

# Why is $g$ so deeply insinuated in social inequality?

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International Society for the Study of Individual Differences  
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# Total-Evidence Rule forces opposing explanations to compete head-on

The 2 competitors—

- Social privilege theory
- Useful tool theory

# Competing explanations for pervasive, persisting IQ-SES links

## 1. Social privilege theory

- a. IQ differences result mostly from differences in family privilege
- b. Higher IQ and education does not reflect “merit,” but social class in disguise.
- c. Higher level jobs do not require more intelligence to perform well
- d. If everyone had equal opportunities in life, all could perform well and social inequality would disappear. Unequal outcomes signals unequal opportunity to develop & use cognitive talent.

Privilege perpetuates itself by pretending to be “merit”

## 2. Useful tool theory

- a. IQ differences result mostly from differences in genetic heritage.
- b. Higher  $g$  level reflects stronger learning & reasoning ability.
- c. Higher  $g$  enhances performance in all jobs, but especially more complex ones.
- d. If everyone had equal opportunities in life, people would perform to very different levels and create social inequality. Equal outcomes would require unequal opportunity to develop & use cognitive talent.

Human cognitive variation guarantees moderate social inequality in any complex, free society

# Total evidence rule

- All types of evidence
  - Tasks, ages, type inequalities
  - Psych, bio, neuro
  - Exper, observational
  - Pheno & geno
  - Variance, covariance, changes in
- Novel predictions
- Pattern of results
  - Consistent
  - Consilient
  - Mechanistic
  - No opportunistic omissions

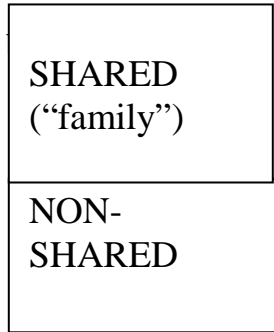
# Individual differences (IDs) at issue

## Background Influences

## Personal Attributes

## Socioeconomic Outcomes: Social Rungs & Task Performances

Variation in environments:



Variation in genotypes:

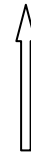
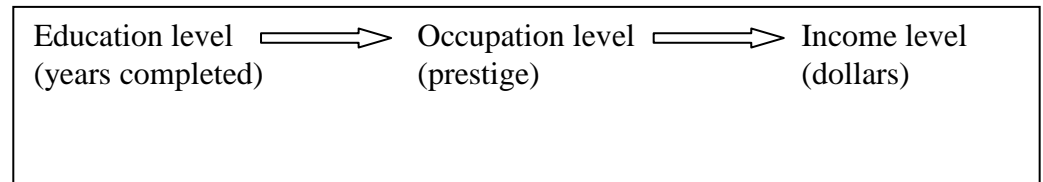
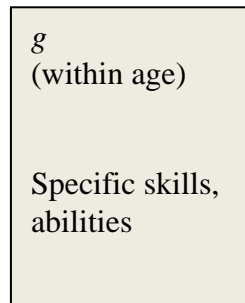
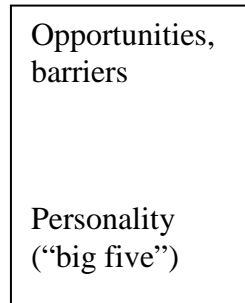


