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(doi: 10.12831/80529)

Journal of Financial Management, Markets and Institutions (ISSN 2282-717X)

Fascicolo 1, gennaio-giugno 2015

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# The Influence of Gender and Household Culture on Financial Literacy Knowledge; Attitudes and Behaviour



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## Abstract

This study of over 500 fifteen year old high school students in New Zealand found that boys have earlier financial discussions with their parents than girls, with the age of first discussion having a significant impact on financial literacy quiz scores for boys, but not for girls. Boys were found to have more positive attitudes than girls about financial matters, specifically around saving and spending. Boys were also found to impulse spend less than girls. Impulse spending behaviour of girls could be mitigated to a certain extent by the education level of the girls' mothers, while a more educated father is correlated with a higher financial literacy quiz score for both boys and girls, after controlling for socioeconomic status.

It is suggested that parents need to be aware of how gender stereotypes, and the «financial culture» in the home ultimately impacts on the financial knowledge, attitudes and behaviours of their children.

**Keywords:** Financial literacy; gender; parents; financial discussions; financial attitudes.

**JEL Codes:** A2, A21, G00, G02.

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## 1 Introduction

The level of financial literacy amongst the public has become more and more important as the range of financial products available to consumers has grown, recent work conducted by Lusardi and Mitchell (2014) found that workers increasingly have the responsibility for saving, investing and managing wealth thrust upon them. With an ever increasing need for financial literacy competence, it is important that sections of society are not marginalised nor penalised due to a lack of financial sophistication. One group that does report lower levels of financial literacy is females.

This paper uses a sample of over 500 fifteen year old high school students to establish the effect of differences in demographic characteristics on financial literacy levels with respect to financial sophistication, attitudes and behaviours of females relative to males. The conceptual framework underlying this paper is that gender stereotypes in the home, along with general parental influence, cause different financial attitudes and behaviours to develop in young girl than in boys. These differences in financial socialisation in the

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home may be a contributing factor to females having lower financial literacy levels in adulthood. Based on previous literature, the main variable used as a proxy for financial socialisation in the home is the age of the first financial discussion with a parent in the home. The education levels of parents are also analysed in the context of influencing the quality and quantity of financial discussions, rather than as a socioeconomic indicator.

Findings of this paper which support the conceptual framework are that a younger age of first financial discussion with a parent is correlated with a higher score in a financial literacy quiz for males but not females. Having a father who attended university is also correlated with an earlier age of first financial discussion while a mother's education level is correlated with a lesser propensity to impulse spend. Male students have an earlier age of first parental financial discussion, are less likely to impulse spend and have more positive attitudes toward spending and investment, relative to females.

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## 2 Literature Review

A growing body of literature has identified that adult males on average are more financially literate than adult females (Chen and Volpe, 2002; Volpe *et al.*, 1996; Goldsmith and Goldsmith, 1997; Fonseca *et al.*, 2012; Worthington, 2006; Braunstein and Welch, 2002), while other studies have attempted to connect conventional gender role beliefs and financial literacy, stating that «gendered financial role patterns that are experienced over time become internalized norms» (Danes and Haberman, 2007, p. 48). Danes and Haberman (2007) also mention that what children expect and how they behave can be influenced by this behaviour. Perhaps alarmingly, they also state that «...girls are trained to be financially dependent and to seek safety and security rather than become risk-takers...» and that there may be a belief by some that «...if a woman is financially competent, she will end up alone» (Danes and Haberman, 2007, p. 49). Lusardi and Mitchell hypothesised that woman (especially young women) may expect that they will have someone later in life (a husband for example) to take care of their finances. They also acknowledge that the gender debate was «far from closed» and that more research was required to better understand observed gender differences in financial literacy (Lusardi and Mitchell, 2014, p. 20).

The recognition in the literature that the financial socialisation of children may influence attitudes and behaviours later in life, was also discussed by John (1999) who described ages 7-11 as a period that contains «some of the most important developments in terms of consumer knowledge and skills», when they develop a more adaptive approach «based on their new-found ability to think from the perspective of a parent or friend» (p. 187). John (1999) also describes the 11-16 age-group as a time when consumers are shaping their own identity while conforming to group expectations. The home is an important part of this process, as some research indicates that within the family unit is where children generally learn about money matters and that the home is a filtering point from the outside world, suggesting that if parents are poor money managers this is likely to affect children as they model their parents' behaviour (Lusardi *et al.*, 2010; Clarke *et al.*, 2005).

