education on improving financial behaviors gradually diminishes over the years.

### 2.2 Financial Literacy at the Macro Level

At the macro level, a high level of financial literacy is claimed to help stabilize and facilitate the development of the financial industry, which has been globally acknowledged and was indicated in the G20's recent endorsement of the OECD/International Network on Financial Education High-Level Principles on National Strategies for Financial Education (OECD, 2016). Specifically, it has been argued that financially informed consumers are able to motivate the market to create more innovative and efficient financial products with characteristics that are able to meet their long-term and short-term demands, thus rendering the entire financial market more competitive and effective (Braunstein & Welch, 2002).



Similarly, one study indicates that competitive market outcomes can be achieved when individual customers have adequate financial literacy to make the proper comparisons between different attributes of products and the prices associated with these attributes (Hastings, Madrian, & Skimmyhorn, 2013). Conversely, empirical results show that financial illiteracy among many Mexican holders of private accounts in the Social Security System may lead to high administration fees in the system as a whole and make it less effective (Duarte & Hastings, 2012; Hastings, Hortaçsu, & Syverson, 2013). A number of other studies have examined the link between financial literacy and financial crises. For instance, it has been found that consumers with different levels of financial literacy distribute the consequences of a financial crisis because financially illiterate investors are more seriously exposed to market fluctuations while financially literate investors are able to diversify potential risks, reduce the negative consequence of a financial crisis, and help stabilize the market (Jappelli, 2010). In addition, Klapper et al. (2013) argued that responsible and prudent financial behavior driven by a high level of financial literacy is critical to ensure the effective allocation of financial resources and financial stability to reduce the probability of triggering a financial crisis in an emerging economy. With datasets collected in 2007, 2008, and 2009, another study revealed that different levels of financial literacy had indeed led to wealth redistribution at the social level; the financially illiterate experienced real loss and were unable to benefit from economic recovery, while the financially literate suffered only paper



losses (Bucher-Koenen & Ziegelmeyer, 2011). In general, high average levels of financial literacy may assist in the development of financial markets, increase market effectiveness and stability, reduce negative consequences after a financial crisis, and reduce wealth inequality.

### 2.3 The Significant Role of Financial Literacy in Adolescents

A number of studies have reported results that support the notion of a circle of poverty by which family poverty leads to low financial literacy among adolescents, and low financial literacy in adolescence results in low financial literacy in adulthood, which is associated with low financial wellbeing and family poverty in adulthood (Atkinson & Messy, 2012; Guiso & Jappelli, 2008; Lusardi et al., 2010; Mandell, 2008a). In other words, the insufficient financial literacy of adolescents living in economically deprived families is likely to make them fall into intergenerational poverty, negatively influencing social mobility (Atkinson & Messy, 2012; OECD, 2005a). In the context of Hong Kong, the Population Census showed that around 26.2% of the population aged 17 or younger were affiliated with households with income below the official poverty line defined as less than half of the median household income; this group of adolescents numbered 275,360 in 2011 (Chou, Cheung, Lau, & Sin, 2014). The large number of adolescents living in an economically deprived environment has caused public concern, especially in Hong Kong, one of the world's wealthiest cities.

Furthermore, new financial products in the fast-changing financial industry have been regularly released to meet and test market demands, which requires consumers to make important financial decisions, such as tuition loans, and shoulder more responsibilities at very early ages (15 to 24); previously, these financial decisions normally needed to be made only after achieving adulthood. The era of transformation we are experiencing has thus created higher demand for financial literacy among adolescents. For instance, a tendency toward massification (growth to accommodate a broader market), marketization, and privatization driven by the high rate of return in private institutions has been observed in the higher education sector since the 1990s, while the tuition fees at both private and public institutions paid by students has increased steadily or even rapidly in countries like the U.K., Canada, Australia, the U.S., and New Zealand (Ehrenberg, 2006; Greenaway & Haynes, 2003; Jongbloed, 2003). A similar tendency has taken place in East Asian countries like Taiwan, Hong Kong, Singapore, and mainland China, where tuition increases and market-related strategies have been adopted ostensibly to increase the effectiveness of higher education and to reduce the financial burden on states (Mok, 2003). Statistics in Hong Kong show that, at the end of 2004, 100% of students enrolled in associate, undergraduate, taught postgraduate, and research postgraduate programs in eight publicly funded higher education institutions were funded by the University Grants Committee (Census and Statistics Department, 2005). However, at the end of 2014, the proportion of self-financed students had increased to 83.3% for associate degree programs, 18.2% for undergraduate programs, 91.8% for taught postgraduate programs, and 6.7% for research postgraduate programs. The responsibility for



financing higher education has thus been transferred rather rapidly from the government to families. Anticipated continuing increases in the proportion of higher education spending as a share of family budgets require more families to plan for tuition fees through loans, with the notion that the loans will be paid by the students after graduation. When college graduates realize their tuition loan and credit debt burdens, their potential wealth accumulation capacity has been seriously hindered (Reed & Cochrane, 2012; Sallie Mae, 2009). In Hong Kong, the number of successful applicants receiving loans from the Non-means-tested Loan Scheme for Full-time Tertiary Students (NLSFT) has increased from 613 in 2008 to 10,344 in 2015, approximately 15-fold (Working Family and Student Finance Agency, 2015).

In addition to the important role of the financial literacy of adolescents in financial practice and avoiding the circle of poverty, it is associated with substantial significance in policy intervention. The OECD (2016) asserts that adolescence is the ideal stage to develop financial literacy, as the effectiveness of financial literacy education in that period is the highest, while the National Association of State Boards of Education (2006) has argued that the earlier adolescents are trained in financial knowledge, the more opportunities schools will have to influence their financial behaviors. Theodore Vail, President of AT&T and first Chairman of the Junior Achievement Bureau (1919, as quoted in Francomano, Lavitt, & Lavitt, 1988) argued for the importance of making adolescents realize the obligations and responsibilities associated with citizenship by equipping them with useful things in life, such

as teaching the next generation a sense of thrift and economy.

Realizing the great significance of financial literacy among adolescents and the potential benefit of school programs' producing future generations with a high level of financial knowledge, a number of countries have implemented financial education programs at the school level (Habschick, Seidl, & Evers, 2007). The OECD has also recommended that the activation point of financial education should be at school and developed relevant guidelines for schools in 2012 (OECD, 2013a). Twenty-one of 32 countries (including Hong Kong) have already executed financial education programs based on a recent survey (Lau, Lam, Law, & Poon, 2012; OECD, 2013a).

By the end of 2015, there were a total 661 financial education initiatives recorded in Hong Kong, about 20% of which target primary, secondary, and tertiary students (Investor Education Centre, 2015). The majority of recorded initiatives are focused on investment-related themes; by comparison, the number of initiatives covering day-to-day monetary management is strikingly low (Investor Education Centre, 2015). Being well-informed about the current level of financial literacy among local adolescents and the determinant mechanisms of financial literacy in Hong Kong is important to evaluate the adequacy and improve the effectiveness of local financial education programs.



# Chapter 3: The Financial Literacy of Youth Worldwide and in Hong Kong

## 3.1 Financial literacy of Youth Worldwide

A number of studies worldwide have adopted a variety of strategies to measure the financial literacy of adolescents. In 2001, the Americans for Consumer Education and Competition tested the financial literacy of high school students from 801 U.S. high schools with multiple-choice questions covering compound interest, the expected rates of return on basic savings products, and finance charges for credit cards, finding that on average the students answered only 35% of all questions correctly (Tarrance Group, 2001). For the same purpose of measuring the financial literacy of high school students, Mandell (2008a) adopted the 31-question Jump\$tart Financial Literacy Surveys to measure the financial literacy of U.S. adolescents in high schools; the results indicated that the overall financial literacy scores of U.S. high school students fell from 57% in 1998 to 51.9% in 2000 and again to 50.2% in 2002, recovering slightly to 52.3% in 2004 and 52.4% in 2006 before falling to 48.3% in 2008. However, the testing results indicated that a satisfactory level (60%) was not achieved for a single year. A number of other studies have also been carried out to measure the financial literacy of youth in college or with a college degree. A Harris Poll showed that only 8% of senior college students were very confident about their capacity in terms of investment and financial planning, with as many as one third of them describing their skills as "not very capable" or "not capable at all," a finding that is consistent with the findings of many other



studies that conclude that American youth are not knowledgeable enough to make wise financial decisions (Chen & Volpe, 1998; Mandell & Klein, 2007). Lusardi et al. (2010) surveyed 7,417 youth aged between 23 and 28, measuring their financial literacy by asking them three questions reflecting basic but fundamental financial knowledge about interest rates, inflation, and risk diversification, all of which are crucial to making wise financial decisions. The results revealed that financial literacy was low among U.S. youth, as the percentage who answered all three questions correctly was only 27%; the rates of correctly answering each of the three questions were 79%, 54%, and 47% respectively, so a large proportion of respondents did not know the answer to at least one of the three questions.

From an international comparison perspective, PISA evaluated the financial literacy of adolescents aged 15 in 18 OECD countries (Australia, Belgium (Flemish Community), Shanghai-China, Colombia, Croatia, Czech Republic, Estonia, France, Israel, Italy, Latvia, New Zealand, Poland, Russia, Slovak Republic, Slovenia, Spain, and the U.S.) with 20 evaluation items covering the content domains of planning and managing finances, risk and reward, and the general financial landscape (OECD, 2013b). The 20 items also cover the cognitive process of analyzing information in a financial context, evaluating financial issues, and applying financial knowledge and understanding, along with several non-cognitive factors like financial motivation and confidence, spending and saving behavior, and access to financial products at the individual, family, and societal levels (OECD, 2013b). The results

showed that in 13 OECD states or economies, one of seven students was unable to make even simple decisions about everyday spending, while only one in 10 could solve complex financial tasks. Therefore, an unsatisfactory level of financial literacy is clearly present among adolescents in these OECD countries (OECD, 2014c). Cameron et al. (2013a) adopted the FFFL to evaluate the financial literacy of 335 U.S. high school students around 15 years of age and compared the results with similar surveys in Japan and New Zealand. The results showed that students in all three countries performed poorly in financial literacy, but the overall performance of Japanese students was much better than those from the U.S. and New Zealand; the main advantage was in understanding financial terms and definitions, and there was a small advantage in comprehending and applying financial knowledge (Cameron et al., 2013a).

## **3.2 Financial Literacy of Hong Kong Residents**

Several studies have been designed and implemented to evaluate the financial literacy of Hong Kong adults and college students. To prepare for the decision of the Hong Kong Special Administrative Region Government to establish an Investment Education Center, the Secretary for Financial Services and Treasury (SFC) commissioned the Nielsen Company to design and implement a survey targeting Hong Kong adults aged 18–64 to evaluate their financial knowledge, financial attitude, and capacity for monetary management. A total of 2,062 adults gave quality responses, and 1,000 who held or had traded investment products



were interviewed at two additional stages. A series of questions in regard to financial understanding and knowledge, the capacity for personal financial control and making ends meet, the capacity to choose and manage financial products, and financial planning were adopted in the survey, with six items used to evaluate financial understanding and knowledge. All respondents were asked to describe the following statements as true or false:

- All investment products involve risks.
- Borrowing money to invest will not influence the risk of investing.
- Generally, the risk of investing increases when the expected rate of return from investment product increases.
- Diversification can help to reduce investment risks.
- When the investment period is longer, then the investment risk will definitely be lower.
- Investment products in the same category have the same level of risk.

The survey results indicated that Hong Kong adults do not have a good understanding of complex and advanced financial concepts: more than 30% of respondents incorrectly believed that the rate of return is the only factor to consider when purchasing equity-linked products; more than 40% of respondents incorrectly believed that the investment return is positively associated with the investment period; and more than 60% of interviewees held the erroneous opinion that investment products in the same category carry the same level of risk (Securities and Futures Commission, 2013). The study also indicated that those with low incomes and low levels of education generally performed worse in understanding financial matters, particularly in understanding the risks associated with more sophisticated financial products, and that they were more vulnerable in financial affairs as a result of poorer saving



habits, budgeting ability, and spending control (Securities and Futures Commission, 2013).

One research team at the Education University of Hong Kong (EdUHK) had the Public Opinion Program at the University of Hong Kong conduct a survey between August and September 2012 in which the financial literacy of Hong Kong adults aged 25–64 was measured by the three most popular items measurement of financial literacy developed by Lusardi and her colleagues: compound interest, inflation, and risk diversification (Almenberg & Save-Soderbergh, 2011; Bucher-Koenen & Lusardi, 2011; Fornero & Monticone, 2011; Lusardi & Mitchell, 2011c; Yu et al., 2015). The survey ultimately collected answers from 1,005 local residents with a wide distribution of different demographic, social, and economic attributes. The results showed that the average financial literacy was 1.95 for males and 1.70 for females out of a maximum score of 3 (Yu et al., 2015). On average, both men and women were thus unable to answer even two questions correctly (Yu et al., 2015).

For local Chinese youth, Lau et al. (2012) argued that their financial skills were low and did not match their level of education, which is consistent with the findings of another study that produced a subjective evaluation of the financial literacy of local college students. Chau, Chan, and Chan (2004) surveyed 802 Hong Kong college students aged 19 to 30 and asked them to subjectively evaluate their knowledge of financial management, the terms and conditions of any student loans they had taken out, and the credit cards they used on a scale from 0 (*Not at all knowledgeable*) and 7 (*Know a lot*). The results indicated that only 2.4%,



3.2%, and 6.0% of them felt that they knew a lot about financial management, the terms and conditions of student loans, and their credit cards in active use (Chau et al., 2004).

Beyond these studies, however, in Hong Kong there has been no study to date specifically designed to objectively measure the financial literacy of adolescents aged around 15—the critical age in the circle of poverty, the best age to receive financial education, and a common age in modern societies for adolescents to start shouldering financial decision-making responsibilities. This data gap should be filled, considering its importance as a reference to develop and improve local financial education projects for adolescents at middle schools. The OECD (2005b) has indicated that financial education should be introduced into the lives of adolescents as early as possible. Rapidly changing pension, social welfare, and healthcare financing in Hong Kong means that adolescents have to bear more responsibility for understanding these complex systems and making difficult financial planning decisions. The highly innovative financial society of Hong Kong, with its steady flow of new consumer-oriented products, has naturally involved more adolescents in financial affairs by providing them with access to online payment options, mobile payment options, and a variety of electronic shopping outlets. Being ill-informed about the financial literacy of adolescents might directly influence the effectiveness of any education projects developed, which in the long term could have a negative impact on the development of personal financial literacy, as the OECD (2014a, 2016) has reported that adolescents without adequate financial



knowledge in middle school appear to be less likely to consistently absorb and develop an understanding of the latest financial knowledge in their workplace; they are held back by the poor financial cognitive ability shaped in their early years. The current project should help fill this important data gap, robustly measure the financial literacy of adolescents aged around 15, and provide firsthand information for policymakers to use as a reference.

# 3.3 The Test Adopted to Measure the Financial Literacy of Hong Kong Chinese

## Adolescents

The objective measurements adopted in previous studies to measure local financial literacy have several limitations. First, the studies of both the Securities and Futures Commission (2013) and the research team of EdUHK did not fully cover the four content domains outlined in Chapter 1. The former covered only investment knowledge and protecting resources, with little discussion of the knowledge of money basics and borrowing, while in the latter borrowing knowledge was not included. Second, as mentioned, all items in both studies have not yet been validated in the local context.

The measurement tool to be adopted to evaluate the financial literacy of Hong Kong Chinese adolescents should not have these limitations, should be consistent with the conceptual definition (financial knowledge and applying financial knowledge in the simulated context only), should comprehensively reflect all four content domains reflected in the literature (monetary basics, investing, borrowing, and protecting resources), and should be appropriate for adolescents around 15 years of age to answer. The FFFL test and the financial literacy test in PISA satisfy all these criteria. The current study has opted for the FFFL test mainly because the working definition of financial literacy of PISA is inconsistent with the conceptual definition adopted in the current study (see p. 26). Other than including elements of financial knowledge and using financial knowledge in the simulated contexts, PISA includes other non-knowledge elements into the definition of financial literacy, like motivation, confidence and attitudes toward financial matters, access to information, education, money and financial products, as well as spending and saving behavior (OECD, 2013b, 2016). In addition, PISA items adopt a construct-related format (need to be answered in several words or sentences) and selected-related format simultaneously (OECD, 2013b, 2016). The answers of constructed-related questions need to be coded by expert judges trained and recognized by test, which is beyond the time and monetary budget scheduled for current project.

The selected FFFL test is made of 50 items, and can be categorized into 5 themes with each theme contains 10 items, including the economic way of thinking, earning income, saving, spending and using credit, and money management (Walstad & Rebeck, 2005). In addition, all 50 items can be re-categorized into 3 cognitive levels, including financial knowledge (14 items), comprehension of financial knowledge (25 items) and application of financial knowledge (11 items) (Walstad & Rebeck, 2005).

### **Chapter 4: The Development of Financial Literacy: Parental Perspective**

### 4.1 Parental Socialization

**4.1.1 Theories.** The development of financial literacy, which is one component of cognitive capacity, can be explained by the theory of cognitive development, in which the financial literacy of individuals is qualitatively changed between early childhood and adulthood according to the responses from interacting with the financial environment (Ginsburg & Opper, 1988). However, only understanding the development of financial literacy as the process of cognitive development is far from adequate (Gudmunson & Danes, 2011), as it is also heavily affected by the intervention of socialization agents (McLeod & O'Keefe, 1972) according to the theory of social learning (Moschis, 1987).

For adolescents, the family is the primary socialized agent for financial knowledge and the filter point of information from the outside financial world (Danes & Haberman, 2007; Danes, Huddleston-Casas, & Boyce, 1999). Clarke, Heaton, Israelsen, and Eggett (2005) claim that financial literacy is mainly developed inside (rather than outside) the home in later years, which is consistent with the notion that the role of parents is central for the next generation to gain financial knowledge (Danes & Haberman, 2007; Neul & Drabman, 2001). Moschis (1987) has identified three ways of learning in the family environment: active teaching and communication, unconscious observation and imitation, and positive or negative

### reinforcement from parents.



Research demonstrates that family income is an important factor in the process of parental financial socialization. Collecting data from 420 U.S. college students (from six states), Jorgensen and Savla (2010) found that family income is positively associated with parental influence (direct teaching and observing financial examples of parents) on youth financial literacy. This is because parents with higher income have more opportunities to interact with youth in different financial occasions, including business banks, insurance companies, and other financial organizations. A higher family income is also associated with more opportunities for youth to adopt parental financial role modeling, supported by the fact that families with a higher economic status are more likely to offer allowances to youth (Barnet-Verzat & Wolff, 2002), and that adolescents from families with higher incomes are more likely to develop savings (Furnham, 1999).

The literature has also demonstrated links between parental socialization and financial literacy outcomes. A number of studies provide support for the notion that direct parental teaching by planned instruction, reinforcement by reward or punishment, encouragement in practice and participation, and adopting parental role modeling by observing and imitating the financial roles performed by parents can make positive contributions to the youth financial learning experience (Alhabeeb, 1999; Bowen, 1996; Danes, 1994; Lachance & Choquette-Bernier, 2004).

With a sample of over 200 individuals from Brigham Young University, parental



involvement, including role modeling and direct teaching, was able to improve youth financial literacy substantially (Clarke et al., 2005). Bandura (1986a, 1986b) saw direct parental teaching and adopting parental role modeling (with the knowledge delivered by parents) as an integrated financial process in which youth learn what is taught by parents, are directed to practice (based on family values, beliefs, and knowledge), and model what they observe in their parents' financial socialization.

Parental participation in the stock market, parental planning, and accumulation of retirement savings have all been proven to increase—to a large extent—the probability of the next generation's ability to answer financial literacy questions on compound interest, inflation, and risk diversification correctly (Lusardi et al., 2010). Consistently, when parents have problems managing financial affairs, the next generation is more likely to be confused about money (Allen, Edwards, Hayhoe, & Leach, 2007).

### **4.1.2** Contributions of the previous model and the current study contribution.

Previous literature has documented the influence of family income on the development of financial literacy (Mandell, 2008a; OECD, 2013b). Family income has been proven to be an important factor in the process of parental financial socialization (Barnet-Verzat & Wolff, 2002; Jorgensen & Savla, 2010), and parental socialization has been positively linked to the development of youth financial literacy (Clarke et al., 2005; Lachance & Choquette-Bernier, 2004). However, very few studies have successfully explained the association between family



income and youth financial literacy through the mediation of parental socialization. To our knowledge, only two studies tried to associate the family income with the development of youth financial literacy through the effect of parental financial socialization, but both of them failed (Jorgensen & Savla, 2010; Shim et al., 2010).

Jorgensen and Savla (2010) reported the findings of their model of parental socialization with a convenience sample of U.S. undergraduate students from six states that are 18–29 years old (Figure 1, pp. 57). According to the model results, parental income had a moderate and significant influence on perceived parental influence ( $\beta = 0.17$ , p < 0.05), in which the measurement of parental influence covered both direct and indirect parental teaching by observing parental behaviors (Jorgensen & Savla, 2010). However, parental influence was shown to not be significantly associated with the development of financial literacy ( $\beta = -0.05$ , p > 0.05). The reason why it failed to explain the connection through parental influence is probably that the adopted samples are of college students. Compared to adolescents, the effect of parental socialization on the development of financial literacy among college students is probably gradually replaced by school and work place socialization (Bartholomae & Fox, 2002; Mortimer, 2003).

With a sample of fresh undergraduate students and guided by the theory of social learning (Moschis, 1987), Shim et al. (2010) proposed, tested, and confirmed a financial socialization model; their findings are reported in Figure 2 (pp. 58). The model supported

three direct links to adopt parental role modeling, including parental economic status, parental financial behavior, and direct parental teaching ( $\beta = 0.09$ , p < 0.01;  $\beta = 0.41$ , p < 0.01;  $\beta = 0.35$ , p < 0.01) (Shim et al., 2010). Moreover, direct parental teaching, school work experience, and school financial education can be directly linked to youth financial literacy ( $\beta = 0.43$ , p < 0.01;  $\beta = 0.13$ , p < 0.01;  $\beta = 0.26$ , p < 0.01) (Shim et al., 2010). However, the model results did not test the association between parental economic status and youth financial literacy, mediated by the adoption of parental financial role modeling, direct parental teaching, and parental financial behavior.