Figure 1

# Causal claims—“social privilege” theory

## Background Influences

## Personal Attributes

## Socioeconomic Outcomes: Social Rungs & Task Performances

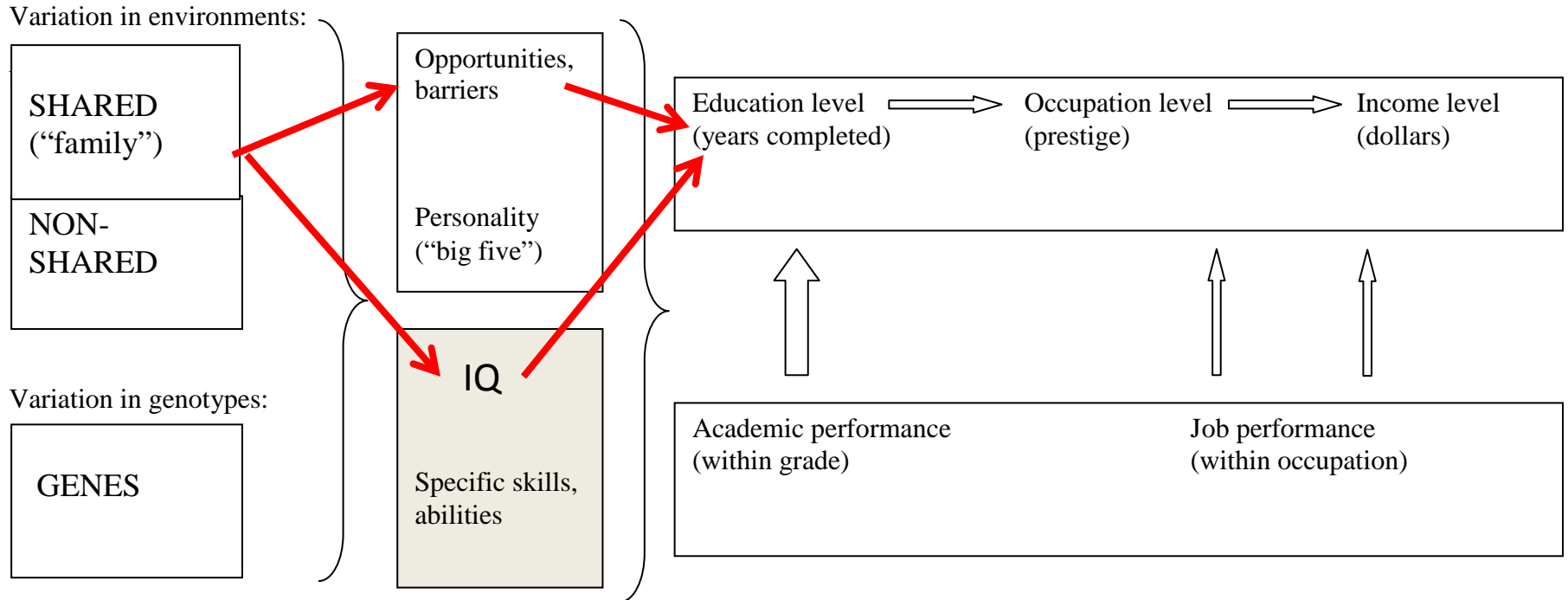
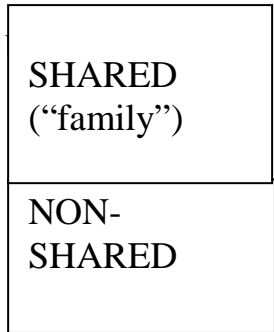


Figure 1

# Causal claims—“useful tool” theory

## Background Influences

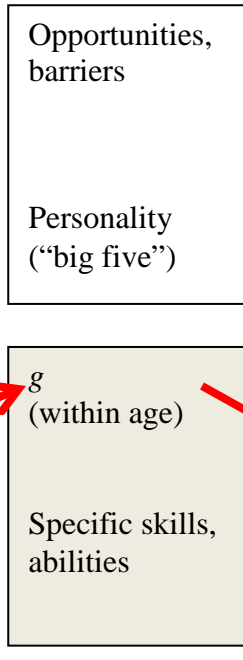
Variation in environments:



Variation in genotypes:



## Personal Attributes



## Socioeconomic Outcomes: Social Rungs & Task Performances

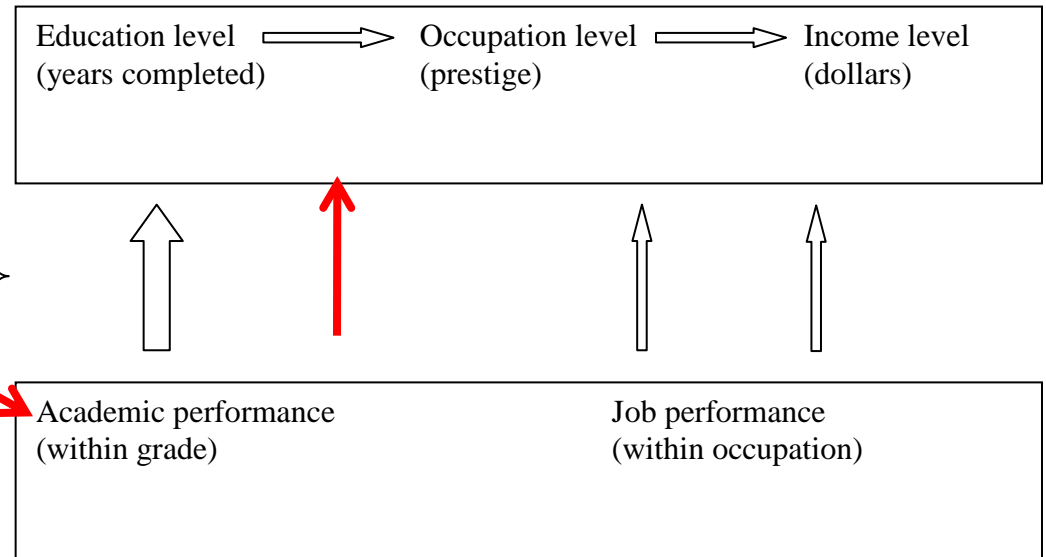


Figure 1

# Which set is most consistent with the full body of evidence?

- Sample of 9 opposing predictions
- Evidence from different fields
  - Psychometrics
  - Job analysis
  - Personnel selection
  - Neuroscience
  - Behavior genetics
- Results replicated