While these findings discuss the importance of the home environment on developing financial attitudes and knowledge, there are also findings that suggest mothers and fathers play different roles in the home when fostering financial skills. Danes (1994, p. 23) comments on the fact that while parents play a necessary role in the transfer of financial knowledge and skills «...parents seem to pass only their own feelings about money on to their children». In terms of the influence of gender on parental behaviours, Danes and Haberman (2007) found that although mothers did demonstrate financial behaviour, fathers modelled financial tasks more frequently than mothers. This is supported by other findings such as men being more likely to be chosen in surveys as the financial representative of the house, the majority of women not being involved in family talks about money during formative years, and that gender differences are not due to differential interest in finance and financial matters between men and women (Fonseca *et al.*, 2012; Bowen, 2002; Brown and Graf, 2013).

These traditional views may reflect a status belief in accordance with *Status Characteristics Theory* (Berger *et al.*, 1977; Wagner and Berger, 1997; Ridgeway, 2001; Ridgeway *et al.*, 2009). According to this theory, gender inequalities are also due to status beliefs: «widely held cultural beliefs that link greater social significance and general competence, as well as specific positive and negative skills, with one category of a social distinction (e.g., men) compared to another (e.g., women)» (Ridgeway, 2001, p. 638). With this line of reasoning, girls could feel less self-confident in managing money than boys since their (and their parents) evaluation is affected by a status belief. This could be expected given the traditional vision of gender and family roles characterising societies, where men have greater control over money within couples. Bussey and Bandura (1999) specifically examine the application of social cognitive theory of gender development and differentiation, stating «Children develop the stereotypic conceptions of gender from what they see and hear around them. Once they achieve gender constancy – the belief that their own gender is fixed and irreversible – they positively value their gender identity and seek to behave only in ways that are congruent with that conception» (p. 677). They go on to describe direct tuition in an educational setting or in the home as potentially having a major influence on gender development. An example of this includes the work of Berti and Bombi (1988) and Karsten (1996) who suggest that children acquire a vast amount of experience as an observer or participant in the shopping process at very early ages.

While the above literature prompted this paper studying the impact of financial socialisation in the home with respect to gender, the decision to use parent-child financial discussions in the home as a measure of financial socialisation was informed by a body of literature in this field which looks specifically at conversations between parents and children, where it has been found that parental conversations are differentiated by gender (Dunn *et al.*, 1987). Mothers tend to talk more to daughters than sons, with both mothers and fathers talking differently to their sons compared to their daughters. Autonomy and independence tends to be stressed more for sons, using more directive speech and making more informative statements (Pomerantz and Ruble, 1998; Leavell *et al.*, 2012; Leaper, Anderson and Sanders, 1998). Examining research specifically related to financial discussions, Newman *et al.* (2008) found that men were more likely to discuss money than women. Others have found the home environment to be more influential in gaining

financial information than school (Williams, 2010; Mandell, 2008; Shim *et al.*, 2010). Shim and Serido (2011) quantified the influence of parents on a child's financial literacy, stating that parents' influence is 1.5 times greater than that of financial education and more than twice that of friends, going on to suggest that «Parental communications – discussions between parents and their children about financial matters – may be especially important in furthering financial capability among young adults» (2011, p. 21). This literature also informed the decision to include parental education levels alongside a socioeconomic variable in the belief that the quality of parental communications with children would be influenced by parental education levels.

One proposition in the recently published Programme for International Students Assessment (PISA) results for their 2012 *Students and Money: Financial Literacy* (OECD, 2014) study was that «as boys and girls grow up, they may be exposed to different opportunities to learn and improve their financial competencies... and therefore they may develop different levels of financial knowledge and different financial strategies in adulthood over time» (2014, p. 81). Based on the research outlined above, this paper suggests a good deal of the different opportunities for the genders to learn and improve financial competencies occurs in the home, with financial discussions with parents playing a significant part. Of the 18 OECD countries which took part in the PISA study, six of them have reported that males outperform females on surveys measuring financial knowledge, when adults were used as the subjects (OECD, 2014). Interestingly, when 15 year olds were the subjects, only one of the 18 OECD countries (Italy) showed a statistically significant difference in financial literacy test scores between the genders. This finding led Agnew and Cameron-Agnew (2015) to suggest this could be due to 15 year olds having had less exposure to stereotypical norms in the home with regards to traditional financial literacy roles and expectations relative to adults. This paper aims to build on this work by examining gender differences in parental discussions in the home, and how variables such as parental education interact with gender, financial discussions, attitudes and behaviours along with the influences on financial literacy quiz scores.