Both model results in the study of Jorgensen and Savla (2010) and Shim et al. (2010) did not successfully explain the connection between family income and financial literacy through the effect of parental socialization. The current study filled in this research gap by checking whether parental socialization was able to connect family income to financial literacy among adolescents. The model confirmed by Shim et al. (2010) incorporated three variables relating to parental socialization, including direct parental teaching, (observing) parental financial behavior, and the adoption of parental financial role modeling. Comparatively, parental socialization was only measured as one variable in the study of Jorgensen and Savla (2010)—namely, parental influence. The current study chose to develop a new model based on the model confirmed by Shim et al. (2010). The associated advantage with modeling direct parental teaching, (observing) parental financial behavior, and parental financial role



modeling adoption separately is to explore different pathways connecting family income to financial literacy in the process of parental socialization.

Five key elements were extracted from Shim et al.'s (2010) confirmed model related to the development of financial literacy in parental socialization, including family income, direct parental teaching, parental financial behavior, adopting parental modeling, and financial literacy. School working experience and school financial education were not incorporated when developing a new model because literature documented that parents played a central role in financial socialization at early ages of youth (Danes & Haberman, 2007; Neul & Drabman, 2001). All five variables were restructured into three-level hierarchical processes, including family income, parental socialization, and financial learning outcome. Parental socialization was modeled as direct parental teaching and parental financial behavior (for observing), and the financial learning outcome was modeled as adopting parental role modeling and financial literacy.

In the model developed by the current study (Figure 3, pp. 59), family income is linked to direct parental teaching (*a*), which is supported by the findings of Jorgensen and Savla (2010) that family income is positively associated with direct parental teaching. Based on the literature, family income is also linked to parental financial behavior (*b*), because parents with high incomes are more likely to conduct diversified financial behaviors on different occasions and create more opportunities to communicate with youth about financial affairs (Jorgensen & Savla, 2010). Based on the links confirmed in the study of Shim et al. (2010), direct parental teaching is linked to the adoption of parental financial role modeling (c) and financial literacy (d), and parental financial behavior is linked to the adoption of parental financial role modeling (e).

Considering the positive association between parental financial behavior and the development of youth financial literacy (Allen et al., 2007; Lusardi et al., 2010), parental financial behavior is also directly linked to financial literacy (f). Similarly, based on the findings in the study of Shim et al. (2010), direct links from family income to the adoption of parental financial role modeling (g) is included. Moreover, the current study considered testing a direct link between the adoption of parental financial role modeling and the financial literacy of adolescents (h), which is supported by the previous finding that the adoption of parental financial role modeling is positively associated with the development of youth financial literacy (Clarke et al., 2005). All links from a-h in Figure 3 (pp. 59) are research hypotheses.




*Figure 1*. Previous findings of the model of socialization, adopted from the study of Jorgensen and Savla (2010). *Note.* \*p < 0.05, \*\*p < 0.01.





*Figure 2.* Previous findings of the model of financial socialization, adopted from the study of Shim et al. (2010). *Note.* \*p < 0.05, \*\*p < 0.01.





Figure 3. Model of parental financial socialization, tested in the current study, constructed based on the previous finding of Allen et al. (2007),

Clarke et al. (2005), Jorgensen and Savla (2010), and Shim et al. (2010).



### **4.2 General Poverty**

**4.2.1 Theories.** Other than parental financial socialization, several other parental mediators link poverty to youth development, including parental stress (Cummings, Davies, & Campbell, 2002; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004), parental investment of money or time into children (Becker, 2009; Yeung, Linver, & Brooks-Gunn, 2002), and positive or negative parenting behaviors (Guo & Harris, 2000). The literature has consistently documents that parental stress and positive or negative parenting behaviors are associated with the social-emotional development of youth (Linver, Brooks-Gunn, & Kohen, 2002; Whipple & Webster-Stratton, 1991), and that parental investment into youth is associated with cognitive developmental outcomes (Kaushal, Magnuson, & Waldfogel, 2011; Mistry, Biesanz, Chien, Howes, & Benner, 2008).

**4.2.1.1 Link between family income and material hardship.** Material hardship and family income are usually separately modeled in poverty-related constructs (parental investment, parental stress, and positive parenting behavior) as mediators between family income and youth development outcomes because a number of studies indicate that material hardship and income are not synonymous (Bickel, Nord, Price, Hamilton, & Cook, 2000; Dunifon & Kowaleski-Jones, 2003). Material hardship focuses on the difficulty of accessing different sorts of resources; thus, previous studies have indicated that income and material hardship are not mutually interchangeable because material hardship does not necessarily



change monotonically with income.

Baulch and Masset (2003) reported that, although complete independence between monetary poverty and non-monetary poverty—poverty measured by nutritional and educational resources—can be easily disproven, the overlapping correlational proportion of the two kinds of poverty is, in fact, only moderate. Wratten (1995) claimed that, although income is an ideal indicator to judge whether residents are likely to obtain different kinds of resources to achieve socially accepted ways of living, it is hardly an indicator to reflect their actual capacity to access these resources. This is because there are a number of other variables that influence this capacity, including sickness, educational achievement, and information.

Ravallion (2003) reported that individual income, which is acknowledged worldwide as an indicator to measure poverty, is too narrow to reflect economic wellbeing, and that poverty measurements in terms of welfare should adopt poverty lines that vary in different social groups. It has been consistently found that 21% of American children living in families with incomes between 100% and 200% of the income poverty line suffer from the same level of material hardship as children in families with incomes below the income poverty line (Douglas-Hall, Chau, & Koball, 2008; Lu, Palmer, Song, Lennon, & Aber, 2004). Gershoff (2003) empirically discovered that material hardship—as measured by medical resources, food insecurity, residential instability, and a lack of other resources—will not significantly



decrease until income reaches twice the poverty level. In addition to the fact that material hardship and income are not perfectly interchangeable, there are other reasons driving the current study to model income and material hardship separately.

Previous studies have indicated that material hardship is likely a mediating factor linking income and development results. With a sample of 9,645 children aged 6–11 in the 2002 National Survey of American Families, Ashiabi and O'Neal (2007) tested a four-step structural equation model consisting of income poverty, material hardship, parenting factors, and child health status. They found that income poverty may directly affect children's health status and indirectly influence it through the mediating effects of material hardship, parental depressiveness, and other parental behaviors.

Another study, in which data from a sample of 21,260 representative American children were analyzed by structural equation modeling, confirmed this mediating effect between income-measured poverty, parental behaviors, and children's cognitive outcomes (Gershoff et al., 2007). Slack and Yoo (2005) used the data from the first and second waves of the Illinois Families Study (IFS) and found that food hardship made a unique contribution to behavioral changes in children, even after controlling for economic measures, which reinforced the case for modeling material hardship individually in the current study.

4.2.1.2 Link between poverty status and youth developmental outcomes by the modelof parental stress. As an extension of the original model of parental stress (Conger & Elder,



1994), Conger et al. (2002) constructed and tested the pathway links from income, material hardship, parents' depressive symptoms, and marital conflict to parenting behaviors. Further extensive links between parenting behaviors and youth external behavioral problems (& social emotional competencies) were confirmed by Mistry, Vandewater, Huston, and McLoyd (2002). Specifically, it is proven that low-income parents have financial strain and consistently worry about their families' financial obligations, which might negatively impact their interactions with the next generation (Elder, 1999; Mistry et al., 2004).

Consistently, it is shown that the sort of subjective stress associated with the objective distress and depression resulting from a low income has been proven to have a disruptive impact on parent-child adjustment (Cummings et al., 2002; Mistry et al., 2004). Depression makes parents more likely to be intrusive and hostile when interacting with children and less responsive to their demands and communications, which is not beneficial to their emotional wellbeing (Downey & Coyne, 1990).

A number of empirical studies include parenting behavior as a mediator in the extended parental stress model. In a U.S. study investigating 585 kindergarten-aged children (associated with 978 parents), the researchers found that parental stress mediated the link between socio-economic status and parental disciplinary behavior. The findings also indicated that parental perceptions, including hostile attributions, emotional upset, worrying about the children's future, available alternative disciplinary strategies, and available



preventive strategies, are all mediators between parental stress and the discipline of the next generation (Pinderhughes, Dodge, Bates, Pettit, & Zelli, 2000).

Another study of 123 families revealed that parental stress played a vital role in physically abusive families and that physically abusive patents most likely come from lower-income families, use more critical statements with children, demonstrate more depression, report more anxiety, and raise children with more behavioral problems than their non-abusive counterparts (Whipple & Webster-Stratton, 1991). Another study with a sample of 83 parents and their children, examining the association between parental stress, parenting behavior, and children's early social-emotional development, demonstrated that parenting stress can affect children's mental performance and that parental usage of imitative gestures and vocalization can affect children's emotional understanding (Guajardo, Snyder, & Petersen, 2009). With a sample of 493 Caucasian and African American children, Linver et al. (2002) examined whether maternal distress and parenting behavior were mediators of the association between income and children's emotional development, with the results showing that maternal distress and parenting practice mediate the effect of income on children's behavioral problems.

Additionally, research also supports direct links between poverty and youth emotional development outcomes through the effect of parenting behavior. After reviewing a number of studies, Guo and Harris (2000) reported that economic hardship (as a result of unemployment



and poverty) causes parents to have less time to actively supervise their children's behavior, feel less of a sense of responsibility, display more inconsistent disciplinary behavior, show less warmth and caring, and punish their children more frequently. At the next stage, these negative parenting behaviors were proven to be associated with the social-emotional competence of the next generation (Mistry et al., 2002).

*4.2.1.3 Link between poverty status and youth cognitive developmental outcomes by the model of parental investment.* The model of parental investment can explain the link between poverty status and youth cognitive developmental outcomes. This model claims that the effect of family income on youth development is mediated by a variety of investments. These include quality food and housing, effective school and supporting resources, quality medical care, positive community environment, and time spent with youth visiting libraries and playing simulation games (Becker, 2009; Brooks-Gunn, Duncan, & Maritato, 1997; Foster, 2002; Haveman & Wolfe, 1994; Mayer, 1997; Yeung et al., 2002).

With two nationally representative datasets, Kaushal et al. (2011) investigated U.S. families' investment in their children across income distributions and empirically confirmed the links from families' income and investment in children to children's learning achievement. In another study analyzing data from 1,459 low-income families, researchers found that parental supportiveness and literacy simulations (Mistry et al., 2008) mediated the effects of social and economic status on children's cognitive development. A study by Yeung et al. (2002) used data from the Panel Study of Income Dynamics and its 1997 Child Development Supplement, which includes 753 children; they found that the income effect on children's cognitive developmental outcome measured by Woodcock-Johnson Achievement Test scores was highly mediated by families' investment in robustly creating a simulating environment. Dahl and Lochner (2005) analyzed panel data from 4,500 children and their mothers participating in the National Longitudinal Survey of Youth (NLSY) and found that, with each US\$1,000 increase in family income, math and reading test scores improved by a 6% of standard deviation in the short run. They attributed the change partially to decisions regarding investments in children. Based on the Canadian National Longitudinal Survey of Children and Adolescents, Lefebvre and Merrigan (1998) argued that low resource input for children in poor families is a determinant of poor cognitive achievement of the next generation.

**4.2.2** Contributions of the previous model and current study. To closely connect these theories to poverty, Gershoff et al. (2007) developed, tested, and confirmed the model of general poverty. The model results are reported in Figure 4 (pp. 70). Gershoff et al. (2007) found that family income was able to determine material hardship ( $\beta = -0.58$ , at least p < 0.05). Poverty status, as gauged by those two measures separately, influenced parental investment ( $\beta = 0.51$ , at least p < 0.05;  $\beta = -0.23$ , at least p < 0.05), parental stress ( $\beta = 0.22$ , at least p < 0.05;  $\beta = 0.70$ , at least p < 0.05), and positive parenting behavior ( $\beta = 0.13$ , at



least p < 0.05;  $\beta = 0.18$ , at least p < 0.05) (Gershoff et al., 2007).

At the next stage, parental stress influenced parental investment and positive parenting behavior directly ( $\beta = 0.04$ , at least p < 0.05;  $\beta = -0.88$ , at least p < 0.05), although the former effect size was small (Gershoff et al., 2007). At the outcome level, parental investment had an effect on cognitive skills ( $\beta = 0.52$ , at least p < 0.05) but did not have an effect on social-emotional competence ( $\beta = -0.02$ , p > 0.05) (Gershoff et al., 2007). Positive parenting behavior had an effect on both cognitive skills and social-emotional competence ( $\beta = -0.06$ , at least p < 0.05;  $\beta = 0.43$ , at least p < 0.05), but the former effect size was small (Gershoff et al., 2007). Furthermore, in this process, both family income and material hardship had direct effects on cognitive skills ( $\beta = 0.05$ , at least p < 0.05;  $\beta = -0.08$ , at least p < 0.05) and social-emotional competence ( $\beta = 0.13$ , at least p < 0.05;  $\beta = -0.11$ , at least p < 0.05) (Gershoff et al., 2007).

Overall, the findings of Gershoff et al. (2007) are consistent with the literature, which suggests that cognitive skills is somewhat associated with parental investment, while social emotional competence is largely influenced by parental stress and its associated positive or negative parenting behaviors. Based on the model results of Gershoff et al. (2007), the current study constructed a new model connecting family income to financial literacy (Figure 5, pp. 71).

Compared with the model of parental financial socialization (Figure 3, pp. 59), the



model in Figure 5 (pp. 71) is another potential mechanism to explain the connection between family income and financial literacy. It aims to test whether the poverty-related mediators (parental investment, parental stress, and positive parenting behavior), which successfully explain the difference between poverty, and two youth development outcomes (cognitive capacity and social emotional competence) can explain the difference between poverty and the financial literacy of adolescents. It should be specially noticed that in both models constructed in the current study family income, rather than family assets, is set as the starting point because compared to family income, family assets are more sensitive and may result in more missing values, which may decrease the quality of modeling.

In the model shown in Figure 5 (pp. 71), based on the finding of Gershoff et al. (2007), family income is linked to material hardship (a), parental investment (b), parental stress (c), and positive parenting behavior (d). Similarly, according to the finding of Gershoff et al. (2007), material hardship is linked to parental investment (e), parental stress (f), and positive parenting behavior (g). The finding of Gershoff et al. (2007) also support constructing the links between parental stress and parental investment (h), and the link between parental stress and positive parenting behavior (i).

The link between parental investment and financial literacy (j), and the link between positive parenting behavior and financial literacy (k) are constructed because the literature documented that cognitive skills and social-emotional competence are the base and prerequisites for developing financial literacy (Sonuga-Barke & Webley, 1993). Therefore, the development of financial literacy should be similar to the development of cognitive skills and social-emotional competence. A direct link between parental stress and financial literacy (*l*) is constructed because Kim (2007) argued that parental stress is negatively associated with financial literacy. The direct link between family income and financial literacy (*m*), and the direct link between material hardship and financial literacy (*n*) are constructed because it is unclear whether these three poverty-related mediators (parental investment, parental stress and positive parenting behavior) are able to explain all differences between poverty and financial literacy. All links in Figure 5 (pp. 71) from *a*–*n* are the research hypotheses.





*Figure 4*. Model of general poverty, adopted from the study of Gershoff et al. (2007). *Note.* All paths are significant for at least p < 0.05 except for the dashed path, which was not significant.





*Figure 5*. Model of general poverty, tested in the current study, constructed based on the finding of Gershoff et al. (2007), Kim (2007) and Sonuga-Barke and Webley (1993).



#### **Chapter 5: Validation Study for the FFFL Test**

### 5.1 Literature

Current validation study examined the reliability and validity of FFFL test among local Chinese adolescents. There are different kinds of reliability. Internal consistency reliability refers to the overall consistency of a measure and (Research Methods Knowledge Base, 2006). Test-retest reliability assesses the degree to which test scores are consistent from one test administration to the next (Research Methods Knowledge Base, 2006). The current research examined the internal consistency reliability which assessed the consistency of results across items within FFFL test (Research Methods Knowledge Base, 2006). The validity of FFFL test, as a test validity, can be defined as the degree to which evidence and theory support the interpretations of test scores (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, Joint Committee on Standards for Educational, & Psychological Testing (U.S.), 1999). There are different types of validity. The content validity refers to the degree that the instrument covers the content that it is supposed to measure (Yaghmale, 2003). The construct validity refers to the extent to which a test measures a construct as defined by a theory (Cronbach & Meehl, 1955). It subsumes the convergent validity that the measure is associated with things it should be associated with and the discriminant validity that the measure is not associated with things it should not be associated with (Cronbach & Meehl, 1955). The criterion validity is the



extent to which a measure is related with an outcome (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, Joint Committee on Standards for Educational, & Psychological Testing (U.S.), 1999). It can be divided into the concurrent validity that is established by comparing between the measure in question and an outcome assessed at the same time and the predictive validity which is established by comparing the measure in question with an outcome assessed at a later time (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, Joint Committee on Standards for Educational, & Psychological Testing (U.S.), 1999). The current validation study examined the internal consistency reliability, construct validity and criterion validity by reference to statistics.

The three-item measurement of financial literacy (compound interest, inflation, and risk diversification) developed by Lusardi and her colleagues has been validated and adopted worldwide in research targeting youth (Mandell, 2008a; Yu et al., 2015). The construct validity of the FFFL test can be established by assessing the correlation between its results with the score of the three-item measurement of financial literacy.

The theory of planned behavior supports the positive association between financial literacy and financial attitude, as well as the association between financial literacy and financial self-efficacy (Ajzen, 1991). The theory was empirically examined by Shim et al.



(2010) with the data from 2,098 U.S. college freshmen, proving financial literacy had a positive effect on financial attitude and financial self-efficacy. Similarly, the positive correlation between financial knowledge and financial attitude was confirmed by Borden, Lee, Serido, and Collins, (2008) in a sample of 97 U.S. college students. Consistently, with the data collected from 781 college students from a large southwestern state university in the U.S., Shim, Xiao, Barber, and Lyons (2009) also demonstrated a relation between financial literacy and financial attitude, as well as a relation between financial literacy and financial self-efficacy. Shim et al. (2010) also identified a positive correlation between financial literacy of youth and parental subjective financial norms, as well as between financial literacy and relation with parents in the financial management. Therefore, the concurrent validity of the FFFL test among local Chinese adolescents can be established by assessing the correlation between their financial literacy and financial attitude, financial self-efficacy, parental subjective financial norms, and the adolescents' relation with parents in the financial management, respectively.

## **5.2 Sampling**

5.2.1 Sampling method. The validation study was approved by the Research EthicsCommittees of the EdUHK. The data were collected through convenience sampling.Altogether, 4 tutorial schools accepted the invitation and permitted our team to conductinterviews after school. The selection criterion is students who were studying in Form 2,



Form 3, and Form 4 in secondary schools.

**5.2.2 Procedures.** Participants were identified and recruited with the assistance of teachers in selected schools. The interviewers explained the research purpose and procedures and asked for consent from students and parents before participation began. Data were gathered through self-administered questionnaires after school with adolescent students (see the questionnaire in Appendix I). All fieldwork was conducted during the period from April to June of 2015.

**5.2.3 Sample.** A total of 789 adolescent students ultimately participated in the survey, with a mean age of 14.66 (SD = 1.1, range = 13–18). All students were from Form 2 (25.0%, n = 197), Form 3 (34.1%, n = 269), or Form 4 (40.9%, n = 323). The overall response rate is 60.5%.

## 5.3 Measurement

**5.3.1 Financial literacy.** The FFFL test is a standardized test to measure the achievement of students in courses that use the FFFL curriculum materials and in other courses that emphasize instruction in personal finance (Walstad & Rebeck, 2005). The test is a valuable tool for assessing what adolescents know about the basics of personal finance and related concepts in economics and business education (Walstad & Rebeck, 2005). The test contains 50 multiple-choice questions, each with only one correct answer; the questions and answers were translated into Chinese by professionals. The back translation was done, and a



comparison of a back-translation with the original text was conducted as a check on the accuracy of the original translation. A draft of the translation was piloted with a group of students who gave their opinions on the comprehensibility and clarity of the translated items. No changes have been made to the items. All correct answers were coded as 1, and all incorrect answers or unanswered questions were coded as 0.

The financial literacy of students was also objectively measured by the well-known three-item measurement of financial knowledge (Almeberg & Save-Soderbergh, 2011; Bucher-Koenen & Lusardi, 2011; Fornero & Monticone, 2011; Lusardi & Mitchell, 2011c; Yu et al., 2015). The final score ranged from 0 (lowest, with no correct answers) to 3 (highest, no incorrect answers). The wording of the questions is printed below, with all items have been translated into Chinese in the previous study conducted in Hong Kong (Yu et al., 2015):

- Suppose you had \$100 in a savings account and the interest rate was 2% per year.
  After five years, how much do you think you would have in the account if you left the money to grow: more than \$102, exactly \$102, or less than \$102? {Do not know; refuse to answer}
- Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, would you be able to buy more than, exactly the same as, or less than today with the money in this account? {Do not know; refuse to answer}



 Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund." {Do not know; refuse to answer}

**5.3.2 Financial attitude.** Financial attitude was measured by asking students to indicate on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) their agreement with six statements which have been adopted in the study of Shim et al., (2010) and Xiao et al. (2009). For example, "You should save regularly," "You should track monthly expenses," and "You should spend within your budget." All items were translated into Chinese. The scale of internal consistency (Cronbach's alpha) was 0.88. The financial attitude was calculated by summing up the scores of all 6 items.

**5.3.3 Financial self-efficacy.** Financial self-efficacy was measured by asking the students to report their degree of confidence in their financial management on a five-point scale from 1 (*not at all confident*) to 5 (*very confident*) with only the single item "How confident do you feel about your ability to manage your own finances?" The item was taken from a study by Xiao, Tang, Serido, and Shim (2011) and translated into Chinese.

**5.3.4 Parental subjective norms.** Parental subjective norm was measured by a scale that indicated parental expectations of adolescents' financial management, as perceived by students (Shim et al., 2010). The adolescent students were asked to indicate on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) their agreement with six statements. For



instance, "Parents think you should save regularly," "Parents think you should track monthly expenses," and "Parents think you should spend within your budget." All items were translated into Chinese. The scale of internal consistency (Cronbach's alpha) was 0.87. Parental subjective norm was calculated by summing the scores of all six items.