# 1. IDs in intelligence: Trait or socially constructed?

Background Influences

Personal Attributes

Socioeconomic Outcomes: Social Rungs & Task Performances

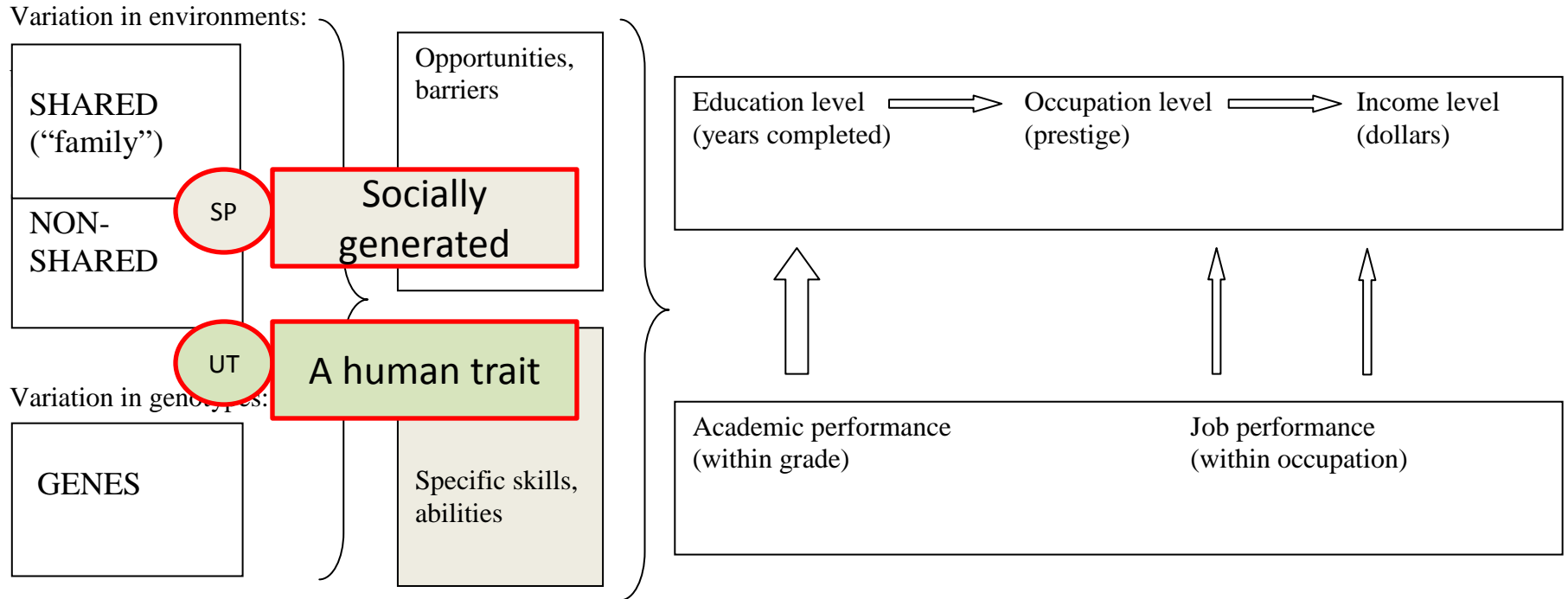
