

# Academic outcomes of students attending different school types in England

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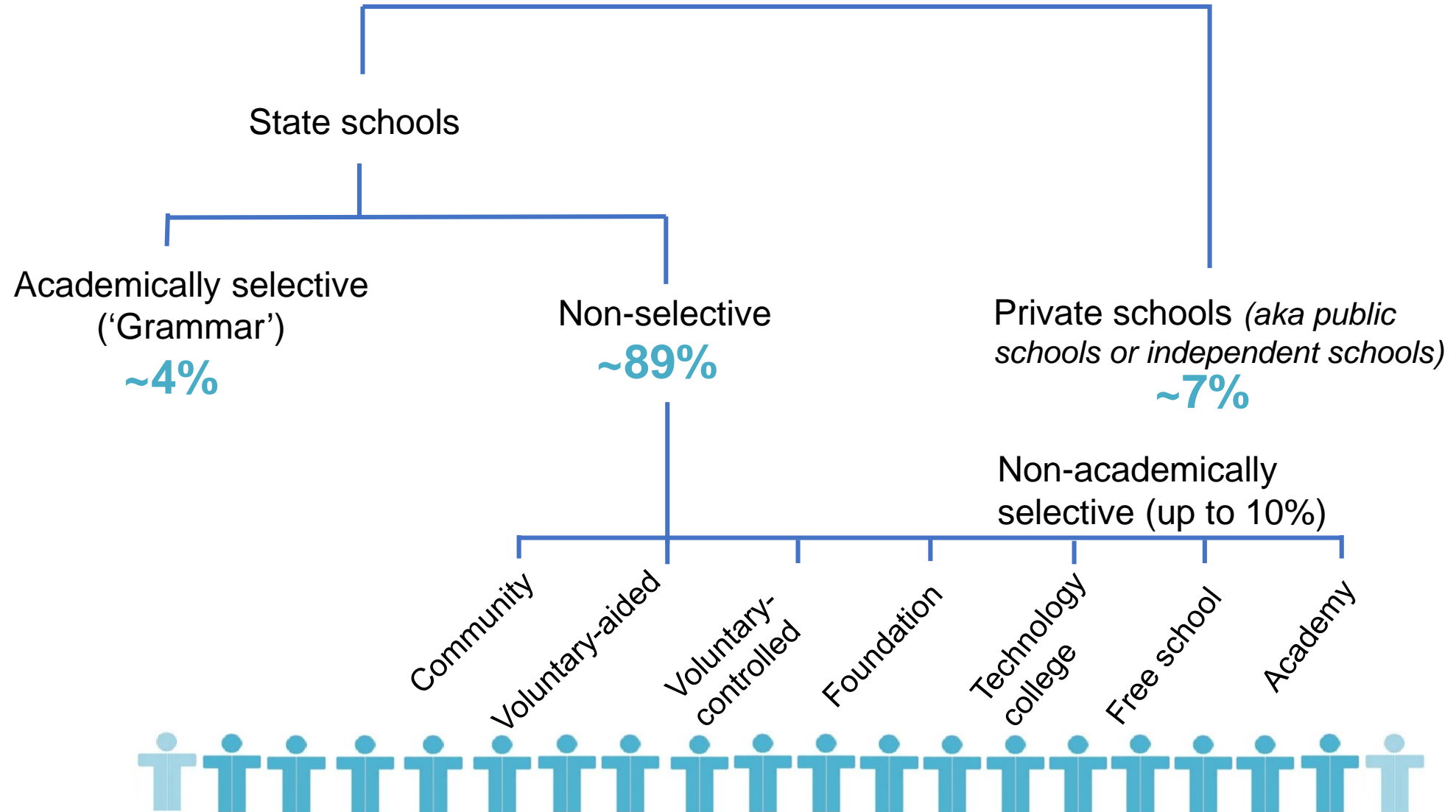
**Academic outcomes** of students  
attending different school types in  
England