**5.3.5 Relation with parents in the financial management.** Adolescent students' relation with parents in the financial management was measured by asking them to indicate on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) the degree to which they agreed or disagreed with three items extracted from a study by Allen et al. (2007): "I argue a lot with my parents about money matters," "My relationship with my parents is not good because of money issues," and "My parents do not approve of my spending patterns in general." All items were reverse-coded and translated into Chinese. The scale of internal consistency (Cronbach's alpha) was 0.91. Students' relation with parents in the financial management was calculated by summing the scores of all three reverse-coded items.

**5.3.6 Other measurements.** The students were also invited to report their gender, form, age, housing type (public rental housing, housing with loan assistance, permanent private housing, or temporary housing), whether they were in a single-parent family, and the educational achievements of their fathers and mothers on a nine-point scale from 1 (*less than elementary school*) to 9 (*postgraduate degree*).



### **5.4 Data Analysis**

Considering the ratio of the number of observation to item is supported to be at least 20:1 when conducting factor analysis and this ratio in the sample of our study is only 15.8:1 (Osborne & Costello, 2009), therefore, the current validation study did not perform factor analysis. The internal consistency of the FFFL test was examined using Cronbach's alpha coefficient, and a Cronbach's alpha higher than 0.60 suggested acceptable consistency (Nunnally, Bernstein, & Berge, 1967). The construct and concurrent validity were examined by checking Pearson's correlation coefficients using SPSS 21.0. Similar data analysis was performed on students aged 15 years old for sensitivity analysis.

## 5.5 Results

**5.5.1 Descriptive statistics.** As displayed in Table 2, male students accounted for 44.6% (n = 352) of participants. Over half of the students resided in public rental housing (50.4%, n = 396), followed by those living in permanent private housing, housing with loan assistance, and temporary housing, which had values of 35.1% (n = 276), 13.6% (n = 107), and 0.9% (n = 7), respectively. Only a small proportion of students came from single-parent families (9%, n = 69). The vast majority of the students' parents had at least completed high school, with a total percentage of 46.1% (n = 364), followed by junior middle school (19.1%, n = 151), pre-college (8.0%, n = 63), and undergraduate (7.5%, n = 59). Overall, these

numbers suggest backgrounds of lower educational attainment for the students in the sample.



Table 2 shows that, on average, the percentage of students understanding compound interest well (53.1%, n = 419) was greater than those who understood inflation (34.3%, n =271) and risk diversification (42.3%, n = 334). The students who were able to give correct answers to one or two questions accounted for only 35.6% (n = 281) and 29.0% (n = 229), respectively, while the percentage of students who answered all three questions correctly was very low at 12.0% (n = 95). It should also be noted that 23.3% (n = 184) of students answered all three questions incorrectly. The average FFFL test score was only 17.3 out of a maximum score of 50, with a standard deviation (SD) of 5.3, indicating that the overall financial literacy of local Chinese adolescents is poor, which is consistent with the findings of the three-item measurement of financial knowledge. Finally, the average scores of financial attitude, financial self-efficacy, parental subjective norms, and relation with parents in the financial management were 3.6 (SD = 0.7, range = 1–5), 3.0 (SD = 0.6, range = 1–5), 3.3 (SD = 0.6, range = 1-5), and 3.3 (SD = 0.9, range = 1-5) respectively.



Descriptive Statistics I

	Student participant (N=789) Frequency (%)/ Mean (SD)	
Gender		
Male	352(44.6%)	
Female	437(55.4%)	
Grades at school		
Form 2	197(25.0%)	
Form 3	269(34.1%)	
Form 4	323(40.9%)	
Age	14.66(1.1)	
13	120(15.2%)	
14	232(29.4%)	
15	277(35.1%)	
16	128(16.2%)	
17	24(3.0%)	
18	8(1.0%)	



(Continued)

	Student participant (N=789)	
	Frequency (%)/ Mean (SD)	
Housing type		
Public rental housing	396(50.4%)	
Housing with assistance loan	107(13.6%)	
Permanent private housing	276(35.1%)	
Temporary housing and others	7(0.9%)	
Single parental family	69(9.0%)	
Highest educational level of parent		
No formal education received	5(0.6%)	
Elementary school	31(3.9%)	
Junior middle school	151(19.1%)	
High school	364(46.1%)	
Pre-college	63(8.0%)	
Postsecondary: diploma	57(7.2%)	
Postsecondary: associate degree	17(2.2%)	
Postsecondary: undergraduate	59(7.5%)	

(Continued)

	Frequency (%)/ Mean (SD)
Postgraduate	23(2.9%)
Correctly answering the question of	
Compound interest	419(53.1%)
Inflation	271(34.3%)
Risk diversification	334(42.3%)
3-item measurement of financial literacy	1.3(1.0)
Answering no question correctly	184(23.3%)
Answering 1 question correctly	281(35.6%)
Answering 2 questions correctly	229(29.0%)
Answering 3 questions correctly	95(12.0%)
FFFL test	17.3(5.3)
Financial attitude	3.6(0.7)
Financial self-efficacy	3.0(0.6)

Student participant (N=789)



(Continued)

	Student participant (N=789)	
	Frequency (%)/ Mean (SD)	
Parental subjective norms	3.3(0.6)	
Relation with parents in the financial	3.3(0.9)	

Note. SD: Standard Deviation



**5.5.2 Internal consistency and convergent and concurrent validity.** The internal consistency across all 50 items is satisfied (Cronbach's  $\alpha$ = 0.65). Table 3 reports the correlation statistics supporting establishing the validity of FFFL test. It was found that the FFFL test scores and three-item measurement of financial knowledge are significantly and positively correlated (r = 0.28, p < 0.01), demonstrating the FFFL test's convergent validity among local Chinese adolescents. Additionally, the correlation between the FFFL test scores and financial self-efficacy (r = 0.21, p < 0.01), the correlation between the FFFL test scores and financial self-efficacy (r = 0.19, p < 0.01), the correlation between the FFFL test scores and parental subjective financial norms (r = 0.33, p < 0.01), and the correlation between the FFFL test scores and relation with parents in the financial management (r = 0.33, p < 0.01). The results support the establishment of concurrent validity of the FFFL test among local Chinese adolescents.

**5.5.3 Sensitivity analysis.** Considering the fact that the sample adopted for the validation study covers adolescents with wide age range from 13 to 18 years old, the same data analysis was re-conducted for the 15-year-old students to ensure the validation results are applicable to the target group: 15-year-old local Chinese adolescents. When restricting the sample to 15-year-old adolescents, the internal consistency across all 50 items is still satisfied (Cronbach's  $\alpha$ = 0.62). The results of the correlation analysis between financial literacy and other constructs adopted to examine convergent and concurrent validity are still positive and

significant, as shown in Table 3. But meanwhile it should be note that the magnitude of correlation detected is a bit smaller when restricting the sample to 15-year-old adolescents.



# Table 3.

Test of Validity

	Sample aged between 13	Sample aged 15
	and 18 ( <i>N</i> = 789)	( <i>N</i> = 277)
Correlation between the FFFL test score and	0.28**	0.20**
three-item measurement of financial literacy	0.28	0.20
Correlation between the FFFL test score and	0.21**	0 2/**
financial attitude	0.21	0.24
Correlation between the FFFL test score and	0 19**	0.16**
financial self-efficacy	0.17	0.10
Correlation between the FFFL test score and	0 33**	0 32**
parental financial subjective norms	0.55	0.32
Correlation between the FFFL test score and		
relation with parents in the financial	0.33**	0.30**
management		

*Note*. \*\* *p* < 0.01



#### **Chapter 6: Main Study**

### 6.1 Sampling

**6.1.1 Sampling method.** The main study was approved by the Research Ethics Committees of the EdUHK. The data were collected through convenience sampling. Altogether, 5 secondary schools accepted the invitation and permitted our team to conduct interviews after school and away for school premises. The selection criterion is students who were studying in Form 2, Form 3, and Form 4 in secondary schools.

**6.1.2 Procedures.** Participants were identified and recruited with the assistance of teachers in selected schools. The interviewers explained the research purpose and procedures and asked for consent from both students and a parent before participation began. Data were gathered through self-administered questionnaires after school with adolescent students (see the questionnaire in Appendix II). The students were also invited to provide their parents' contacts information; the interviews conducted with a parent (either father or mother) were conducted by face-to-face interviews in the household (see the questionnaire in Appendix III). All fieldwork was conducted during the period from October to December 2015.

**6.1.3 Sample.** A total of 1,635 adolescent students and their parents (either mother or father) were invited to join. Current study adopted the dyadic data from paired student and parent. Therefore, only paired data from both students and parents were adopted. Ultimately, 200 paired data from both students and parents were successfully collected, with the response



rate of 12.2%. The response rate is low because many parents refused to participate into the survey. After checking, there is no overlap between the data collected for the validation study and the data collected for the main study.

The mean of student age is 14.8 (SD = 1.0, range = 13–18). All students are from Form 2 (16.0%, n = 32), Form 3 (35.0%, n = 70), or Form 4 (49.0%, n = 98). Among 200 parents, 68.5% (n = 137) are the mothers of students.

6.2 Measurement: Model of Parental Financial Socialization (from Adolescents) (Figure3, pp. 59)

**6.2.1 Financial literacy.** Financial literacy was measured by the validated FFFL test (Chinese version). All correct answers were coded as 1, and all incorrect answers or unanswered questions were coded as 0. According to the results of the validation study, the summed number of correct answers among 50 questions was used as the financial literacy score. The scale's internal consistency (Cronbach's alpha) was 0.70. The measured financial literacy was also applied to run the model of general poverty.

**6.2.2 Direct parental teaching.** Direct parental teaching was measured by a six-item scale adopted in Shim et al.'s (2010) study of parental socialization. For example, "My parents discussed family financial matters with me," "My parents spoke to me about the importance of saving," and "My parents taught me how to be a smart shopper." The students were asked to respond on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly* 



*agree*), with higher scores indicating better direct parental teaching in financial affairs. All items have been translated into Chinese. The scale of internal consistency (Cronbach's alpha) was 0.87. Direct parental teaching was calculated by summing the scores of all six items.

### 6.2.3 Adoption of parental financial role modeling. To measure the adoption of

parental role modeling, the adolescent students were invited to indicate on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) their agreement with four items: "I make financial decisions based on what my parent(s) have done in similar situations," "When it comes to managing money, I look to my parent(s) as my role models," "My parent(s) are role models for me about how to manage financial matters," and "My parent(s) have a positive influence on me when it comes to managing money," which were used in Shim et al.'s study (2010). All items have been translated into Chinese. The scale of internal consistency (Cronbach's alpha) was 0.87. The adoption of parental role modeling was calculated by summing the scores of all four items.

## 6.3 Measurement: Model of Parental Financial Socialization (from Parents)

**6.3.1 Family income.** Parents were not asked for the exact amount of their family income. Instead, they were asked to report their family income in Hong Kong dollars by selecting one of 20 income ranges: 0, 1–1,999, 2,000–3,999, 4,000–4,999, 5,000–5,999, 6,000–6,999, 7,000–7,999, 8,000–8,999, 9,000–9,999, 10,000–12,499, 12,500–14,999, 15,000–19,999, 20,000–24,999, 25,000–29,999, 30,000–39,999, 40,000–49,999, 50,000–



59,999, 60,000–69,999, 70,000–79,999, and 80,000 or above, which has been developed based on the monthly income ranges adopted in the report of Wong, Saunders, Wong, Chan, and Chua (2012). The 20 ranges were coded from 0 to 19. Due to the sensitivity of data, there was one parent refusing to report the family income. This missing value was replaced with the mean of data gathered, rounded to the unit. The cleared data of family income was also adopted to run the model of general poverty.

**6.3.2 Parental financial behavior.** Parental financial behavior was measured by asking parents to indicate their extent of agreement from 1 (*strongly disagree*) to 5 (*strongly agree*) on 10 statements about positive financial behavior. For example, "You always track your monthly expenses," "You spend within your budget," and "You check whether your bills are accurate every month." The questions were also used by Shim et al. (2010) and Xiao et al. (2009). All items have been translated into Chinese. The scale of internal consistency (Cronbach's alpha) was 0.91. The financial behavior of adolescent students was calculated by summing the scores of all 10 items.

### 6.4 Measurement: Model of General Poverty (from Parents) (Figure 5, pp. 71)

**6.4.1 Material hardship.** Material hardship was measured by asking parents 22 questions adopted by Wong et al. (2012) to measure social exclusion and deprivation, e.g., whether they had a safe living environment, whether they have access to nearby recreational facilities, and whether they can receive eldercare service if needed. All "yes" answers were



coded as 0, and all "no" answers were coded as 1. The original version of questionnaire was in Chinese. The scale of internal consistency (Cronbach's alpha) was 0.92. Material deprivation was calculated by summing the scores of all 22 items.

**6.4.2 Parental stress.** To measure parental stress, parents were asked to indicate their agreement on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*) with 12 items adopted from Haskett, Ahern, Ward, and Allaire (2006). For instance, "I feel that I cannot handle things," "I gave up my own life's pleasures for my children's needs," and "I feel trapped by my parenting responsibilities." All items have been translated into Chinese. The scale of internal consistency (Cronbach's alpha) was 0.91. Parental stress was calculated by summing the scores of all 12 items.

**6.4.3 Parental investment.** Parental investment was measured by asking parents to indicate whether they have invested for a variety of simulation activities and developmental advances for next generation. Twenty-four items extracted from the Home Observation for Measurement of the Environment Instrument for Cohort 15 were adopted for the current study (Earls, Brooks-Gunn, Raudenbush, & Sampson, 2005). Parents were asked to indicate whether they invested in 24 areas covering these two aspects using a bi-variant scale on which "yes" was scored as 1 and "no" was scored as 0. There were 13 items about types of simulation, such as, "The home has a pet," and "The family visits or receives visits from relatives or friends about twice a week." There were 11 other items related to developmental


advances. For instance, "The child has access to a record/CD/tape player or radio and five records/CDs/tapes," and "The child has access to two appropriate board games." All items have been translated into Chinese. The scale of internal consistency (Cronbach's alpha) of all 24 items was 0.85. Parental investment was calculated by summing the scores of all 24 items.

**6.4.4 Positive parenting behavior.** Positive parenting behavior was measured asking parents to indicate the frequency of several parenting behaviors on a five-point scale from 1 (*never*) to 5 (*always*) with 30 items taken from a study by Arnold, O'Leary, Wolff, and Acker, (1993). Items include the following: "When I say my child can't do something, I let my child do it anyway," "If my child gets upset, I back down and give in," and "When I give a fair threat or warning, I often don't carry it out." All items were translated into Chinese and reverse-coded. The scale of internal consistency (Cronbach's alpha) was 0.90. Positive parenting behavior was calculated by summing the scores of all 30 items.

### 6.5 Measurement: Others

The students were also invited to report their gender, form, age, housing type (public rental housing, housing with loan assistance, permanent private housing, or temporary housing), whether they were in a single-parent family, the educational achievements of their fathers and mothers on a nine-point scale from 1 (*less than elementary school*) to 9 (*postgraduate degree*), whether have working experience when at schools, and the number of courses and workshops related with financial management taken respectively.



#### 6.6 Data Analysis

A correlation analysis was conducted between financial literacy and family income. Once a significant correlation was found, structural equation modelling (SEM) was carried out with Mplus 7.0 so as to determine the specific mechanisms connecting financial literacy and family income. The chi-square ( $\chi^2$ ) statistics, comparative fit index (CFI), Tucker-Lewis index (TLI), RMSEA, and standardized root mean square residual (SRMR) were evaluated to examine SEM model data fitness. A model associated with CFI and TLI larger than 0.95, RMSEA smaller than 0.08, and SRMR smaller than 0.08 represented a good fit and indicated the model's acceptability (Hu & Bentler, 1998; Yu, 2002). Similar data analysis was performed on students aged 15 years old for sensitivity analysis.

#### 6.7 Results

**6.7.1 Descriptive statistics.** Table 4 displays the descriptive statistics, while Appendix IV produces the frequency in the distribution table of all item responses for the sample. As shown in Table 4, the number of female adolescent students (57.5%, n = 115) is slightly higher than the number of male students (42.5%, n = 85). For income distribution, the overall proportions of families in different monthly income ranges are similar. The percentage of families with a lower monthly income (between HKD 9,999 and 14,999, 16.5%, n = 33) is similar to that of families with a higher monthly income (above HKD 40,000, 15.5%, n = 31). The proportions of families in other monthly income ranges are also similar, ranging between



21.0% and 24.0%. In terms of housing, the adolescent students residing in public rental housing (47.5%, n = 95) dominate in number, followed by permanent private housing (39.0%, n = 78) and housing with assistance loans (12.5%, n = 25). The percentage of students residing in single-parent families is only 10.6% (n = 21). The educational achievement of the students' parents tends to be lower. The majority of students' parents only graduated from junior middle schools (25.6%, n = 50) or high schools (44.6%, n = 87). The percentages of students' parents with an associate degree or diploma (11.3%, n = 22) and undergraduate degrees or above (5.6%, n = 11) are obviously and substantially lower. For financial education experience, the average number of courses and workshops in financial management taken by students are both only 1.5, and most students have not taken any courses or workshops in financial management, accounting for 62.0% (n = 124) and 70.0% (n = 140), respectively. For work experience, most students report never having worked (83.5%, n =167). In terms of financial literacy, the percentage of students understanding compound interest well (63.5%, n = 127) is larger than those who understood inflation (35.5%, n = 71) and risk diversification (44.5%, n = 89). The three-item measurement of financial knowledge had a mean of 1.4 (SD = 0.9, range = 0–3). Around one-third of students only gave one correct answer (35.0%, n = 70), followed by those who could only answer two questions correctly (34.0%, n = 68) and the small number of students who were able to give correct answers to all three questions (13%, n = 27). It should be noted that about one in five students



could not answer any of the three questions correctly (17.5%, n = 35). This is consistent with the relatively low level of financial literacy measured by the FFFL test, with a mean of 18.0 (SD = 5.8, range = 0–50). For construct measures, it should be noted that the mean of parents reporting material hardship was 1.9 (SD = 3.7, range = 0–22), which is very low, while the mean of parental investment was 16.1 (SD = 5.0, range = 0–24), which was very high. These results may arise because respondents had their own preferred response based on social norms.



Descriptive Statistics II

	Student participant (N=200)				
	Frequency (%)/ Mean (SD)				
Parents					
Mothers	137(68.5%)				
Fathers	63(31.5%)				
Gender					
Male	85(42.5%)				
Female	115(57.5%)				
Grades at school					
Form 2	32(16.0%)				
Form 3	70(35.0%)				
Form 4	98(49.0%)				
Age	14.8(1.0)				
13	15(7.5%)				
14	64(32.0%)				
15	81(40.5%)				
16	31(15.5%)				

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(Continued)

	Student participant (N=200)
	Frequency (%)/ Mean (SD)
17	7(3.5%)
18	2(1.0%)
Family income per month in HKD	12.1(2.8)
9,999 or below	12(6.0%)
10,000-14,999	21(10.5%)
15,000-19,999	42(21.0%)
20,000-24,999	48(24.0%)
25,000-39,999	45(22.6%)
40,000 or above	31(15.5%)
Housing type	
Public rental housing	95(47.5%)
Housing with assistance loan	25(12.5%)
Permanent private housing	78(39.0%)
Temporary housing and others	2(1.0%)
Single parental family	21(10.6%)



(Continued)

	Student participant (N=200)	
	Frequency (%)/ Mean (SD)	
Highest educational level of parent		
No formal education received	1(0.5%)	
Elementary school	5(2.6%)	
Junior middle school	50(25.6%)	
High school	87(44.6%)	
Pre-college	19(9.7%)	
Postsecondary: diploma	18(9.2%)	
Postsecondary: associate degree	4(2.1%)	
Postsecondary: undergraduate	8(4.1%)	
Postgraduate	3(1.5%)	
Number of courses taken in financial		
management, business and economic	1.5(3.3)	
0	124(62.0%)	
1-3	50(25.0%)	
Greater than 3	26(13.0%)	



(Continued)

	Student participant (N=200)
	Frequency (%)/ Mean (SD)
Number of workshops taken in financial	1.5(2.7)
management	1.5(3.7)
0	140(70.0%)
1-3	34(17.0%)
Greater than 3	26(13.0%)
Working experience	
Never	167 (83.5%)
Yes, in summer vocation	30 (15.0%)
Yes, in both semester and summer	2(1.50/)
vocation	3 (1.3%)
Correctly answering question of	
Compound interest	127(63.5%)
Inflation	71(35.5%)
Risk diversification	89(44.5%)



(Continued)

	Frequency (%)/ Mean (SD)
Three-item measurement of financial literacy	1.4(0.9)
Answering no question correctly	35(17.5%)
Answering 1 question correctly	70(35.0%)
Answering 2 questions correctly	68(34.0%)
Answering 3 questions correctly	27(13%)
FFFL test	18.0(5.8)
Direct parental teaching	3.2(0.7)
Adoption of parental financial role modelling	3.3(0.7)
Parental financial behavior	3.7(0.7)
Material hardship	1.9(3.7)
Parental stress	2.5(0.6)
Parental investment	16.1(5.0)
Positive parenting behavior	3.2(0.4)

Note. SD: Standard Deviation



### Student participant (N=200)

To check how the sample obtained conveniently (n = 200) could represent overall Hong Kong adolescents aged around 15, microdata from the 2011 Population Census 1% / 5% sample data set is adopted to compare the frequency distributions of some common variables (Census and Statistics Department, 2011). Table 5 compares the frequency distribution of sex, housing types and family income. To make statistics comparable, in the sample (n = 200), only adolescent students aged 15 are considered to compare with residents aged 15 in the 2011 government collected microdata (n = 4238). As shown in the Table 5, in both the sample of government micro data and the sample (n = 80) in the current study, gender distribution is more or less half-half. For the housing type and family income, there is also no big distinction observed in the frequency distributions. Therefore, the sample (n = 80) is acknowledged to be able to represent Hong Kong Chinese adolescents aged 15 years old, and the representativeness of the sample (n = 200) of students around 15 years old is not a big concern.



	2011 microdata	Sample
	(n = 4238)	( <i>n</i> = <b>81</b> )
Age		
15	4238(100%)	81(100%)
Gender		
Male	2143(50.6%)	36(44.4%)
Female	2095(49.4%)	45(55.6%)
Iousing type		
Owner occupied	2042(48.2%)	24(29.6%)
Sole tenant	2033(48.0%)	52(64.2%)
Rent free	56(1.3%)	5(6.2%)
amily income per month in HKD		
9,999 or below	797(18.8%)	12(6.0%)
10,000-14,999	688(15.9%)	21(10.5%)
15,000-19,999	688(15.9%)	42(21.0%)
20,000-24,999	466(11%)	48(24.0%)
25,000-39,999	708(16.7%)	45(22.6%)
40,000 or above	962(22.7%)	31(15.5%)

**6.7.2 Family income and financial literacy.** The statistics initially indicates that family income is positively and significantly correlated with FFFL-measured financial literacy (r = 0.14, p < 0.05). Next sections explore the specific mechanisms connecting family income and financial literacy in greater depth.

