

Financial Socialization, Financial Literacy, and Financial Behavior of Adults in New Zealand

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We used survey data from a cross-sectional New Zealand sample of adults to examine whether financial socialization and financial literacy are associated with their financial behavior. The results show different financial socialization experiences of adult males compared to adult females are associated with higher financial literacy and higher financial confidence. Adults with education in finance and economics had higher financial literacy and financial confidence in managing their personal finances. Furthermore, those with high self-assessed confidence in managing personal finance but low financial literacy, have a higher propensity to engage in undesirable financial behaviors.

Keywords: financial behaviour, financial confidence, financial literacy, financial socialization

Financial literacy has risen on the agenda of educators, community groups, businesses, government agencies and policymakers. This increased interest in financial literacy has been prompted by the increasing complexity of financial products and concerns for the financial security and well-being of uneducated people (Hilgert et al., 2003). The consequences of insufficient financial literacy are becoming more severe, as evidenced by many people making poor choices in their personal financial management (Grohmann & Menkhoff, 2015). Some researchers (e.g., Lusardi & Mitchell, 2011; Nicolini et al., 2013; Organization for Economic Co-operation and Development [OECD], 2005) analyzed differences in financial literacy in Europe and North America and concluded that national and cultural differences in households' knowledge affect their personal finances. While most of the studies provide insight into the financial knowledge level of students and adults in the US, the need exists for a study examining financial literacy in the non-US context. According to Atkinson and Messy (2012), the New Zealand score was significantly higher than all countries in an OECD pilot study comparing financial literacy among adults in 14 countries. However, two years later in the Standards & Poor's Global Financial Literacy Survey 2014, the percentage of financially literate adults in New Zealand was 61% compared to 68% in Canada; 67% in the

UK; 64% in Australia; and 57% in the US (Klapper et al., 2014).

This study focuses on New Zealand for several reasons. First, at the national level, the vision outlined in the National Strategy for Financial Capability is to assist everyone to succeed financially. Second, financial education in New Zealand is provided by nongovernmental organizations (NGOs), some budgetary advisory services, tertiary education providers, private training establishments, community groups, and banks with approximately 90 different providers. The government's role is primarily to coordinate financial education rather than to fund it. It aims to encourage people to talk comfortably about money in society; learn the importance of financial capability as part of lifelong learning; make financial plans to support their life goals, in particular, to protect their assets with insurance and emergency funds; manage debt and get out of high-interest debt faster; and save and invest in a range of financial assets, including active engagement with and contribution to KiwiSaver—a savings initiative of the New Zealand government begun so members can build their savings through regular contributions from their pay (Commission for Financial Capability, 2015).

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Previous studies on adult financial literacy in New Zealand (e.g., Colmar Brunton, 2010) were aimed at identifying areas of low financial literacy (by topic and population) and assisting in the identification of areas for improvement in the design or communication of financial products. Stangl and Mathews' (2013) survey of young New Zealanders about personal finance education reported improvements in the levels of financial literacy among young New Zealanders. A pilot study by Gibson et al. (2014) examined the financial remittance behavior of Pacific Island and East Asian immigrants living in New Zealand. They reported a significant increase in financial knowledge among Pacific Island and East Asian migrant groups after completing a financial training program. Agnew and Harrison (2015) compared attitudes toward student debt in New Zealand and the UK. Importantly, none of these studies used a cross-sectional sample of adults to empirically analyze the impact of financial literacy and confidence on financial behaviors. These features of our study set it apart from the previous studies and strengthen our justification for this research.

Literature Review and Hypotheses

Three major areas of this study are financial literacy, financial socialization and financial confidence. This first section provides a review of these areas, their interlinkages and their current state of empirical research in the developed countries, then study hypotheses are developed from this review.

Financial Literacy

Financial literacy has multiple meanings. It may mean either financial knowledge or application of financial knowledge (financial behavior). Financial literacy is the measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate short-term decision-making and long-range financial planning, while being mindful of life events and changing economic conditions (Remund, 2010). This definition is similar in spirit to Huston's (2010) conceptualization of financial literacy as having two dimensions: understanding (theory) and using (application) personal financial knowledge. Individuals who are financially literate are likely to demonstrate their understanding of financial concepts—such as interest rates, inflation rates, taxes, mortgages, and savings for a retirement plan, bonds and stocks—through financial behaviors (Huston, 2010; van

Rooij et al., 2011). Most empirical studies on financial literacy have either used a *subjective* measure (*perception-based*), which refers to a participant's self-assessment of his or her knowledge, or an *objective* measure (*financial knowledge-based*), which refers to someone's ability to answer questions correctly. We argue that these measures do not comprehensively capture the financial knowledge progression areas as expected in New Zealand's curriculum (Butcher, 2004). Specifically, our financial literacy measure includes questions on investment, interest rates, savings and personal debt. None of the earlier New Zealand studies (e.g., Agnew & Harrison, 2015; Colmar Brunton, 2010; Stangl & Mathews, 2013) used these questions to measure financial literacy.