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### 3 Methodology

The model developed by Agnew and Cameron-Agnew (2015) mentioned in the literature above was tested using a pilot sample of tertiary students, using ordinary least squares regressions. Agnew and Cameron-Agnew (2015) suggest the significant influences on a student's score on a financial literacy quiz are ethnicity, whether the father attended university, school decile (a proxy for socioeconomic status) and the age of the first financial discussion in the home between parent and child. School decile is calculated by the ministry of education, and indicates the extent to which the school draws its students from low socio-economic communities. Decile 1 schools are the 10% of schools with the highest proportion of students from low socio-economic communities, whereas decile 10 schools are the 10% of schools with the lowest proportion of these students.

The pilot sample yielded similar results to Agnew and Cameron-Agnew (2015), with ethnicity and age of the first financial discussion in the home revealing the strongest

**Table 1:** Demographic details of school sample

	Female	Male	Total
Gender	262	306	568
High School Decile	171	208	379
Low School Decile	91	98	189
Father Attended University	116	161	277
Father Didn't Attend University	126	127	253
Mother Attended University	184	130	314
Mother Didn't Attend University	112	121	233
Caucasian Ethnicity	236	26	262
Not Caucasian Ethnicity	272	34	306

correlation with the financial literacy quiz score. However, when ordinary least squares regressions were run on the male and female cohorts separately, all of the significant correlations were driven by male students. No variables were found to be significant for female students. Based on findings from the pilot study, and those identified in the literature, a study involving Year Ten (mostly 15 year old) students from nine secondary schools (five decile 2 to 4 schools and four decile 9 and 10 schools) was conducted. Year Ten was chosen as it is the last full year of compulsory education for most students (the school leaving age is 16). The surveys were completed in class time under the supervision of their teachers, with each teacher given the same set of instructions. The financial literacy questions and attitudinal statements included in the quiz were derived from across the literature, with some questions modified to reflect the young age (and potentially low reading age) of the participants in the school survey. On the recommendation of a principal in a low decile school, the financial literacy quiz section was reduced from 17 questions to 10, with the language of the remaining ten questions simplified. Some questions were also modified to reflect a New Zealand context. The ten financial literacy quiz questions are shown appendix one. The sample size was 568 Year Ten students.

The demographic details of the sample are shown in Table 1 above. (Note: Some students did not complete the parental education variables).

Ordinary least squares regressions were run on the school level data, using the model developed by Agnew and Cameron-Agnew (2015).

*Independent Variables:*

- *Father Attended University:* This variable was binary coded whether or not the father attended university (1 = attended university).
- *Caucasian Ethnicity:* This variable was binary coded according to whether the student was of Caucasian descent or not (1 = Yes).
- *Age in years of the first financial discussion with a parent.*
- *High Decile:* This variable was binary coded into two categories, low decile schools (deciles 2 to 4) and high decile schools (deciles 9 and 10) (1 = high).

Alternative socio-economic status variables such as whether the family home was owned or rented, the mother attended university, parents owned shares or not were all brought in the model. None of these were significant when school decile was in the model. A stepwise regression also revealed that school decile and father's education were the only significant socioeconomic variables influencing financial literacy quiz score. An additional variable of whether a student had a part-time job was also tried in the model, but found to be not

significant, therefore it was removed (confirmed by a stepwise regression). The age of the student when they had their first savings account, along with the age at which the student first started receiving pocket money were also found to not be significantly correlated with the financial literacy quiz score.

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## 4 Results and Discussion

The four variable model as outlined above yielded the following coefficients and t-statistics as shown in table 2. A male Caucasian student from a high decile school with a father that attended university, who had their first financial discussion with parent(s) at a younger age had the best chance of scoring a high score on the financial literacy test. With the financial literacy quiz being out of a total of ten marks, having a father who attended university or being of Caucasian ethnicity are both correlated with approximately half a mark higher score on the quiz. Attending a high decile school rather than a low decile school has a large impact of almost a one and a half mark higher quiz scores. The age of first financial discussion variable has a much smaller coefficient, but it must be remembered this variable is of a continuous nature rather than the binary nature of the other three variables. Having the first financial discussion with a parent 1 year later is correlated with a 0.079 lower financial literacy quiz mark. For the age of first financial discussion variable to have the same effect size as the ethnicity variable, it would require a student to have their first financial discussion with a parent approximately 6 years and 2 months later. The equivalent figure for the father's educational variable would be approximately 7 years and 1 month (Tab. 2).