**6.7.3 Model of parental financial socialization.** Table 6 reviews the correlations between variables in the model of parental financial socialization. As expected, family income is positively correlated with parental financial behavior (r = 0.38, p < 0.01) and the financial literacy of adolescents (r = 0.14, p < 0.05). However, unexpectedly, family income is not significantly correlated with direct parental teaching (r = -0.004, p > 0.05) and the adoption of parental financial role modelling (r = 0.10, p > 0.05). As expected, parental financial behavior is positively correlated with financial literacy (r = 0.22, p < 0.01), but unexpectedly, it is not significantly correlated with direct parental teaching (r = -0.01, p >0.05) and the adoption of parental financial role modelling (r = 0.07, p > 0.05). As expected, direct parental teaching is positively correlated with the adoption of parental financial role modeling (r = 0.65, p < 0.01), but unexpectedly, it is negatively correlated with financial literacy (r = -0.18, p < 0.01). Also, unexpectedly, no significant correlation is detected between the adoption of parental financial role modeling and financial literacy of adolescents (r = 0.10, p > 0.05).

The potential shared reporter variance is not a concern for the following reasons. First,



none of the correlations reach 1.0, which is evidence of the constructs' discriminant validity. Second, the majority of correlations are below 0.5, with only a few high correlations reaching the level of 0.6–0.7, which is far from the signal of multicollinearity (r = 0.8–0.9), indicating that the potential multicollinearity problem caused by a single reporter is accepted in the current study. The preliminary review of correlation table supports running the model of parental financial socialization.

Considering that the sample size is relatively small, one-step structural equation modeling is adopted when running the model of parental financial socialization. The model of parental financial socialization constructed by the current study (Figure 3, pp. 59) can fit the data with the perfect model fitness ( $\chi^2$  (2, N = 200) = 0.303, CFI = 1.00, RMSEA = 0.00, SRMR = 0.008). No modification indices are suggested. The model results are reported in Figure 6 (pp. 109).

The reported model proves to be an effective parental financial socialization process for connecting family income to financial literacy, indicating that family income shapes parental financial behavior ( $\beta = 0.38$ , p < 0.01) and indirectly improves the financial literacy of adolescent students ( $\beta = 0.18$ , p < 0.01). In addition, direct parental teaching is associated with a greater tendency to adopt parental financial role modeling ( $\beta = 0.65$ , p < 0.01), and the adoption of parental financial role modeling is associated with the development of financial literacy ( $\beta = 0.36$ , p < 0.05). In other words, direct parental teaching is an impact on financial



literacy through the adoption of parental financial role modeling.

However, it must be noted that, unexpectedly, direct parental teaching is negatively associated with the development of adolescents' financial literacy ( $\beta = -0.41$ , p < 0.01). Moreover, unexpectedly, the model results indicate that family income does not significantly influence direct parental teaching ( $\beta = -0.004$ , p > 0.05) and the adoption of parental role modeling ( $\beta = 0.09$ , p > 0.05), and there is no significant link detected between parental financial behavior and the adoption of parental financial role modeling ( $\beta = 0.04$ , p > 0.05).

Considering that the age range of students in the sample is wide (13–18 years old), sensitivity analysis was conducted by re-running the model with only 15-year-old students in the sample to ensure the model results above were applicable to 15-year-old local Chinese adolescents. Table 7 produces the correlation between variables (with only data from 15-year-old students in the sample). The correlation reported in Table 7 is similar with that in Table 6.

However, it should be noted that there is some difference between Tables 6 and 7. As expected, family income is positively correlated with the adoption of parental financial role modeling (r = 0.30, p < 0.01) in Table 7, while, in Table 6, unexpectedly, they are not significantly correlated with each other (r = 0.10, p > 0.05). Unexpectedly, in Table 7, direct parental teaching and financial literacy are not significantly correlated (r = -0.17, p > 0.05); however, in Table 6, they are significantly correlated with each other (r = -0.18, p < 0.05),



although the correlation is negative, which does not match the expectation. All correlations reported in Table 7 prove the discriminant validity of constructs and show that the multicollinearity problem is not a concern.

The model result reported in Figure 7 (pp. 111) shows the satisfied model fitness ( $\chi^2$  (2, N = 81) = 2.20, CFI = 0.998, RMSEA = 0.034, SRMR = 0.03). No modification indices are suggested. Most scholars recommend using at least 200 cases when conducting structural equation modeling (Kline, 2011). Thus, the model result in Figure 7 (pp. 111) is for reference only, considering the sample size is only 81. The model results in Figure 7 (pp. 111) are nearly the same as those in Figure 6 (pp. 109). However, the model results in Figure 7 (pp. 111) are 111) support a direct link between family income and the adoption of parental financial role modeling ( $\beta$  = 0.19, p < 0.05), while in Figure 6 (pp. 109), this direct link is not significant.



Table 6.

	1. Family income	2. Parental financial behavior	3. Direct parental teaching	4. Adoption of parental financial role modeling	5. Financial literacy
1. Family income	-				
2. Parental financial behavior	0.38**	-			
3. Direct parental teaching	-0.004	-0.01	-		
4. Adoption of parental financial	0.10	0.07	0 65**		
role modelling	0.10	0.07	0.03***	-	
5. Financial literacy	0.14*	0.22**	-0.18**	0.10 -	

Correlation of Constructs in the Model of Parental Financial Socialization (N = 200)

*Note.* \* p < 0.05, \*\*p < 0.01.





*Figure 6.* SEM result of the model of parental financial socialization (N = 200). *Note.* \*p < 0.05, \*\*p < 0.01.



Table 7.

	1. Family income	2. Parental financial behavior	3. Direct parental teaching	4. Adoption of parental financial role modeling	5. Financial literacy
1. Family income	-				
2. Parental financial behavior	0.42**	-			
3. Direct parental teaching	0.16	0.11	-		
4. Adoption of parental financial	0 20**	0.19	0 66**		
role modelling	0.30***	0.18	0.00***	-	
5. Financial literacy	0.28**	0.31**	-0.17	0.10 -	

Correlation of Constructs in the Model of Parental Financial Socialization (15-year-old adolescents only, N = 81)

*Note*. \* p < 0.05, \*\*p < 0.01.





*Figure 7.* SEM result of the model of parental financial socialization (15-year-old adolescents only, N = 81). *Note.* \*p < 0.05, \*\* p < 0.01.



**6.7.4 Model of general poverty.** Table 8 reviews the correlation among variables in the model of general poverty. As expected, family income is negatively correlated with material hardship (r = -0.22, p < 0.01), positively correlated with parental investment (r = 0.32, p < 0.01), negatively correlated with parental stress (r = -0.33, p < 0.01), and positively correlated with the financial literacy of adolescents (r = 0.14, p < 0.05). However, unexpectedly, family income is not significantly correlated with positive parenting behavior (r = 0.10, p > 0.05). As expected, material hardship is negatively correlated with parental investment (r = -0.51, p < 0.01), positively correlated with parental stress (r = 0.16, p < 0.05). However, unexpectedly, material hardship is not significantly correlated with financial literacy (r = -0.11, p > 0.05). However, unexpectedly, material hardship is not significantly correlated with financial literacy (r = -0.11, p > 0.05).

Expectedly, parental investment is negatively correlated with parental stress (r = -0.38, p < 0.01) and positively correlated with positive parenting behavior (r = 0.19, p < 0.05) and financial literacy (r = 0.22, p < 0.01). As expected, parental stress is negatively correlated with positive parenting behavior (r = -0.33, p < 0.01) and financial literacy (r = -0.33, p < 0.01). Expectedly, positive parenting behavior is positively correlated with the financial literacy of adolescents (r = 0.29, p < 0.01). All correlations reported in Table 8 prove the discriminant validity of constructs and show that the multicollinearity problem is within tolerance. The preliminary review of correlation among variables supports running the model



of general poverty.

Considering that the sample size is relatively small, one-step structural equation modeling is also adopted when running the model. The model of general poverty constructed by current research (Figure 5, pp. 71) appears to fit the data very well ( $\chi^2$  (1, N = 200) = 0.43, CFI = 1.00, RMSEA = 0.00, SRMR = 0.007). No modification indices are suggested. The model results are reported in Figure 8 (pp. 117).

The model reports that family income is proven to explain partial variance in material hardship ( $\beta = -0.22$ , p < 0.01). Family income and material hardship can similarly influence parental investment ( $\beta = 0.16$ , p < 0.05;  $\beta = -0.41$ , p < 0.01) as well as parental stress ( $\beta =$ -0.29, p < 0.01;  $\beta = 0.20$ , p < 0.01). Unexpectedly, both family income and material hardship are not significantly associated with positive parenting behavior ( $\beta = -0.01$ , p > 0.05;  $\beta =$ -0.08, p > 0.05). Additionally, higher parental stress is associated with less parental investment ( $\beta = -0.22$ , p < 0.01) and a lower tendency to behave positively with adolescents ( $\beta$ = -0.30, p <0.01). Parental stress is negatively associated with financial literacy ( $\beta$  = -0.24, p <0.01), and positive parenting behavior is shown to positively influence financial literacy ( $\beta$ = 0.15, p < 0.05). However, unexpectedly, parental investment is not significantly associated with financial literacy ( $\beta = 0.10, p > 0.05$ ), and there is no significant direct link detected from family income and material hardship to financial literacy ( $\beta = 0.04$ , p > 0.05;  $\beta = 0.03$ , p> 0.05).



Considering that the age range of students in the sample is wide (13–18 years old), sensitivity analysis was conducted by re-running the model with only 15-year-old students in the sample to ensure the model results above were applicable to 15-year-old local Chinese adolescents. Table 9 checks the correlation among variables. The overall correlation reported in Table 9 is similar with that in Table 8. However, in Table 9, unexpectedly, material hardship is not significantly correlated with positive parenting behavior (r = -0.17, p > 0.05), while in Table 8, the same correlation is significant and as expected (r = -0.16, p < 0.05). The correlation reported in Table 9 proves the discriminant validity of constructs and shows the multicollinearity problem is within tolerance. The model results are reported in Figure 9 (pp. 119) with satisfied model fitness ( $\chi^2$  (1, N = 81) = 1.29, CFI = 0.99, RMSEA = 0.06, SRMR = 0.02).

Most scholars recommend using at least 200 cases when conducting structural equation modeling (Kline, 2011). Thus, the model result in Figure 9 (pp. 119) is for reference only, considering the sample size is only 81. Some difference is detected when comparing the results in Figure 9 (pp. 119) with those in Figure 8 (pp. 117). In Figure 9 (pp. 119), unexpectedly, family income is not significantly associated with parental investment ( $\beta$  = 0.20, p > 0.05), while in Figure 8 (pp. 117), the same link is significant and as expected ( $\beta$  = 0.16, p < 0.05). Also, unexpectedly in Figure 9 (pp. 119), both family income and material hardship do not influence parental stress ( $\beta$  = -0.19, p > 0.05;  $\beta$  = 0.15, p > 0.05), while in



Figure 8 (pp. 117), both associations are significant and expected ( $\beta = -0.29$ , p < 0.01;  $\beta = 0.20$ , p < 0.01). Moreover, in Figure 9 (pp. 119), a direct positive link from family income to financial literacy is proven ( $\beta = 0.22$ , p < 0.05), while in Figure 8 (pp. 117), unexpectedly, the same link is not significant ( $\beta = 0.04$ , p > 0.05). Furthermore, unexpectedly in Figure 9 (pp. 119), positive parenting behavior is not significantly associated with financial literacy ( $\beta = 0.15$ , p > 0.05), while in Figure 8 (pp. 117), the same association is significant and as expected ( $\beta = 0.15$ , p < 0.05).



Table 8.

	1. Family income	2. Material hardship	3. Parental investment	4. Parental stress	5. Positive parenting behavior	6. Financial literacy
1. Family income	-					
2. Material hardship	-0.22**	-				
3. Parental investment	0.32**	-0.51**	-			
4. Parental stress	-0.33**	0.27**	-0.38**	-		
5. Positive parenting behavior	0.10	-0.16*	0.19*	-0.33**	-	
6. Financial literacy	0.14*	-0.11	0.22**	-0.33**	0.29**	-

Correlation of Constructs in the Model of General Poverty (N = 200)

*Note.* \* p < 0.05, \*\*p < 0.01.





*Figure 8.* SEM result of the model of general poverty (N = 200). *Note.* \*p < 0.05, \*\* p < 0.01.



Table 9.

	1. Family income	2. Material hardship	3. Parental investment	4. Parental stress	5. Positive parenting behavior	6. Financial literacy
1. Family income	-					
2. Material hardship	-0.35**	-				
3. Parental investment	0.35**	-0.37**	-			
4. Parental stress	-0.24*	0.22*	-0.37**	-		
5. Positive parenting behavior	0.10	-0.17	0.25*	-0.31**	-	
6. Financial literacy	0.28**	-0.04	0.21*	-0.37**	0.26*	-

Correlation of Constructs in the Model of General Poverty (15-year-old Adolescents only, N = 81)

*Note*. \* *p* < 0.05,\*\**p* < 0.01.





*Figure 9.* SEM result of the model of general poverty (15-year-old adolescents only, N = 81). *Note.* \*p < 0.05, \*\* p < 0.01.



#### **Chapter 7: Discussion**

The major achievements of the current study are validating the FFFL test among Hong Kong Chinese adolescents as well as exploring the mechanisms explaining the impact of family income on the development of financial literacy of adolescents, including the models of parental financial socialization and general poverty.

### 7.1 Validation Study

The FFFL test was translated into Chinese, and its reliability and validity were examined among a group of local Chinese students, who were all approximately 15-years-old, from local secondary schools. The internal consistency reliability across all 50 items of the FFFL test is established by a satisfactory alpha of 0.65, although it is weaker than the alpha of 0.86 reported by Walstad and Rebeck (2005) with a group of U.S. adolescents. The difference is probably due to the fact in Hong Kong the majority recorded initiatives to promote financial literacy are prone to investment related, with low percentage of them is related with other financial themes like saving, spending, budgeting and life insurance (Investor Education Center, 2015). Thus, the content domains of financial knowledge mastered by Hong Kong adolescents is likely to be incomplete, resulting in lower internal consistency of FFFL test results, compared to that of U.S. adolescents. In addition, the convergent validity is confirmed by a significant and positive correlation between the FFFL scores and three-item measurement of financial knowledge (r = 0.28, p < 0.01). Walstad and Rebeck (2005)



confirmed the discriminant validity by comparing the test scores of two groups of U.S. adolescents attending and not attending the FFFL training course, finding the former is significantly higher than the latter. Associated with the findings of Walstad and Rebeck (2005), the current study establishes the construct validity of the FFFL test.

Moreover, the concurrent validity of the test is proven by demonstrating positive and significant correlations between financial literacy and financial attitude (r = 0.21, p < 0.01), which is the same as the correlation between the same variables (r = 0.21, p < 0.01) found by Shim et al. (2010). The concurrent validity is also confirmed by the significant and positive correlation between financial literacy and financial self-efficacy (r = 0.19, p < 0.01) as much as the correlation between the same constructs (r = 0.15, p < 0.01) in Serido et al.'s (2013) research. In addition, a significant and positive correlation was identified between the adolescents' financial literacy and subjective parental financial norms (r = 0.33, p < 0.01) and relation with parents in the financial management (r = 0.33, p < 0.01), which are all consistent with the correlations found by Shim et al. (2010).

Overall, the current study confirms the internal reliability established by the previous study. However, the test-retest reliability was not examined in the current validation study. After one year, the same group of students should be invited to test their financial literacy again with the FFFL test to establish the test-retest reliability (Guttman, 1945). Also, the current study contributes to the literature by establishing the concurrent validity of the FFFL test, as no previous empirical research has been done to test the criterion validity of the FFFL test, both in terms of its concurrent and predictive validity. In the future, the predictive validity of the FFFL test among local Chinese adolescents should be studied by tracking their financial behavior and measuring the correlation between their future financial behavior and current FFFL test scores. Financial behavior can be measured in terms of expense tracking, spending control, saving, credit card management, and investment (Jorgensen & Savla, 2010; Serido et al., 2013; Shim et al., 2010).

#### 7.2 Financial Literacy of Hong Kong Adolescents

The financial literacy of 200 Hong Kong Chinese adolescents was measured with the validated FFFL test. This test was also adopted to measure 335 adolescents from U.S. schools (Walstad & Rebeck, 2005). The sample was obtained through convenient sampling, and no claim was made that the sample accurately represented U.S. adolescents (Walstad & Rebeck, 2005). The adolescents in the U.S. sample were around 15 years old, but no accurate mean and range of age were given (Cameron et al., 2013a; Walstad & Rebeck, 2005). Besides, the FFFL test was adopted to measure the financial literacy of 292 New Zealand adolescents, who were from five geographically dispersed schools throughout the Hamilton sub-region (Cameron et al., 2013b). The mean age of them was 15.9, with a maximum age of 18.8 and a minimum age of 13 (Cameron et al., 2013b). Moreover, the FFFL test was also applied to a sample of 1,434 Japanese adolescents around 15 years old, with no sampling method and



accurate range reported (Cameron et al., 2013a). The summary of the test results in these three countries and regions are reported in Table 10. The overall performance of Japanese adolescents is the best, with a mean score of 28.6, followed by that of adolescents from New Zealand, with a mean score of 23.1, and that of U.S. adolescents, with a mean score of 22.3. The financial literacy of Hong Kong adolescents is comparatively poor, with a mean score of 18.0.

Cameron et al. (2013b) indicated that the test results of New Zealand adolescents excluded those with a correct rate below 25%, while for the U.S. and Hong Kong, no similar procedures were conducted to clear the data. For Japan, no information about the data clearing process was reported. To explore whether the big difference of test scores between Hong Kong and New Zealand is due to the data clearing treatment of the New Zealand sample, the current study conducted the post-hoc analysis and excluded the test results of adolescents in Hong Kong with a correct rate below 25%. The mean score of Hong Kong students increased from 18.0 to 19.6, but still a big difference compared to the mean score of New Zealand adolescents.



## Table 10.

	U.S.	New Zealand	Japan	Hong Kong
Sample size	335	292	1,434	200
Mean age	N/A*	15.9	N/A*	14.8
Maximum age	N/A*	18.8	N/A*	18.0
Minimum age	N/A*	13.0	N/A*	13.0
Mean score	22.3	23.1	28.6	18.0
Mean percentage correct	44.6%	46.2%	57.3%	36.0%

# International Comparison of FFFL Test Results

*Note*. \*N/A refers to Not Available.



#### 7.3 Main Study

**7.3.1 Model of socialization.** The financial literacy of Hong Kong adolescents is found to be correlated with the family income reported by their parents (r = 0.14, p < 0.05), which is consistent with the finding of Mandell (2008a). With a nationally representative sample of 5,775 U.S. adolescents studying in the high school, Mandell (2008a) found that students from families with higher incomes tended to do better than those from families with lower incomes in the financial literacy exam.

The major finding from the results of the model of parental financial socialization (Figure 6, pp. 109) is that family income is able to influence the financial literacy of adolescents through parental financial behavior ( $\beta = 0.38$ , p < 0.01;  $\beta = 0.18$ , p < 0.01). The link found between family income and parental financial behavior ( $\beta = 0.38$ , p < 0.01) is consistent with the findings of Perry and Morris (2005) and Shim et al. (2010). Based on 10,997 observation from U.S. adults aged between 20 and 40, Perry and Morris (2005) found healthy financial behavior was partially correlated with income after controlling for the financial knowledge and demographic variables. Shim et al. (2010) reported a positive correlation between parental social and economic status and parental financial behavior.

The link found between parental financial behavior and the financial literacy of adolescents ( $\beta = 0.18, p < 0.01$ ) is consistent with the findings of Shim et al. (2010), i.e., that parental financial behavior is positively correlated with the financial literacy of youth, and

Jorgensen and Savla (2010), i.e. that youth are able to accumulate financial knowledge by observing financial examples from parents (Jorgensen & Savla, 2010). This link is well supported by the social learning theory that youth have financial learning experiences through unconscious observation from socialized agents (Moschis, 1987) and that parents are the key socialized agents at early ages of youth (Danes & Haberman, 2007; Jorgensen & Savla, 2010; Neul & Drabman, 2001).

Direct parental teaching is found to influence financial literacy through the mediation of the adoption of parental financial role modeling ( $\beta = 0.65$ , p < 0.01;  $\beta = 0.36$ , p < 0.05). The link found between direct parental teaching and the adoption of parental financial role modeling ( $\beta = 0.65$ , p < 0.01) is consistent with the finding of Shim et al. (2010) that direct parental teaching has a positive effect on the adoption of parental financial role modeling. This finding is also consistent with the argument of Clarke et al. (2005) that the financial knowledge needed in teen years is taught by parents. This finding is supported by the social learning theory that youth have financial learning experiences through deliberate teaching and enforcement (Bandura, 1986b; Moschis, 1987).

The link found between the adoption of parental financial role modeling and financial literacy ( $\beta = 0.36$ , p < 0.05) is also consistent with the findings of Shim et al. (2010), i.e., that the correlation between the adoption of parental financial role modeling and youth financial literacy is positive, and the argument of Mandell (2008b), i.e., that youth are able to learn

financial knowledge from having practical financial experience modeling parental financial roles and behaviors. This finding is well supported by the social learning theory that youth is able to learn through the effect of modeling (Bandura, 1986b; Moschis, 1987).