Financial Socialization

A broader conceptualization of financial literacy suggests it is a continuum of abilities influenced by demographic factors (e.g., age, gender, income, marital status) and socioeconomic factors (education, culture, language and residence). Many researchers have used consumer socialization theory to develop a financial socialization construct to understand financial literacy. Financial socialization refers to the process by which individuals not only acquire theoretical knowledge of finance matters but also learn attitudes and behaviors affecting their financial behavior. Financial socialization occurs through different channels, e.g., school, work and family (LeBaron et al., 2018; Shim et al., 2010). Socialization agents—e.g., parents, peers, and school—influence mental and behavioral outcomes—e.g., the process through which parents teach consumer skills to children—and have long-term implications (Gutter et al., 2014). Studies have shown that family has the strongest impact on financial socialization (Shim et al., 2010) and even unintentional socialization is positively associated with subjective financial literacy and financial behavior (Deenanath et al., 2019).

According to consumer socialization theory, social class, race and ethnicity affect socialization by influencing learning processes. Race and ethnicity influence the socialization behavior of a group, which impacts financial literacy and behavior (Fang et al., 2013; Koonce et al., 2008). Mandell (2008) argued that what is learned in high school financial education classes may lie dormant in the minds of students until much later in life when they [students] have sufficient resources to utilize what they have learned. Thus, a course

in personal finance may not have an immediate impact on financial literacy until the knowledge is applied.

Several researchers have applied financial socialization theory in the financial literacy literature (Gudmunson et al., 2016). Hilgert et al. (2003) reported that households that reported learning from friends and family—in addition to using television, radio and Internet—were more likely to have higher index scores for financial management practices. Likewise, Norvilities and MacLean (2010) reported that the children of parents who engaged in hands-on financial education experienced lower levels of debt and decreased credit card use as college students. McNeil and Turner (2013) found that key financial attitudes and behaviors of young home-leavers were almost directly related to the parental financial education they received while growing up and, in many cases, parental influence was still present even once the child moved away from home and was responsible for their own decision-making. Related studies found that childhood financial socialization experiences were positively related to beneficial financial practices and financial asset ownership in young adulthood (Kim & Chatterjee, 2013) and that obtaining personal financial information had a positive influence on children's financial knowledge and financial practices (Mimura et al., 2015).

Previous studies on credit and prepurchase counseling programs have shown improvement in borrowers' behaviors and creditworthiness (Elliehausen et al., 2003; Hira & Zorn, 2001). Access to and use of online banking—such as the ability to check one's account balances, transfer funds, make payments, and track investment performance at any time—were also related to one's financial literacy (Hogarth & Anguelov, 2004). Furthermore, Byrne (2007) and Loibl and Hira (2005) reported that information from formal advisors and financial education in the workplace had a positive effect on the financial behaviors of employees in their study. Sohn et al. (2012) found that those who chose media as their primary socialization agent and those who had a bank account exhibited a higher level of financial literacy. Moreland (2018) indicated greater benefits from obtaining advice for those with less financial knowledge.

New Zealand continues to be a prominent immigrant and refugee-receiving country. Consequently, the ethnic backgrounds of New Zealanders are poised to change due to

immigration from various regions of the world, in particular, China, India, and the Pacific (Macpherson, 2004). Financial socialization among refugees and migrants occurs through observation, modeling, informal discussions, and mentoring, leading to financial wellbeing and adjustment. According to Tisdell et al. (2013), an understanding of the cultural contexts is indispensable for analyzing financial literacy. We argue that variations in family backgrounds—such as being a first-generation college student, race and ethnicity, and immigration status—influence financial knowledge in ways not explored in the earlier studies in New Zealand. Thus, our survey fills an important gap in our understanding of financial literacy in the context of the rapidly changing demographic environment of New Zealand.

Financial Confidence

Asaad (2015) stressed two components of financial literacy—financial knowledge and financial confidence (or perceived knowledge)—both of which are critically important to sound decision-making. People typically perceive to have greater financial knowledge than they actually possess. A person's frame of reference, such as individuals or groups of individuals who influence a person, also has an effect on their perception of their knowledge. The frame of reference for a college student includes family and peers. Furthermore, the relevance of the knowledge to the person also has an effect on the level of perceived knowledge. Additionally, a gap between one's perception of one's knowledge and knowledge changes over time (LaBorde et al., 2013).

The ethnic or racial differences that may exist in financial socialization affect the actual and perceived financial knowledge of adults. Although challenges exist for both parental teaching and formal financial education, the need to build financial confidence in young adults makes it important to discover which mechanism is most strongly associated with positive financial behaviors. In sum, wider support exists for examining the influence of variations in formal education in finance and economics, gender, race, and ethnicity on financial socialization, which influences financial literacy and confidence. Thus, our survey fills an important gap in the literature.

Hypotheses

The main aim of our survey was to examine the influence of financial socialization and financial literacy

(objective measure) on financial behavior after controlling for the influence of gender, age, education, marital status, and race. We wanted to test the influence of financial socialization on financial literacy, which affects financial confidence (subjective measure). Financial confidence reflects a self-assessed level of financial knowledge, which may or may not coincide with measured financial knowledge. Examining the interaction between financial knowledge and confidence is important because people could become overconfident when their financial confidence exceeds their knowledge, and such people have a greater likelihood of making undesirable decisions. Our research hypotheses were as follows:

- H1:** Education in finance and economics is associated with higher financial literacy after controlling for demographic and socioeconomic-level variables.
- H2:** Education in finance and economics is associated with higher financial confidence after controlling for demographic and socioeconomic-level variables.
- H3:** Financial socialization through family, friends, financial advisors and the Internet is associated with higher financial literacy than traditional media (television, radio, and magazines) after controlling for the influence of education in finance and economics.
- H4:** Financial socialization through family, friends, financial advisors and the Internet is associated with higher financial confidence than traditional media (television, radio, and magazines) after controlling for the influence of education in finance and economics.
- H5:** The positive association of financial socialization with higher financial literacy is moderated by gender.
- H6:** The positive association of financial socialization with higher financial confidence is moderated by gender.
- H7:** Overconfident individuals (high financial confidence, low financial literacy) are those most likely to engage in undesirable personal money management financial behaviors.
- H8:** Highly confident individuals (high financial confidence, high financial literacy) are those most likely to engage in prudent personal money management financial behaviors.

