

Use and interest in personal genomics and their relationship with genetic literacy, personal characteristics, and attitudes towards psychiatric genetic testing

José J. Morosoli*, Lucía Colodro-Conde, Fiona Kate Barlow,
Sarah E. Medland

14 October 2021



Disclosure

Funding

This study was funded by the John Templeton Foundation (Genetics and Human Agency project).

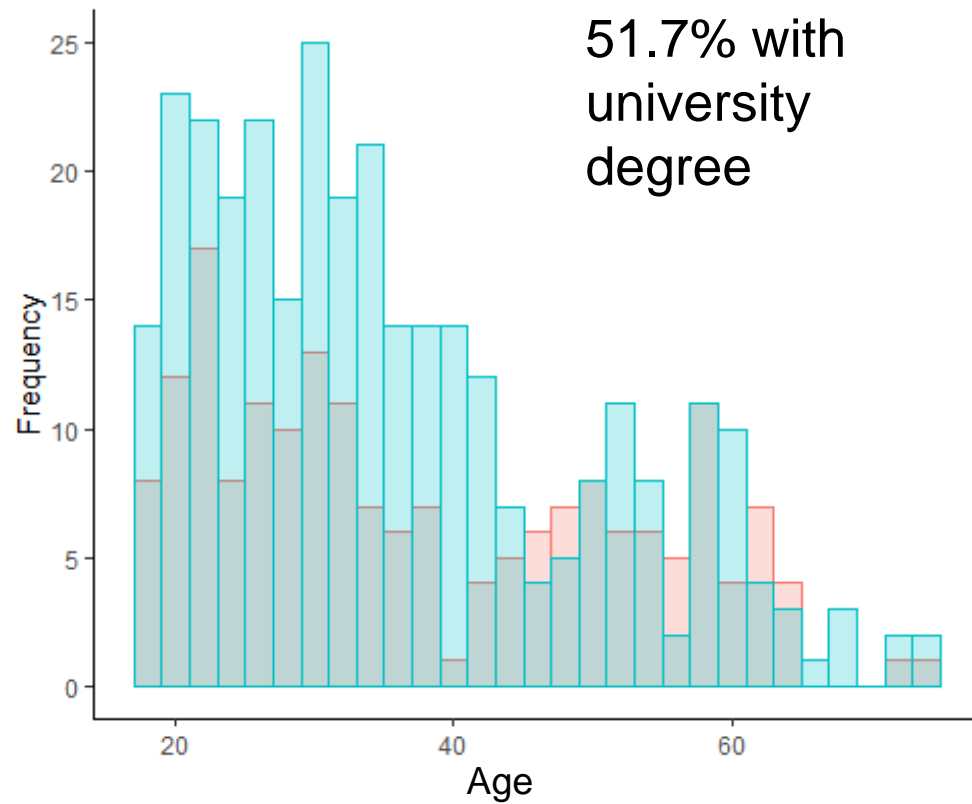
Conflict of interest

The authors declare that they have no conflict of interest.