However, direct parental teaching is found to be negatively associated with financial literacy ( $\beta = -0.41$ , p < 0.01), which is inconsistent with the finding of Shim et al. (2010) that the same link was positive. Direct parental teaching may activate the psychological inversion of adolescents and make them reject the knowledge parents taught. However, parents who actively teach adolescents about financial knowledge are likely to be those who have material wellbeing by successful management experience. Although adolescents refuse to accept what is directly taught by parents, they might admire the experience and have interest in modeling parental behaviors. Adopting another perspective, whether adolescents determine to internalize financial knowledge taught by parents may depend on whether they have opportunities to practice personal finance and model parental financial behaviors. It is reasonable to infer that adolescents may reduce interest of internalizing financial knowledge and even dislike that if they are only passively inculcated with knowledge without any practical financial experience. Both above may explain why the direct association between direct parental teaching and financial literacy is negative ( $\beta = -0.41$ , p < 0.01), while the indirect association between direct parental teaching and financial literacy, mediated by the adoption of parental financial role modeling, is positive ( $\beta = 0.65$ , p < 0.01;  $\beta = 0.36$ , p < 0.36, p < 0.01

Additionally, family income is shown to have no effect on direct parental teaching ( $\beta =$ -0.004, p > 0.05), which is inconsistent with the finding of Shim et al. (2010) that family social and economic status is significantly and positively correlated with direct parental teaching. This result is also inconsistent with the finding of Jorgensen and Savla (2010) that family income is positively associated with parental financial influence, measured as direct and indirect parental teaching ( $\beta = 0.17$ , p < 0.05). Figure 10 (pp. 131) shows the change in direct parental teaching by income. As shown, direct parental teaching experiences no change when the family income stays at a low level, indicating that parents with low income do not have adequate financial resources to conduct financial management and, therefore, do not have the possibility of enjoying benefits associated with financial management. These parents are unlikely to have adequate awareness of teaching adolescents about financial management. Figure 10 (pp. 131) also shows that, when family income increases, no obvious pattern of the correlation between family income and direct parental teaching can be observed. This is probably because, instead of family income, the difficulty of obtaining income for families with different occupations may influence the awareness of financial management and the decision of conducting direct parental teaching. Specifically, if the income is generated with difficulty, parents are likely to take efforts to be involved in financial management to keep or increase their value of wealth and teach the next generation about financial management.


Conversely, if the income is generated without much difficulty, parents are less likely to involve in financial management and teach the next generation about it. In a word, when the family income increases above the structural turning point, the difficulty associated with generating family income is likely to influence direct parental teaching, rather than the value of family income.

Family income is not found to be significantly associated with the adoption of parental financial role modeling ( $\beta = 0.09, p > 0.05$ ), which is also not as expected because the finding of Shim et al. (2010) indicates that family social and economic status positively shape the adoption of parental financial role modeling. Figure 11 (pp. 131) displays the change in the adoption of parental financial role modeling by family income. As shown, when the family income stays at a low level, some adolescents may be motivated to change their situation of low material wellbeing. Thus, modeling parental financial roles to involve into monetary affairs is likely to be one of their strategies. The structural turning point is likely to be the event of receiving allowance from parents. When family income increases to the turning point, material wellbeing becomes much better and parents can satisfy more of adolescents' material needs, except providing allowance. Thus, adolescents residing in families within this income range have less of a need to model parental financial roles when family income increases. When the family income increases past the structural turning point, adolescents are likely to be offered allowance, as the allowance is normally positively associated with family

income (Sohn, Joo, Grable, Lee, & Kim, 2012). Adolescents with allowance might either involve in financial management by saving and managing their money or conduct consumption without considering anything related to financial management. This decision largely depends on financial attitude, parental subjective norm, perceived behavioral control and financial self-efficacy (Serido et al., 2013; Shim et al., 2010). All of the above might explain why there is no significant association detected between family income and the adoption of parental financial role modeling.





Figure 10. Change in direct parental teaching (by family income)



Figure 11. Change in the adoption of parental financial role modeling (by family income)



Unexpectedly, the model results display an insignificant association between parental financial behaviors and the adoption of parental financial role modeling ( $\beta = 0.04, p > 0.05$ ), which is inconsistent with the finding of Shim et al. (2010) that parental financial behavior is associated with a greater tendency of adopting parental financial role modeling. This finding is also inconsistent with the social learning theory that youth learn by observing and modeling what they observe (Bandura, 1986a). This inconsistency also raises another important question as to what the mediator that explains the link between parental financial behavior and the financial literacy of adolescents is, if the mediator is not the adoption of parental financial role modeling. Figure 12 (pp. 134) displays the change in the adoption of parental financial role modeling by parental financial behavior, and no obvious pattern can be observed. According to the social learning theory, when parents demonstrate healthy financial behaviors to adolescents, they are positively influenced and motivated to learn. However, in the modern financial world, although parents are those who raise the interest of adolescents to learn financial affairs by showing their own healthy financial behaviors, adolescents do not necessarily learn by modeling parents. Some will probably model the parental financial behavior, while others (whose interest in financial management has been raised after observing parental financial behaviors) might model the financial behaviors of social peers and adopt the most updated financial methods to manage personal finance. Thus, one potential mediator breaking the link between parental financial behavior and financial literacy



might be the adoption of financial role modeling from social peers.





*Figure 12.* Change in the adoption of parental financial role modeling (by parental financial behavior)



In summary, the main finding and theoretical contribution of the results of the model of parental financial socialization is that parental financial behavior explain the link between family income and financial literacy, which is supported by the result of sensitivity analysis (Figure 7, pp. 111). The same indirect link was rejected in the study of Jorgensen and Savla (2010) after examination. They explore the effect of perceived parental influence on the financial literacy of young adults and found that parental influence cannot mediate the association between family income and financial literacy.

The different findings between the current study and the study of Jorgensen and Savla (2010) might be attributed to different measurements of parental influence. In the study of Jorgensen and Savla (2010), parental influence was measured as one variable, incorporating both direct teaching and observing parental financial behaviors, while in the current study, they are separately modeled as two different variables. Besides, the difference might also be attributed to the samples adopted in the studies. The sample adopted in the current study is made up of adolescents, while the sample adopted by Jorgensen and Savla (2010) are college students. The effect of parental financial behavior on the development of financial literacy might be easier to detect among adolescents, compared to college students, who are young adults that are affected more by society.

**7.3.2 Model of general poverty.** The major findings of the results of the model of general poverty (Figure 8, pp. 117) are the indirect link between poverty status and the

financial literacy of adolescents, mediated by parental stress, and the indirect link between poverty status and financial literacy, mediated by parental stress and positive parenting behavior.

Family income is negatively associated with material hardship ( $\beta$  = -0.22, *p* < 0.01), which is consistent with the literature that the variance of material hardship can only be partially explained by the variance of family income (Baulch & Masset, 2003; Douglas-Hall, Chau, & Koball, 2008; Gershoff et al., 2007; Lu, Palmer, Song, Lennon, & Aber, 2004).

Family income and material hardship are found to be associated with parental investment ( $\beta = 0.16$ , p < 0.01;  $\beta = -0.41$ , p < 0.01). In fact, the detected links are the same as those detected in the study of Gershoff et al. (2007) that family income is positively associated with parental investment and material hardship has a negative effect on it. This finding also supports the literature that family income and material hardship affect the amount of money and time (in joint activities) parents spend on children (Kaushal et al., 2011; Yeung et al., 2002).

Similarly, family income and material hardship are proven to affect parental stress ( $\beta$  = -0.29, p < 0.01;  $\beta = 0.20$ , p < 0.01). The detected links are the same as those detected in the study of Conger et al. (2002) that family income is negatively associated with parental stress and material hardship has a positive effect on it. The finding is also consistent with the literature that low-income parents have financial strain and consistently worry about their

families' financial obligations (Elder, 1999; Mistry et al., 2004).

Unexpectedly, both family income and material hardship are not found to influence positive parenting behavior ( $\beta = -0.01$ , p > 0.05;  $\beta = -0.08$ , p > 0.05), which is inconsistent with the findings of Guo and Harris (2000) that, due to economic hardship, parents are likely to display more inconsistent disciplinary behavior and show less warmth and caring. This is probably because the samples adopted in Guo and Harris (2000) and the current study are from two culturally different regions and countries, i.e., the U.S. and Hong Kong. Raver, Gershoff and Aber (2007) tested the original model in the study of Gershoff et al. (2007) (Figure 4, pp. 70), with participants of three culturally different groups, i.e., white, black and Hispanic. The findings of Raver et al. (2007) showed that, unexpectedly for white families, family income is not significantly associated with positive parenting behavior, but as expected, material hardship is negatively associated with positive parenting behavior. For black families, expectedly, both family income and material hardship are associated with positive parenting behavior (Raver et al., 2007). However, for Hispanic families, neither family nor material hardship are significantly associated with positive parenting behavior (Raver et al., 2007). The finding in Hong Kong is similar with the finding for Hispanic families. This is because poverty status is not one of the determinants of positive parenting behavior in Hong Kong and among the Hispanic in the U.S. Thus, other determinants, like a parenting style inherited from past generations, can be tested in future studies.



Parental stress is found to be associated with less possibility to invest in youth ( $\beta$  = -0.22, p < 0.01). This finding is consistent with the finding of Guo and Harris (2000) that stressful parents are less likely to invest time in youth affairs. Parental stress is also found to negatively affect positive parenting behaviors ( $\beta = -0.30$ , p < 0.01). This finding is consistent with the literature finding that parental stress results in negative parent-child interaction and adjustment (Cummings, Davies, & Campbell, 2002; Elder, 1999; Mistry et al., 2004). However, the substitution effect found in the study of Gershoff et al. (2007) that parents who show less positive parenting behavior due to high stress may invest more into children regarding compensation is not found in the current study. This is most likely because the current study adopted adolescents as a sample, while the sample adopted by Gershoff et al. (2007) included all children. Compared to children, parents may feel less guilty and not compensate by investing when conducting less positive parenting behaviors for adolescents. This is because they might think that adolescents are much more sensible and can understand their stress and difficulty, compared to children.

At the outcome level, parental stress and positive parenting behavior are proven to be associated with financial literacy ( $\beta = -0.24$ , p < 0.01;  $\beta = 0.15$ , p < 0.05), which indicates that the development of financial literacy is similar to the development of social-emotional competence (Gershoff et al., 2007; Raver et al., 2007). This is supported by the literature finding that social-emotional competence is one of the prerequisites for developing financial literacy (Sonuga-Barke & Webley, 1993). Unexpectedly, parental investment is not associated with financial literacy ( $\beta = 0.10$ , p > 0.05). This is inconsistent with the literature findings that cognitive skills are another prerequisite for developing financial literacy (Sonuga-Barke & Webley, 1993) and that the development of financial literacy should be similar to the development of cognitive skills. This is most likely due to the measurement of parental investment.

The current study adopted original items extracted from the Home Observation for Measurement of the Environment Instrument for Cohort 15 (Earls, Brooks-Gunn, Raudenbush, & Sampson, 2005), which contains general simulated activities and advanced development invested by parents. However, among them, no items are directly related to financially simulated activities and advanced development, such as taking adolescents to commercial banks to handle family financial affairs and buying them books to introduce the financial and business world, which are likely to be key items in parental investment that have influential power in the development of financial literacy.

Family income and material hardship are not found to directly influence financial literacy ( $\beta = 0.04$ , p > 0.05;  $\beta = 0.03$ , p > 0.05), indicating (statistically) that the correlation between family income and financial literacy can be fully explained by the mediation of parental stress and positive parenting behavior.

In summary, the results of the model of general poverty support the finding that



parental stress and positive parenting are mediators that explain the link between family income and financial literacy. The indirect effects, which were not examined or proven in the previous study, contribute to the literature by proving the emotional aspect of financial literacy. Although the result of sensitivity analysis (Figure 9, pp. 119) does not support this mediation, its results are only for reference because of the small sample size.

**7.3.3** Conclusion of main study. The results of the model of general poverty demonstrate that poverty status can influence the financial literacy of adolescents through the mediation of parental stress and positive parenting behavior. Specifically, a series of hypotheses in Figure 5 (pp. 71) are supported, i.e., the variance of family income can partially explain the variance of material hardship; family income has a positive effect on parental investment and parental stress, and material hardship is negatively associated with parental investment and parental stress; parental stress has a negative impact on parental investment and positive parenting behavior; and parental stress negatively affects the development of financial literacy, and positive parenting behavior positively influences financial literacy. The results of the model of general poverty only fail to prove that family income and material hardship can influence positive parenting behavior and that parental investment has an effect on financial literacy.

Comparatively, the results of the model of parental financial socialization only prove that the link between family income and financial literacy can be mediated by parental



financial behavior, rejecting a series of hypothesis in Figure 3 (pp. 59). Specifically, family income is proven not to be associated with direct parental teaching or the adoption of parental modeling. Direct parental teaching is also shown not to positively associate with financial literacy, and parental financial behavior does not have an effect on the adoption of parental financial role modeling.

7.3.4 Post-hoc analysis. To compare which model can better explain the impact of family income on the financial literacy of adolescents, post hoc analysis was conducted to combine significant links from two models. The results of combined model were reported in the Figure 13 (pp.143) with the good model fitness ( $\chi^2$  (2, N = 200) = 0.09, CFI = 1.00, RMSEA = 0.00, SRMR = 0.004). As shown, when parental financial behavior, parental stress, and positive parenting behavior were incorporated simultaneously as mediators to compete for influential power, parental financial behavior is no longer the mediator between family income and the financial literacy of adolescents, but becomes the mediator of family income and parental stress, while the mediation roles of parental stress and positive parenting behavior between family income and financial literacy do not experience any changes. Thus, it can be concluded that the model of general poverty can better explain the impact of family income on the development of financial literacy. The results of combined model also indicate the direction of future studies (Figure 14, pp.144). Future studies may explore what the mediators between parental stress and financial literacy are. Literature consistently

documented that parental stress and positive parental behavior are associated with social emotional competence of adolescents (Linver, Brooks-Gunn, & Kohen, 2002; Whipple & Webster-Stratton, 1991). The same links can be tested in the future studies (a and b). At the next step parental financial behavior and social emotional competence may be associated with communicating with friends about financial affairs (c and d), which may further impact financial literacy (e). The links from a to e in the Figure 14 (pp.144) are the research hypothesis for future studies.





*Figure 13*. Results of combined model





Figure 14. Direction for future studies



## 7.4 Limitation

**7.4.1 Validation study**. The convenience sampling method adopted in the validation study is associated with limitations. Since the sampling frame is unknown, and the samples are not chosen at random, the inherent bias in convenience sampling is that it is unlikely to be representative of the whole adolescents. Three-level cluster random sampling method may consider being applied in the future. First step is to select three to five secondary schools standing out randomly from every Hong Kong district (18 districts in Hong Kong). The second step is to choose 15 to 25 adolescents randomly to take the survey at the school level.

The main limitation associated with the validation study is that a factor analysis was not performed to explore the factor structure of all items. In the future, more students should be recruited to make the ratio of observations to items 20:1, which is suggested to be the minimum requirement for performing factor analysis (Osborne & Costello, 2009).

In addition, the current validation study did not measure the financial literacy of adolescents through performance-based testing, which requires students to formulate responses that demonstrate their financial knowledge. The significant advantage associated with a performance-based test is that it is able to inform how much students know about financial knowledge instead of how well they know about given financial knowledge associated with multiple-choice questions. In the future, a performance-based test should be used to measure the financial literacy of adolescents with the assistance of professionals to



rate students' performance.

Another limitation associated with the validation study is that measurements for testing criterion validity all rely on self-reported information, which is likely to be unreliable due to a social desirability bias. For example, when measuring financial attitude, students were asked to indicate on a five-point scale from 1 (strongly disagree) to 5 (strongly agree) their agreement with the item "You should save regularly." To avoid getting socially desirable answers instead of actual ones, in the future, peer-rated, parent-rated and teacher-rated financial attitude of adolescents may consider being adopted. Alternatively, in the future parents and peers may consider rating the financial behavior of adolescents to validate the measurement of their financial attitude, as financial attitude has been proven to be positively associated with financial behavior (Shim et al., 2010).

**7.4.2 International comparison**. The international comparison of FFFL test scores between the adolescents of Hong Kong and other countries is associated with some limitations, and can be used for reference only. First, due to the fact that not all countries reported a standard deviation of the mean score, statistical tests cannot be performed to analyze whether the differences among test scores are significant. Second, the samples in both the U.S. and Hong Kong were obtained through convenience sampling, and whether these two samples accurately represent adolescents in the two countries is in question. Although the sample in New Zealand was obtained from five geographically dispersed



schools throughout the Hamilton sub-region, the adolescents might not represent general adolescents in New Zealand. Third, there is no information about the mean and range of age among U.S. and Japan adolescents. Considering that financial literacy is found to be positively related with age among adolescents (Cameron et al., 2013b), failing to report the mean and range of age makes the comparison of adolescents between Hong Kong and these two countries less reliable.

**7.4.3 Main study**. Although it is believed that the main study made notable contributions, several limitations are worth noting. The convenience sampling in the main study is associated with similar disadvantages, which has been indicated when discussing the limitation of validation study. As mentioned, in the future three-level cluster random sampling method may consider being adopted.

The response rate of the main study is relatively low because many parents did not accept the invitation to participate. The low response rate is partially due to the difficulty of getting the dyadic data from paired student and parent. However, there is big merit associated with dyadic data that it avoids the potential multicollinearity problem among the value of variables reported by single reporter. In the future, to increase response rate, the sampling process can be changed by inviting parents (before students) to participate. In this way, students are unlikely to refuse to join when parents have already agreed to participate.

Besides, the majority of parents participating into survey are mothers (68.5%, n = 137).



Previous findings have detected the difference between fathers and mothers in terms of financial behavior (Hira & Mugenda, 2000), teaching strategies (Lisi, 1988), parental investment (Alderman & King, 1998), parental stress (Deater-Deckard & Scarr, 1996), and parenting behaviors (Walling, Stamper, Smiseth, & Moore, 2008). For example, in terms of financial behavior, male are better at well management money and financial emergency, while the female perform better at saving (Hira & Mugenda, 2000). Therefore, the sample in which the majority of parents are mothers is associated with the limitation of not establishing adequate representativeness. The future samples adopted should consider balancing the ratio of mothers and fathers.

The current research relies on data collected in a cross-sectional fashion. The directional pathway generated in the model's estimation is probably feasible (instead of the inferred casual relations), particularly when examining the *development* of financial literacy. Therefore, the group of students and parents should be tracked in the future to collect data for longitudinal study purposes.

In terms of modeling, the main limitation associated with current study is the model of parental financial socialization aims to connect the family income to financial literacy through the mediation of parental socialization, and overlook the impact of other socialized factors on the development of financial literacy. Other socialized factors have been documented in the literature as school financial education (Fox et al., 2005; Tennyson, & Nguyen, 2001), working experience (Erskine, Kier, Leung, & Sproule, 2006; Mandell, 2009; Mortimer, 2003), and peer effects (Brown, Ivković, Smith, & Weisbenner, 2008; Lusardi et al., 2010). Future study may consider incorporating these variables into the model.

In terms of measurement, similar to the validation study, another limitation associated with the main study is that it did not measure the financial literacy of adolescents through performance-based testing. Whether some key variables are precisely measured is worth further discussion, including family income, parental investment, and positive parenting behavior. Family income is the most critical variable and the starting point of our model. When measuring family income, family size was not measured. This is the main limitation of the current study, as family income is more able to reflect poverty when considered along with family size. Also, the current study asked parents to report family income in ranges instead of accurate numbers, which resulted in the inaccurate report of information. However, considering the sensitive nature of family income, reporting in ranges helps to avoid missing values. In the current study the missing rate of family income is only 0.5%. Additionally, for the sake of privacy, some parents may have been unlikely to report their real family income accurately. Following social norms, reported family income is likely to be higher than the actual level.

To minimize concerns associated with the inaccurate reporting of family income, a correlation analysis was carried out between the family income collected from parents and

the parental educational achievement reported by students; the significant and positive correlation found between family income and highest family educational achievement (r = 0.26, p < 0.01) may, to some extent, increase the validity of income measurement. When analyzing the microdata extracted from the Hong Kong Population Census in 1991, 2001, and 2011 (Census and Statistics Department, 2011), the educational levels were all significantly and positively correlated with the monthly income (r = 0.44, p < 0.01; r = 0.48, p < 0.01; r = 0.38, p < 0.01).

In terms of parental investment and positive parenting behavior, parents and students may understand and interpret the sub-items in the scales differently. Also, their ability to recall relevant information is likely to differ, particularly when some parental investments and positive behaviors have long been habitual for parents and, thus, are not adopted deliberately. Relying on parents alone to report information related to these variables could be problematic, although parents know them better, compared to adolescents whose feeling is affected by many other factors, for example, comparison with peers.

To address this concern in the current study, students were invited to answer the same questions, although the questions are phrased differently to make them more suitable for students. The highly significant and positive correlation between parental-reported investment and adolescent-reported investment (r = 0.99, p < 0.01) may, to some extent, alleviate our concern, as does the significant and positive correlation detected between

parental-reported and adolescent-reported positive parenting behaviors (r = 0.39, p < 0.01). In the future, to detect the effect of parental investment on the cognitive aspect of financial literacy, the items closely related to financial areas should be incorporated when measuring parental investment.

Finally, it should be noted that the sample size in the main study barely meets the minimum requirement of the structural equation modeling (Reinartz, Haenlein, & Henseler, 2009). In the future, larger sample sizes should be adopted to confirm the findings of the current study. In particular, future study should increase the number of adolescents aged exactly 15 years old.



## **Chapter 8: Policy Implications**

The validation of the FFFL test is an important achievement in the development of local financial literacy education. After establishing test-retest reliability and predictive validity, this reliable and valid measurement can be the benchmark to track future changes in the levels of financial literacy. Additionally, with the established test-retest reliability, this reliable and valid measure of adolescent financial literacy can serve as a tool to evaluate the effectiveness of school-based financial education programs, while its content topics can also provide references to develop and improve the teaching guidelines of these financial education programs.

The results of the model of parental financial socialization show that parental financial behavior mediates the connection between family income and the financial literacy of adolescents. Sample statistics show that the financial literacy scores of adolescents whose family income is in the upper 30% is 12% higher than that of adolescents whose family income is in the lower 30% (t = 2.23, p < 0.05). Thus, to develop the financial literacy of the next generation, parents should demonstrate healthy financial behaviors, especially for those from low-income families.

