

# Culture and Financial Literacy

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# Motivation: What determines financial literacy?

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Literature mentions several channels which influence the level of financial literacy

- **Financial socialisation by parents**  
Sohn et al. 2012; Van Campenhout 2015
- **Financial education**  
Hastings et al. 2013; Fernandes et al. 2014
- **Endogenous human capital choice**  
Jappelli & Padula 2013; Meier & Sprenger 2013; Lusardi et al. 2016

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If financial socialisation and endogenous human capital choice are important, it is likely that **culture influences the accumulation of financial literacy** through preferences, norms and beliefs

# What is culture?

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Guiso et al. (2006): Culture as a set of **beliefs, norms and preferences** that are **shared among the members** of a cultural group and that **transmit fairly unchanged** from generation to generation

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- Time and risk preferences  
Dohmen et al. 2012
- Norms and attitudes  
Mitchell & Mickel 1999
- Financial socialisation  
Sohn et al. 2012; Van Campenhout 2015

# Research question

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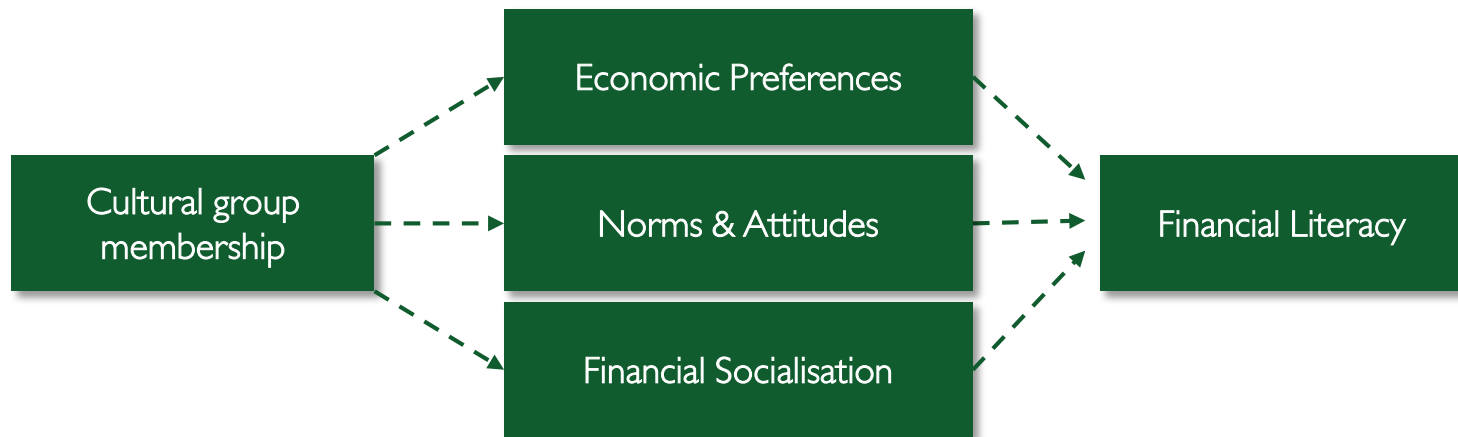
- 1 Does cultural background influence financial literacy?



# Research question

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- 1 Does cultural background influence financial literacy?
- 2 Through which channels may culture influence financial literacy?