# Academic outcomes

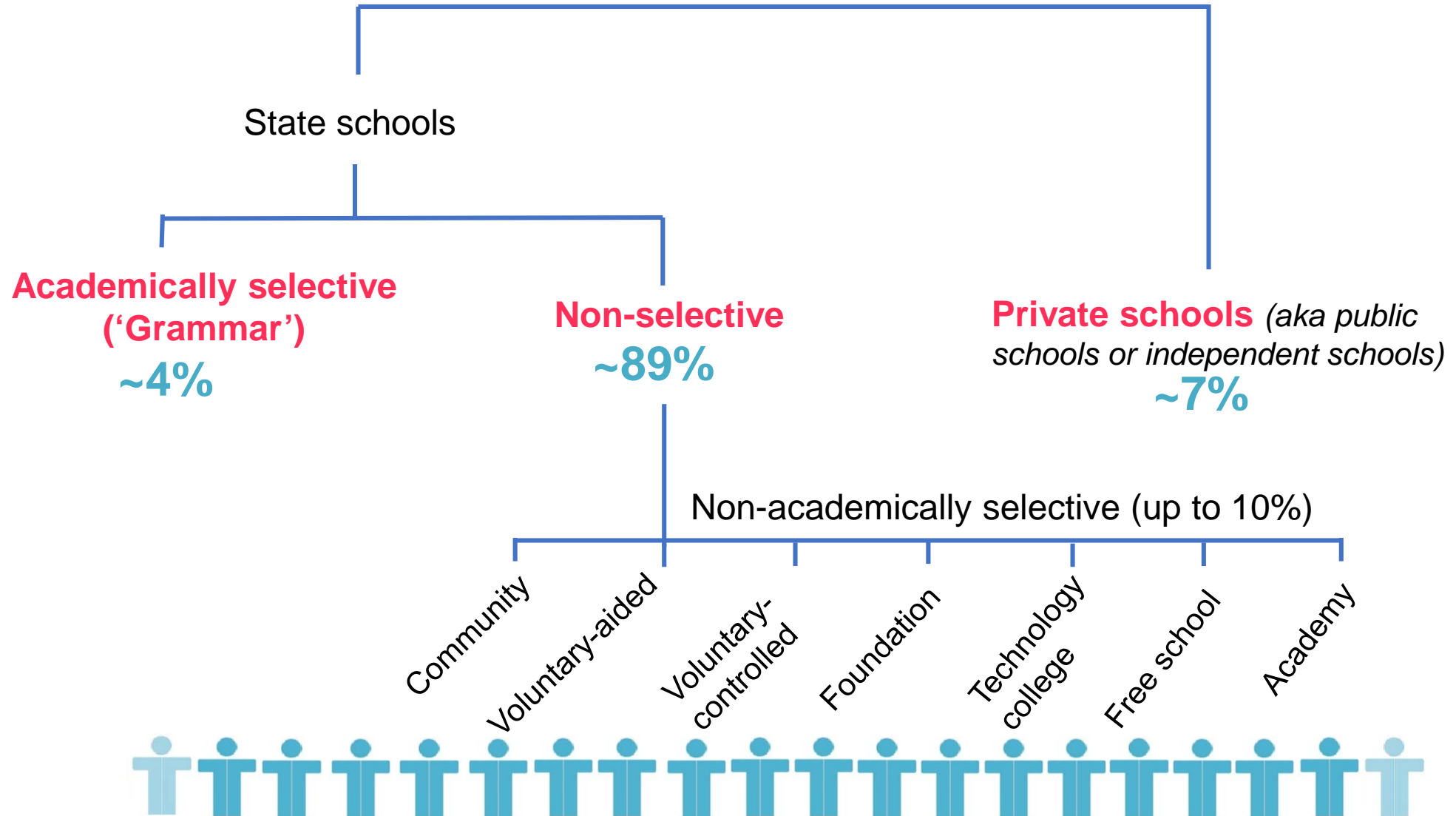
1. General Certificate of Secondary Education (GCSEs)
2. Genetic variants associated with educational attainment
3. A-levels
4. University enrolment
5. Type of university course
6. Current occupation status at age 21

Academic outcomes of students  
attending different **school types** in  
England

# UK schooling system: The (mainly) comprehensive system



# UK schooling system: The (mainly) comprehensive system





# NEWS

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Family & Education | Young Reporter | Global Education

## Oxbridge 'over-recruits from eight schools'

By Sean Coughlan  
BBC News education and family correspondent

7 December 2018 | 824

## We need education reform – the grammar-comprehensive school advantage gap has never been so wide

Experiments in new types of schools and the expansion of the higher and further education sectors may help ameliorate matters, but social mobility is on a fast decline

Editorial | @IndyVoices | 2 days ago | 5 comments | 19 shares

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## Private school cost 'outweighs child's future earnings'

Children educated at private school can earn salaries just £3,600 higher than state sector peers in later life, according to think tank study



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## Background, subject and university 'all impact earnings'

7 June 2018

f [social media icons]

## Pay gap between state-educated and private school graduates could be narrowed through delivery of 'better academic performance'

Head of new study says raising self-esteem, self-confidence and aspirations in state schools are 'unlikely to be very effective' in narrowing the pay gap

Aftab Ali Student Editor | Thursday 12 November 2015 13:44 | 1 comment



ughters to school Photo: Alamy

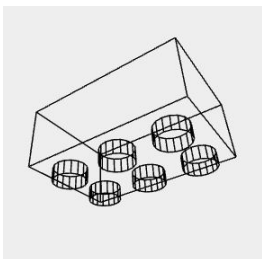
rkup, Political Editor  
1 2014

ollowers



# iTEDS

Twins Early Development Study

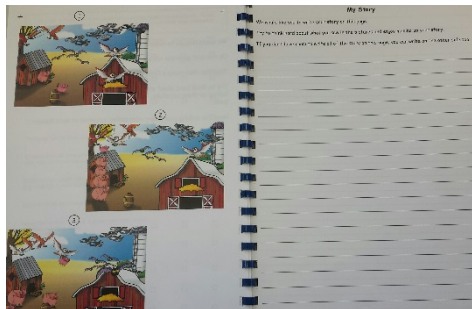


## NPD

National Pupil Database

1994-1996

Present day





# iTEDS

Twins Early Development Study

Family socioeconomic status

1994-1996



## NPD

National Pupil Database



Present day



2  
yrs

11  
yrs

16  
yrs

18  
yrs

21  
yrs

2  
yrs

11  
yrs

16  
yrs

18  
yrs

21  
yrs

## Socioeconomic status

*Based on:*

Maternal education

Paternal education

Maternal occupation

Paternal occupation

Maternal age at birth of first  
child

2  
yrs

## Socioeconomic status

*Based on:*

Maternal education  
Paternal education  
Maternal occupation  
Paternal occupation  
Maternal age at birth of first  
child