The financial literacy of parents (Banks, O'Dea, & Oldfield, 2010; Hastings & Mitchell, 2011; Lusardi & Mitchell, 2007a; Lusardi & Tufano, 2009; Van Rooij, Lusardi, & Alessie, 2011b) and their access to financial information (Lusardi, 2008) have been claimed to be



positive factors influencing their (parental) healthy financial behaviors. To improve financial literacy, Lusardi and Mitchell (2007a) indicated that financial education programs targeted at specific sub-groups of the population are effective. Thus, financial education programs targeted at parents related to home economics might have a positive effect on the financial literacy of parents. Up to now, among all recorded financial education programs in Hong Kong, only 2% are specifically targeted at parents (Investment Education Center, 2015). Also, of the recorded programs, 36% are investment related, and only a minority of them are home economics related (Investment Education Center, 2015). Therefore, the government should consider funding local banks to offer more financial education programs at the community level that are related to home economics and specifically targeted at parents. Other than financial education programs, Servon and Kaestner (2008) found the association between technological literacy and financial literacy and claimed that, for low-income families, manipulating money online is a compelling gateway to financial literacy. Therefore, the local government should consider promoting online banking to low-income parents and offering them free training courses to make online transactions. The local government may also consider funding commercial banks to provide additional benefits to fresh low-income parent users.

To help parents get financial information, regular and free financial counselling services should be introduced at the community level to inform parents of the latest financial products, financial plans and policy change of commercial banks, so as to apply financial knowledge learned from financial education programs to process information and make wise financial decisions.

The results of the model of parental financial socialization also find that the adoption of parental financial role modeling has a positive effect on the financial literacy of adolescents. Thus, to improve financial literacy, adolescents should be encouraged to adopt parental financial role modeling. Monetary allowance and involvement in financial management are two prerequisites for modeling parental financial roles and behaviors. Parents should not only provide fixed monthly allowance to adolescents but also limit the proportional use of allowance by modeling parental financial roles and performing personal financial management. At the school level, simulated financial institutions should be established to offer adolescents opportunities to model parental financial roles and perform financial management. For instance, local schools may consider opening school banks, with more interest to be paid by student consumers than by ordinary banks (Cruce, 2001; Topinka, 2004) to motivate adolescents to model their parents' saving behaviors. Similarly, simulations of financial products and financial markets, such as a stock market game, could be designed, with real cash bonuses to motivate adolescents to model their parents' investment behavior.

The results of the model of general poverty indicate that parental stress and positive parenting behavior can explain the link between family income and the financial literacy of adolescents. To improve financial literacy, parents are suggested to reduce stressful emotions and demonstrate positive parenting behaviors when interacting with adolescents, especially for parents from low-income families.

To reduce stressful emotions, the literature documented three levels of intervention programs. In first level programs, parents are to focus on altering the source of stress. For example, when the stress originates from marriage, a couple solutions can be introduced to increase coping skills, such as communication and problem solving (Bodenmann & Shantinath, 2004). If the source of stress is an adolescent behavioral problem, the establishment of a supportive community system is recommended for social support in dealing with these problems (Adrenal Fatigue Solution, 2016). When the stress is related to a heavy workload in a short period of time, interventions like time management training (Bruning & Frew, 1987) and provision of co-worker support system (Carson et al., 1999) are recommended.

Comparatively, programs at the second level did not focus on any origins of stress but emphasized switching the attention away from stressors. For example, strength-based programs, which are focused on strength-based exercises, can be introduced to alleviate tension built up from stressful events (Proctor et al., 2011). Resilience training focuses on direct parental interpretations away from fixed prejudices, which cause disappointment and stress, and toward a more flexible disposition, as well as switching their attention to the novelty of the world, may be considered (Sood, Prasad, Schroeder, & Varkey, 2011). If the programs at the first and second levels do not work well, programs aiming at providing confidential, accessible and free mental health programs should be introduced at the community level.

The literature documented three kinds of intervention programs to promote positive parenting behavior. They can be summarized as organizing professionals to approach parents, namely home visit (Barlow et al., 2007; Kendrick et al., 2000); attracting parents to approach professionals, namely counseling (Reynolds, 2000); and activating parent-parent interaction, namely information exchange (Daneback & Plantin, 2008; Funderburk, Ware, Altshuler, & Chaffin Nieuwboer, 2008). The personnel delivering home visits may detect negative parenting behaviors at early ages of children and offer interventions by leading parents to positively interact with adolescents, making them realize what negative parenting behaviors are and avoiding demonstration before adolescents (Kendrick et al., 2000). The Perry Preschool Program, which organized home visits to improve parent-child relationships, can be a reference for Hong Kong, (Heckman, & Kautz, 2013). To satisfy parental counseling needs, the programs of the Chicago Child-Parent Center, which required parents to visit the center and receive advice on good parenting behavior, can be the reference for Hong Kong (Heckman, & Kautz, 2013; Reynolds, 2000). To create common space for parents to discuss successful and unsuccessful experiences of positive parenting, online programs might be a



good choice. These programs may disseminate successful experience through group forums and discussion (Amichai-Hamburger, 2008). Nieuwboer, Fukkink and Hermanns (2013) indicated that the advantage associated with online programs is that parents may get social support in terms of positive parenting anonymously.

In the future, Hong Kong needs more financially literate individuals to make informed and responsible financial decisions for themselves and their families to reduce the social problems resulting from irresponsible financial behaviors. The complex and growing financial market and industries also require participants to be equipped with high financial literacy to understand and reflect on creative financial products and encourage financial institutions to design and sell more products of high quality to clear target customers. Associated with the finding of the main study, all intervention programs mentioned in this chapter can be gateways to improve financial literacy. However, establishing parental awareness of the importance of financial literacy of the next generation and their vital role in the development of it is an important prerequisite to motivate parents to actively join these programs. This awareness should also be established among other financial stakeholders, including financial institutions and the government. They should all be motivated to provide support for families by executing the parental role in developing financial literacy, namely demonstrating healthy parental financial behaviors, motivating adolescents to adopt their financial role modeling, reducing parental stress and conducting positive parenting behaviors, particularly for high-risk targets, such as low-income families.



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## Appendix I: Questionnaire for Adolescent Students (Validation Study)

## 香港教育大學 亞洲及政策研究學系 香港學生財經知識與應用問卷調查(學生用)



## 前序

你好,我是朱嶽峰,為香港教育大學亞洲及政策研究學系哲學博士研究生候選人。現設 計此問卷,以評估香港青少年財經知識與應用情況,以及它對家庭的影響。此問卷需時 約 50 分鐘。問卷結果保密,僅供研究之用,用後立即銷毀。你的支持和幫助對研究香 港財經教育十分重要。

指引

- 1. 請按問題次序完成此問卷。
- 2. 每條問題答案無對錯之分,請按你的意願填寫。
- 3. 你有權不回答任何一條問題,亦可隨時終止回答此問卷。

第一部分:個人資料(請圈出合適的答案):

1	你在哪一個月份出生? 1 □ 一月 2 5 □ 五月 6 9 □ 九月 10	□ 二月 □ 六月 □ 十月	3 7 11	<ul> <li>□ 三月</li> <li>□ 七月</li> <li>□ 十一月</li> </ul>	4 8 12	□ 四月 □ 八月 □ 十二月
2	你在哪一年出生?:					
3	你的性别: 1□男	2 🗌 女				
4	你現在就讀的年級: 1 □ 中二 2 □ 中三 3 □ 中四					
5	<ul> <li>你家物字單位的類型是:</li> <ol> <li>公營租住房屋</li> <li>資助自置居住房屋</li> <li>私人永久性房屋</li> <li>非住宅用房屋</li> <li>臨時房屋</li> </ol> </ul>					



- 6 你的父母是否同住?
  - 1 是
  - 2 否,已離婚
  - 3 否,已分居
  - 4 否,其他:\_\_\_\_\_
- 7 你<u>父母</u>的最高學歷是什麼?請替你父親(或繼父,或男監護人—任何與你同住的男成 年人)和母親(或繼母,或女監護人—任何與你同住的女成年人)作答。

( <u>a)父</u>	( <u>b)母</u>	
1	1	沒有接受過正式教育
$2 \square$	$2 \square$	小學
$3 \square$	$3 \square$	初中
4	4	高中
5	5	預科
6	6	大專:文憑
7	7	大專:副學位課程
8	8	大學:學位課程
9	9	研究院:碩士/博士課程

第二部分: 財經知識與應用 (FFFL Test)

- 1 以下哪項最接近你對百萬富翁的理解?
  - 1 他們大部份財富都是承繼得來的
  - 2 他們每週工作超過四十小時
  - 3 他們從事令人嚮往的工作,例如運動或娛樂事業
  - 4 他們因高風險而避免投資股票
- 2 以下哪一項最有可能改善多數人的財務狀況?
  - 1 利用信用額度使支出大於收入
  - 2□ 憑直覺迅速地作出財務決定
  - 3 一有收入就開始儲蓄
  - 4 選擇盡早就業而不是繼續深造
- 3 陳大文按自己喜好將三件物品排序如下:
  - (1) 一個 CD 播放機;
  - (2) 一個電腦遊戲;
  - (3) 一件運動衫。
  - 每件物品的售價均是50元。
  - 陳大文買了最想得到的 CD 播放機。他的機會成本是:
  - 1 運動衫
  - 2 CD 播放機
  - 3 電腦遊戲
  - 4 ] 運動衫和電腦遊戲

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- 4 如果李小玲今年決定購買比舊年更多的汽車保險,那麼李小玲的動機可能是:
  - 1□ 汽車保險的好處大於成本
  - 2 更多汽車保險將會減低發生車禍的風險

  - 4 她將會更小心駕駛
- 5 「世上沒有免費午餐」的意思是:
  - 1 免費午餐是一個騙局,但沒法避免
  - 2 因為稀缺的資源少,所以昂貴
  - 3 → 缺乏資源的是個人問題而不是社會問題
  - 4 做一件事的資源本來可以作另一用
- 6 下列哪項通常是正確的?
  - 1 做出正確的選擇是沒有成本的
  - 2 人不會對獎勵做出反應
  - 3 自願交易會產生輸家和贏家
  - 4 □ 現在的選擇會影響未來的結果
- 7 有些人選擇在中學畢業前輟學。這些輟學的人的機會成本是什麼?
  - 1 在勞動市場賺取低收入
  - 2 以較低的利率償還信貸
  - 3 因提前離開學校而需承擔高額稅項
  - 4 付給僱用輟學者公司的特別費用
- 8 「資源短缺」後果之一是:
  - 1 資源充分利用
  - 2 商品和服務的生產是持續的
  - 3 人們須在不同的選擇中作出取捨
  - 4 供應充裕的產品價格會較高
- 9 以下哪一項會被視為人力資源?
  - 1 商業大廈
  - 2 工廠工人
  - 3 🗌 電話簿
  - 4🗌 電力
- 10 做經濟決定的前三個步驟是:
   1□ 得出結論,構建模型,做出總結
   2□ 找出假設,制定政策,評估政策
   3□ 收集事實,形成理論,進行模擬
   4□ 定義問題,列明選項,決定標準
- 以下哪項最能幫助求職者找到工作?
   1□提供一份簡潔準確的申請表

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- 2□ 除非僱主要求,否則不準備個人履歷
- 3 避免透過傳統的報章招聘廣告獲得資訊
- 4 著奇裝異服參加面試
- 12 聯絡一些可以為你找尋僱主的親友,這種求職方法稱為:

201

- 1 利益輸送
- 2 招聘
- 3 連接
- 4 網路
- 13 在面試時, 僱主可以問應徵者以下哪一個問題?
  - 1 你結婚了沒?
  - 2□ 你有否參加宗教活動?
  - 3□ 你認為你哪些個人弱項和此職位有關?
  - 4 你有沒有任何殘疾可能會影響你的工作表現?
- 14 企業家的一個典型特徵是:
  - 1 喜歡兼職工作
  - 2 願意承擔風險
  - 3 □ 喜歡儲蓄多過投資
  - 4 \_ 喜歡在被監督的情況下工作
- 15 人力資本包括:
  - 1 □ 股票和債券
  - 2 知識和技能
  - 3 廠房及設備
  - 4 儲蓄和投資
- 16 電腦軟件程式設計師的需求增加將導致以下哪種情況?

  - 3 軟件程式設計師的工資增加
  - 4 更多軟件程式設計師失業
- 17 香港統計處資料顯示增長最快的工種需要哪一級別的教育培訓?
  - 1 副學士學位或更高學歷
  - 2 高中後的職業培訓
  - 3 高中學歷或以下
  - 4 有相關的工作經驗
  - 5

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- 18 工資總額和淨工資的區別是什麼?
  - 1 淨工資是工資總額減去儲蓄
  - 2 工資總額是淨工資減去儲蓄
  - 3 工資總額是淨工資減去各類扣減
  - 4 淨工資是工資總額減去各類扣減

- 19 張小娟在一間貿易公司全職工作,月薪高於\$7,100。誰支付她的強積金供款?
  1□ 只有張小娟
  - 2□ 只有張小娟的僱主
  - 3 張小娟和她的僱主
  - 4 \_\_\_\_ 政府
- 20 一名僱員每月工作160小時,時薪\$200。扣除每月\$1600薪俸稅,\$1600強積金供款。 一個月淨工資是多少?
  - 1 🗌 \$27, 800
  - 2 🗌 \$28, 800
  - 3 🗌 \$29, 800
  - 4 🗌 \$30, 800
- 21 如將所得利息放入本金繼續儲蓄而不提取,機會成本是什麼?
  - 1 本年的稅款降低
  - 2 失去儲蓄的風險增加
  - 3 現時購物資金減少
  - 4 储蓄户口的利息增加
- 22 黄志強開立了一個儲蓄戶口並存款\$500。如果儲蓄戶口的固定年利率為5%,而他沒 有額外的存取,兩年後他的戶口將有多少錢?
  - 1 刷好\$505
  - 2 刷好\$550
  - 3 少於\$550
  - 4 多過\$550
- 23 金融專家建議年輕時開始儲蓄,這是因為:
  - 1 當你開始有收入時會較容易儲蓄
  - 2 到年長時,支出增加便很難儲蓄
  - 3 使用信用咭購物時,你要支付較高利息
  - 4 複息會為你賺取更多的利息

24 如果\$1000以7.2%的年利率存放在儲蓄戶口,大概多少年\$1000才能累積成\$2,000?

- 1 7.2 年
- 2 10.0年
- 3 14.4年
- 4 20.0 年
- 25 在作出投資時,「市場價格風險」是指以下哪項?
  - 1 將投資轉換成現金的難度
  - 2 投資可能隨時間貶值
  - 3 無法撤回資金
  - 4 所賺取的利息高於通脹率



- 26 以下哪類型投資的流動性風險最高?
  - 1 房地產
  - 2 股票基金
  - 3 儲蓄
  - 4 個別股票
- 27 風險和回報之間一般來說有什麼關係?
  - 1 風險越高,潛在回報越低
  - 2 風險越高,潛在回報越高
  - 3 風險高低不會影響潛在回報
  - 4 風險與回報是有關係的,但是是不確定的
- 28 你如何計算真實的投資回報率?
  - 1 名義回報率減去通脹率
  - 2 □ 通脹率減去名義回報率
  - 3 年回報率減去名義回報率
  - 4 名義回報率減去年回報率
- 29 普通股讓股票持有人:
  - 1 □ 成為一家公司的股東
  - 2□ 每年獲得固定的息率
  - 3 保證年紅利
  - 4 實現有保障的投資
- 30 投資時要考慮哪三個最重要的標準?
  - 1 規模,保險,稅項
  - 2□ 資金槓桿,利潤,信貸
  - 3 風險,回報率,流動性
  - 4 抵押品,帳户存取權,紅利
- 31 獲得信貸的主要好處是它可以幫助人們:
  - 1 出售資產
  - 2 提高資產淨值
  - 3 降低投資股票的風險。
  - 4 可以延遲支付今天購買的商品或服務
- 32 誰一般會從貸款交易中得益?
  - 1 只有貸款者
  - 2 只有借款者
  - 3 借款者與貸款者
  - 4 既不是借款者,也不是貸款者
- 33 使用信貸購置房產或汽車時,債務人哪三個屬性最受債權人重視?
  - 1 婚姻狀況,性別,地點
  - 2 性格,抵押品,還款能力



3□ 貸款期,信譽,傭金

4 職業,人脈,收入來源

- 34 信貸機構一般做什麼?
  - 1 為合資格買家延長信貸
  - 2 就如何使用信貸提供建議
  - 3 □ 記錄監測消費者帳單支付習慣
  - 4 向信用記錄不良的人發出警告
- 35 如果借款人選擇在一段較長的時間償還貸款,每月的還款額是:
  - 1 還款額會較低,但支付的利息較高
  - 2 還款額會較高,支付的利息也較高
- 36 向借款人徵收的利率與其拖欠還款的風險之間有什麼關係?
  - 1 存在直接或間接的關係
  - 2 拖欠貸款的風險越低,利率越高
  - 3 拖欠貸款的風險越高,利率越高
  - 4 它們之間不存在任何關係
- 37 衡量貸款成本的最佳指標是:
  - 1 首期付款金額
  - 2 年利率
  - 3 還款次數
  - 4 每月還款額
- 38 一名小偷偷了你的信用卡。報失信用卡後,你發現小偷已經盜用信用卡並簽帳 2000 元。這 2000 元中,你需要承擔多少?
  - 1 不超過 50 元
  - 2 取決於能否捉到盜用者
  - 3 0元,因為你已報失
  - 4 2000 元,因為此信用卡是以你的名義簽發的
- 39 一間公司來電並提供一個有高回報的投資機會。你所需要做的是招募你的朋友參與是 項投資,這樣投資回報將會滾滾而來。這項描述屬於下列哪種投資騙局?
  - 1 身份盜用
  - 2 貸款騙局
  - 3 信用重整騙局
  - 4 層壓式推銷
- 40 以下哪類金融機構收取的貸款利率通常是最高的?
  - 1 信用社
  - 2 商業銀行
  - 3 儲蓄貸款機構



4 財務公司

- 41 可動用收入的錢就是:
  - 1 從薪水中扣除的收入
  - 2 ▲類支出的預算
  - 3 扣減各類使費後的收入
  - 4 每月的儲蓄和投資
- 42 正資產淨值是指:
  - 1 收入少於儲蓄
  - 2□ 資產少於負債
  - 3 收入大於儲蓄
  - 4 資產大於負債
- 43 「先付錢給自己」(Pay Yourself First)的意思是:
  - 1 在儲蓄之前支付所有帳單
  - 2□ 在消費之前,預留金錢作儲蓄

  - 4 當收入不能支付開支時才使用信用卡付款
- 44 使用轉帳卡(或借記卡)購物跟使用\_\_\_\_\_最相似:
  - 1 貸款
  - 2 支票
  - 3□ 信用卡
  - 4 貨幣市場帳戶
- 45 這是陳小芬的支票帳戶登記冊。

支票编號	日期	項目描述	存款		提款		餘額	
	14/5/03	初始餘額					\$500	00
500	15/5/03	世紀汽車零部			100	00		
		件						
	31/5	工資	200	00				
501	2/6/03	Best Clothes						

如果陳小芬寫了 50 元的支票給 Best Clothes,新的餘額是多少?

- 1 \$450
- 2 🗌 \$500
- 3 🗌 \$550
- 4 \$600

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- 46 哪類型的保險保護投保人免受訴訟損失?
  - 1 責任保險
  - 2 意外傷亡保險
  - 3 定期人壽保險
  - 4 碰撞事故保險

- 47 以下哪項最能描述汽車保險政策中關於碰撞事故的保障?
  - 1 □ 如保單持有人在事故發生後無法工作,保險公司將為保險持有人提供定期收入
  - 2 賠付汽車因火災,盜竊或暴風雨造成的損失
  - 3 賠付保單持有人的財產損失和造成他人受傷的費用
  - 4 如保單持有人的汽車在事故中損壞,保險公司將理賠維修費用
- 48 何玲的車尾撞到一個金屬柵欄,造成\$500的損失。她的汽車保單有\$200扣減額。為了 維修她的車,汽車保險公司應該支付多少?
  - 1 🗌 \$0
  - 2 🗌 \$200
  - 3 300
  - 4 🗌 \$500
- 49 哪項是汽車保險政策中關於全面覆蓋最好的說明?
  - 1 理賠範圍覆蓋因火災,盜竊和暴風雨造成的損失
  - 2 當保單持有人無法工作時,它在特定時期內提供收入
  - 3 賠付保單持有人的財產損失和造成他人受傷的費用
  - 4 如保單持有人的汽車在事故中損壞,保險公司將理賠維修費用
- 50 終身人壽險提供的保障為:
  - 1 在保單持有人失去工作能力時提供收入
  - 2 在保單持有人一生中提供保障,保證現金價值
  - 3 ─ 在指定時期內提供保障,但並不保證現金價值

#### 第三部分:財務知識

- 1 假設你銀行戶口有\$ 100 存款,年利率兩厘。如果你將錢放在銀行,五年後,你戶口 會有多少錢?
  - 1 多於\$102
  - 2 🗌 \$102
  - 3 \_\_\_ 少於\$102
- 2 假如現在銀行存款的年利率是一厘,通脹率是百分之二。一年後,你能夠利用這筆銀行存款購買的物品將會:
  - 1 比今天多
  - 2 與今天一樣
  - 3 比今天少
- 3 有意見認為「購買一間公司股票比買股票互惠基金有更穩妥的回報」,你認為這個講法 是否正確?
  - 1 正確
  - 2 不正確

#### 第四部分:家長影響評估



		非常	不同	間中	同意	非常
		不同	意			同意
		意				
1	父母認為你應該定期存錢	1	2	3	4	5
2	父母認為你應該掌握你的每月開支	1	2	3	4	5
3	父母認為你的花費應該在預算之內	1	2	3	4	5
4	父母認為你應該始終保持你銀行帳戶上有足夠的	1	2	3	4	5
	結餘					
5	父母認為你應該預備一些錢,以應對緊急情況的	1	2	3	4	5
	生					
6	父母認為你應該每月為未來儲蓄	1	2	3	4	5

## 第五部分: 財務態度和能力評估

		非常	反對	中立	贊成	非常
		反對				贊成
1	你應該定期存錢	1	2	3	4	5
2	你應該掌握你每月的開支	1	2	3	4	5
3	你應該在預算之內花費	1	2	3	4	5
4	你應該始終保持你銀行帳戶上有足夠的結餘	1	2	3	4	5
5	你應該預備一些錢,以應對緊急情況的發生	1	2	3	4	5
6	你應該每月為未來儲蓄	1	2	3	4	5
		非常	不同	間中	同意	非常
		不同	意			同意
		意				
7	因為理財的問題,你與父母的關係不好	1	2	3	4	5
8	父母不認同你的一般消費模式	1	2	3	4	5
9	你經常與父母爭論有關理財的問題	1	2	3	4	5
10	你經常擔心理財的問題	1	2	3	4	5
		非常	不自	間中	自信	非常
		不自	信			自信
		信				
11	你如何評價你管理自己財務的能力	1	2	3	4	5