As an extension to the work of Agnew and Cameron-Agnew (2015), the model was then tested using a series of interaction variables. Some of the variables deemed not significant by the pilot sample in this study were also added back in to the model to establish if the addition of interaction variables had any influence on their significance. The results of these regressions are shown in appendix two. Being from a high decile school, of Caucasian ethnicity and having an earlier first parental financial discussion all continue to be correlated with a higher financial literacy quiz score, with similar effect sizes. The introduction of dummy interaction variables for gender and school decile supported those findings of the PISA report mentioned earlier that a significant gender differential in financial literacy quiz scores did not exist for 15 year olds in New Zealand, unlike many findings when an adult population was used. The gender-decile interaction variable found no significant difference between high decile male and female quiz scores. The low decile female and male variables were both significantly correlated with a lower quiz than a high decile female, with very similar coefficient sizes, suggesting socio-economic status was the driver of quiz score differences rather than gender.

Having a father that did not attend university for both male and female students is correlated with having a lower financial literacy quiz score of 0.8 of a mark compared to a male whose father attended university, while none of the interaction variables for gender with mothers' education or gender with having completed a financial literacy course at school are significant. Given that a measure for socioeconomic status was also included in the regressions, this is the first evidence in support of social influence as outlined in

**Table 2:** Variables affecting financial literacy quiz score in Year Ten students

Father Attended University	0.560*** (2.853)
High Decile	1.447*** (6.338)
Caucasian Ethnicity	0.489** (2.183)
Age of First Financial Discussion	-0.079** -(2.404)

Notes: Dependent Variable: Quiz Score.

\*, \*\* and \*\*\* denote statistical significance at the 10, 5 and 1% levels respectively. ( $R^2 = 0.195$ ).

the theoretical model proposed in the introduction, that it is the fathers rather than mothers in a household that lead the financial discussions with children, which is why the level of fathers' education is significant where the mothers' is not.

In an effort to better understand the social dynamics in play in the home, the regressions containing interaction variables outlined above were repeated using the age of first financial discussion with a parent as the dependant variable, with financial literacy quiz score as an independent variable. The results also shown in appendix two reveal that a child having their first financial discussion with a parent at an earlier age is correlated with being of Caucasian ethnicity (10 months earlier), having done a financial literacy course at school (around seven months earlier), and having a higher financial literacy quiz score (approximately 1 and a half months earlier for every extra mark out of ten on the quiz) remain significant with very similar effect sizes across all of the regressions containing different interaction variables.

The interaction variables provide support for a gender bias in the age of the first financial discussion in the home, with a high decile female having their first parental financial discussion at an older age (eight months) than a high decile male. This is an important finding, as this paper suggests that while no gender differential on financial literacy test scores is prevalent in 15 year olds, the seeds for a gender differential at a later date have been sown through social influences in the home such as the age of first financial discussion in the home with a parent. The concerning aspect of this gender differential is that a younger age of first parental financial discussion was a significant variable in the regressions examining correlations with higher financial literacy quiz scores. The importance of parental education levels on financial discussions is also revealed, with a female student whose father did not attend university being correlated with having an older first parental financial discussion relative to a male whose father did attend university of just over 1 year and 1 month. A similar effect size was found for the same interaction with regards to mothers' education rather than fathers' education, the only regression where mothers' education level had a significant effect. These findings are suggestive of male children being exposed to earlier, better quality financial discussions than female children. Parental education levels seem to be interacting with gender to give older, possibly less quality financial discussions for females relative to males.

While the literature suggests the home environment has a stronger effect on financial socialisation than the school environment, the interaction of gender and completion of a



**Table 3:** OLS results for variables affecting financial literacy quiz score in Year Ten students by gender

	Males	Females
Age of First Financial Discussion	-0.109** (-2.325)	-0.027 (-0.584)
High Decile	1.559*** (4.634)	1.305*** (4.291)
Caucasian Ethnicity	0.324 (1.005)	0.731** (2.397)
Father Attended University	0.637** (2.207)	0.454* (1.719)

Notes: Dependent Variable: Quiz Score.

\*\* and \*\*\* denote statistical significance at the 5 and 1% levels respectively.

financial literacy course at school shows a similar gender bias. Being a female who has not done a financial literacy course at school is correlated with an older age of first parental financial discussion relative to a male student who has not done a financial literacy course at school of 6 months. A male who has done a financial literacy course at school is correlated with a younger age of first parental financial discussion relative to a male student who has not done a financial literacy course at school, with an effect size of 9 months. However, there is no significant difference between a female who has or has not completed a financial literacy course at school. A male who has done a financial literacy course having an earlier age of first financial discussion with a parent than a male who has not done a financial literacy course is intuitively easy to comprehend, although causality may not be clear (did completing the course prompt the discussion or vice versa?). However, why the later age of first discussion for the female when neither had completed a financial literacy course?