11  
yrs

## Prior achievement

*Based on KS2 results  
obtained from NPD*

## General cognitive ability

*Based on:*  
WISC Vocabulary  
Multiple-Choice  
WISC General  
Knowledge test  
Raven's Progressive  
Matrices  
WISC Picture  
Completion task

16  
yrs

18  
yrs

21  
yrs

2  
yrs

## Socioeconomic status

*Based on:*

Maternal education  
Paternal education  
Maternal occupation  
Paternal occupation  
Maternal age at birth of first child

11  
yrs

## Prior achievement

*Based on KS2 results obtained from NPD*

## General cognitive ability

*Based on:*

WISC Vocabulary Multiple-Choice  
WISC General Knowledge test  
Raven's Progressive Matrices  
WISC Picture Completion task

16  
yrs

## GCSE

*Based on TEDS and NPD data*

## School type

*Based on TEDS and EduBase data*

18  
yrs

21  
yrs



2  
yrs

## Socioeconomic status

*Based on:*

Maternal education  
Paternal education  
Maternal occupation  
Paternal occupation  
Maternal age at birth of first child

11  
yrs

## Prior achievement

*Based on KS2 results obtained from NPD*

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WISC Picture Completion task

16  
yrs

## GCSE

*Based on TEDS and NPD data*

## School type

*Based on TEDS and EduBase data*

18  
yrs

## UCAS

*Based on TEDS and NPD data*

## Uni enrolment Uni course type University name

*Based on TEDS data asking individuals about their plans for the next year*

21  
yrs

2  
yrs

## Socioeconomic status

*Based on:*

Maternal education  
Paternal education  
Maternal occupation  
Paternal occupation  
Maternal age at birth of first child

11  
yrs

## Prior achievement

*Based on KS2 results obtained from NPD*

## General cognitive ability

*Based on:*

WISC Vocabulary  
Multiple-Choice  
WISC General Knowledge test  
Raven's Progressive Matrices  
WISC Picture Completion task

16  
yrs

## GCSE

*Based on TEDS and NPD data*

## School type

*Based on TEDS and EduBase data*

18  
yrs

## UCAS

*Based on TEDS and NPD data*

## Uni enrolment Uni course type University name

*Based on TEDS data asking individuals about their plans for the next year*

21  
yrs

## University achievement

*Based on TEDS data (degree classification)*

2  
yrs

## Socioeconomic status

*Based on:*

Maternal education  
Paternal education  
Maternal occupation  
Paternal occupation  
Maternal age at birth of first child

11  
yrs

## Prior achievement

*Based on KS2 results obtained from NPD*

## General cognitive ability

*Based on:*

WISC Vocabulary  
Multiple-Choice  
WISC General Knowledge test  
Raven's Progressive Matrices  
WISC Picture Completion task

16  
yrs

## GCSE

*Based on TEDS and NPD data*

## School type

*Based on TEDS and EduBase data*

18  
yrs

## UCAS

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## Uni enrolment Uni course type University name