感謝你花費寶貴的時間完成此問卷



### Appendix II: Questionnaire for Adolescent Students (Main Study)

## 香港教育大學 亞洲及政策研究學系 香港學生財經知識與應用問卷調查(學生用)



### 前序

你好,我是朱嶽峰,為香港教育大學亞洲及政策研究學系哲學博士研究生候選人。現設計此問卷,以評估香港青少年財經知識與應用情況,以及它對家庭的影響。此問卷需時約50分鐘。問卷結果保密,僅供研究之用,用後立即銷毀。你的支持和幫助對研究香港財經教育十分重要。

指引

- 1. 請按問題次序完成此問卷。
- 2. 每條問題答案無對錯之分,請按你的意願填寫。
- 3. 你有權不回答任何一條問題,亦可隨時終止回答此問卷。

第一部分:個人資料(請圈出合適的答案):

1	你在哪一個月份出生? 1 □ 一月 2 5 □ 五月 6 9 □ 九月 10	□ 二月 □ 六月 □ 十月	3 7 11	□ 三月 □ 七月 □ 十一月	4 8 12	□ 四月 □ 八月 □ 十二月
2	你在哪一年出生?:					
3	你的性别: 1 🗌 男	2 🗌 女				
4	你現在就讀的年級: 1 □ 中二 2 □ 中三 3 □ 中四					
5	<ul> <li>你家物字單位的類型是:</li> <li>1 □ 公營租住房屋</li> <li>2 □ 資助自置居住房屋</li> <li>3 □ 私人永久性房屋</li> <li>4 □ 非住宅用房屋</li> <li>5 □ 臨時房屋</li> </ul>					



- 6 你的父母是否同住?
  - 1 是
  - 2 否,已離婚
  - 3 否,已分居
  - 4 否,其他:\_\_\_\_\_
- 7 你<u>父母</u>的最高學歷是什麼?請替你父親(或繼父,或男監護人—任何與你同住的男成 年人)和母親(或繼母,或女監護人—任何與你同住的女成年人)作答。

( <u>a)父</u>	( <u>b)母</u>	
1	1	沒有接受過正式教育
$2 \square$	$2 \square$	小學
3	$3 \square$	初中
4	4	高中
5	5	預科
6	6	大專:文憑
7	7	大專:副學位課程
8	8	大學:學位課程
9	9	研究院:碩士/博士課程

- 8 你在讀中學時是否在家庭以外打工:
  - 1 🗌 從未打工
  - 2 🗌 暑期打工
  - 3 🗌 暑期和正常學期內都有打工
- 9 在讀中學期間你上過\_\_\_\_\_門有關財務管理,消費者教育,經濟學或商學的課程。
- 10 在讀中學期間你參加過\_\_\_\_\_次教授財務管理知識的研習班,工作坊或課外專案。

### 第二部分: 財經知識與應用 (FFFL Test)

- 1 以下哪項最接近你對百萬富翁的理解?
  - 1 ── 他們大部份財富都是承繼得來的
  - 2□ 他們每週工作超過四十小時
  - 3 他們從事令人嚮往的工作,例如運動或娛樂事業
  - 4 他們因高風險而避免投資股票
- 2 以下哪一項最有可能改善多數人的財務狀況?
  - 1 利用信用額度使支出大於收入
  - 2□ 憑直覺迅速地作出財務決定
  - 3 一有收入就開始儲蓄
  - 4 選擇盡早就業而不是繼續深造
- 3 陳大文按自己喜好將三件物品排序如下: (1)一個 CD 播放機;

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- (2) 一個電腦遊戲;
- (3) 一件運動衫。
- 每件物品的售價均是50元。
- 陳大文買了最想得到的 CD 播放機。他的機會成本是:
- 1 運動衫
- 2 CD 播放機
- 3 電腦遊戲
- 4 運動衫和電腦遊戲
- 4 如果李小玲今年決定購買比舊年更多的汽車保險,那麼李小玲的動機可能是: 1□汽車保險的好處大於成本
  - 2 更多汽車保險將會減低發生車禍的風險
- 5 「世上沒有免費午餐」的意思是:
  - 1 免費午餐是一個騙局,但沒法避免
  - 2 因為稀缺的資源少,所以昂貴
  - 3 缺乏資源的是個人問題而不是社會問題
  - 4 做一件事的資源本來可以作另一用
- 6 下列哪項通常是正確的?
  - 1 做出正確的選擇是沒有成本的
  - 2 人不會對獎勵做出反應
  - 3 | 自願交易會產生輸家和贏家
  - 4 □ 現在的選擇會影響未來的結果
- 7 有些人選擇在中學畢業前輟學。這些輟學的人的機會成本是什麼?
  - 1 在勞動市場賺取低收入
  - 2 以較低的利率償還信貸
  - 3 因提前離開學校而需承擔高額稅項
  - 4 付給僱用輟學者公司的特別費用
- 8 「資源短缺」後果之一是:
  - 1 資源充分利用
  - 2 商品和服務的生產是持續的
  - 3 人們須在不同的選擇中作出取捨
  - 4 ── 供應充裕的產品價格會較高
- 9 以下哪一項會被視為人力資源?
  - 1 商業大廈
  - 2 工廠工人
  - 3 🗌 電話簿
  - 4 🗌 電力



- 10 做經濟決定的前三個步驟是:
  - 1 得出結論,構建模型,做出總結
  - 2 【 找出假設,制定政策,評估政策
  - 3 收集事實,形成理論,進行模擬
  - 4 定義問題,列明選項,決定標準
- 11 以下哪項最能幫助求職者找到工作?
  - 1 提供一份簡潔準確的申請表
  - 2□ 除非僱主要求,否則不準備個人履歷
  - 3 避免透過傳統的報章招聘廣告獲得資訊
  - 4 著奇裝異服參加面試
- 12 聯絡一些可以為你找尋僱主的親友,這種求職方法稱為:
  - 1 利益輸送
  - 2 招聘
  - 3 連接
  - 4 網路
- 13 在面試時,僱主可以問應徵者以下哪一個問題?
  - 1 你結婚了沒?
  - 2□ 你有否參加宗教活動?
  - 3 你認為你哪些個人弱項和此職位有關?
  - 4 你有沒有任何殘疾可能會影響你的工作表現?
- 14 企業家的一個典型特徵是:
  - 1 喜歡兼職工作
  - 2 願意承擔風險
  - 3 喜歡儲蓄多過投資
  - 4 直歡在被監督的情況下工作
- 15 人力資本包括:
  - 1 股票和債券
  - 2 知識和技能
  - 3 廠房及設備
  - 4 儲蓄和投資
- 16 電腦軟件程式設計師的需求增加將導致以下哪種情況?

  - 2□ 軟件的供應減少
  - 3 軟件程式設計師的工資增加
  - 4 更多軟件程式設計師失業
- 17 香港統計處資料顯示增長最快的工種需要哪一級別的教育培訓?
  - 1 副學士學位或更高學歷
  - 2 高中後的職業培訓



3 高中學歷或以下

4 有相關的工作經驗

- 18 工資總額和淨工資的區別是什麼?
  - 1 → 淨工資是工資總額減去儲蓄
  - 2□ 工資總額是淨工資減去儲蓄
  - 3 工資總額是淨工資減去各類扣減
  - 4 淨工資是工資總額減去各類扣減
- 19 張小娟在一間貿易公司全職工作,月薪高於\$7,100。誰支付她的強積金供款?
   1□ 只有張小娟
  - 2 只有張小娟的僱主
  - 3 張小娟和她的僱主
  - 4 \_\_\_\_ 政府
- 20 一名僱員每月工作160小時,時薪\$200。扣除每月\$1600薪俸稅,\$1600強積金供款。 一個月淨工資是多少?
  - 1 🗌 \$27, 800
  - 2 🗌 \$28,800
  - 3 \$29,800
  - 4 \$30,800
- 21 如將所得利息放入本金繼續儲蓄而不提取,機會成本是什麼?
  - 1 本年的稅款降低
  - 2 失去儲蓄的風險增加
  - 3 ... 現時購物資金減少
  - 4 儲蓄戶口的利息增加
- 22 黃志強開立了一個儲蓄戶口並存款\$500。如果儲蓄戶口的固定年利率為5%,而他沒 有額外的存取,兩年後他的戶口將有多少錢?
  - 1 刷好\$505
  - 2 刷好\$550
  - 3 少於\$550
  - 4 多過\$550
- 23 金融專家建議年輕時開始儲蓄,這是因為:
  - 1 當你開始有收入時會較容易儲蓄
  - 2 到年長時,支出增加便很難儲蓄
  - 3 使用信用咭購物時,你要支付較高利息
  - 4 複息會為你賺取更多的利息
- 24 如果\$1000以7.2%的年利率存放在储蓄户口,大概多少年\$1000才能累積成\$2,000?
  - 1 7.2 年
  - 2 10.0年
  - 3 14.4 年



4 20.0 年

- 25 在作出投資時,「市場價格風險」是指以下哪項?
  - 1 將投資轉換成現金的難度
  - 2 投資可能隨時間貶值
  - 3 無法撤回資金
  - 4 所賺取的利息高於通脹率
- 26 以下哪類型投資的流動性風險最高?
  - 1 房地產
  - 2 股票基金
  - 3 儲蓄
  - 4 個別股票
- 27 風險和回報之間一般來說有什麼關係?
  - 1 風險越高,潛在回報越低
  - 2 風險越高,潛在回報越高
  - 3 ▲險高低不會影響潛在回報
  - 4 ▲ 風險與回報是有關係的,但是是不確定的
- 28 你如何計算真實的投資回報率?
  - 1 名義回報率減去通脹率
  - 2 通脹率減去名義回報率
  - 3 年回報率減去名義回報率
  - 4 名義回報率減去年回報率
- 29 普通股讓股票持有人:
  - 1 成為一家公司的股東
  - 2 每年獲得固定的息率
  - 3 保證年紅利
  - 4 實現有保障的投資
- 30 投資時要考慮哪三個最重要的標準?
  - 1 規模,保險,稅項
  - 2□ 資金槓桿,利潤,信貸
  - 3 風險,回報率,流動性
  - 4 抵押品,帳户存取權,紅利
- 31 獲得信貸的主要好處是它可以幫助人們:
  - 1 出售資產
  - 2 提高資產淨值
  - 3 降低投資股票的風險。
  - 4 可以延遲支付今天購買的商品或服務

32 誰一般會從貸款交易中得益?



- 2 只有借款者
- 3 借款者與貸款者
- 4 既不是借款者,也不是貸款者
- 33 使用信貸購置房產或汽車時,債務人哪三個屬性最受債權人重視?
  - 1□ 婚姻狀況,性別,地點
  - 2 性格,抵押品,還款能力
  - 3□ 貸款期,信譽,傭金
  - 4 職業,人脈,收入來源
- 34 信貸機構一般做什麼?
  - 1 為合資格買家延長信貸
  - 2 就如何使用信貸提供建議
  - 3 □ 記錄監測消費者帳單支付習慣
  - 4 向信用記錄不良的人發出警告
- 35 如果借款人選擇在一段較長的時間償還貸款,每月的還款額是:
  - 1 還款額會較低,但支付的利息較高

  - 3 還款額會較低,支付的利息也較低
- 36 向借款人徵收的利率與其拖欠還款的風險之間有什麼關係?
  - 1 存在直接或間接的關係
  - 2 拖欠貸款的風險越低,利率越高
  - 3 − 拖欠貸款的風險越高,利率越高
  - 4 它們之間不存在任何關係
- 37 衡量貸款成本的最佳指標是:
  - 1 首期付款金額
  - 2 年利率
  - 3 還款次數
  - 4 每月還款額
- 38 一名小偷偷了你的信用卡。報失信用卡後,你發現小偷已經盜用信用卡並簽帳 2000 元。這 2000 元中,你需要承擔多少?
  - 1 🗌 不超過 50 元
  - 2 取決於能否捉到盜用者
  - 3 0元,因為你已報失
  - 4 2000 元,因為此信用卡是以你的名義簽發的
- 39 一間公司來電並提供一個有高回報的投資機會。你所需要做的是招募你的朋友參與是 項投資,這樣投資回報將會滾滾而來。這項描述屬於下列哪種投資騙局? 1□身份盜用



- 2 貸款騙局
- 3 信用重整騙局
- 4 層壓式推銷
- 40 以下哪類金融機構收取的貸款利率通常是最高的?
  - 1 信用社
  - 2□ 商業銀行
  - 3 储蓄貸款機構
  - 4 財務公司
- 41 可動用收入的錢就是:
  - 1 從薪水中扣除的收入
  - 2 各類支出的預算
  - 3 扣減各類使費後的收入
  - 4 每月的儲蓄和投資
- 42 正資產淨值是指:
  - 1 收入少於儲蓄
  - 2 資產少於負債
  - 3 收入大於儲蓄
  - 4 資產大於負債
- 43 「先付錢給自己」(Pay Yourself First)的意思是:
  - 1 🗌 在儲蓄之前支付所有帳單
  - 2 在消費之前,預留金錢作儲蓄
  - 3□ 先支付必要開支,再支付靈活開支
  - 4 當收入不能支付開支時才使用信用卡付款
- 44 使用轉帳卡(或借記卡)購物跟使用\_\_\_\_\_最相似:
  - 1 貸款
  - 2 \_ 支票
  - 3 信用卡
  - 4 貨幣市場帳戶

45 這是陳小芬的支票帳戶登記冊。

支票編號	日期	項目描述	存款		提款		餘額	
	14/5/03	初始餘額					\$500	00
500	15/5/03	世紀汽車零部			100	00		
		件						
	31/5	工資	200	00				
501	2/6/03	Best Clothes						

如果陳小芬寫了 50 元的支票給 Best Clothes,新的餘額是多少?

1 🗌 \$450

- 2 🗌 \$500
- 3 3550



4 \$600

- 46 哪類型的保險保護投保人免受訴訟損失?
  - 1 責任保險
  - 2 意外傷亡保險
  - 3 定期人壽保險
  - 4 碰撞事故保險
- 47 以下哪項最能描述汽車保險政策中關於碰撞事故的保障?
  - 1 □ 如保單持有人在事故發生後無法工作,保險公司將為保險持有人提供定期收入
  - 2 賠付汽車因火災,盜竊或暴風雨造成的損失
  - 3 賠付保單持有人的財產損失和造成他人受傷的費用
  - 4 如保單持有人的汽車在事故中損壞,保險公司將理賠維修費用
- 48 何玲的車尾撞到一個金屬柵欄,造成\$500的損失。她的汽車保單有\$200扣減額。為了 維修她的車,汽車保險公司應該支付多少?
  - $1 \square \$0$
  - 2 \$200
  - 3 300
  - 4 \$500
- 49 哪項是汽車保險政策中關於全面覆蓋最好的說明?
  - 1 理賠範圍覆蓋因火災,盜竊和暴風雨造成的損失
  - 2 當保單持有人無法工作時,它在特定時期內提供收入
  - 3 賠付保單持有人的財產損失和造成他人受傷的費用
  - 4 如保單持有人的汽車在事故中損壞,保險公司將理賠維修費用

#### 50 終身人壽險提供的保障為:

- 1 在保單持有人失去工作能力時提供收入
- 2□ 在保單持有人一生中提供保障,保證現金價值
- 3 在指定時期內提供保障,但並不保證現金價值
- 4 是以保單持有人是否有一個健康的生活方式為前提

### 第三部分:財務知識

- 1 假設你銀行戶口有\$ 100 存款,年利率兩厘。如果你將錢放在銀行,五年後,你戶口 會有多少錢?
  - 4 多於\$102
  - 5 5 \$102
  - 6 少於\$102
- 2 假如現在銀行存款的年利率是一厘,通脹率是百分之二。一年後,你能夠利用這筆銀行存款購買的物品將會:



4 🗌 比今天多

- 5 與今天一樣
- 6 比今天少

3 有意見認為「購買一間公司股票比買股票互惠基金有更穩妥的回報」,你認為這個講法 是否正確?

- 3 正確
- 4 不正確

第四部分:家長影響評估

		非常	不同	間中	同意	非常
		不同	意			同意
		意				
1	父母與我討論家庭的財務事宜	1	2	3	4	5
2	父母告訴我有關儲蓄的重要	1	2	3	4	5
3	父母教我如何做一個精明的消費者	1	2	3	4	5
4	父母教我如何適當地使用信用卡	1	2	3	4	5
5	父母與我討論如何建立良好的信用評級	1	2	3	4	5
6	父母與我討論如何資助我讀大學	1	2	3	4	5
7	我作出的财務決定是基於父母過去在類似情況	1	2	3	4	5
	所作的決定。					
8	在理財方面,我以父母為榜樣	1	2	3	4	5
9	就如何管理財務事項,我會以父母為榜樣	1	2	3	4	5
10	父母為你的理財方面帶來正面影響	1	2	3	4	5

感謝你花費寶貴的時間完成此問卷。

### **Appendix III: Questionnaire for Parents (Main Study)**

#### 香港教育大學

亞洲及政策研究學系 香港學生財經知識與應用問卷調查(父母用)



### 前序

你好,我是朱嶽峰,為香港教育大學亞洲及政策研究學系哲學博士研究生候選人。現設 計此問卷,以評估香港青少年財經知識與應用情況,以及它對家庭的影響。此問卷需時 約20分鐘。問卷結果保密,僅供研究之用,用後立即銷毀。你的支持和幫助對研究香 港財經教育十分重要。

指引

- 1. 請按問題次序完成此問卷。
- 2. 每條問題答案無對錯之分,請按你的意願填寫。
- 你有權不回答任何一條問題,亦可隨時終止回答此問卷。

第一部分:個人資料 (請圈出合適的答案):

- 1 你是小孩的:
  - 1 🗌 父親
  - 2 🗌 母親
- 2 你家庭每月的收入是多少:
  - 0 🗌 沒有收入
  - 1 🗌 \$ 1- \$ 1,999
  - $2 \qquad \square \ \$ \ 2,000 \ \ \$ \ 3,999$
  - 3 🗌 \$ 4,000 \$ 4,999
  - 4 🗌 \$ 5,000 \$ 5,999
  - 5 🗌 \$ 6,000 \$ 6,999
  - 6 🗌 \$ 7,000 \$ 7,999
  - 7 🗌 \$ 8,000 \$ 8,999

  - 12 🗌 \$ 20,000 \$ 24,999
  - 13 🗌 \$ 25,000 \$ 29,999
  - 14 🗌 \$ 30,000 \$ 39,999
  - 15 🗌 \$ 40,000 \$ 49,999



 16
 □ \$ 50,000 - \$ 59,999

 17
 □ \$ 60,000 - \$ 69,999

 18
 □ \$ 70,000 - \$ 79,999

 19
 □ \$ 80,000 或以上

## 第二部分: 父母財務行為

		從不	很少	間中	經常	一定
1	你一直掌握每月的開支	1	2	3	4	5
2	你以往的花費是在預算之內	1	2	3	4	5
3	你每月都檢查帳單是否準確	1	2	3	4	5
4	你始終保持銀行帳戶上有足夠的結餘	1	2	3	4	5
5	你每月都準時的繳付帳單	1	2	3	4	5
6	你會定期存錢	1	2	3	4	5
7	你會預備一些錢,以應對緊急情況的發生	1	2	3	4	5
8	你過去每月繳清所有信用卡的欠款	1	2	3	4	5
9	你過去每月都會為未來儲蓄	1	2	3	4	5
10	你以往為長期的財務目標作經常性投資	1	2	3	4	5

## 第三部分: 家庭經濟狀況

		是	否
1	居住環境安全,沒有結構性的危險	1	2
2	家裡有活動空間,不用整天「屈」在床上	1	2
3	在家裡,不用和其他家庭共用洗手間	1	2
4	家裡最少有一個窗口	1	2
5	居所附近有康樂體育設施	1	2
6	居所附近有可與街坊或朋友聚腳的場所	1	2
7	在居所附近有方便的公共交通服務	1	2
8	體弱長者如有需要可以得到照顧服務	1	2
9	有需要時,可坐的士往返醫院	1	2
10	定期檢查牙齒	1	2
11	如有需要,向中醫求診	1	2
12	有急病時,不用輪候街症,可向私家西醫求診	1	2



	是	否
13 購買醫生處方的藥物	1	2
14 能支付探望親友的交通開支	1	2
15 有需要時,可以回鄉探親	1	2
16 親友結婚時能夠支付賀禮	1	2
17 過年時能夠封利市給親友	1	2
18 被別人尊重	1	2
19 自己的身份被别人接受	1	2
20 假如患病,有人可照顧你或幫你料理家居事務	1	2
21 如有緊急需要時,有人可借錢(3000元)給你	1	2
22 如需要做重要決定,有人可以給你提意見	1	2

# 第四部分:父母壓力評估

	非常不同意	不同意	間 中	同意	非常同意
1 我時常擔心不能處理好一些事情	1	2	3	4	5
2 我會為了滿足小孩的需要而放棄自己的生活	1	2	3	4	5
3 感覺自己為了承擔父母的責任而陷入困境	1	2	3	4	5
4 感覺自己沒法嘗試新事物	1	2	3	4	5
5 感覺自己以後沒法做回喜歡的事情	1	2	3	4	5
6 為了上次給自己買衣服的事情感到不開心	1	2	3	4	5
7 感覺自己受很多事情困擾	1	2	3	4	5
8 感覺小孩成為我和配偶的磨心	1	2	3	4	5
9 感覺自己孤獨且沒有朋友	1	2	3	4	5
10 感覺自己在聚會上沒有辦法盡情享受	1	2	3	4	5
11 感覺自己不如過去般對其他人感興趣	1	2	3	4	5
12 覺得自己不如過去般對對事物感興趣	1	2	3	4	5