# Institutional setting: Exploiting a language border



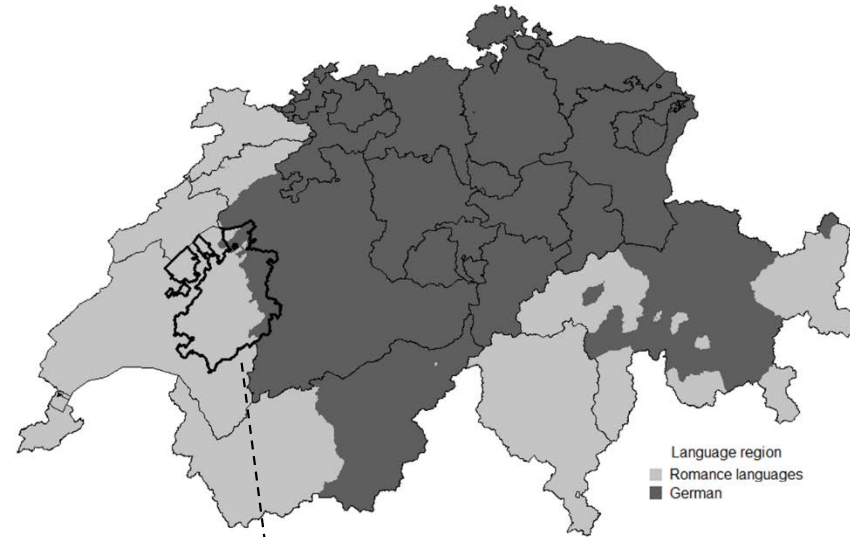
Fribourg or Freiburg is the capital of the Swiss canton of Fribourg...  
...and is an important economic, administrative and educational centre on  
the cultural border between German and French Switzerland.



# Exploiting the Swiss language border

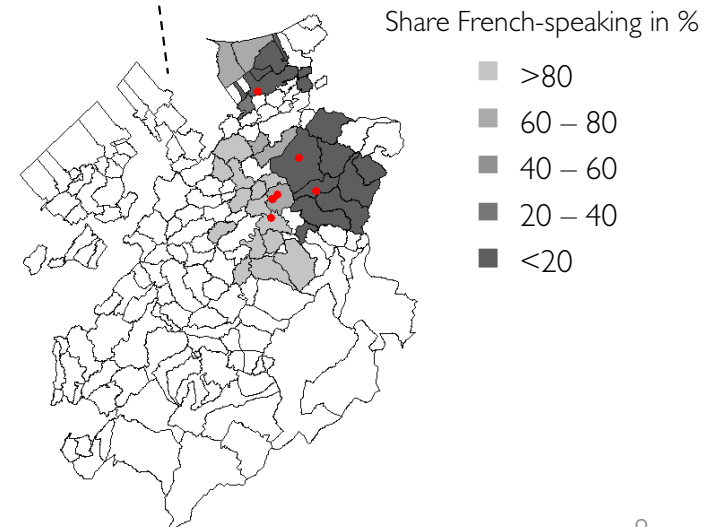
## Bilingual Canton of Fribourg

- Historical language border is a clear cut
- Language border allows for long-term coexistence and persistence of cultural difference
- Institutions (e.g. school curriculum) set at cantonal level



## Sample of Survey

- Survey of 15-year-old students at language border within one canton
- 649 students from 7 schools at the language border
- Equally distributed by school level and language



# Measures of financial literacy

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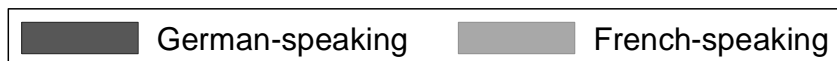
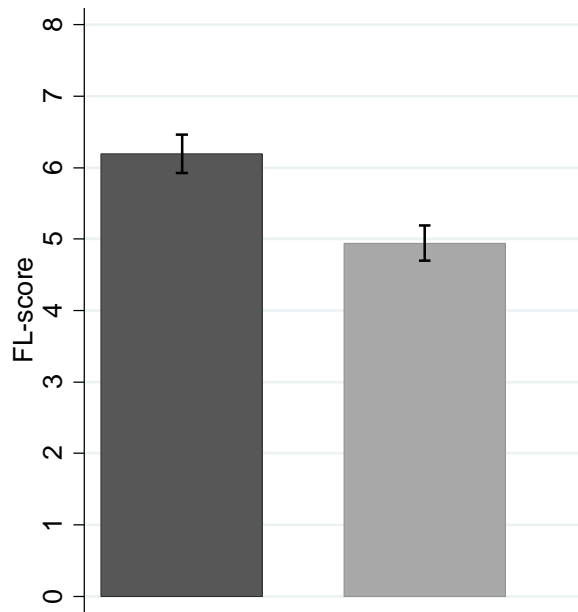
## Financial literacy score: FL\_score [0, 10]