To measure the gender bias in the age of first financial discussion variable, an ordinary least square regression was run with the dependent variable of age of first financial discussion and gender as the independent variable, the result of which was a t-statistic of  $-4.269^{***}$  and a coefficient of  $-1.028$ . On average, male students in the sample have their first financial discussion with their parents just over one year younger than female students. To establish whether the gender bias exists over both high and low decile schools, two ordinary least squares regression were run with age of first financial discussion the dependent variable and gender the independent variable. Both low (coefficient of  $-0.994$ , t-statistic of  $-3.539$ ) and high (coefficient of  $-1.024$ , t-statistic of  $-2.319$ ) school decile male students have their first parental financial discussion a year earlier than female students, significant at the 95% confidence level for high decile school students, and the 99% confidence level for low decile school students.

When examining the raw data, the average age of their first parental financial discussion is 10 years for a male from a high decile school, 11 years for a girl from a high decile school and a boy from a low decile school, and 12 years for a girl from a low decile school. Ordinary Least Square regressions were then run on the male and female cohorts separately, to establish if age of first financial discussion was equally as important for males as females in terms of the impact on their financial literacy quiz score. The results are shown in Table 3.

Interestingly, age of first discussion is significant for males, but not for females, while ethnicity is significant for females but not for males. This could be indicative of better

**Table 4:** OLS results for variables affecting age of first parental financial discussion in Year Ten students by gender

	Males	Females	Both Genders
Did Financial Literacy Course	-0.797** (-2.233)	-0.259 (-0.626)	-0.544** (-2.040)
High Decile	-0.041 (-0.085)	0.231 (0.476)	0.083 (0.245)
Caucasian Ethnicity	-0.798* (-1.903)	-0.858* (-1.872)	-0.855*** (-2.777)
Father Attended University	0.066 (0.151)	-0.968** (-2.248)	-0.442 (-1.451)
Mother Attended University	-0.357 (-0.812)	-0.434 (-1.008)	-0.339 (-1.109)
Total Financial Literacy Quiz Score	-0.178** (-2.266)	-0.033 (-0.320)	-0.124** (-1.991)
Male Gender			-0.662*** (-2.683)

quality financial discussions for males than for females, an earlier financial discussion for a female has less impact than for a male, because the discussion is at a more superficial level. For the two variables significant for both genders, both have larger effects sizes for males than females.

When age of first financial discussion is treated as the dependant variable, and the same segregation by gender is applied, similar results are found, as shown in Table 4.

Caucasian ethnicity is significant for both genders, which may be indicative of cultural influences on financial attitudes and beliefs. Having completed a financial literacy course and financial literacy quiz score are only significantly correlated with age of first financial discussion for male students, while the father's education level variable is only significant for the female students, but with an effect size of almost 1 year. While a thorough investigation of the state of financial literacy courses in schools is beyond the scope of this paper, a differing quality in the provision of financial literacy courses does not explain a differential relationship with financial discussions in the home amongst the majority of the students in the sample who were from co-educational schools, and thus sitting in the same financial literacy course as each other. Additionally, why does a female with a university educated father have the first financial discussion a year earlier than a female with an uneducated father, when fathers' education is not significant for a male student? An intuitive explanation based on the theoretical framework of this paper is that fathers as a group understand the importance of their sons being financially literate, however only the more educated fathers recognise the importance of financially literate daughters, prompting more educated fathers to be more receptive to, and instigators of financial discussions with daughters.

The findings around socioeconomic status being correlated with higher financial literacy quiz scores are somewhat easier to intuitively comprehend, not least because higher socioeconomic students tend to outperform lower socioeconomic students on most tests, regardless of content. The gender discrepancy in the age of initial financial discussions irrespective of socioeconomic status is a little more thought provoking. Unlike the initial distribution of pocket money or opening of a savings account which tends to happen at a milestone such as a particular birthday, the impetus to discuss financial matters with a

child as young as 10 may tend to occur on a more ad hoc basis, rather than as a right-of-passage. The age that children have their first financial discussion with parents is therefore more susceptible to an either conscious or subconscious gender bias than the opening of a savings account for example. The notion that it is more important for a male to be financially literate than a female due to the traditional «bread winning» status of the male may be one influence behind the earlier discussions between parents and boys. This idea of discrepancies in the financial attitudes of parents toward their children based on the child's gender has some support from the Westpac Money and Kids Report, a nationwide survey in New Zealand commissioned to understand the money habits of children. The research surveyed 540 Westpac customers all with children aged between 4 and 18 years old, and found that for those who get pocket money boys get \$3 more a week on average than girls with chores to earn it based on gender. Both spend 2.4 hours a week doing chores with girls being more likely to clean the bedroom and do the dishes and laundry; while boys are more likely to take out the rubbish, mow the lawns and clean the car. (Wade, 2013).