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21  
yrs

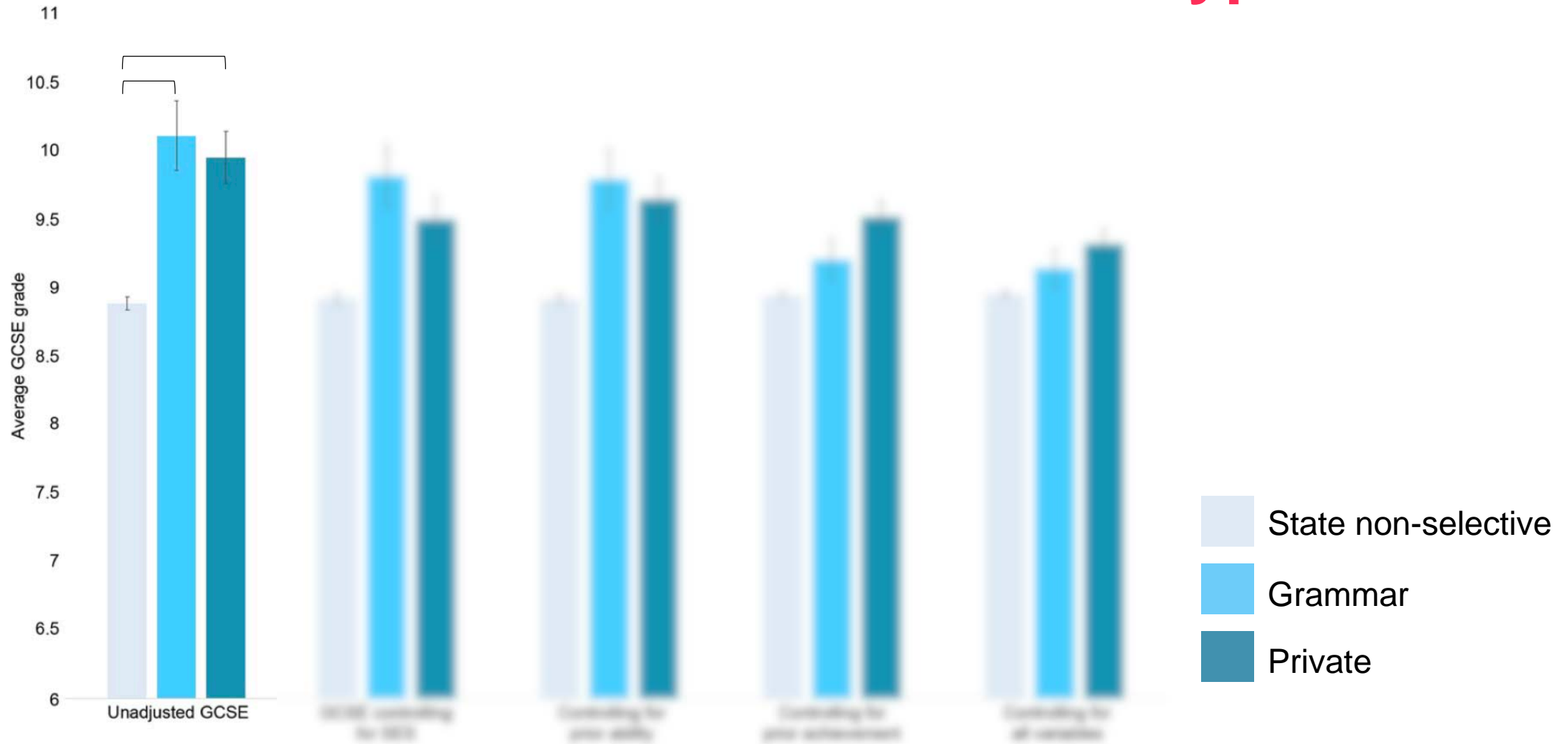
## University achievement

*Based on TEDS data (degree classification)*

## Genotype data

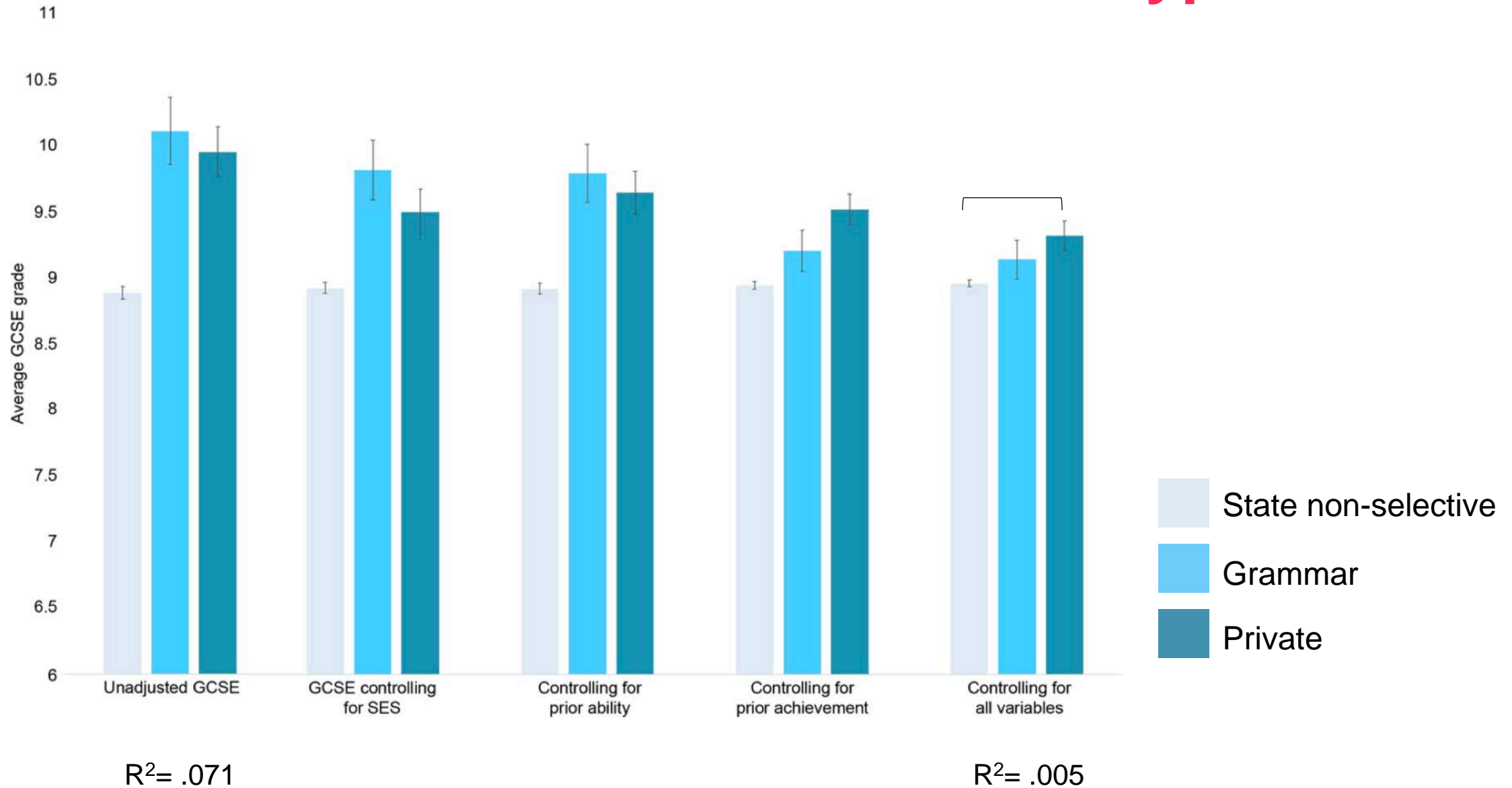
*Created a 'polygenic score' based on summing genetic variants associated with educational attainment*