Methodology

Data

A article-based questionnaire was used to collect primary data from male and female adult participants aged 18 years and above from two cities: Auckland and Palmerston North. The questionnaire is available from the authors upon requests. A few colleagues from a local university also assisted in nominating colleagues who invited their students to participate in this study. We used the snowball sampling method, which is a nonprobability sampling method. It is an informal method of reaching a target population and offers practical advantages (Hendricks et al., 1992). We contacted lecturers in two tertiary educational institutions and asked them to refer other students and people in their social circles to participate in this study. Their high social visibility, collegiality and, most importantly, their ability to assist regularly in the distribution and collection of the completed questionnaires made them our de facto research assistants. We used four such in our data collection process. A formal human ethics application for the approval of questionnaires and permission to recruit students from tertiary institutes were sought from the human ethics committees of the respective tertiary institutes. After obtaining the necessary approval, of 250 questionnaires, 143 completed questionnaires were received from the professionals, retirees, students (postgraduate and undergraduate), workers, and lead parents during July–August 2016. The proportion of participants who were students was 60%. Although our snowball sampling method for data collection resulted in a small sample size, it was higher than sample sizes used in similar studies (e.g., Mandell & Klein, 2009).Mandell & Klein, 2009).

Measurement of Variables

Financial Literacy. We used the same questions as in some previous studies (see, e.g., Allgood & Walstad 2013; Asaad, 2015; Mottola 2013; Nye & Hillyard, 2013) to develop an objective measure of financial literacy. To obtain a financial literacy score, a participant was asked 32 questions related to general financial knowledge about interest rates, credit cards, savings, and financial product knowledge such as mortgages and investments. Specifically, each participant was asked to answer 22 True/False questions and 10

multiple choice questions with only one correct answer. We tested the reliability of these 32 questions as facets of a common latent construct of financial literacy using Cronbach's Alpha (α). Shim et al. (2010) also tested the scale reliability of objective and subjective knowledge questions in their study of first-year students. We found $\alpha = 0.876$ for True/False questions and $\alpha = 0.870$ for the multiple choice questions.

We calculated the median percentage score of correct answers for the entire sample, then divided participants into two financial literacy score (*FLScore*) categories: *FLScoreHigh* and *FLScoreLow*. This approach is consistent with the financial literacy literature. For instance, Alhenawi and Elkhail (2013) used three levels to categorize financial knowledge: a relatively high level (if a participant's score was more than 80%), a medium level (if a participant's score was between 60–70%), and a relatively low level (if a participant's total score was below 60%).

Financial Confidence. We asked respondents to rate their financial knowledge by using the question "How would you describe your knowledge and skills in managing personal finance?" and by giving the following options: *None*, *Unsatisfactory*, *Good*, and *Excellent*. We coded their responses on a scale of 1 (*None*) to 4 (*Excellent*). If a participant rated himself/herself *Good* or *Excellent*, such responses were categorized as high financial confidence (*FinConHigh*), and when a respondent rated himself/herself *Unsatisfactory* or *None* then such responses were categorized as low financial confidence (*FinConLow*).

According to Allgood and Walstad (2013), combining financial knowledge (i.e., percentage of correct answers) and perceived financial knowledge provides "more robust and nuanced insight" about how financial literacy affects financial behavior. Following their methodology as applied by Asaad (2015, p. 108), first we separated *FLScoreHigh* and *FinConHigh* representing the *high* financial literacy and *high* financial confidence group from *FLScoreLow* and *FinConLow* representing the *low* financial literacy and *low* financial confidence group. Second, we created combinations of *HighHigh*, *HighLow*, *LowHigh*, and *LowLow*—portraying four types of combined (knowledge and confidence) financial literacies to examine their influence on a range of financial behaviors as explained below.

Financial Behavior. We chose 23 financial behavior statements. For each of the financial behavior statements, we gave participants the following answer options: *Never*, *Rarely*, *Sometimes*, *Often* and *Always*. Participants could also report that the item was *not applicable* (*N/A*). We classified responses into undesirable and prudent financial behavior categories. When participants responded that they *often* or *always* engaged in the financial behaviors, e.g., miss bill payments, using overdraft, pawn valuables, take out "pay day" loans, we classified the answers as *undesirable* financial behaviors. In contrast, when participants responded that they *never* or *rarely* engaged in any of these financial behaviors we classified the answers as *prudent* financial behaviors. We used the item analysis to retain only the most reliable financial behavior items as a result of above classification i.e., prudent vs. undesirable. Our items analysis on undesirable financial behavior items indicated $\alpha = 0.85$ for these six behavior items: (i) taking a cash advance on a credit card, (ii) making minimum payments on a credit card, (iii) overdrawing a checking account, (iv) financing a balance on a credit card, (v) using more than three credit cards, and (vi) paying fees for late payments. Similarly, item analysis on prudent financial behaviors items yielded $\alpha = 0.83$ for these six behavior items (i) saving for important purchases, (ii) saving for unexpected expenses, (iii) comparing offers from various banks, (iv) setting up automatic payments for bills, (v) paying bills on time, and (vi) contributing to a retirement scheme (KiwiSaver). We used discriminant validity test to further provide evidence that the prudent financial behaviour construct is unrelated to risky financial behaviour construct resulting from the item analysis, by comparing the amount of the variance (AVE) captured by each construct and the shared variance with other construct.

