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Determinants of Financial Attitudes Among Secondary-School Students in Singapore

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Abstract

We investigated instructional, sex and school-level determinants of students' financial attitudes among 4801 students in 25 secondary schools in Singapore. A two-scale financial attitudes questionnaire was developed to assess students' attitudes to financial management and attitudes to financial literacy programs. Data analyses revealed that the attitude questionnaire was valid and reliable when used with these Singaporean school students. A three-way MANOVA for instructional, sex and school-level differences in student attitudes revealed that: students who attended financial literacy programs had significantly more positive attitudes on both scales; females had significantly more positive attitudes to financial literacy programs than did males; and upper-secondary students had more positive attitudes to financial literacy programs than did lower-secondary students.

Key Words learning environment, financial literacy, attitudes, secondary schooling, money management

Introduction and Background

The lack of attention to financial literacy education in schools limits consumers' ability to make sound financial decisions about present and future personal needs. Poor financial skills resulting from the lack of a sound financial education often leads to delayed financial responsibilities. Studies in the field of family and consumer sciences have revealed that developing an early awareness of spending and saving concepts typically leads to efficient consumption later and enhances students' knowledge about money-related values (savings, managing and sharing) and common money transactions (Koh, 2005, 2009).

Although many people assume that they know the basics of managing money, statistics suggest otherwise. Moffitt's (2012) 30-year longitudinal study with 1000 children in New Zealand from birth to maturity identified a persistent and cross-situational pattern of poor self-control in children. Research suggests that childhood self-control predicts future adult unplanned single-parenting, high-school drop-out rates, criminal offences, addiction, heavy smoking, poor personal finances and less income, lack of savings for retirement, and poor physical health and illness. These relationships were statistically significant even after considering factors such as intelligence and family social class. Other studies have also shown that children can be taught self-control and delayed gratification (Mischel, Shoda, & Rodriquez, 1989).

With personal bankruptcies and the amount of consumer debt rising, the government has compelling reasons to promote financial literacy in Singapore. Hence, the National Institute of Education became instrumental in empowering teachers with pedagogical skills and resources to reach out to the students. Knowing how to handle money properly – planning,

realistic budgeting, investing and use of personal money-management techniques – is an essential life skill. Developing a relevant mindset and financial discipline is an important goal that is easier to achieve if a person starts at a young age. In reality, many people start financial planning later than what they consider to be ideal. Hence, it is crucial to reach out to students at an early stage.

Financial Literacy Programs

In implementing a financial literacy education program, many factors need to be considered, such as the program duration, whether the program should be made mandatory, whether the program is infused into the school curriculum or is a stand-alone subject, who should teach financial literacy to students, program content, needed support and resources. Programs should be implemented with subsequent evaluation in mind because, while the number of financial literacy programs has increased rapidly over the years, the evaluation of program success has been slower (Lyons, 2005). It is therefore important with any drive to promote financial literacy that needed groundwork is established. Because financial literacy varies for different students across national and cultural settings, promoting financial literacy in Singapore schools should commence with an understanding of the baseline of these students before specific program recommendations and further evaluations can be made. Mapping the needs of these students, as well as their readiness in terms of interest, attitudes, perceptions and knowledge of financial literacy, would help to guide the pitching of the program at the right level for maximum success.

Worldwide, numerous studies of the impact of financial education programs for teaching students concepts such as saving, managing credit, wise spending, and setting and achieving financial goals have generally demonstrated positive results, with the students achieving higher scores on financial literacy and report subsequent desired change in financial knowledge, skills, behaviours, attitudes and confidence after exposure to the lessons (Borden, Lee, Serido, & Collins, 2008; Bowen & Jones, 2006; Danes, 2004; Danes & Haberman, 2007; Fox, Bartholomae, & Lee, 2005; Furtuna, 2008; Jump\$tart Coalition, 1997, 2000, 2002, 2004; Mandell, 2006a; Tennyson & Nguyen, 2001; Varcoe, Martin, Devitto, & Go, 2005). Some of these programs have well established financial literacy curricula, with comprehensive support of advocacy, research, standards and resources for preparing youth for lifelong financial decision-making. Nonetheless, even short courses have been found to have a positive impact on an individual's knowledge and attitudes (Fox et al., 2005). It is important, however, to allow sufficient time for financial literacy education to have an impact. Despite introducing financial literacy since 1997, evaluation studies by the Jump\$tart Coalition only revealed a positive turnaround in financial literacy scores in the 2004 survey (Mandell, 2004), with scores continuing to increase positively although at a slower rate in 2006 (Mandell, 2006b).