# GCSE differences between school types



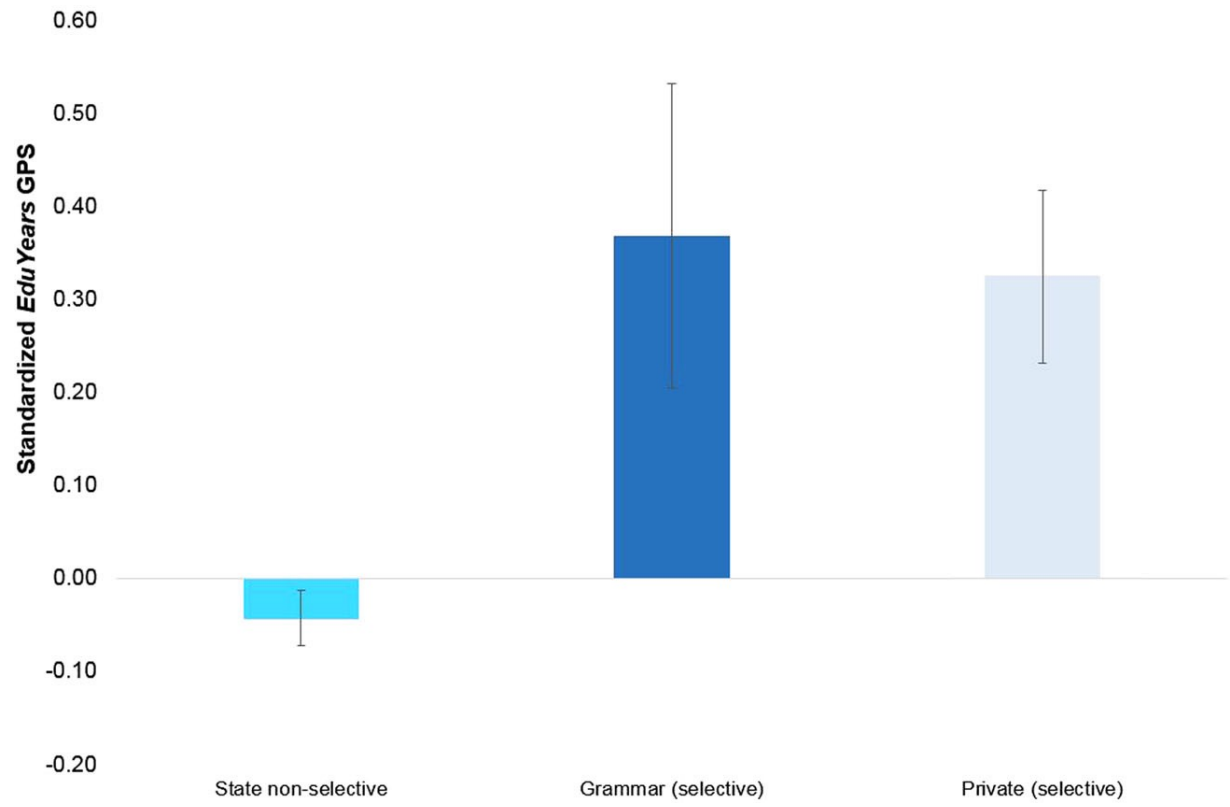
$R^2 = .071$

# GCSE differences between school