- 10 questions on financial concepts and their application in everyday life
- Standard FL questions comparable to other studies
  - FSA 2006
  - Lusardi & Mitchell 2011
  - OECD 2012
  - Atkinson & Messy 2012
  - Lusardi & Tufano 2015
- FL-score = number of correct answers

# Univariate evidence

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Financial Literacy score (0/10)



- Mean difference of 1.25 (Sample mean: 5.53)
- Difference highly statistically significant
- Represents 23% of sample mean

# Underlying assumptions

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Observed outcomes:

$$E[Y_i(1) | T_i=1, X=x] - E[Y_i(0) | T_i=0, X=x] = ATE$$

Where  $T = 1$  defined as attending a French-speaking school

- Also run robustness checks with treatment on municipal level

Everything that influences potential outcomes and  $T$  may bias our estimate

- Factors that influence choice of school language and financial literacy
- Difference in socioeconomic characteristics affecting potential outcomes
- Setting supports assumption that institutions are homogenous
- **BUT** difference may also reveal influence of culture (endogenous control variable)

# Financial literacy: Strong difference remains robust

- Univariate difference remains also in a multivariate analysis

	(1)	(2)
	FL-score	FL-score
French	-0.904** (0.428)	-1.140*** (0.214)
Constant	5.057*** (0.380)	4.775*** (0.508)
Mean	5.53	5.51
Estimate in % of mean	16%	20%
Observations	649	588
R-squared	0.126	0.357
Basic controls	Yes	Yes
Extended controls	No	Yes

Basic controls:

Gender, citizenship, age

Extended controls:

Urban, school level, parental income/wealth, religion

# Further results

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- **Subsample by citizenship**

Effect strongest for Swiss citizens and not statistically significant for students with recent immigration history

- **Exclude bilingual families**

Estimated effect is larger



Supports hypothesis that it is a cultural effect and not a school effect

- **Group questions by «math intensity» vs concepts**

Significant cultural difference observed for all question types

- **Subjective measure of financial literacy (self-confidence in financial matters)**

Comparable effect for subjective measure

# Underlying channels of culture

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## Economic preferences

- Qualitative & quantitative measures of time and risk preferences; comparable to Sutter et al., 2015; Falk et al., 2013

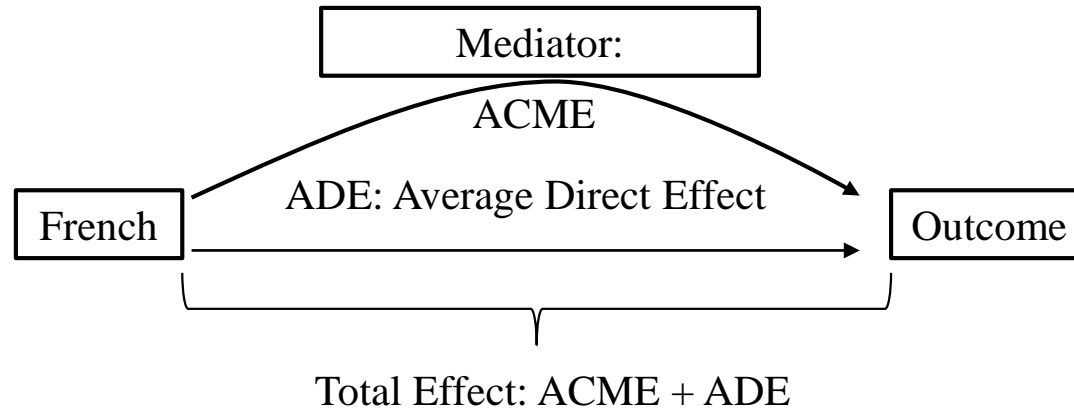
## Financial socialisation

- Age of first pocket money, bank account, independent account

## Norms and attitudes

- Debt norms: How strongly discouraged from making debt
- Freedom and control: e.g. *I am living according to the motto: Money gives me the freedom to do what I feel like*
- Social prestige: e.g. *For me, money is a tool to make friends*