Empirical Model

To test the study hypotheses, we used binary logistic regressions instead of a conventional regression. Binary logistic regression analyses have been used to predict categorical outcomes in the financial literacy literature due to their suitability in determining parameters of dichotomous dependent variables (Asaad, 2015; Kim & Chatterjee, 2013). The odds ratio from the estimation of the binary-logistic model provides the ratio of the likelihood of an outcome. For example, an individual's financial education is associated with an outcome such as high financial literacy compared to low financial literacy (referent group) while controlling for the influence of financial socialization

characteristics on this outcome. To test the hypotheses developed in this paper, we used the following six models.

To test hypothesis one examining the association of education in finance and economics with higher financial literacy of respondent i after controlling for the influence of demographic and socioeconomic-level variables, we used Model A. To test hypothesis two examining the association of education in finance and economics with higher financial confidence of respondent i after controlling for the influence of demographic and socioeconomic-level variables, we used Model B. We used Model C to test hypothesis three examining the association of education in finance and economics as well as financial socialization with higher financial literacy of respondent i after controlling for the influence of demographic and socioeconomic-level variables. Model D was used to test hypothesis four, examining the association of education in finance and economics as well as financial socialization with higher financial confidence of respondent i after controlling for the influence of demographic and socioeconomic-level variables. Although these equations used the same explanatory variables, the outcomes (dependent variables) were different, i.e., financial literacy and financial confidence. We added interaction term $Fin_Soc * Gender$ in Models C and D to test hypotheses five and six, respectively.

Model A:

$$\log \left(\frac{(FLScoreHigh)p_i}{1-(FLScoreHigh)p_i} \right) = \beta_0 + \varphi_i \sum_{t=1}^4 Fin_Edu_{i,t} + \gamma_i \sum_{t=1}^5 Fin_Soc_{i,t} + \beta_1 Gender_i + \beta_2 Age_i + \beta_3 Marital_status_i + \beta_4 Race_i \quad (1)$$

Model B:

$$\log \left(\frac{(FLConfHigh)p_i}{1-(FLConfHigh)p_i} \right) = \beta_0 + \varphi_i \sum_{t=1}^4 Fin_Edu_{i,t} + \gamma_i \sum_{t=1}^5 Fin_Soc_{i,t} + \beta_1 Gender_i + \beta_2 Age_i + \beta_3 Marital_status_i + \beta_4 Race_i \quad (2)$$

Model C:

$$\log \left(\frac{(FLScoreHigh)p_i}{1-(FLScoreHigh)p_i} \right) = \beta_0 + \varphi_i \sum_{t=1}^4 Fin_Edu_{i,t} + \gamma_i \sum_{t=1}^5 Fin_Soc_{i,t} + \theta_i \sum_{t=1}^5 Fin_Soc_{i,t} * Gender_i + \beta_1 Gender_i + \beta_2 Age_i + \beta_3 Marital_status_i + \beta_4 Race_i \quad (3)$$

Model D:

$$\log \left(\frac{(FLConfHigh)p_i}{1-(FLConfHigh)p_i} \right) = \beta_0 + \varphi_i \sum_{t=1}^4 Fin_Edu_{i,t} + \gamma_i \sum_{t=1}^5 Fin_Soc_{i,t} + \theta_i \sum_{t=1}^5 Fin_Soc_{i,t} * Gender_i + \beta_1 Gender_i + \beta_2 Age_i + \beta_3 Marital_status_i + \beta_4 Race_i \quad (4)$$

where $(FLScoreHigh)p_i$ is the probability of respondent i having a high financial literacy score in Equations (1) and (3), and $(FLConfHigh)p_i$ is the probability of respondent i having high financial confidence in Equations (2) and (4), respectively.

To test hypothesis seven, examining if respondent i with low financial literacy and high financial confidence is most likely to engage in undesirable financial behaviors, we used Model E.

Model E:

$$\log \left(\frac{(Undesirable)p_i}{1-(Undesirable)p_i} \right) = \beta_0 + \beta_1 HighHigh_i + \beta_2 HighLow_i + \beta_3 LowHigh_i + \beta_1 Gender_i + \beta_2 Race_i \quad (5)$$

where $(Undesirable)p_i$ is the probability of respondent i engaging in undesirable financial behavior in Equation (5). To test hypothesis eight, examining if respondent i with high financial literacy and high financial confidence is most likely to engage in prudent financial behaviors, we used Model F.