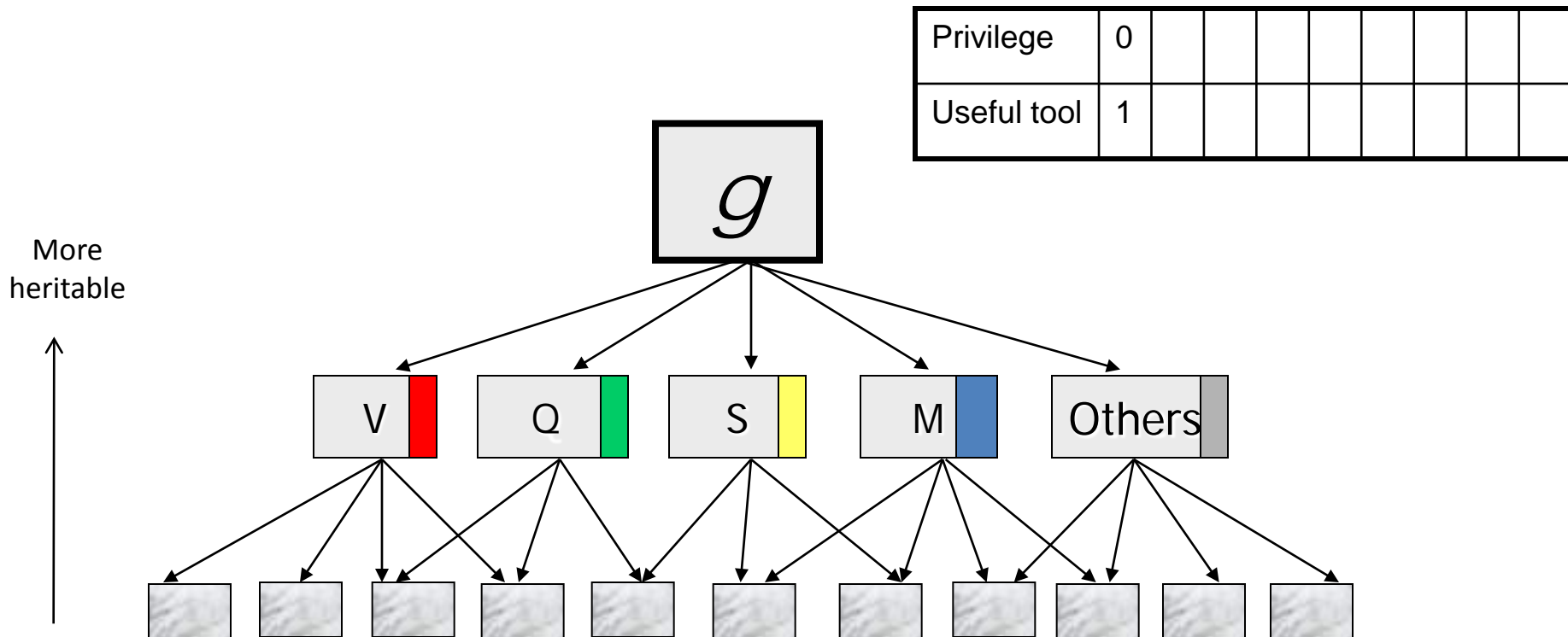


Figure 1

# Variation highly structured, not socially constructed

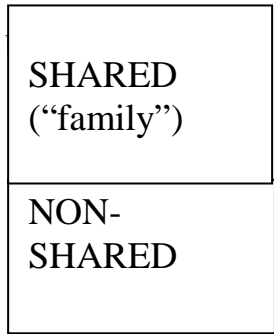
Its phenotypic structure appears to be replicated at genetic level