# Mediation analysis: Disentangling the channels



$$M_i = \alpha_2 + \beta_2 T_i + \xi_2 X_i + \varepsilon_{i2}$$

$$Y_i = \alpha_3 + \beta_3 T_i + \gamma M_i + \xi_3 X_i + \varepsilon_{i3}$$

Total effect = Direct effect + ACME

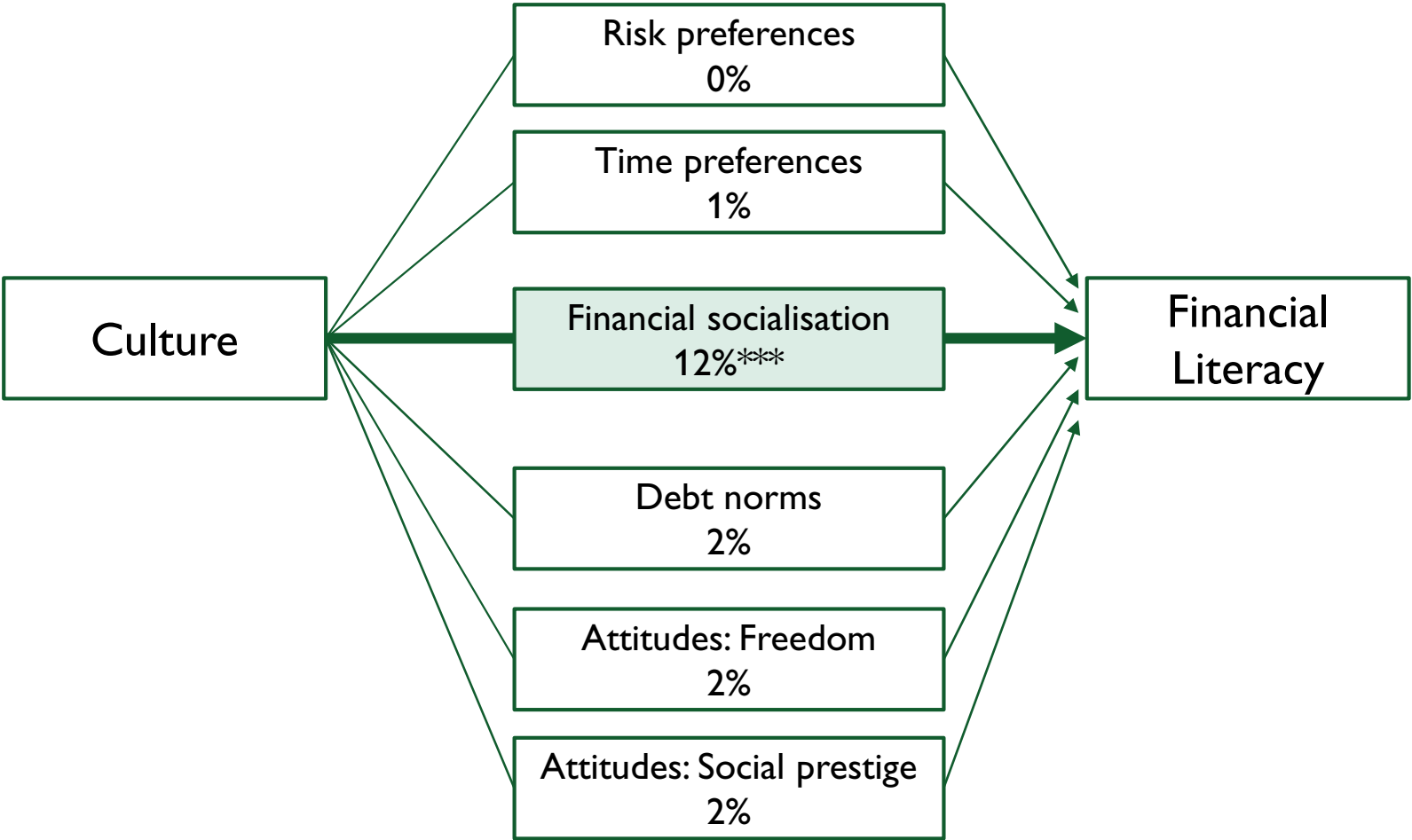
Direct effect =  $\beta_3$

Mediation effect **ACME** =  $\beta_2 \times \gamma$

Based on Pearl (2001), Imai et al. (2010; 2011; 2013)