types

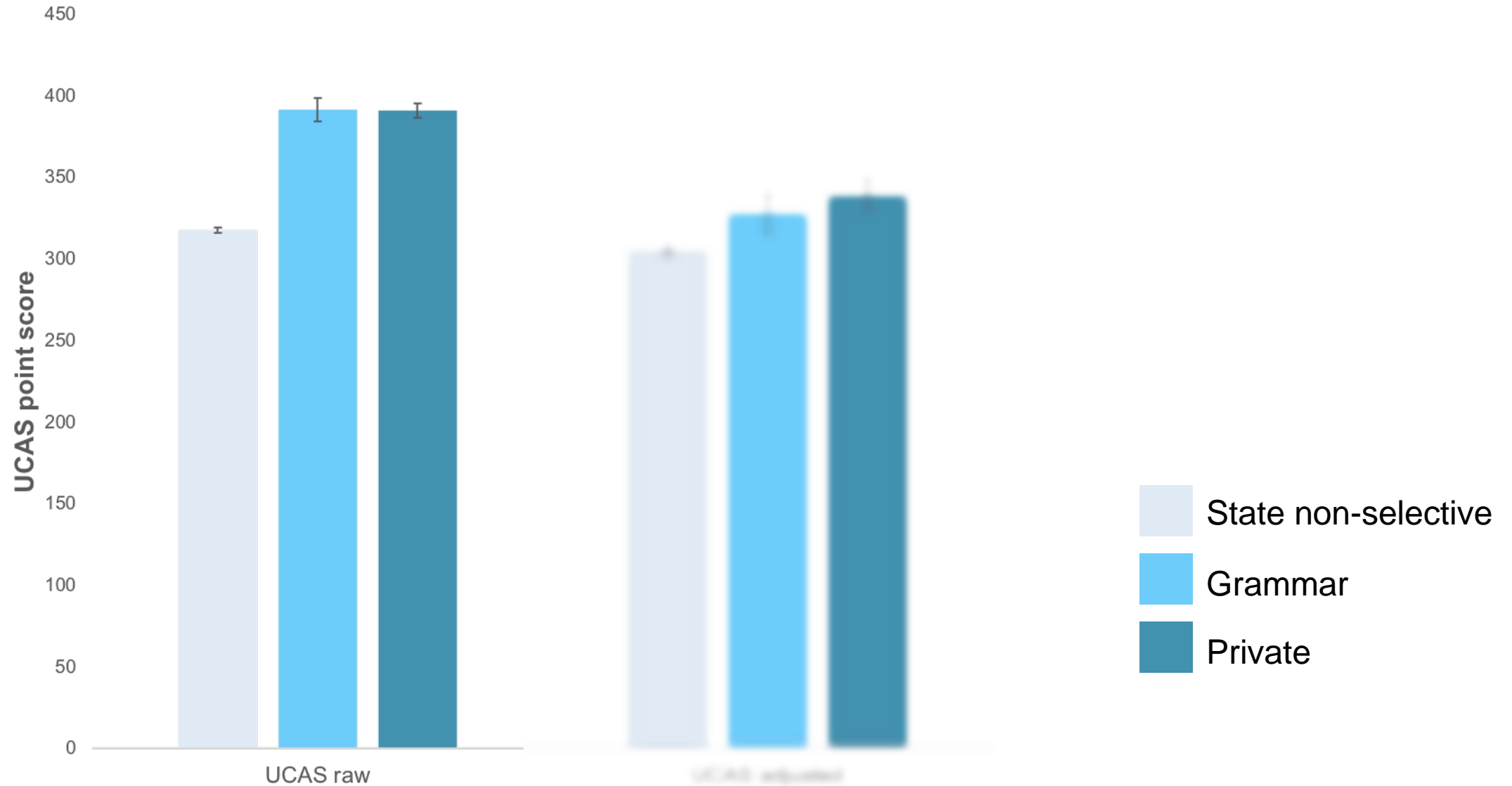




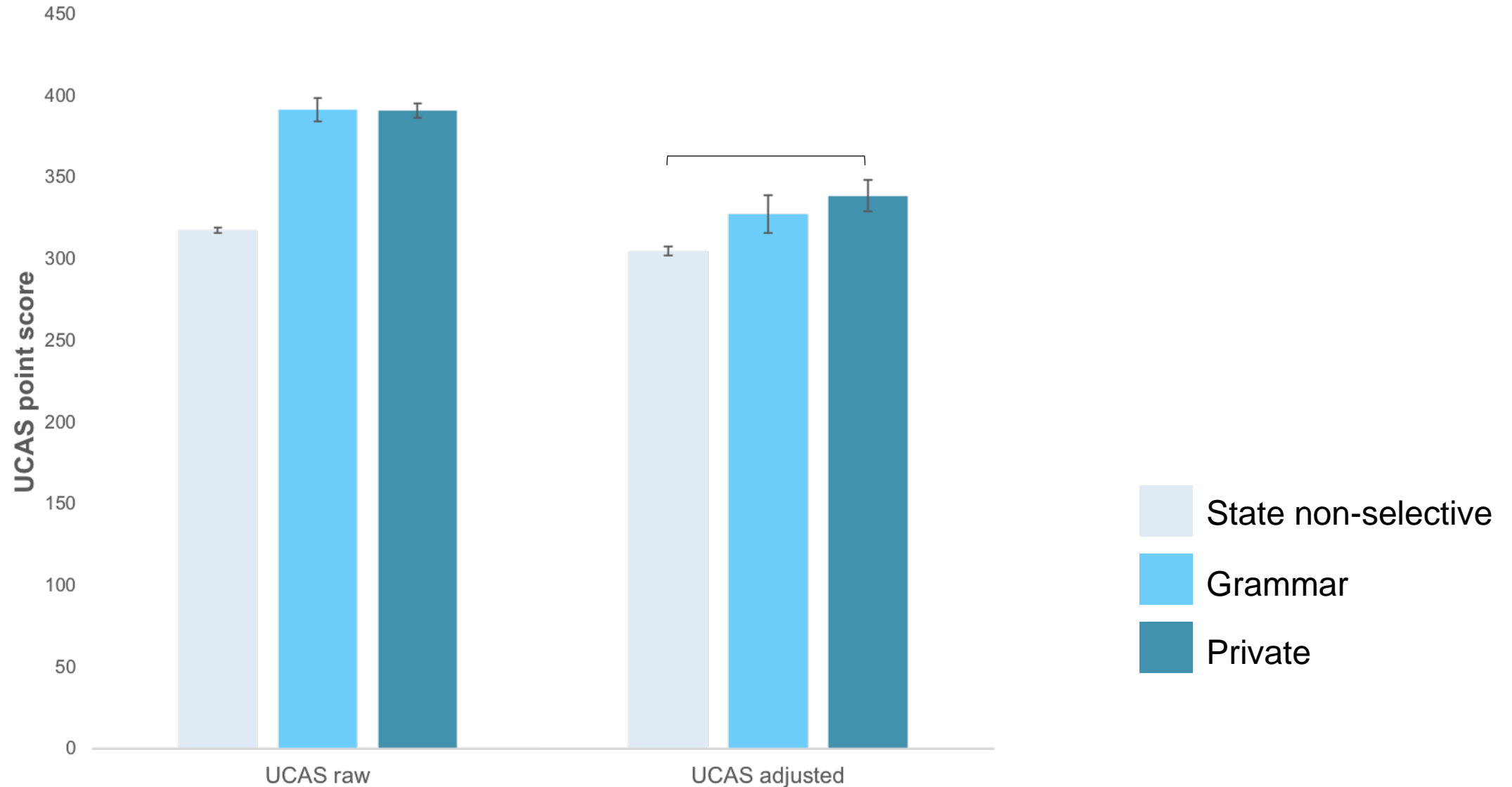
# Genetic differences between school types