Model F:

$$\log \left(\frac{(Prudent)p_i}{1-(Prudent)p_i} \right) = \beta_0 + \beta_1 HighHigh_i + \beta_2 HighLow_i + \beta_3 LowHigh_i + \beta_1 Gender_i + \beta_2 Race_i \quad (6)$$

where $(Prudent)p_i$ is the probability of respondent i engaging in prudent financial behavior in Equation (6). *High-High* is a dummy variable equal to 1 for a participant whose $FLScoreHigh = 1$ and $FLConfHigh = 1$ and 0 otherwise, *HighLow* is a dummy variable equal to 1 for a participant

whose $FLScoreHigh = 1$ and $FLConfLow = 0$ and 0 otherwise, $LowHigh$ is a dummy variable equal to 1 for a participant whose $FLScoreLow = 0$ and $FLConfHigh = 1$ and 0 otherwise. $Low-Low$ is the reference category.

Results and Discussion

Descriptive Statistics

Table 1 provides descriptive statistics for the survey sample. The sample was 59% female; 77% single; 24% European/Pakeha, 4% Māori, and 13% Pasifika; 39% aged between 18 and 23 years; 41% with an education beyond high school; and 25% with a university education in finance or economics. We found interesting patterns for the influence of financial socialization on male and female participants' financial investments as well as for the participants' ethnicity in New Zealand. In regard to the association between gender and financial socialization, we found that information from the Internet had more influence on financial investments made by the male participants (25%) than the female participants (19%) in New Zealand. Garrison and Gutter (2010) reported that female students have a significantly higher financial socialization opportunity than male students do across four dimensions: discussion with parents, discussion with peers, observation of parents' financial behaviors, and observations of peers' financial behavior. We did not carry out statistical tests to suggest whether these raw percentages were statistically significant.

The Asian participants indicated that information from the Internet (27%), advice from financial advisors (15%), and information from more than one source (29%) had the most influence on their financial investment decisions. In contrast, the Māori and Pasifika participants indicated that information from their families, friends and communities (79%) had the most influence on their financial investment decisions. Our survey showed that European/Pakeha participants use information from more than one source (29%); family, friends and community (24%); the Internet (18%), and financial advisors (15%), but the use of information from traditional media such as television, newspapers, magazines, and radio was very low (6%). Nicolini et al. (2013) reported that Canadians are more likely than Americans or British are to talk with friends and relatives about financial topics on a regular basis and to compare providers before buying financial products or services. Thus, participants' use of informal sources of information appears similar to those reported for nationals from other developed countries.

The survey results show that none of the participants correctly answered two sets of financial literacy questions (32 questions). Forty-eight percent of female adults had lower financial literacy scores than male adults did and 72% of female adults perceived their self-confidence in managing personal finance to be at a lower level than male adults did.

Binary Logistic Regression Analysis

In Table 2, we report the binary logistic regression estimation results from Models A and B. The purpose of the binary regression analysis was to explore the association of the financial education with financial confidence as well as association of financial education with financial literacy of adults in New Zealand. Our estimation results supported H1 and H2; i.e., education in finance and education is associated with higher financial confidence and financial literacy after controlling for the influence of demographic and socioeconomic variables. Xiao and Porto (2017) provide evidence that financial education affect financial satisfaction through financial literacy. The survey participants with an education in finance were 2.9 times more likely to have higher financial confidence than those who did not have any previous education or training in finance or economics. Participants who had a degree in finance or economics were 3.6 times more likely to have high financial literacy scores. In addition, participants who had taken training courses in finance or economics were 11 times more likely to have higher financial confidence than those who did not have any previous education or training in finance or economics. These survey results suggest that both formal classroom learning as well as structured professional personal finance training (workshops) were associated with higher financial confidence in personal financial management due to higher financial literacy. Our results show that ethnicity (except Pasifika) was not associated with higher financial literacy and higher financial confidence, which is similar to the findings of Mimura et al. (2015).

Table 3 reports the estimation results of binary logistic regressions from Models C and D. Our empirical results suggest that financial socialization through family, friends, financial advisors and the Internet is not associated with higher financial literacy and higher financial confidence after controlling for the influence of education in finance and economics. Thus, H3 and H4 were not supported. However, different financial socialization experiences of adult

TABLE 1. Descriptive Statistics

Panel A: Profile of Respondents

Total respondents, <i>N</i>		143			
		<i>n</i>	%	<i>n</i>	%
<i>Gender</i>					
	Male	59	41.3		
	Female	84	58.7		
<i>Age</i>			<i>Marital status</i>		
	18–23	56	39.2	Single	77 53.8
	24–29	35	24.5	Married	44 30.8
	30–34	0	0	Separated	8 5.6
	35–39	0	0	Divorced	4 2.8
	40–49	27	18.9	Other	10 7.0
	50–59	10	5.6	<i>Marital status</i>	
	60 or older	8	4.9		
<i>Ethnicity/Race</i>			<i>Education</i>		
	European/Pakeha	34	23.8	No qualification	9 6.3
	Māori	5	3.5	School qualification	29 20.3
	Pasifika	18	12.6	Level 1–4 certificate	4 2.8
	African	2	1.4	Graduate diploma	11 7.7
	Asian	73	51.0	Bachelor’s degree	59 41.3
	Middle Eastern	2	1.4	Master’s degree or higher	27 18.9
	Others	9	6.3	Other	4 2.80

Panel B: Financial Socialization

	Internet	Finan- cial advisor	Family, friends/ community	Newspaper, radio, television	Other	More than one source
<i>Gender (%):</i>						
Male	25	8	17	12	12	25
Female	19	18	20	5	10	29
<i>Ethnicity/Race (%):</i>						
Asian	27	15	10	8	11	29
European/Pakeha	18	15	24	6	9	29
Māori	20	0	40	0	40	0
Pasifika	17	11	39	17	11	6
Middle Eastern	0	0	100	0	0	0
Others	11	11	11	0	0	67

male compared to female are associated with higher financial literacy and higher financial confidence. Thus, H5 was supported. The results of our survey show that male adults with higher levels of socialization opportunities (through family, friends and community) compared to female adults are more likely to have high financial literacy and confidence.