# Financial socialisation is strongest mediator



# Conclusion

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- Evidence that **cultural group membership** can strongly influence **financial literacy** even within one institutional setting
- Differences in underlying channels observed
  - Difference in financial literacy mainly **mediated through financial socialisation**

*What are the implications?*

- Heterogeneity in initial stock of financial literacy
- Findings of high relevance for initiatives **targeting a heterogeneous population**

# Differences in financial literacy questions

Concept	Question adapted from:	Share correctly answered		Difference
		German-speaking	French-speaking	
Simple interest	Atkinson and Messy (2012)	0.77	0.42	0.35***
Compound interest	Lusardi and Tufano (2015)	0.37	0.22	0.15***
Percentage calculation of purchase decision	FSA (2006)	0.80	0.71	0.09***
Budgeting	OECD (2012)	0.50	0.42	0.08**
Understanding of bank statement	OECD (2012)	0.63	0.58	0.05
Understanding of bank statement	OECD (2012)	0.70	0.54	0.16***
Graphical understanding of stock price development	OECD (2012)	0.64	0.71	-0.07*
Graphical understanding of stock price development	OECD (2012)	0.62	0.47	0.15***
Inflation	Lusardi and Mitchell (2011)	0.37	0.25	0.12***
Diversification	Lusardi and Mitchell (2011)	0.80	0.62	0.18***

# Summary statistics control variables

Variable	Obs	Mean	SD	Min	Max	Mean German	Mean French	Diff	P-value t-test
<i>Basic controls: Variables independent of cultural group membership</i>									
Female	649	0.47	0.50	0.00	1.00	0.45	0.49	-0.04	0.36
Swiss	649	0.77	0.42	0.00	1.00	0.93	0.63	0.30	0.00
Born in 2000	649	0.63	0.48	0.00	1.00	0.65	0.60	0.04	0.24
Born after 2000	649	0.21	0.41	0.00	1.00	0.23	0.19	0.04	0.17
<i>Extended controls: Variables potentially influenced by cultural group member</i>									
Urban	649	0.29	0.45	0.00	1.00	0.17	0.39	-0.22	0.00
Basic school level	649	0.28	0.45	0.00	1.00	0.25	0.31	-0.06	0.07
Medium school level	649	0.36	0.48	0.00	1.00	0.40	0.32	0.08	0.03
High school level	649	0.36	0.48	0.00	1.00	0.35	0.37	-0.02	0.63
Single room	615	0.86	0.35	0.00	1.00	0.91	0.81	0.10	0.00
Rent home	633	0.42	0.49	0.00	1.00	0.27	0.56	-0.29	0.00
Holidays	640	3.02	1.56	0.00	5.00	3.08	2.97	0.11	0.36
Catholic	637	0.59	0.49	0.00	1.00	0.55	0.62	-0.08	0.05
Protestant	637	0.14	0.35	0.00	1.00	0.23	0.06	0.17	0.00
Other religion	637	0.14	0.34	0.00	1.00	0.10	0.17	-0.07	0.02
Not religious	637	0.14	0.35	0.00	1.00	0.13	0.15	-0.02	0.39