In studies by Mandell (2006c, 2009), there was little evidence that full-time high-school or college courses on personal finance had led to increased student financial literacy. These low financial literacy scores, despite the availability of personal financial courses, were attributed by Mandell and Klein (2007) to students' lack of motivation to learn or retain these skills. Apparently this was because students did not have to make many important financial decisions and did not see the relevance of financial courses relating to buying a house, investing in securities or purchasing insurance or saving for retirement. The students' attitude and perceptions towards the importance of financial literacy and financial literacy education for their present day lives would therefore play an important part in determining

receptiveness and learning. An effective financial literacy course should come at critical teachable moments of a person's life, be related to the students' interest and needs, and be provided when an individual is motivated by a life circumstances or a decision-making context (Beck & Neiser, 2009). A study by Bowen and Jones (2006) showed that students experienced greater increases in financial literacy scores when the financial education focused only on specific topics that interest students instead of a general program. Hence it is desirable that financial education programs involve adolescents in using resources that are relevant and of interest to them. This would help to maximise the impact that these programs have on students and equip them with the financial skills needed when they reach adulthood.

Rationale for Teaching Financial Literacy in Schools

In Singapore, educational goals include developing children to their full potential to eventually become confident, self-directed learners who are concerned with and contribute actively to society (<http://www.moe.gov.sg/education/desired-outcomes/>). In today's complex and materialistic environment, where consumerism is a major preoccupation, the world is incessantly bombarded with advertising messages to entice individuals to part with their money. Individuals, regardless of their age, need to be equipped with some basic knowledge, skills, values and attitudes with regards to finance so that they can effectively fend off these subtle but compelling enticements and make the most of the limited resources they have. They need to distinguish between genuine needs and frivolous wants to understand the financial consequences of satisfying needs and wants. There is a need to provide students with positive experiences and values about money in order to stimulate their interests and enhance their lifelong financial and learning skills.

Buccioli and Veronesi (2013) suggest that savings education during childhood is important for stimulating savings behaviour later during adult life. Friedline (2012) further found that children's own savings, over and above those that their parents have saved for them and their parents' financial resources, could be a means by which to improve the future educational outcomes of children, especially those from low-income and medium-income households. The possession of savings assets by children has been shown to positively influence their aspirations for and outcomes of educational success, in addition to providing the financial means to pursue a higher education, even after controlling for the families' income and net worth.

In this study, we investigated the financial attitudes of secondary-school students when a financial literacy program was implemented in Singapore schools. This program involved empowering school teachers with engaging pedagogies to facilitate the integration of financial literacy into the day-to-day core curriculum like mathematics, English language and social studies and cluster events such as financial literacy carnivals or heritage learning trails or mathematics amazing races.

Research Questions

The research questions for this study were:

1. Is a questionnaire assessing attitudes to financial management and attitudes to financial literacy programs valid when used with secondary-school learners in Singapore?

2. Are there differences in student attitudes to financial literacy according to instructional method (i.e. attendance or non-attendance at financial literacy programs), sex and school level?

Research Methods

Instrument

A two-scale attitude questionnaire was designed especially for this study as the main data-gathering instrument. The two scales are called Attitudes to Financial Management and Attitudes to Financial Literacy Programs. In developing this questionnaire, we were guided by the widely-used Test of Science-Related Attitudes (TOSRA) (Fraser, 1981), whose validity and usefulness have been established in many studies including Fraser and Fisher (1982) and McRobbie and Fraser (1993). A sample item, along with a description of each scale, are provided in Table 1.

TABLE 1. Scale Description and Sample Item for the Financial Attitudes Questionnaire

Scale	Scale Description	Sample Item
Attitudes to Financial Management	Attitudes towards spending and saving money	Saving money is important.
Attitudes to Financial Literacy Programs	Attitudes to the value and importance of financial literacy programs	More programs on financial literacy should be added to my school.

The response alternatives are SA, A, N, D and SD.