第五部分:父母對子女投資

		是	否
1	你的家裡飼有寵物	1	2
2	你的家裡一月2次探親或有親友造訪 探親或接收來自親戚 朋友探訪	1	2
3	你的小孩通常每天至少與你和父親(或繼父)一起吃一頓飯	1	2
4	你的小孩一週四天都可以看見並和父親(或繼父)一起共處	1	2
5	你或其他家庭成員每兩周都會帶小孩外出進行戶外活動	1	2
6	小孩每隔一周就會和你或其他家庭成員一起外出	1	2
7	在過去一年內你或其他家庭成員曾帶小孩去科學,藝術或文化 博物館	1	2
8	在過去一年內你或其他家庭成員曾帶小孩去離家 50 英里外的 地方旅行	1	2
9	在過去一年內你或其他家庭成員曾帶小孩乘搭飛機,火車或長 途巴士	1	2
10	在過去一年內你或其他家庭成員曾帶小孩觀看現場音樂劇或 戲劇表演	1	2
11	在過去一年內你或其他家庭成員曾安排小孩參加特別課程, 以發展小孩的興趣(例如體操,藝術、舞蹈或音樂課程等)	1	2
12	你經常帶小孩參加家庭休閒娛樂活動(例如騎單車、散步、遊覽公園、 泳、打球、棋牌和砌拼圖等)	1	2
13	在過去一年內,你或其他家庭成員試過 3-4 次帶小孩參加一些家庭商務 動(例如去汽車修理店、裁縫店、設備維修店,銀行等)	1	2
14	你的小孩能夠在家裡使用 CD 播放機並自己擁有至少 5 張 CD	1	2
15	家裡有樂器(例如鋼琴、鼓、 夏威夷吉他、吉他、小號、單 簧管等)供小孩使用	1	2
16	家裡有至少兩盒棋牌遊戲供小孩玩樂	1	2
17	家裡有至少 20 本符合小孩年齡的書籍供他閱讀	1	2
18	家裡有書桌或其它地方供小孩閱讀或學習	1	2
19	家裡有至少2種參考類書籍供小孩使用	1	2
20	你的小孩有自己的圖書館借書證	1	2



	是	否
21 你或其他家庭成員有鼓勵小孩獨立閱讀	1	2
22 你的小孩有至少3本屬於自己的書籍	1	2
23 你或其他家庭成員積極鼓勵小孩發展和保持興趣愛好	1	2
24 你的小孩有機會使用至少2件運動器材	1	2

# 第六部分 父母行為

		從	很	有	經	-
		不	少	時	常	定
1	儘管我說了不讓小孩做某些事,但最後還是會讓 他做	1	2	3	4	5
2	如果我的小孩感到沮喪,我就會讓步並屈服	1	2	3	4	5
3	當小孩做了讓我不開心的事情時,我一般得過且過	1	2	3	4	5
4	當我向小孩作出合理的警告和威脅時,我通常不會執行	1	2	3	4	5
5	當小孩不跟從我要求他做的事時,我一般作罷或是 最終自己做了	1	2	3	4	5
6	當說"不"不管用時,我會給小孩一些好處好讓他/她 收斂	1	2	3	4	5
7	我哄勸或懇求我的小孩停止某些行為	1	2	3	4	5
8	我讓我的小孩做他想做的一切事	1	2	3	4	5
9	我威脅小孩做一些事,但我知道我是不會做的	1	2	3	4	5
10	當小孩犯錯並表示歉意時,我會很快原諒他	1	2	3	4	5
11	當我們不在家,我讓小孩更易逃脫處罰	1	2	3	4	5
12	我沮喪和生氣的時候,小孩可以看見並感受到我的失落	1	2	3	4	5
13	我會因情勢所迫做一些我本不打算做的事	1	2	3	4	5
14	對小孩說話時,有時我會忍不住提高音量甚至吼叫	1	2	3	4	5
15	我經常打小孩	1	2	3	4	5
16	我經常對小孩心存怨氣	1	2	3	4	5
17	當我失落或壓力大時,對小孩會更加挑剔	1	2	3	4	5
18	我經常辱罵並對小孩說一些羞辱或刻薄的話	1	2	3	4	5
19	我對小孩說話時經常喋喋不休	1	2	3	4	5
20	我會長篇大論地說教小孩	1	2	3	4	5
21	我經常使用髒話或咒罵的言語	1	2	3	4	5
22	我會讓小孩告訴我為什麼他這樣做	1	2	3	4	5

	從	很	有	經	-
	不	少	時	常	定
23 我話比較多	1	2	3	4	5
24 如果 說"不"沒法立即奏效時,我會不停地說並儘量 讓小孩明白	1	2	3	4	5
25 如果小孩在我處理問題時反駁或抱怨,我會說服他 不要抱怨	1	2	3	4	5
26 我會給小孩一連串提示和警告	1	2	3	4	5
27 我會推遲做一些事	1	2	3	4	5
28 對於小孩的糾纏,我無法視而不見	1	2	3	4	5
29 當小孩不在視線以內時,我不清楚他在做什麼	1	2	3	4	5
30 我在處理某些問題時會向小孩道歉	1	2	3	4	5

感謝你花費寶貴的時間完成此問卷。



## **Appendix IV: Frequency Distribution of Response Items**

No.	Item distribution	Correct response	Percentage
1	Becoming a Millionaire	49	24.5%
2	Financial Success	101	50.5%
3	Opportunity Cost	62	31.0%
4	Cost and Benefit	73	36.5%
5	A Free Lunch	36	18.0%
6	Choice	81	40.5%
7	Opportunity Cost	110	55.0%
8	Scarcity	81	40.5%
9	Human Resource	135	67.5%
10	Decision-making Process	62	31.0%
11	Getting a Job	104	52.0%
12	Looking for a Job	46	23.0%
13	Job Interview	106	53.0%
14	Entrepreneur	122	61.0%
15	Human Capital	118	59.0%
16	Competitive Job Market	77	37.5%

Table A1: Frequency distribution of the FFFL Test response

Table A1: (Continued)

No.	Item distribution	Correct response	Percentage
17	Lifetime Income	74	37%
18	Net Pay	97	48.5%
19	Social Security Contributions	104	52.0%
20	Deductions and Net Pay	37	18.5%
21	Opportunity Cost of Compound Interest	57	28.5%
22	The Power of Compound Interest	41	20.5%
23	The Power of Compound Interest	60	30.0%
24	The Rule of 72	65	32.5%
25	Market Price Risk	76	38.0%
26	Liquidity Risk	19	9.5%
27	Risk and Reward	105	52.5%
28	The Real and Nominal Rate of Return	41	20.5%
29	Common Stock	53	26.5%
30	Criteria of Investment	100	50.0%
31	The Advantage of Using Credit	47	23.5%

Table A1: (Continued)

No.	Item distribution	Correct response	Percentage
32	Loan Transaction	55	26.5%
33	Judging a Creditworthiness	45	22.5%
34	A Credit Bureau	46	23.0%
35	Paying Back a Loan	70	35.0%
36	Risk of Loan Default	85	42.5%
37	The Cost of a Loan	78	39.0%
38	Unauthorized Use of a Credit Card	36	18.0%
39	A Pyramid Scheme	67	33.5%
40	A Payday Loan Company	90	45.0%
41	Disposable Income	47	23.5%
42	Net Worth	109	54.5%
43	Pay Yourself First	61	30.5%
44	A Debit Card	66	33.0%
45	Balance at a Bank	116	58.0%
46	A Type of Insurance	83	41.5%
47	A Type of Insurance for Autos	41	20.5%
48	A Deductible	69	39.5%



Table 1A: (Continued)

No.	Item distribution	Correct response	Percentage
49	Another Type of Insurance for	25	12 5%
17	Autos	25	12.570
50	Life Insurance	73	46.5%



Table A2: Frequency distribution of response in direct parental teaching

		Strongly	Dicagraa	Madium	Agroo	Strongly	Missing
		disagree	Disagiee	Weutum	Agiee	agree	wiissing
1.	Parents discussed family financial						
	matters with me	17(8.5%)	35(17.5%)	75(37.5%)	70(35.0%)	2(1%)	1(0.5%)
2.	Parents poke to me about the						
	importance of saving	5(2.5%)	17(8.5%)	79(39.5%)	91(40.5%)	7(3.5%)	1(0.5%)
3.	Parents taught me how to be a smart						
	shopper	6(3.0%)	20(10.5%)	89(44.5%)	75(37.5%)	9(4.5%)	1(0.5%)
4.	Parents taught me how to use a credit						
	card appropriately	11(5.5%)	49(24.5%)	71(35.5%)	54(27.0%)	11(5.5%)	4(2%)
5.	Parents discussed with me how to						
	establish a good credit ratings	9(4.5%)	44(22%)	68(34%)	69(34.5%)	9(4.5%)	1(0.5%)



		Strongly	Disagree	Medium	Agree	Strongly	Missing
		disagree	g		0	agree	0
6.	Parents discussed how to finance my						
	college education with me	11(5.5%)	35(17.5%)	71(35.5%)	73(36.5%)	9(4.5%)	1(0.5%)



Table A3: Frequency distribution of response in the adoption of parental financial role modelling

		Strongly	Disagraa	Discourse Madium		Strongly	Missing
		disagree	Disagree	Wieulum	Agree	agree	wiissing
1.	I make financial decisions based on what						
	my parent(s) have done in similar	6(3.0%)	32(16.0%)	79(39.5%)	73(36.5%)	7(3.5%)	3(1.5%)
	situations						
2.	When it comes to managing money, I look						
	to my parent(s) as my role models	4(2.0%)	29(14.5%)	86(43.0%)	74(37.0%)	6(3.0%)	1(0.5%)
3.	My parent(s) are role models for me about						
	how to manage financial matters	4(2.0%)	25(12.5%)	86(43.0%)	74(37.0%)	10(5.0%)	1(0.5%)
4.	My parent(s) have a positive influence on						
	me when it comes	5(2.5%)	18(9.0%)	84(42.0%)	79(39.5%)	13(6.5%)	1(0.5%)
	to managing money						



 Table A4: Frequency distribution of response in parental financial behavior

		Strongly	D:		<b>A</b>	Strongly	Minsing
		disagree	Disagree	Medium	Agree	agree	wissing
1.	You always track your monthly expense	1(0.5%)	15(7.5%)	55(27.5%)	94(47.0%)	34(17.0%)	1(0.5%)
2.	You spend within the budget	2(1.0%)	20(10.0%)	55(27.5%)	100(50.0%)	22(11.0%)	1(0.5%)
3.	You check whether the bill is accurate						
	every month	1(0.5%)	21(10.5%)	58(29.0%)	92(46.0%)	27(13.5%)	1(0.5%)
4.	You always maintain sufficient balance						
	in your account each month	0(0%)	18(9.0%)	49(24.5%)	98(49.0%)	34(17.0%)	1(0.5%)
5.	You pay your bills on time each month	1(0.5%)	16(8.0%)	41(20.5%)	95(47.5%)	46(23.0%)	1(0.5%)
6.	You save regularly	2(1.0%)	25(12.5%)	63(31.5%)	79(39.5%)	30(15.0%)	1(0.5%)
7.	You would prepare emergency funds	2(1.0%)	22(11.0%)	39(19.5%)	97(48.5%)	38(19.0%)	2(1.0%)



### Table A4: (Continued)

		Strongly	Disagree Medium	A gree	Strongly	Missing	
		disagree	Disagree	Wieddin	Agitt	agree	111001115
1.	You pay credit card balances in full each						
	month	8(4.0%)	15(7.5%)	42(21.0%)	77(38.5%)	56(28.0%)	2(1.0%)
2.	You save each month for the future	1(0.5%)	21(10.5%)	64(32.0%)	80(40.0%)	33(16.5%)	1(0.5%)
3.	You should invest for long term financial						
	goals regularly	12(6.0%)	33(16.5%)	64(32.0%)	67(33.5%)	21(10.5%)	1(0.5%)



Table A5: Frequency distribution of response in parental stress

		Strongly	Disagraa	Medium	A	Strongly	Missing
		disagree	Disagree		Agree	agree	wiissing
1.	Feel that I cannot handles things	5(2.5%)	49(24.5%)	107(53.5%)	37(18.5%)	1(0.5%)	1(0.5%)
2.	Give up my life for children's needs	4(2.0%)	57(28.5%)	84(42.0%)	48(24.0%)	6(3.0%)	1(0.5%)
3.	Feel trapped by parenting responsibilities	15(7.5%)	89(44.5%)	64(32.0%)	28(14.0%)	3(1.5%)	1(0.5%)
4.	Unable to do new and different things	17(8.5%)	80(40.0%)	72(36.0%)	27(13.5%)	3(1.5%)	1(0.5%)
5.	Never able to do things that I like to do	15(7.5%)	88(44.0%)	70(35.0%)	23(11.5%)	2(1.0%)	2(1.0%)
6.	Unhappy with last purchase of clothing for myself	33(16.5%)	101(50.5%)	48(24.0%)	16(8.0%)	1(0.5%)	1(0.5%)
7.	Quite a few things bother me	11(5.5%)	76(38.0%)	89(44.5%)	18(9.0%)	5(2.5%)	1(0.5%)



## Table A5: (Continued)

		Strongly	Diagona	M. 1		Strongly	Missing
		disagree	Disagree	Mealum	Agree	agree	MISSINg
4.	Having a child caused problems with						
	spouse	18(9.0%)	96(48.0%)	66(33.0%)	16(8.0%)	3(1.5%)	1(0.5%)
5.	Feel alone and without friends	30(15.0%)	116(58.0%)	36(18.0%)	12(6.0%)	4(2.0%)	2(1.0%)
6.	Expect not to enjoy myself at parties	20(10.0%)	110(55.0%)	54(57.0%)	14(7.0%)	1(0.5%)	1(0.5%)
7.	Not interested in people as I used to be	24(12.0%)	97(48.5%)	55(27.5%)	19(9.5%)	4(2.0%)	1(0.5%)
8.	Don't enjoy things as I used to	19(9.5%)	96(48.0%)	64(32.0%)	19(9.5%)	1(0.5%)	1(0.5%)



Table A6: Frequency	distribution	of response i	in parental	investment
1 7		1	1	

		Yes	No	Missing
1.	Home has a pet	71(35.5%)	128(64%)	1(0.5%)
2.	Family visits or receives visits from relatives or friends about twice a week	123(61.5%)	75(37.5%)	2(1%)
3.	Child eats one meal per day, on most days, with PC and father (or father			
	figure)	154(77.0%)	44(22.0%)	2(1%)
4.	Child sees and spends some time with father or father figure 4 days a week	151(75.5%)	48(24.0%)	1(0.5%)
5.	Parent or other family members regularly engage in outdoor recreation with			
	child once every two weeks	140(70.0%)	59(29.5%)	1(0.5%)
6.	Child has gone with a family member on one outing every other week	140(70.0%)	59(29.5%)	1(0.5%)
7.	Family member has taken child, or arranged for child to go to a scientific, art,			
	or cultural museum within past year	87(43.5%)	112(56.0%)	1(0.5%)



## Table A6: (Continued)

		Yes	No	Missing
8.	Family member has taken child, or arranged for child to go on a trip			
	more than 50 miles from home during the past year	103(51.5%)	96(48.0%)	1(0.5%)
9.	Family member has taken child, or arranged for child to take a trip on			
	a plane, train (NOT subway), or bus, within the past year	119(59.5%)	80(40.0%)	1(0.5%)
10.	Family members has taken child, or arranged for child to attend some			
	type of live musical or theatre performance within last year	77(38.5%)	121(60.5%)	2(1.0%)
11.	Family has arranged for child to receive lessons or organizational			
	membership to support child's talents within the past year (Y	114(57.0%)	85(42.5%)	1(0.5%)
	membership, gymnastic lessons, art, dance, or music lessons)			
12.	Child is regularly included in family's recreational hobby (biking,			
	walking, playing in park, playing ball, swimming, checkers, puzzles)	112(56.0%)	86(43.0%)	2(1.0%)


		Yes	No	Missing
13.	Child has accompanied parent or other family member on a commercial			
	venture 3-4 times within the past year (mechanic/garage, tailor/clothing shop,	83(41.5%)	115(57.5%)	2(1.0%)
	appliance repair shop, bank)			
14.	Child has access to record/CD/tape player or radio and five records/CDs/tapes	96(48.0%)	103(51.5%)	1(0.5%)
15.	Child has access to real musical instrument. (Piano, drum, ukelele, guitar,			
	trumpet, clarinet)	109(54.5%)	91(45.5%)	0(0%)
16.	Child has access to two appropriate board games	157(58.5%)	43(21.5%)	0(0%)
17.	Child has access to twenty age appropriate books	149(74.5%)	51(25.5%)	0(0%)
18.	Child has access to a desk or other suitable place for reading or studying	186(93.0%)	14(7.0%)	0(0%)



		Yes	No	Missing
19.	Child has access to two types of reference materials in the home	178(89.0%)	21(10.5%)	1(0.5%)
20.	Child has a library card	186(93.0%)	14(7.0%)	0(0%)
21.	Child is encouraged by parent to read on his/her own	176(88.0%)	24(12.0%)	0(0%)
22.	Child has three or more books of his/her own	179(79.5%)	21(10.5%)	0(0%)
23.	Parent or other family member encourages child to develop or sustain			
	hobbies	179(79.5%)	21(10.5%)	0(0%)
24.	Child has access to two pieces of appropriate equipment for physical development or organized sports activities	138(69.0%)	62(31.0%)	0(0%)



Table A7: Frequency distribution of response in positive parenting behavior

		Never	Seldom	Sometimes	Usually	Absolutely	Missing
1.	When I say my child can't do						
	something, I let my child do it anyway	2(1.0%)	29(14.5%)	125(62.5%)	40(20.0%)	4(2.0%)	0(0.0%)
2.	If my child gets upset, I back down and						
	give in	3(1.5%)	48(24.0%)	122(61.0%)	26(13.0%)	1(0.5%)	0(0.0%)
3.	When my child does something I don't						
	like, I often let it go	8(4.0%)	60(30.0%)	113(56.5%)	19(9.5%)	0(0%)	0(0.0%)
4.	When I give a fair threat or warning I						
	often don't carry it out	4(2.0%)	61(30.5%)	110(55.0%)	24(12.0%)	1(0.5%)	0(0.0%)
5.	When my child won't do what I ask, I						
	often let it go or end up doing it myself	1(0.5%)	59(29.5%)	103(51.5%)	34(17.0%)	3(1.5%)	0(0.0%)



		Never	Seldom	Sometimes	Usually	Absolutely	Missing
6.	When saying no doesn't work, I offer						
	my child something nice so he/she will	10(5.0%)	55(27.5%)	109(54.5%)	25(12.5%)	1(0.5%)	0(0%)
	behave						
7.	I coax or beg my child to stop	3(1.5%)	56(28.0%)	105(52.5%)	33(16.5%)	3(1.5%)	0(0%)
8.	I let my child do whatever he/she wants	0(0%)	29(14.5%)	101(50.5%)	64(32.0%)	6(3.0%)	0(0%)
9.	I threaten to do things that I know I						
	won't actually do	10(5.0%)	67(33.5%)	93(46.5%)	25(12.5%)	5(2.5%)	0(0%)
10.	If my child misbehaves and then acts						
	sorry, I will let it go that time	1(0.5%)	20(10.0%)	86(43.0%)	69(34.5%)	24(12.0%)	0(0%)



		Never	Seldom	Sometimes	Usually	Absolutely	Missing
11. V	When we are not at home, I let my child						
g	get sway with a lot more	4(2.0%)	64(32.0%)	104(52.0%)	22(11.0%)	5(2.5%)	1(0.5%)
12. I	get so frustrated or angry that my child						
с	can see I 'm upset	5(2.5%)	54 (27.0%)	105(52.5%)	32(16.0%)	3(1.5%)	1(0.5%)
13. T	Things build up and I do things I don't						
n	nean to	14(7.0%)	70(35.0%)	89(44.5%)	25(12.5%)	2(1.0%)	0(0%)
14. I	raise my voice or yell	19(9.5%)	68(34.0%)	87(43.5%)	98(49.0%)	24(12.0%)	2(1.0%)
15. I	spank, grab, slap, or hit my child most						
0	of time	57(28.5%)	82(41.0%)	50(25.0%)	8(4.0%)	2(1.0%)	1(0.5%)



		Never	Seldom	Sometimes	Usually	Absolutely	Missing
16.	I often hold a grudge	58(29.0%)	80(40.0%)	47(23.5%)	14(7.0%)	1(0.5%)	(0%)
17.	When I am upset or under stress, I'm on						
	my child's back	42(21.0%)	86(43.0%)	57(28.5%)	14(7.0%)	1(0.5%)	0(0%)
18.	I insult my child, say mean things, or						
	call my child names most of the time	66(33.0%)	79(39.5%)	45(22.5%)	8(4.0%)	2(1.0%)	0(0%)
19.	I usually get into long argument with my						
	child	32(16.0%)	81(40.5%)	69(34.5%)	16(8.0%)	2(1.0%)	0(0%)
20.	I give my child a long lecture	9(4.5%)	65(32.5%)	101(50.5%)	23(11.5%)	1(0.5%)	1(0.5%)



		Never	Seldom	Sometimes	Usually	Absolutely	Missing
21. I almost always use	bad language or curse	85(42.5%)	65(32.5%)	40(20.0%)	9(4.5%)	1(0.5%)	0(0%)
22. I make my child tell	me why he/she did it	10(5.0%)	51(25.5%)	81(40.5%)	49(24.5%)	8(4.0%)	1(0.5%)
23. I say a lot		5(2.5%)	59(29.5%)	105(52.5%)	22(11.0%)	8(4.0%)	1(0.5%)
24. If say no doesn't wor	k right away, I keep						
talking and try to get	through to my child	3(1.5%)	60(30.0%)	107(53.5%)	26(13.0%)	2(1.0%)	2(1.0%)
25. If my child talks bac	k or complain when I						
handle a problem, I g	give a talk about not	5(2.5%)	57(28.5%)	111(55.5%)	24(12.0%)	2(1.0%)	1(0.5%)
complaining							



		Never	Seldom	Sometimes	Usually	Absolutely	Missing
26.	I give my child several reminders and						
	warnings	4(2.0%)	57(28.5%)	111(55.5%)	24(12.0%)	2(1.0%)	1(0.5%)
27.	I do something about it later	11(5.5%)	88(44.0%)	83(41.5%)	14(7.0%)	3(1.5%)	1(0.5%)
28.	I can't ignore my child's pestering	11(5.5%)	74(37.0%)	91(45.5%)	18(9.0%)	5(2.5%)	1(0.5%)
29.	When my child is out of my sight, I often						
	don't know what my child is doing	14(7.0%)	72(36.0%)	87(43.5%)	23(11.5%)	3(1.5%)	1(0.5%)
30.	When I handle a problem, I tell my child I						
	am sorry about it	8(4.0%)	67(33.5%)	97(48.5%)	22(11.0%)	5(2.5%)	1(0.5%)