# 2. Adult trajectory: Social or biological?

## Background Influences

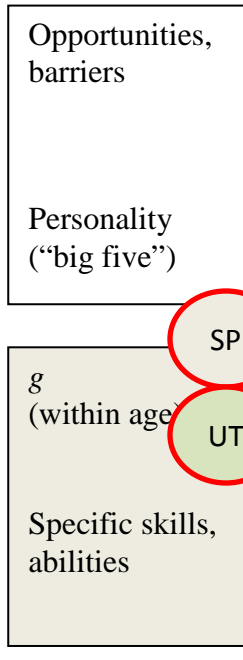
Variation in environments:



Variation in genotypes:



## Personal Attributes



## Socioeconomic Outcomes: Social Rungs & Task Performances

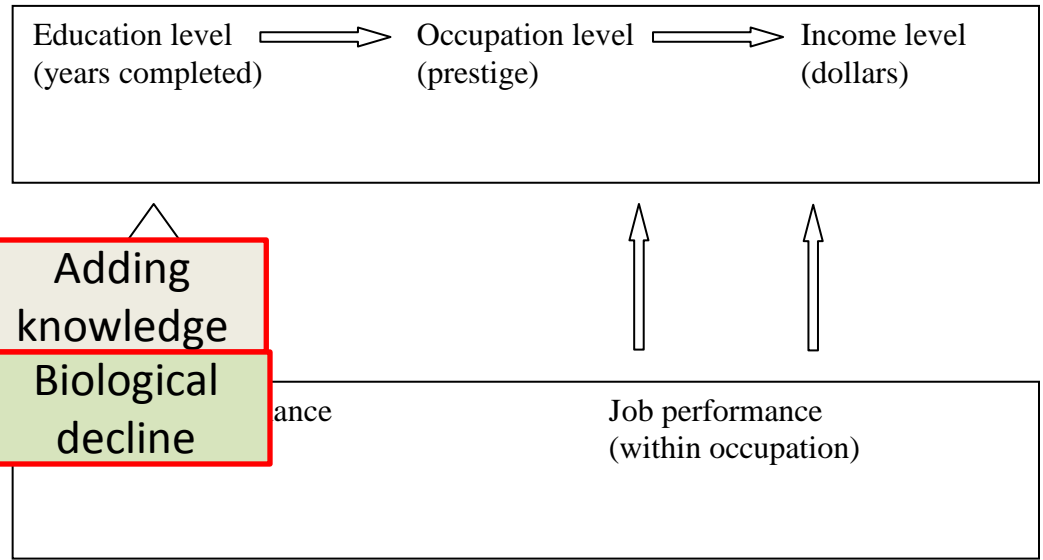
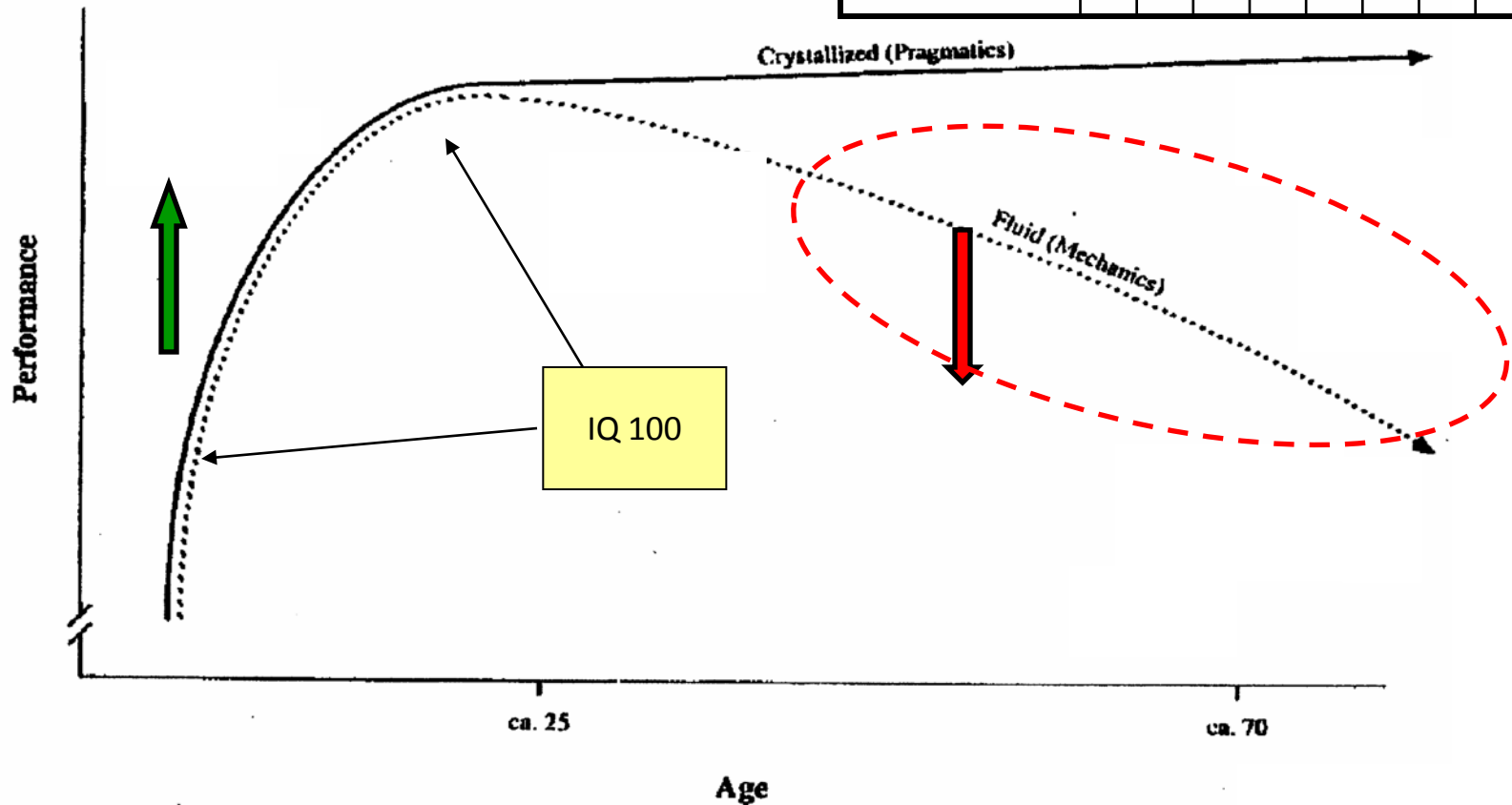