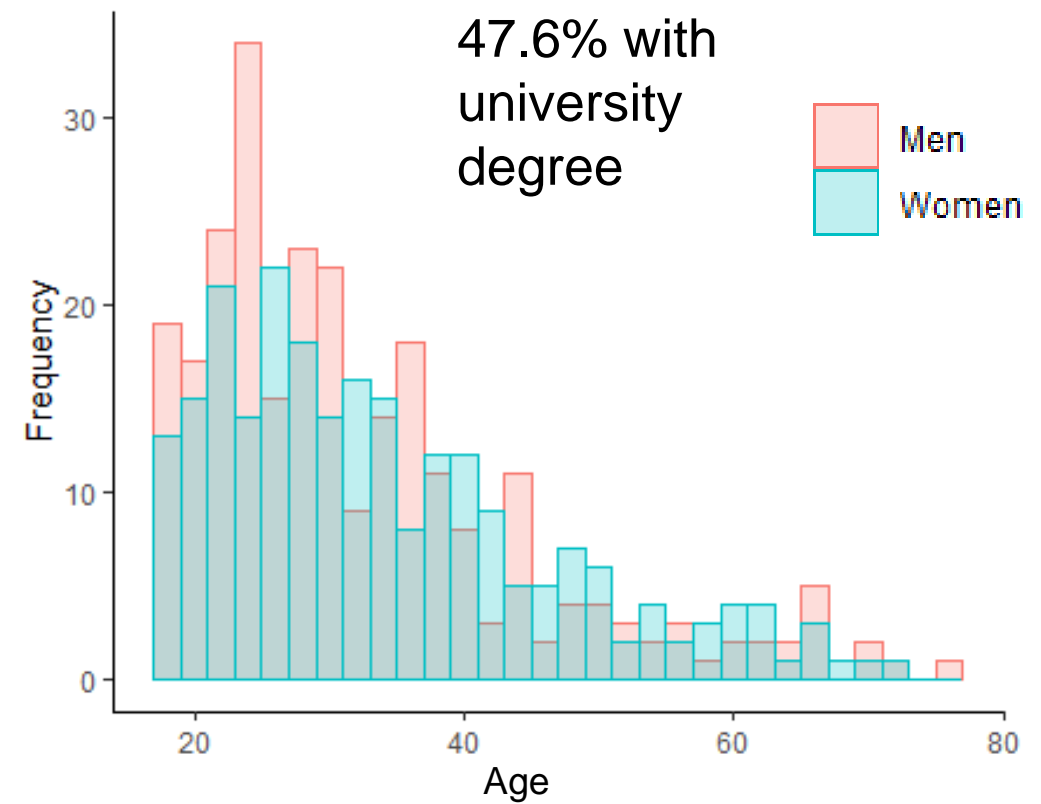
Context of the project

- Survey study on public opinion on psychiatric genetic testing in general population from Australia, the UK, and the US.
- Looking at factors *above and beyond* genetic literacy associated with attitudes towards psychiatric genetic testing.
- Unselected sample for use of personal genomics services.
 - ✓ Secondary analysis

Sample



United Kingdom (N=500)



United States (N=500)

Research questions 1, 2

What predicts...

- Have you ever purchased and/or used a genetic test from any personal genomics company (e.g., 23andMe, Ancestry.com)?
Yes / No
- If not, how likely is that you would use a service like this?
Extremely unlikely (1) – 2 – 3 – 4 – 5 – Extremely likely (6)

Predictors

- Age
- Gender
- Level of education

Predictors

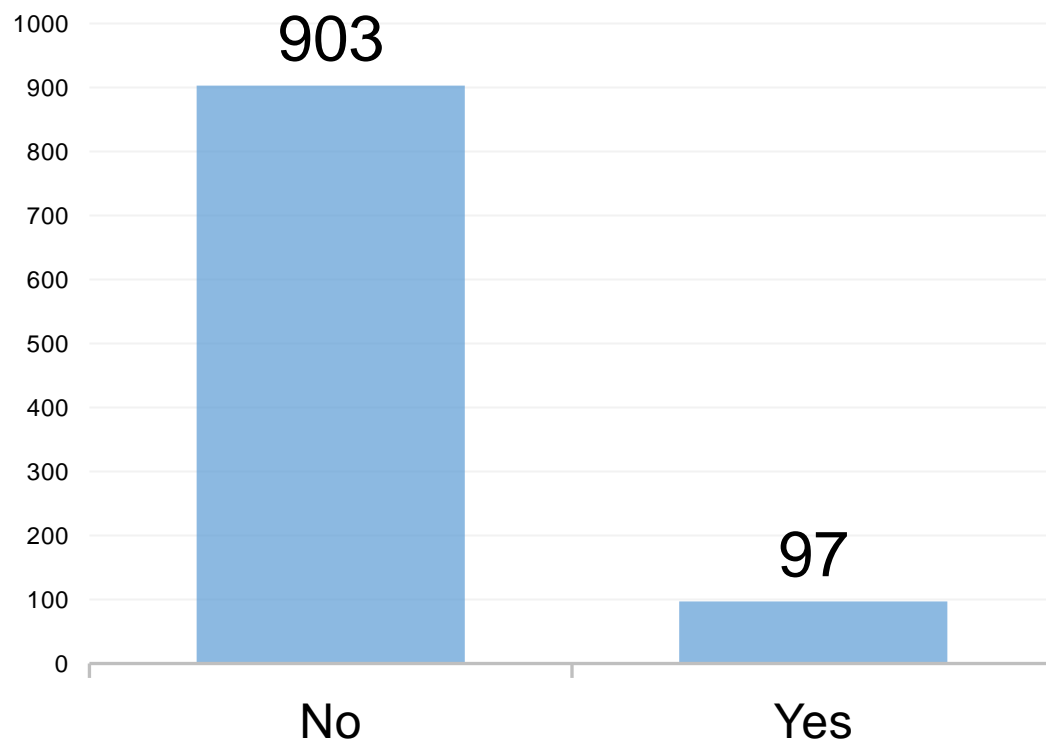
- Age
- Gender
- Level of education
- Knowledge basic genetic principles (33 true/false items)
- How familiar are you with *genetic variant* (0-6 Likert scale)
- How familiar are you with *polygenic* (0-6 Likert scale)