In Table 4, we report the estimation results of Models E and F. Following Asaad’s (2015; p. 109) approach, we kept the *LowLow* group as the reference group; thus, we interpreted that the odds ratio of *low* knowledge and *high* confidence denoted by the *LowHigh* group reflected a difference in confidence, and the odds ratio of *high* knowledge and *low* confidence denoted by the *HighLow* group reflected a difference

TABLE 2. Association of Financial Education with Financial Literacy and Financial Confidence

	Model A		Model B	
	Response variable = <i>FLScoreHigh</i>		Response variable = <i>FinConfHigh</i>	
	Coefficients	Odds ratio	Coefficients	Odds ratio
Constant	1.4279 (1.0415)		-2.1115 (0.9991)	
Fin_Edu 1	1.2817* (0.6393)	3.60**	1.0704 (0.6773)	2.92
Fin_Edu 2	0.3111* (0.6603)	1.36	0.6275 (0.6400)	1.87
Fin_Edu 3	-0.2214 (1.1295)	0.80	2.4001** (1.2243)	11.02**
Fin_Edu 4	-1.8593 (0.9741)	0.16	1.2527 (0.8750)	3.50
Male	0.2386 (0.4832)	1.27	0.6137 (0.4647)	1.85
SINGLE	-1.0617 (0.6684)	0.35	0.0777 (0.6485)	1.08
SEPARATED	-1.7677 (1.2559)	0.17	-1.4304 (1.7654)	0.01
DIVORCED	-1.0886 (1.5900)	0.34	-0.0996 (1.4305)	0.91
WIDOW	-1.9987 (1.9577)	0.14	-0.0075 (1.5267)	1.09
AGE 1AGE 1	-0.3223 (0.9271)	0.72	0.4258 (0.8791)	1.53
AGE 2	0.2031 (0.9304)	1.23	0.5092 (0.8536)	1.66
AGE 3	-0.1578 (0.8497)	0.85	0.9395 (0.8193)	2.56
European/Pakeha	0.4114 (0.900)	1.50	0.6843 (0.8133)	1.98
Māori	-2.125 (1.509)	0.00	-0.0342 (1.3917)	0.97
Pasifika	-0.3776* (1.2924)	0.03	-1.8557 (1.2559)	0.16

(Continued)

TABLE 2. Association of Financial Education with Financial Literacy and Financial Confidence (Continued)

	Model A		Model B	
	Response variable = <i>FLScoreHigh</i>		Response variable = <i>FinConfHigh</i>	
	Coefficients	Odds ratio	Coefficients	Odds ratio
Asian	-1.1509 (0.8242)	0.32	-0.5571 (0.7452)	0.57
Wald test	11.10** (0.021)		5.70 (0.22)	
Log-likelihood	139.44		142.463	
Pseudo <i>R</i> ²	0.28		0.14	

Note. This table reports the estimation results of the binary logistic regression models A and B. The response, predictor, and control variables are explained in Table 3. The standard errors are reported in parentheses. The Wald test value shows the *Fin_Edu 1*, *Fin_Edu 2*, *Fin_Edu 3*, and *Fin_Edu 4* coefficients are statistically significant.

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

in financial literacy (financial knowledge). The estimated coefficients and odds ratio supported H6. Overconfident individuals (*high* confidence, *low* knowledge) were most likely to engage in undesirable personal money management financial behaviors. Our findings show an interesting pattern regarding specific financial behaviors, such as that the *LowHigh* group paid the minimum on their credit cards and financed a balance on credit cards. For example, participants with low financial knowledge but high confidence were 4.9 times more likely to have credit card debt and 3.6 times more likely to have used more than three credit cards. We found Māori and Pasifika respondents were more likely to take a cash advance on a credit card. Our survey findings seem to suggest that despite being confident about the negative effect of a high annual percentage interest rate (APR) on a credit card balance, the participants did not consider it undesirable behavior; consequently, they accumulated more debt than they did previously. As Goel and Thakor (2008) pointed out, individuals who are overconfident have narrow confidence intervals; therefore, they tend to overestimate precision and underestimate risk.

The estimation results of Model F show that participants with high financial literacy and financial confidence were 5.4 times more likely to save for unexpected expenses and 4.8 times more likely to compare offers from various banks. Carpena et al. (2011) posited that an individual's increased awareness and initiative may also affect financial decisions and financial confidence. Thus, our findings confirm the results reported by Asaad (2015) that overconfident

individuals, or those with high self-assessed confidence in managing personal finance but low financial literacy, had a higher propensity to engage in undesirable financial behaviors.