Sample

The attitude questionnaire was administered to 4801 students in 25 schools. This total sample of 4801 students was used in all analyses involving the validation of the attitude questionnaire in Research Question 1.

For the second research question involving three determinants of student attitudes (instruction, sex and school level), a slightly reduced sample size of 4290 students was used after the exclusion of a subgroup of 611 students. In selecting the sample for the three-way MANOVA, we used only the 4290 students who satisfied all of the following criteria:

- Students indicated that they either had attended one or more financial literacy programs ($n = 3131$) or had attended none of these programs ($n = 1159$).
- Students indicated that they were either female ($n = 1818$) or male ($n = 2472$).
- Students indicated that they were attending either an upper secondary school ($n = 2250$) or a lower secondary school ($n = 2040$).

Results

Validity of Financial Attitudes Questionnaire

Data collected from the questionnaire survey of 4801 students in 25 schools were analysed to check the attitude questionnaire's validity when used with secondary school students. When the structure of the attitude questionnaire was checked using factor analysis, the factor loadings reported in Table 2 were found. Principal axis factoring with varimax rotation and Kaiser normalisation was used to confirm the a priori structure of the two-scale questionnaire.

Only items with factor loadings of at least 0.40 on their own scale and less than 0.40 with the other scale were retained. After Items 1, 3 and 9–12 were omitted from the Attitudes to Financial Management scale and Items 21, 23 and 27 were omitted from the Attitudes to Financial Literacy programs scale, all remaining items had a loading of at least 0.40 on their own scale and less than 0.40 on the other scale as shown in Table 2.

TABLE 2. Factor Analysis Results for the Financial Attitudes Questionnaire

Item	Factor Loadings	
	Attitudes to Financial Management	Attitudes to Financial Literacy Programs
2	0.42	
4	0.62	
5	0.65	
6	0.60	
7	0.60	
8	0.53	
22		0.52
24		0.41
25		0.61
26		0.69
28		0.70
29		0.71
30		0.76
31		0.83
32		0.79
% Variance	13.01	38.34
Eigenvalue	1.96	5.75

Extraction method: Principal axis factoring; Rotation method: Varimax with Kaiser normalisation.

Loadings less than 0.40 have been omitted.

The sample consisted of 4801 students.

The bottom of Table 2 shows that the proportion of variance accounted for was 13.01% for Attitudes to Financial Management and 38.34% for Attitudes to Financial Literacy Programs. The total proportion of variance was 51.35%. Eigenvalues for the two scales were 1.96 and 5.75, respectively.

Table 3 reports the internal consistency reliability (Cronbach alpha coefficient) for each of the two scales of the attitude questionnaire. Analyses were performed separately for the individual student and the school mean as units of analysis. For the Attitudes to Financial Management and Attitudes to Financial Literacy Programs, respectively, the alpha reliability coefficients were 0.76 and 0.89 at the student level and 0.84 and 0.98 at the school level.

TABLE 3. Internal Consistency Reliability (Cronbach Alpha Coefficient) and Discriminant Validity (Correlation Between Scales) for the Financial Attitudes Questionnaire

Scale	No. of Items	Unit of Analysis	Alpha Reliability	Correlation Between Scales
Attitudes to Financial Management	6	Student	0.76	0.42
		School	0.84	0.59
Attitudes to Financial Literacy Programs	9	Student	0.89	0.42
		School	0.98	0.59

The sample consisted of 4801 students in 25 schools.

The discriminant validity or independence of the attitude scales was checked using the correlation between the scales. Again, two units of analysis were used (the student and the class mean). Table 3 shows that the discriminant validity was 0.42 with the student as the unit of analysis and was 0.59 for school means. Although these values of the discriminant validity suggest some overlap in raw scores on different attitude scales, the factor analysis results attest to the independence of raw scores.

Instruction, Sex and School-Level Differences in Financial Attitudes

Instruction, sex and school-level differences were explored using a three-way MANOVA with the set of two attitude scales as the dependent variables and with three independent variables. (The instruction variable involved whether or not a student attended at least one financial literacy program.) Because Wilks' lambda criterion suggested that there were no significant interactions between any of the three independent variables of instruction, sex and school-level, it was justifiable to interpret the results separately for each of the instruction, sex and school-level main effects. Furthermore, because the multivariate test using Wilks' lambda criterion revealed statistically significant instruction, sex and school-level differences for the set of dependent variables as a whole, we interpreted the univariate ANOVA results separately for each attitude scale. The ANOVA results for instruction, sex and school-level differences are reported in Tables 4 for the Attitudes to Financial Management scale and in Table 5 for the Attitudes to Financial Literacy Programs scales.