It is difficult to believe that a household culture which results in girls, on average, having their first financial discussion a year later than boys would not also impact on the quality and content of those discussions. In fact, the age of first financial discussion may well be a proxy for a «household financial attitudes and behaviour» variable. The fact that the age of first financial discussion variable had a statistically significant correlation with financial literacy quiz score for boys but not for girls, while the completion of a financial literacy course at school was not significant, supports the research mentioned in the introduction that parental financial influence can be stronger than the influence of school. However, what this paper adds to the literature is that there appears to be a gender bias in the household environment, which could be contributing to the lower performance by females on financial literacy quiz scores. One explanation for the age of a child's first parental financial discussion not being significant for girls is that even when girls do have financial discussions with parents in the home they are not as rigorous, or are more superficial than those had between parents and boys. This is where the gender of parents can also have an influence, where fathers may be more willing (or able) to have financial discussions with sons than daughters. There are a number of feasible reasons for this. These include that today's fathers of young people are not old enough to have escaped the influence of a more traditionally patriarchal society, where boys grew up to be men; the expected chief «breadwinners» of a conventional nuclear family. Perhaps another hangover from tradition may be for some to see financial education for daughters as not necessary. So, although it appears that girls are involved in financial discussions with their parents it may be that these are more superficial, more piecemeal, in content. It may also be that fathers and sons generally have more opportunity to talk (maybe on the way to sporting fixtures, for example) than fathers and daughters.

To establish whether the gender differences present in the age of first financial discussions in the home with parents is also present in financial attitudes and behaviours, odds ratios and chi square statistics were calculated for a series of attitudinal questions the students were asked to respond to using Likert scales. Table 5 shows the statements males were statistically significantly more likely to agree with, while Table 6 shows the statements females were statistically significantly more likely to agree with.

**Table 5:** Statements Year Ten males are more likely to agree with than Year Ten females

	Odds Ratios
My parent(s) are role models for me about how to manage financial matters.	6.569** (2.25)
My parent(s) think that I should save money each month for the future.	3.830* (1.68)
With today's unemployment rate, it really doesn't pay to get more education after high school.	4.479** (1.71)
People with more formal education rarely earn more money than people with less formal education.	3.209* (1.47)
I think it's easy to open a cheque account.	3.420* (1.60)
I save at least 10% of the money I earn each month.	13.659*** (2.18)
Without peeking, I know how much money is in my wallet or purse right now.	3.302* (1.54)

Notes: \*, \*\* and \*\*\* denote statistical significance at the 10, 5 and 1% levels respectively.

**Table 6:** Statements Year Ten females are more likely to agree with than Year Ten males

	Odds Ratios
My parent(s) think that I should spend within a budget.	4.392** (1.73)
I'd like to start saving money, but my spending habits prevent it.	14.585*** (2.13)
I spend money on things I don't really need, such as eating out.	4.038** (1.51)
I think that banks are mysterious places.	12.193*** (2.19)
Investing in stocks and bonds is for rich people.	3.238* (1.54)
I think that finding a good job today is largely a matter of luck.	3.208* (1.45)

Notes: \*, \*\* and \*\*\* denote statistical significance at the 10, 5 and 1% levels respectively.

Boys were more likely to save than girls, be less mystified by banks, believe that achieving a good job was something they had control over and that investing in stocks was not only for the wealthy. Girls, on the other hand, found their spending habits too often led them to make purchases they didn't need, often on impulse, despite the desire to start saving. These less desirable attitudes displayed by girls is further evidence of a potential catalyst for lower financial understanding and knowledge in the future, which may also be attributable to financial socialisation in their environment.

The financial behaviour of children as they mature into adulthood is important, with the financial knowledge gained, and financial attitudes developed, sure to be major influences on financial behaviour. In addition to the link between gender and financial attitudes, odds ratios and chi square statistics were also calculated to establish if there was a difference in financial behaviours between male and female students. The calculations revealed that females are 1.56 times more likely to impulse spend than males, a statistically significant difference at the 95% confidence level, with a chi square statistic of 4.733.

**Table 7:** Coefficients and odds ratios for variables that significantly influence impulse spending by Year Ten students

Caucasian Ethnicity	0.177 (1.194)
High Decile	0.164 (1.178)
Mother Attended University	-0.503* (0.605)
Male Gender	-0.589** (0.555)
Age of First Discussion	-0.020 (0.980)
Completed Financial Literacy Course	0.325 (1.384)
Father Attended University	0.238 (1.268)
Financial Literacy Quiz Score	0.018 (1.019)
Has Part Time Job	1.424** (4.152)

Notes: \*\* and \*\*\* denote statistical significance at the 10 and 5% levels.