Conclusion and Implications

Conclusion

This purpose of this article was to examine the association of financial socialization and financial literacy with financial behaviors of adults using a nonprobability sampling method. The results of the survey indicate that among public sources of information, the Internet dominates traditional media as both a preferred source of information and an influence on the financial investment decisions of residents in New Zealand, which is similar to the results reported for other developed countries. Using the binary logistic estimation approach, our survey results also show that participants with an education in finance and economics are more likely to have higher financial knowledge and confidence than those who are not exposed to such learning opportunities. Participants with *high* financial confidence (*low* financial knowledge) are more likely to have financed a balance on credit cards and used more than three credit cards. The results also seem to suggest that despite being confident about the impact of interest rates on credit cards, adults tend to accumulate more debt than before in New Zealand. Our finding of gender differences in financial literacy are consistent with other studies (e.g., Lusardi & Mitchell, 2008) and with those studies that identified a positive association between financial socialization and financial behavior

TABLE 3. Association of Financial Education and Financial Socialization with Financial Literacy and Financial Confidence

	<i>Model C</i>		<i>Model D</i>	
	Response variable = <i>FLScoreHigh</i>		Response variable = <i>FLConfHigh</i>	
	Coefficients	Odds ratio	Coefficients	Odds ratio
Constant	2.4142 (1.2463)	11.18**	-1.1428 (1.0925)	0.31
<i>Fin_Edu 1</i>	1.6975** (0.8716)	5.46**	1.4614* (0.0599)	4.31
<i>Fin_Edu 2</i>	0.5805 (0.8662)	1.79	0.3339 (0.7584)	1.39
<i>Fin_Edu 3</i>	-0.2193 (1.3207)	0.80	3.9952 (1.6997)	54.33**
<i>Fin_Edu 4</i>	-2.1176* (1.1929)	0.12	1.2403 (0.9517)	3.46
<i>Fin_soc1</i>	-0.9982 (1.1024)	0.37	-2.4008* (1.1928)	0.09
<i>Fin_soc2</i>	-1.8192 (1.0291)	0.16	-0.6585 (0.8572)	0.51
<i>Fin_soc3</i>	-4.4492*** (1.3089)	0.01	-0.9506 (0.9152)	0.38
<i>Fin_soc4</i>	-0.2318 (1.0540)	0.08	-1.8739 (4.8360)	0.00
<i>Fin_soc5</i>	-2.6638 (1.3748)	0.07	0.2587 (1.1847)	1.29
<i>Male</i>	-0.9743 (1.0615)	0.38	-0.5086 (0.7945)	0.60
<i>Fin_soc1*Male</i>	-0.0839 (1.4921)	0.92	2.2543 (1.5220)	9.52
<i>Fin_soc2*Male</i>	0.7839 (2.0771)	2.19	0.1535 (1.6661)	1.16
<i>Fin_soc3*Male</i>	3.5239** (1.7948)	33.92**	-0.3311 (1.6540)	0.71
<i>Fin_soc4*Male</i>	4.0883* (2.1421)	59.64*	1.7162 (4.0874)	1.041

(Continued)

TABLE 3. Association of Financial Education and Financial Socialization with Financial Literacy and Financial Confidence (Continued)

	<i>Model C</i>		<i>Model D</i>	
	Response variable = <i>FLScoreHigh</i>		Response variable = <i>FLConfHigh</i>	
	Coefficients	Odds ratio	Coefficients	Odds ratio
<i>Fin_soc5*Male</i>	1.8513 (1.9750)	6.37	2.0847 (1.6387)	8.04
<i>European/Pakeha</i>	1.0001 (1.0665)	2.72	0.7656 (0.9110)	2.15
<i>Māori</i>	-1.7115 (0.5583)	0.00	-0.5558 (1.7218)	0.57
<i>Pasifika</i>	-3.2143* (1.5479)	0.04	-2.7131* (1.5971)	0.07
<i>Asian</i>	-1.0322 (0.2832)	0.36	-1.0331 (0.8440)	0.36
Log-likelihood	121.992		133.31	
Wald test	21.02*** (0.01)		11.20* (0.10)	
Pseudo R^2	0.4189		0.2748	

Note. This table reports the estimation results of binary logistic regression. The predictor variables are explained in Table 3. The standard errors are reported in parentheses. The Wald test is a chi-square test for testing the significance of the influence of financial education (*Fin_Edu 1*, *Fin_Edu 2*, *Fin_Edu 3*, and *Fin_Edu 4*) and financial socialization variables (*Fin_soc1*, *Fin_soc1*, *Fin_soc2*, *Fin_soc3*, *Fin_soc5*, and *Fin_soc6*).

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

(e.g., Kim & Chatterjee, 2013). Our findings also suggest the significance of formal education in finance and education and that personal finance training has a significant association with high financial confidence. Every young adult, regardless of parental financial knowledge or ethnicity, benefits from having personal finance materials incorporated in university curricula.

Our study makes a new contribution to knowledge by exposing gender differences in regard to financial literacy in New Zealand. Our findings suggest that family, friends, and community have the most influence on financial investment decisions, regardless of race/ethnicity. Shim et al. (2010) contend that students' willingness to adopt parental role modeling is positively related to their financial attitudes. Hilgert et al. (2003) also found that friends and formal education were the most important source of knowledge about personal finance.

This research has some limitations. First, the questions used to assess participants' financial knowledge might have been difficult to answer. Second, due to the use of snowball sampling methods, sampling bias could have occurred if respondents nominated people they knew well.