# Underlying mediators

Variable	Obs	Mean	SD	Min	Max	Mean	Mean	Diff	P-value
						German	French		t-test
<b>Patience</b>	584	0.67	0.16	0.07	1.00	0.69	0.66	0.02	0.06
Time preferences quant. measure	599	0.74	0.25	0.00	1.00	0.77	0.70	0.07	0.00
Time preferences qual. measure	633	0.61	0.18	0.07	1.00	0.60	0.61	-0.02	0.27
<b>Risk seeking</b>	581	0.41	0.18	0.00	1.00	0.39	0.43	-0.05	0.00
Risk preferences quant. measure	593	0.26	0.23	0.00	1.00	0.25	0.27	-0.01	0.47
Risk preferences qual. measure	635	0.64	0.21	0.17	1.00	0.60	0.67	-0.06	0.00
<b>Financial socialisation</b>	598	0.52	0.32	0.00	1.00	0.61	0.43	0.18	0.00
Bank account	642	0.75	0.43	0.00	1.00	0.88	0.63	0.25	0.00
Independent bank account	638	0.33	0.47	0.00	1.00	0.40	0.27	0.13	0.00
Dummy pocket money	611	0.45	0.50	0.00	1.00	0.55	0.37	0.18	0.00
<b>Debt norms</b>	629	0.67	0.41	0.00	1.00	0.74	0.62	0.12	0.00
Not spend more than what you have	641	0.66	0.47	0.00	1.00	0.73	0.60	0.13	0.00
Should not make debt	633	0.68	0.47	0.00	1.00	0.74	0.62	0.12	0.00
<b>Freedom &amp; control</b>	642	0.48	0.41	0.00	1.00	0.35	0.59	-0.24	0.00
Tool to obtain goals	642	0.56	0.50	0.00	1.00	0.45	0.65	-0.21	0.00
Provides freedom	647	0.39	0.49	0.00	1.00	0.26	0.51	-0.26	0.00
<b>Social prestige</b>	639	0.12	0.23	0.00	1.00	0.11	0.14	-0.03	0.09
Tool to make friends	644	0.06	0.23	0.00	1.00	0.09	0.02	0.07	0.00
Willing to do everything required to obtain money	641	0.19	0.40	0.00	1.00	0.12	0.26	-0.13	0.00

# Heterogeneity of home municipalities

Variable	German-speaking	French-speaking	Diff	p-value t-test
Nr of students	305	344		
Nr of municipalities	31	23		
<i>Main language spoken</i>				
Share German	0.67	0.17	0.49***	0.00
Share French	0.25	0.72	-0.47***	0.00
Share other language	0.08	0.11	-0.02***	0.00
<i>Population</i>				
Population in 1000	9.04	17.02	-7.98***	0.00
Urban municipalities (>=10000 residents)	0.17	0.39	-0.22***	0.00
Share of non-Swiss residents	0.18	0.29	-0.1***	0.00
<i>Economic activity</i>				
Share employed in primary sector	0.09	0.04	0.05***	0.00
Share employed in secondary sector	0.28	0.21	0.08***	0.00
Share employed in tertiary sector	0.63	0.75	-0.12***	0.00
Nr of cars per 1000 inhabitants	568.09	517.28	50.81***	0.00
Nr of bank branches in municipality	4.8	8.0	-3.2***	0.00
Municipalities without bank branch	0.16	0.13	0.04	0.16
Tax on income and wealth as share of cantonal tax	0.79	0.81	-0.02***	0.00
Municipal tax potential; Index cantonal average: 100	102.24	102.39	-0.15	0.93
<i>Religion</i>				
Share catholic	0.66	0.78	-0.12***	0.00
Share protestant	0.23	0.10	0.13***	0.00
Share other	0.05	0.05	0.00	0.86
Share not religious	0.06	0.07	-0.01***	0.00

# Correlation matrix: Underlying factors and FL

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- Within sample relations are in line with predictions from the literature
- Especially time preferences and financial socialisation strongly related to financial literacy

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	FL-score	Fin- confusing
Risk seeking	-0.1**	-0.01
Patience	0.27***	-0.2***
Financial socialisation	0.23***	-0.17***
Debt norms	0.1**	-0.05
Freedom & control	-0.08**	-0.05
Social prestige	-0.18***	0.06

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# Differences in mediators

	Preferences		Financial socialisation	Norms and money attitudes		
	(1) Risk seeking	(2) Patience	(3) Financial socialisation	(4) Debt norms	(5) Freedom & control	(6) Social prestige
French	0.042** (0.020)	-0.013 (0.017)	-0.138*** (0.035)	-0.096** (0.040)	0.219*** (0.035)	0.016 (0.020)
Constant	0.347*** (0.051)	0.649*** (0.047)	0.570*** (0.084)	0.751*** (0.098)	0.428*** (0.090)	0.137** (0.051)
Mean	0.41	0.67	0.52	0.67	0.48	0.12
Observations	528	535	546	570	583	580
R-squared	0.049	0.143	0.122	0.061	0.147	0.064
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes
Extended controls	Yes	Yes	Yes	Yes	Yes	Yes