Predictors

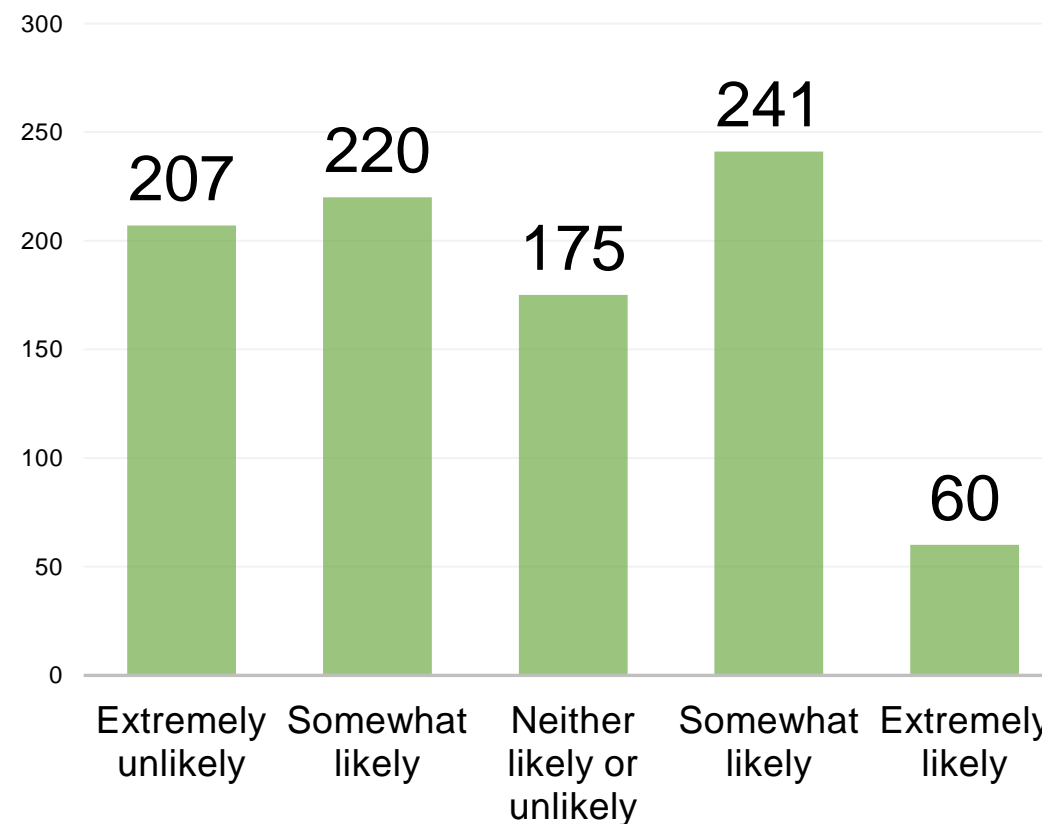
- Age
- Gender
- Level of education
- Knowledge basic genetic principles (33 true/false items)
- How familiar are you with *genetic variant* (0-6 Likert scale)
- How familiar are you with *polygenic* (0-6 Likert scale)
- **Innovativeness:** *ability to find new trends and interest in innovations.*
- **Credibility of science:** *trust in science, positive attitudes towards scientists.*
- **Need for certainty:** *desire to have a definite answer, tolerance for ambiguity.*

Results (1)

Have you ever purchased and/or used a genetic test from any personal genomics company (e.g., 23andMe, Ancestry.com)?



If not, how likely is that you use a service like this?



Results (1)

Have you ever purchased and/or used a genetic test from any personal genomics company?

- Significant predictors (yes): older (OR = 3.03), women (OR = 1.58), and higher need for certainty (OR = 4.48).
 - 8.5% of men vs 10.7% of women.
 - 8.8% of people under 27y vs 12.0% of people over 38y.
 - 6.6% of people below P33th in NFC vs 10.6% above P66th.