Given this gender difference in impulse spending behaviour, a logistic regression reporting odds ratios was run using a binary dependant variable of yes/no to having impulse spent in the past three months, with the independent variables as set out in Table 7.

A mother's level of education has a greater importance in shaping the behaviour relating to impulse spending, than we have seen with financial discussions in the home and financial literacy quiz scores. Males and students whose mother attended university are less likely to impulse spend while students with a part time job are more likely to impulse spend, possibly due to greater discretionary income. Interestingly, the effect size of having a mother who went to university is the same as the effect of being male. While it is the fathers appear to be leading the financial discussions in the home, it may well be the mother who is present when spending patterns are developed.

## 5 Conclusions, Implications and Limitations

The findings of this paper suggest that financial discussions in the home are important in terms of improving financial knowledge, influencing financial attitudes, and ultimately influencing financial behaviours such as impulse spending. This process occurring in the home appears to contain a gender bias. In the introduction to this article, Shim *et al.* (2010) expressed the need for action; in particular the belief that parents need to understand the effect of how the way they behave financially can impact on their children, and that consequently they need to provide more specific instruction about money management.

This need to act appears to be even more important for girls. For many years now the shackles of tradition have not overtly restricted women to work and earn, or live independently if they wish. The apparently enduring traditional attitudes of the majority of parents and children may be out of line with the needs and expectations of an increasingly

complex society. People, regardless of gender, should not feel restricted when it comes to achieving financial security. Certainly no-one is immune to financial misfortune, but no person need fall victim to their own financial ineptitude, provided appropriate and robust financial information is imparted and modelled, preferably from an early age.

The authors of this paper suggest that parents need to be made more aware of how gender stereotypes, and the 'financial culture' in the home ultimately impacts on the financial knowledge, attitudes and behaviours of their children. Specifically, the role that personal relationships and discussions with parents of different genders play is crucial. Educational institutions need to be aware that females may be presenting with different attitudes and knowledge than boys as a result of their home environment, that these differences are pervasive across all socioeconomic status levels, and that they directly influence the financial behaviour of girls relative to boys, such as impulse spending.

One limitation of this study is that the age of first financial discussion is self-reported. Initially, this raised the prospect of a potential gender bias in the self-reporting of some data. The fact that there was no gender difference in the self-reporting of the age of first opening a savings account, and first receiving pocket money, two variables for which responses were collected but not used due to a lack of significance does give confidence that the gender difference in the age of first discussion is not an error of self-reporting, and is in fact a real difference.

Further research into the differences and similarities in the quality and quantity of financial discussions in the home between parents and their sons and daughters would be insightful, as would research into the dynamics mentioned above in single parent families. Comparing the household financial environments of families with differing ethnicities may also yield some interesting results.

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## Appendix One

1. Which of the following is true about New Zealand's goods and services tax (GST)?
  - a. The GST percentage rate is 12.5%.
  - b. The government will take it from your pay.
  - c. You don't have to pay the tax if your income is very low.
  - d. It makes things more expensive for you to buy.
  
2. If you went to university and earned a degree, how much more money could you expect to earn than if you only had a high school qualification?
  - a. About 10 times as much.
  - b. No more; I would make about the same either way.
  - c. A little more; about 20% more.
  - d. A lot more; about 70% more.
  
3. David just found a job with a take-home pay of \$2,000 per month. He has the following monthly expenses:
  - \$900 for rent

- \$150 for groceries
- \$250 for transport
- \$100 for clothes
- \$200 for eating out
- \$250 for other expenses

How long will it take him save \$600?

- a. 3 months.
  - b. 4 months.
  - c. 1 months.
  - d. 2 months.
4. Rob and Mary are the same age. At age 25 Mary began saving \$2,000 a year while Rob saved nothing. At age 50, Rob started saving \$4,000 per year while Mary kept saving her \$2,000. Now they are both 75 years old. Who has the most money in their account?
- a. They would each have the same amount because they put away exactly the same.
  - b. Rob, because he saved more each year.
  - c. Mary, because she has put away more money.
  - d. Mary, because her money has grown for a longer time at compound interest.
5. If a borrower chooses to pay back a car loan over a longer period of time, the monthly payment is generally
- a. lower and the total interest paid is lower.
  - b. lower and the total interest paid is higher.
  - c. higher and the total interest paid is lower.
  - d. higher and the total interest paid is higher.
6. Suzy backs her car into a metal fence, causing \$500 of damage to her car. Suzy has an auto insurance policy with a \$200 excess. To get her car fixed, how much will her auto insurance company pay?
- a. \$0.
  - b. \$200.
  - c. \$300.
  - d. \$500.
7. Charlie opens a savings account and deposits \$500 at an interest rate of 5%. What amount will Charlie have in his savings account at the end of two years?
- a. Exactly \$50.
  - b. Exactly \$550.
  - c. Less than \$550.
  - d. More than \$550.
8. Which of the following credit card users will pay the most in interest?
- a. Jessica, who pays at least the minimum amount each month and more, when she has the money.