# UCAS differences between school types



# UCAS differences between school types



# University enrolment between school types

## Raw estimates

	<b>Estimate</b>	<b>Robust SE</b>	<b>z value</b>	<b>p</b>	<b>OR</b>	<b>2.50%</b>	<b>97.50%</b>
Intercept	0.106	0.02	5.213	1.61 x10-7	1.112	1.068	1.157
School_typeGrammar	<b>1.047</b>	<b>0.127</b>	<b>8.256</b>	<b>2.20 x10-16</b>	<b>2.849</b>	<b>2.233</b>	<b>3.672</b>
School_typePrivate	<b>1.092</b>	<b>0.077</b>	<b>14.185</b>	<b>2.20x10-16</b>	<b>2.981</b>	<b>2.568</b>	<b>3.473</b>

# University enrolment between school types

## Raw estimates

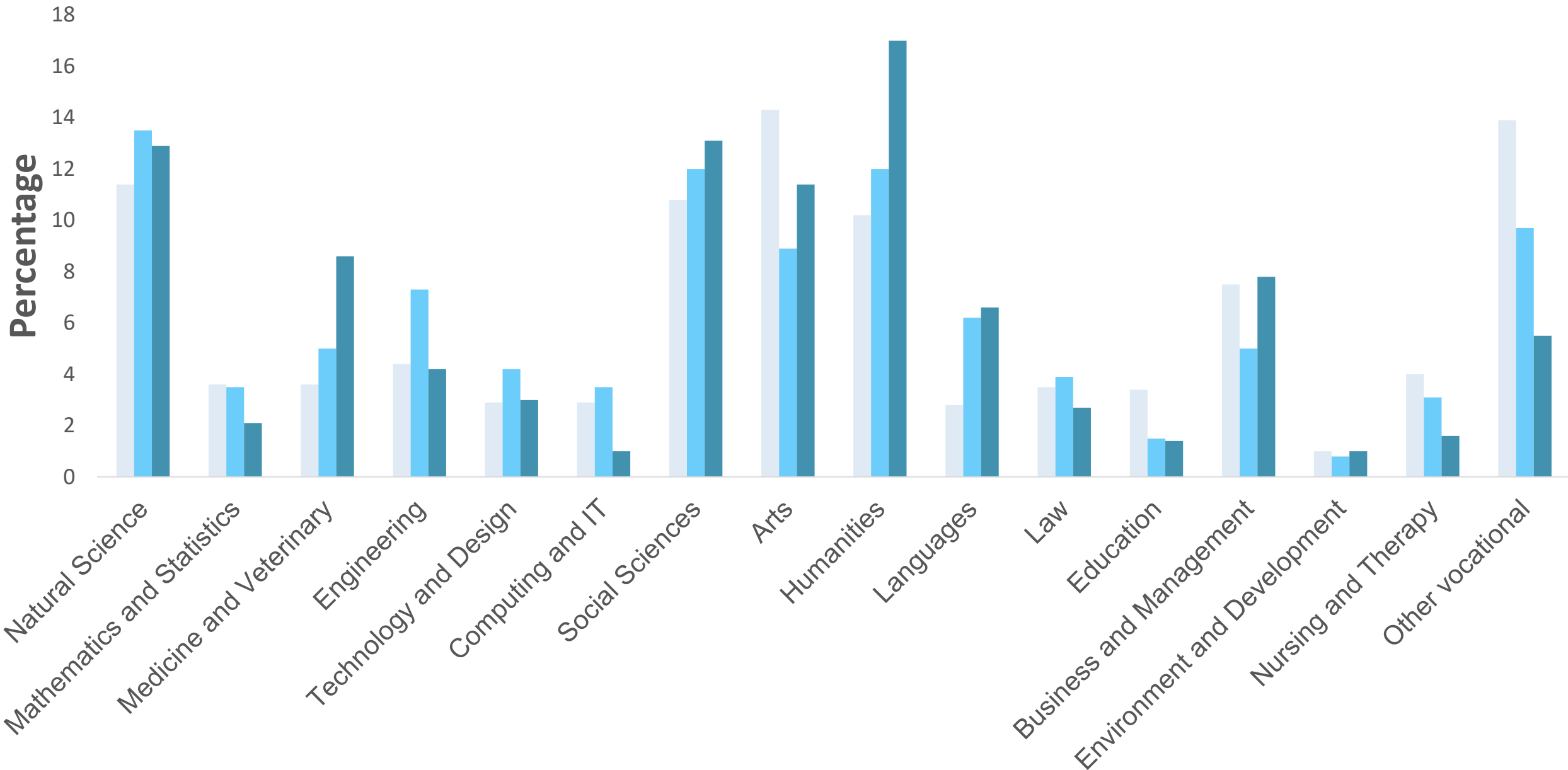
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Intercept	0.106	0.02	5.213	1.61 x10-7	1.112	1.068	1.157
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## Adjusted for covariates