Figure 1

# Fluid $g$ rises, then falls with biological age

*All fluid abilities move in tandem*

Privilege	0	0							
Useful tool	1	1							



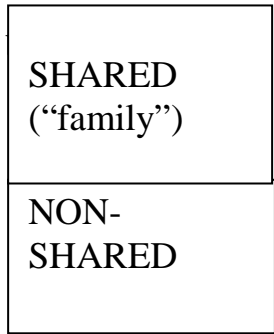
# 3. Trajectory of IQ heritability—up or down?

## Background Influences

## Personal Attributes

## Socioeconomic Outcomes: Social Rungs & Task Performances

Variation in environments:



Variation in genotypes:

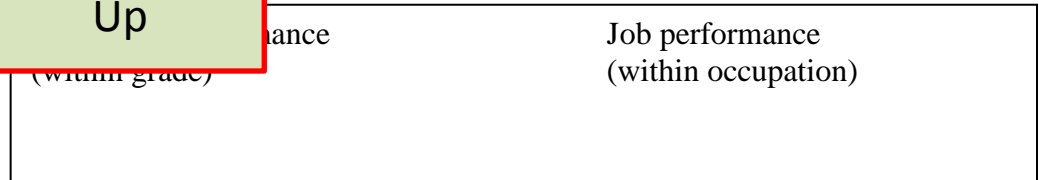
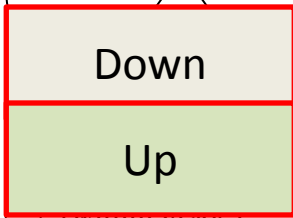
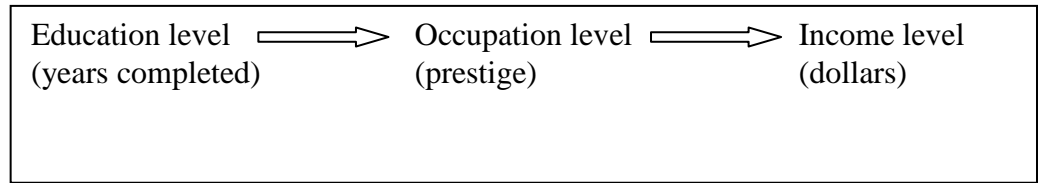
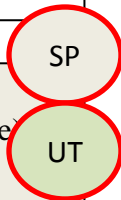
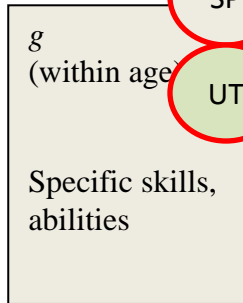
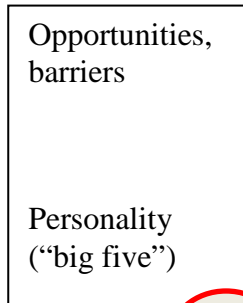
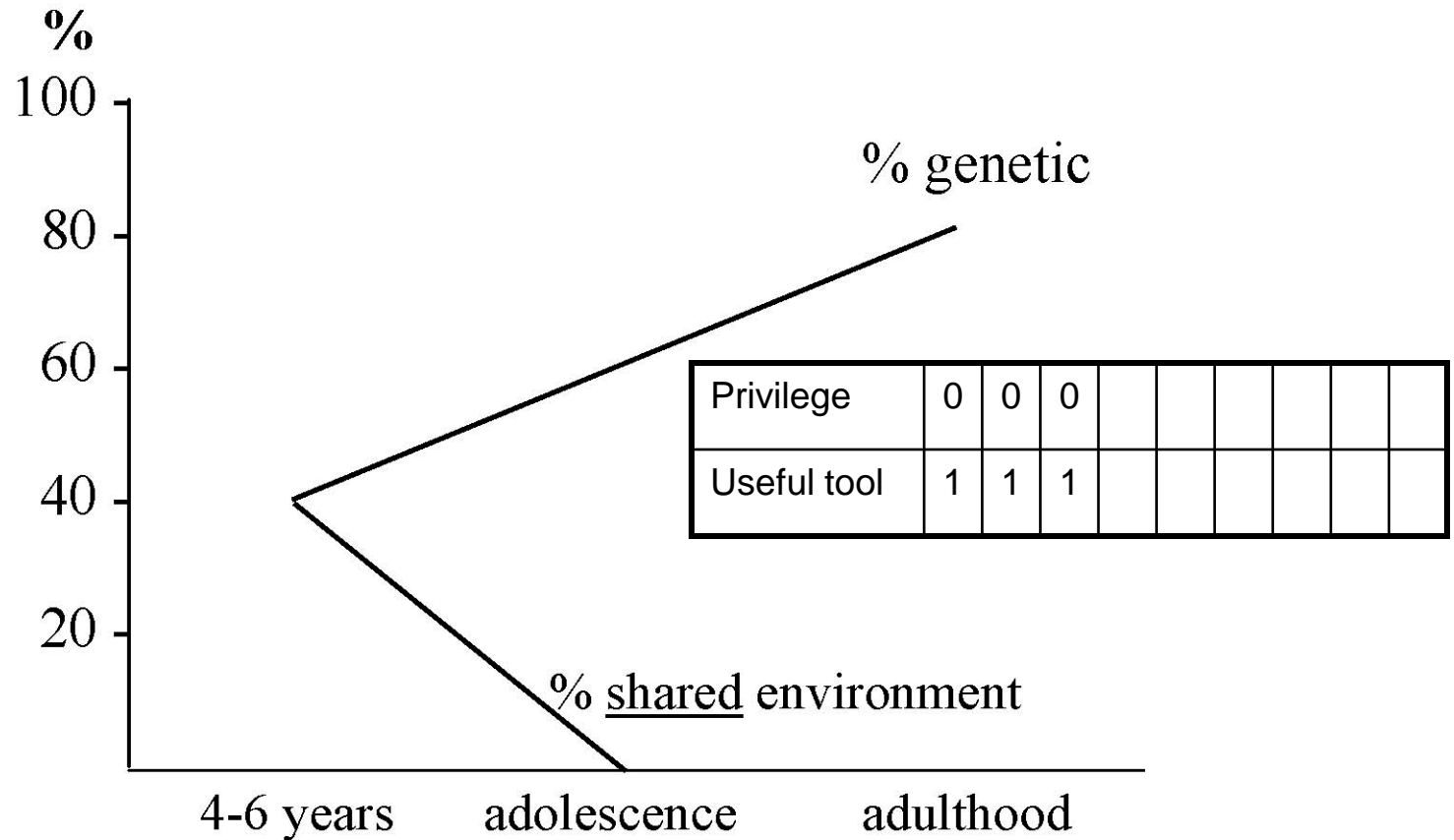