No association with genetic literacy, nor familiarity with *polygenic or genetic variant*.

Note: model $R^2 = 3.3\%$

Results (2)

If not, who has more intention to use a service like this?

- Significant predictors (more likely): younger ($sr = -0.17$), and more innovative ($sr = 0.24$).
 - Innovative people:
 - *I often read detailed articles about the latest ideas, trends, and developments.*
 - *I am more likely to tell my friends and acquaintances about the newest ideas, trends, and developments than they are to tell me.*

Again, no association with genetic literacy, nor familiarity with polygenic or genetic variant.

Note: model $R^2 = 9.7\%$

Attitudes (% agree)

I agree that...	Alcohol	Cancer	Depression	Schizophrenia
I often worry about my genetic predisposition.	18.0%	49.5%	39.2%	11.3%
If I knew I had a strong genetic predisposition, I'm worried I wouldn't be able to cope with it.	21.0%	55.0%	31.8%	47.9%
I would like to know my genetic predisposition only if there is something I can do about it.	39.1%	58.8%	51.4%	48.2%
I wouldn't want to have children if I knew I had a strong genetic predisposition.	20.5%	38.9%	26.3%	47.4%
Knowing my children's genetic predisposition would help me be a better parent to them.	61.8%	59.5%	73.0%	67.1%
I'm concerned I won't be able to get health/life insurance	29.1%	49.2%	38.4%	39.7%

For more information on this:

Morosoli, J. J., Colodro-Conde, L., Barlow, F. K., & Medland, S. E. (2021). Investigating perceived heritability of mental health disorders and attitudes toward genetic testing in the United States, United Kingdom, and Australia. *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*.

Research question 3, 4

Are attitudes towards genetic risk information associated with...

- Use of personal genomics?
- Likelihood of using personal genomics in the future?

Results (3)

I agree that... (agree/disagree)	Alcohol	Cancer	Depression	Schizophrenia
	Odds Ratios			
I often worry about my genetic predisposition.	-	-	-	-
If I knew I had a strong genetic predisposition, I'm worried I wouldn't be able to cope with it.	-	-	-	-
I would like to know my genetic predisposition only if there is something I can do about it.	-	-	-	-
I wouldn't want to have children if I knew I had a strong genetic predisposition.	-	-	-	-
Knowing my children's genetic predisposition would help me be a better parent to them.	-	-	-	-
I'm concerned I won't be able to get health/life insurance	-	-	-	-

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Are attitudes towards genetic risk information associated with **having used** personal genomics?

No.

Results (4)

I agree that... (agree/disagree)	Alcohol	Cancer	Depression	Schizophrenia
	Odds Ratios			
I often worry about my genetic predisposition.	-	1.490*	1.796***	-
If I knew I had a strong genetic predisposition, I'm worried I wouldn't be able to cope with it.	-	-	-	-
I would like to know my genetic predisposition only if there is something I can do about it.	-	-	-	-
I wouldn't want to have children if I knew I had a strong genetic predisposition.	-	-	-	-
Knowing my children's genetic predisposition would help me be a better parent to them.	1.363***	1.277**	1.406***	1.334***
I'm concerned I won't be able to get health/life insurance	1.548*	-	-	-

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Are attitudes towards genetic risk information associated with **intention to use** personal genomics in the future?

Only with perceived usefulness and worry about cancer and depression.

In summary...

- No differences in familiarity with genetics based on user status.
- Users were older and had higher desire for certainty.
- Intention to use related to individuals' interest in new trends.
- Attitudes towards genetic testing were not associated with use of personal genomics.
- Intention to use personal genomics in the future was associated with perceived usefulness of genetic information.
 - Also, with worry about genetic risk for cancer and depression.

Conclusions

- No (indirect) evidence of DTC genetic testing having an impact on literacy levels or attitudes towards genetic testing (for better or worse).
- However, explanatory power of our model is very low.
 - What factors could explain better consumer behavior? SES?
- No associations with concern with insurance or coping. Intention to use associated more with perceived usefulness than worry about consequences.

Acknowledgements

- Prof Sarah Medland
- A/Prof Fiona Barlow
- A/Prof Lucia Colodro-Conde

Funding

- John Templeton Foundation
 - Genetics and Human Agency project