In addition to investigating the statistical significance of differences between instructional groups, sexes and school levels, we also estimated the magnitude, or effect size (Thompson, 1998), for each difference. The effect size is calculated by dividing the difference between two means by the pooled standard deviation and it expresses a difference in standard deviation units. Effect sizes are also reported in Tables 4 and 5.

TABLE 4. Attitudes to Financial Management – Means, Standard Deviations and Differences (Effect Sizes and MANOVA Results) for Instructional, Sex and School-Level Differences

Variable	Categories	N	Mean	SD	Difference	
					Effect Size	F
Instruction	Attendance at FL	3131	4.31	0.51	0.24	10.22**
	Non-attendance at FL	<u>1159</u> 4290	4.17	0.60		
Sex	Female	1818	4.30	0.49	0.08	2.25
	Male	<u>2472</u> 4290	4.25	0.57		
School Level	Upper secondary	2250	4.28	0.52	0.02	0.20
	Lower secondary	<u>2040</u> 4290	4.27	0.55		

** $p < 0.01$ FL=Financial Literacy programs
N=4290

Table 4 shows that both sex differences and school-level differences were non-significant for the Attitudes to Financial Management scale and that the corresponding effect sizes were small (less than one-tenth of a standard deviation). However, for the instructional variable, differences were statistically significant ($p < 0.01$) and were associated with a moderate effect

sizes of approximately a quarter of a standard deviation. This suggests that instructional differences for this attitude scale are somewhat important educationally. The interpretation is that more positive Attitudes to Financial Management scores were found among students who had attended financial literacy courses.

TABLE 5. Attitudes to Financial Literacy Programs – Means, Standard Deviations and Differences (Effect Sizes and MANOVA Results) for Instructional, Sex and School-Level Differences

Variable	Categories	N	Mean	SD	Difference	
					Effect Size	F
Instruction	Attendance at FL	3131	4.02	0.61	0.49	42.12**
	Non-attendance at FL	1159	3.73	0.69		
		4290				
Sex	Female	1818	4.03	0.58	0.24	12.48**
	Male	2472	3.88	0.69		
		4290				
School Level	Upper secondary	2250	4.02	0.64	0.27	9.28**
	Lower secondary	2040	3.85	0.65		
		4290				

** $p < 0.01$ FL=Financial Literacy programs
N=4290

MANOVA results for the Attitudes to Financial Literacy Programs are provided in Table 5. For this attitude scale, statistically significant differences ($p < 0.01$) were found for all three independent variables of instruction, sex and school level. Although effect sizes were only modest in magnitude (around a quarter of a standard deviation) for sex and school level, the effect size for instruction was relatively large (around half a standard deviation) and suggested a more educationally important finding.

The interpretation of the findings in Table 5 are that statistically significantly more positive Attitudes to Financial Literacy Programs were found among: students who had attended at least one financial literacy program; female students (relative to males); and upper-secondary students (relative to lower-secondary students).

Conclusion and Significance

This study is unique because it focused on financial attitudes among secondary school students in Singapore. Furthermore, few past studies have investigated the influence of instruction (attendance at financial literacy programs), sex and school-level on students' attitudes.

One outcome of this research is that a widely-applicable two-scale financial attitudes questionnaire was developed and validated for use among secondary school students in Singapore. Scales assessing Attitudes to Financial Management and Attitudes to Financial Literacy programs exhibited sound factorial validity and internal consistency reliability.

The results of this study provide some evidence to support the assertion that demographic factors, especially attendance at financial literacy programs, can influence students' financial

attitudes. MANOVA revealed that attendance at financial literacy programs was a significant determinant of Attitudes to Financial Management, but that all three independent variables (attendance at financial literacy programs, sex and school level) were significant determinants of Attitudes to Financial Management Programs. Knowing what these factors are and their potential impact on students' attitudes could help teachers and educational planners who serve diverse populations to be more sensitive to student needs and thus to make more informed pedagogical decisions.

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