- b. Vera, who generally pays off her credit card in full but, occasionally, will pay the minimum when she is short of cash.
- c. Megan, who always pays off her credit card bill in full shortly after she receives it.
- d. Erin, who only pays the minimum amount each month.
9. What is the general relationship between financial risk and financial return?
- a. There is no relationship between risk and return.
- b. The lower the risk, the higher the return.
- c. The higher the risk, the lower the return.
- d. The higher the risk, the higher return.
10. Daylon's aunt agrees to co-sign a car loan for him. By doing so, she has agreed to
- a. pay the loan as a gift to Daylon.
- b. pay the loan if Daylon cannot pay.
- c. share the payments equally with Daylon.
- d. make the payments until Daylon can make them himself.

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## Appendix Two

OLS results for variables correlated with financial literacy quiz scores and the age of first parental financial discussion.

(a) Gender-decile interaction variables

	Total Quiz	Age of First Discussion
Father Attended University	0.693*** (3.089)	-0.442 (-1.449)
Mother Attended University	-0.220 (-0.966)	-0.339 (-1.106)
Age of First Financial Discussion	-0.068** (-1.984)	
Caucasian Ethnicity	0.499* (1.954)	-0.855*** (-2.772)
Done Financial Literacy Course	0.116 (0.584)	-0.543** (-2.028)
Low Decile Female	-1.360*** (-4.180)	0.567 (1.253)
Low Decile Male	-1.425*** (-4.667)	-0.062 (-0.146)
High Decile Male	0.233 (1.075)	
High Decile Female		0.675** (2.316)
Financial Literacy Quiz Score		-0.123** (-1.984)

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## (b) Gender-father's education interaction variables

	Total Quiz	Age of First Discussion
Mother Attended University	-0.225 (-0.988)	-0.362 (-1.182)
High Decile	1.518*** (6.271)	0.079 (0.232)
Age of First Financial Discussion	-0.070** (-2.033)	
Caucasian Ethnicity	0.458** (1.995)	-0.829*** (-2.693)
Done Financial Literacy Course	0.115 (0.576)	-0.577** (-2.161)
Father No Uni Male	-0.810*** (-2.873)	0.074 (0.193)
Father No Uni Female	-0.829*** (-2.893)	1.138*** (2.954)
Father Yes Uni Female	-0.268 (-1.054)	0.285 (0.834)
Financial Literacy Quiz Score		-0.126** (-2.033)

## (c) Gender-mother's education interaction variables

	Total Quiz	Age of First Discussion
Father Attended University	0.690*** (3.070)	-0.454 (-1.487)
High Decile	1.519*** (6.273)	-0.078 (-0.230)
Age of First Financial Discussion	-0.068** (-2.000)	
Caucasian Ethnicity	0.454** (1.976)	-0.847*** (-2.747)
Done Financial Literacy Course	0.128 (0.646)	-0.536** (-2.010)
Mother No Uni Male	0.161 (0.561)	0.139 (0.360)
Mother No Uni Female	-0.078 (-0.275)	1.032*** (2.733)
Mother Yes Uni Female	-0.202 (-0.818)	0.472 (1.421)
Financial Literacy Quiz Score		-0.124** (-2.000)

(d) Gender-completed a financial literacy course at school interaction variables

	Total Quiz	Age of First Discussion
Father Attended University	0.709*** (3.151)	-0.414 (-1.354)
High Decile	1.530*** (6.318)	0.102 (0.300)
Age of First Financial Discussion	-0.069** (-2.021)	
Caucasian Ethnicity	0.457** (1.990)	-0.845** (-2.741)
Mother Attended University	-0.235 (-1.031)	-0.368 (-1.197)
Female Did Course	0.320 (1.028)	0.277 (0.669)
Female No Course		0.511* (1.748)
Male Did Course	0.234 (0.883)	-0.757** (-2.180)
Male No Course	0.242 (1.112)	
Financial Literacy Quiz Score		-0.126** (-2.021)

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