Implications for Educators, Planners, and Consumer Finance Counselors and Further Research Needs. The findings from this study has a number of implications for financial education, planners and policy-making. First, the findings of the association between information sources and financial knowledge suggest the importance of certain information sources. A significant information source today is the Internet. In this regard, government agencies should frequently update financial literacy information on the Internet. Furthermore, irrespective of ethnic background, the educational institutes should offer more personal finance courses

TABLE 4. Financial Behavior, Financial Literacy, and Confidence

Model E:	High-High	Odds ratio	High Low	Odds ratio	Low High	Odds ratio	Male	Odds ratio	Māori	Odds ratio	Pasifika	Odds ratio	Waldtest	Pseudo R ²
<i>Risky financial behavior:</i>														
Take cash advance on credit card	-0.231 (0.511)	0.79	0.361 (0.433)	1.43	1.580*** (0.617)	4.85**	-0.887* (0.105)	0.41	2.212** (0.04)	2.59	1.804** (0.013)	9.13	0.08	0.04
Pay minimum on credit card	-0.414 (0.611)	0.66	-0.236 (0.514)	0.78	1.335* (0.782)	3.81	-1.162** (0.006)	0.31	-0.325 (0.800)	0.72	0.486 (0.550)	1.63	12.21***	0.105
Overdraft checking account	1.539*** (0.552)	4.66**	0.918** (0.455)	2.50**	0.696 (0.642)	2.00	0.019 (0.955)	1.02	0.656 (0.553)	1.92	-0.597 (0.421)	0.55	16.48***	0.168
Finance a balance on credit card	0.362 (0.548)	1.43	0.681 (0.503)	1.97	0.852 (0.626)	2.34	0.338 (0.384)	1.40	-0.535 (0.624)	0.58	-0.967 (0.230)	0.38	3.90	0.109
Use more than three credit cards	-0.246 (0.531)	0.78	0.231 (0.453)	1.26	1.282** (0.633)	3.60**	-1.034 (0.377)	0.36	1.188 (1.117)	3.28	0.659 (0.898)	1.93	5.11	0.062
Pay fees for late payment	-1.106** (0.582)	0.33	0.286 (0.482)	1.33	-0.283 (0.741)	0.75	0.278 (0.464)	1.32	-0.141 (0.920)	0.86	0.683 (0.389)	1.98	5.32	0.088
<i>Model F:</i>														
<i>Prudent financial behavior:</i>														
Saving for important purchases	0.925* (0.541)	2.74	0.962** (0.453)	5.55**	1.031* (0.551)	3.30	-0.403 (0.258)	0.66	-1.178 (0.235)	0.31	-1.267* (0.085)	0.28	7.70**	0.105
Saving for unexpected expenses	1.693*** (0.002)	5.43*	1.082** (0.011)	2.95	1.616*** (0.002)	5.03	-0.378 (0.275)	0.68	-1.717 (0.096)	0.17	-0.717 (0.326)	0.48	2.36	0.09

(Continued)

TABLE 4. Financial Behavior, Financial Literacy, and Confidence (Continued)

Model E:	High-High	Odds ratio	High Low	Odds ratio	Low High	Odds ratio	Male	Odds ratio	Māori	Odds ratio	Pasifika	Odds ratio	Waldtest	Pseudo R ²
Comparing offers from various banks	1.539*** (0.005)	4.82*	0.917** (0.043)	2.15	0.696 (0.278)	0.07	0.019 (0.955)	1.31	0.656 (0.553)	0.00	-0.597 (0.420)	0.00	16.84***	0.165
Setting up automatic payments for bills	0.544 (0.280)	1.27	0.878** (0.037)	2.40	0.557 (0.329)	1.74	-0.965*** (0.005)	0.38	1.010 (0.346)	2.74	- (0.687)	0.74	8.02*	0.070
Paying bills on time	2.344*** (0.009)	1.03	1.060** (0.027)	1.24	1.960** (0.004)	1.56	-0.858** (0.028)	1.56	-0.813 (0.474)	0.68	- (0.267)	0.58	18.39***	0.168
Contributing to retirement (KiwiSaver)	0.363 (0.508)	1.43	0.681 (0.172)	1.97	0.852 (0.172)	2.34	0.338 (0.384)	1.34	-0.535 (0.624)	0.58	- (0.230)	0.37	3.90	0.110

Note. The table reports the coefficients and odds ratios from the estimation of binary logistic regression models E and F. The binary outcome or response variables are the financial behaviors listed in the first column. The standard errors are reported in parentheses. The Wald test is a chi-square test for testing the significance of combined financial knowledge and financial confidence variables.

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively. The results for other control variables are not reported.

earlier than college may also yield positive outcomes from a socioeconomic perspective. For example, Sorted is a free service powered by the Commission for Financial Capability (CFFC), a government-funded, independent agency dedicated to helping New Zealanders succeed financially. It has the tools and information to tackle debt, plan and budget, save and invest, plan for retirement, and manage a mortgage. As financial capability is related to financial literacy and financial behaviour (Xiao & Porto, 2017), thus there is a need to provide more robust research evidence to policy makers and practitioners that online sources such as Sorted have positive effect on financial capability through improvements in financial literacy of the adults in New Zealand. Additional research in various regions in New Zealand is needed to determine which of these regions are lagging other prosperous regions in New Zealand by developing certain national-level financial literacy benchmarks. In addition, nongovernmental organizations should also raise awareness about the importance of financial literacy and its relation to the improvements in the financial wellbeing of adults in New Zealand.

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