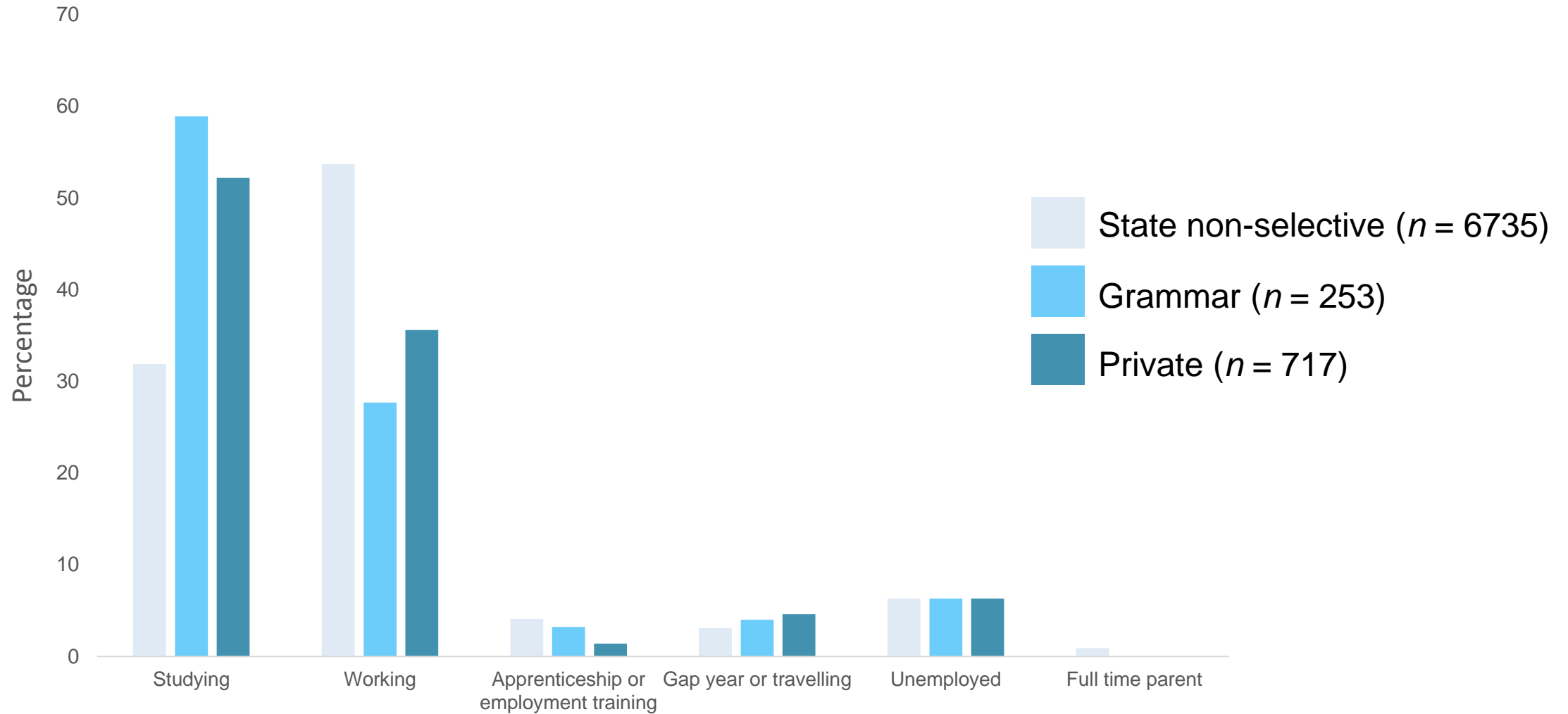
	Estimate	Robust SE	z value	p	OR	2.50%	97.50%
Intercept	0.158	0.044	3.624	2.9 X10-2	1.171	1.075	1.277
School_typeGrammar	<b>0.254</b>	<b>0.263</b>	<b>0.966</b>	<b>0.334</b>	<b>1.289</b>	<b>0.797</b>	<b>2.165</b>
School_typePrivate	<b>0.252</b>	<b>0.205</b>	<b>1.23</b>	<b>0.219</b>	<b>1.287</b>	<b>0.879</b>	<b>1.915</b>
KS2 achievement	0.667	0.055	12.08	2.2 X10-16	1.948	1.744	2.179
SES	0.429	0.049	8.768	2.2X10-16	1.535	1.397	1.689
General cog ability	0.087	0.053	1.665	0.096	1.091	0.987	1.207



# University course choices between school types



# Career status between school types



**What happens if we adjust for covariates?**

# Conclusions

- Large raw differences in academic outcomes between school types that largely disappear
- Genetic differences between school types reflect selection on heritable traits
- Will be interesting to look at the career and earnings of individuals as they become older

**My thanks yous..**

Professor Robert Plomin

**Co-authors**



TEDS Team

TEDS twins and families

**Questions?**