Figure 1

Genetic portion of IQ variation rises with age  
 Family SES contributions to IQ variation wash away



# 4. How does intelligence get into the brain?

## Background Influences

## Personal Attributes

## Socioeconomic Outcomes: Social Rungs & Task Performances

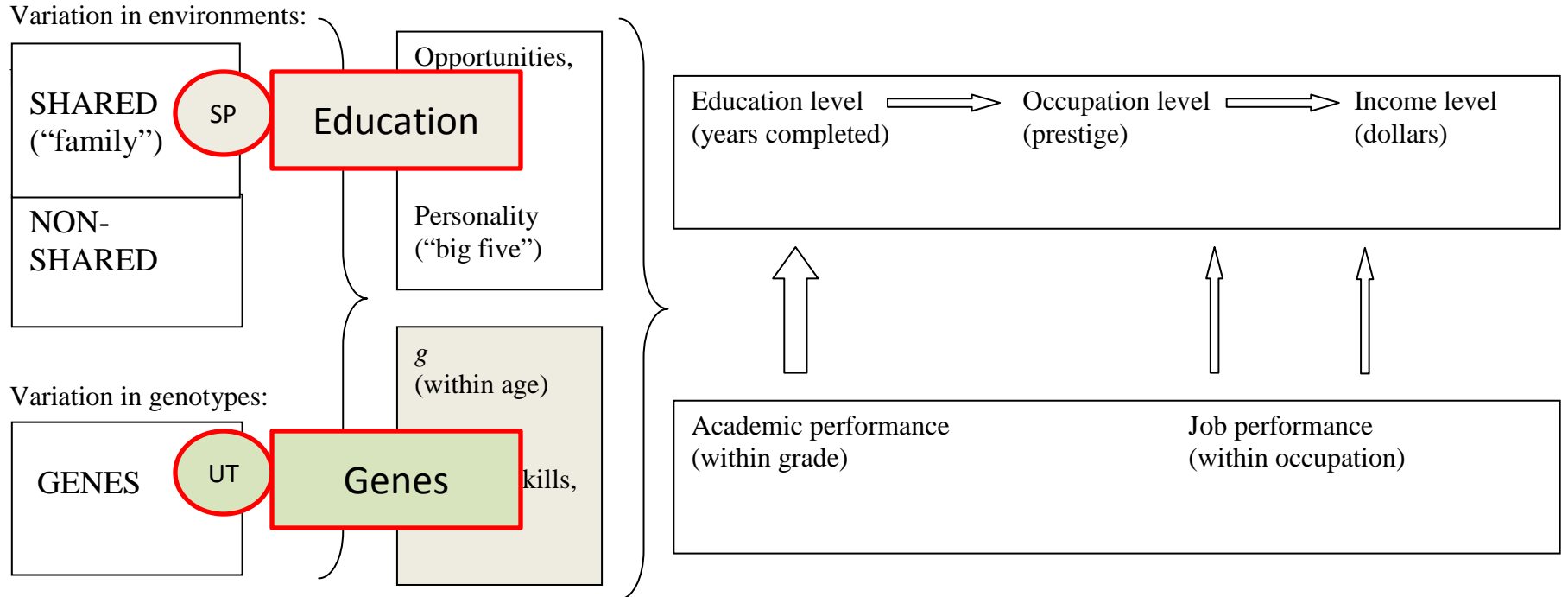
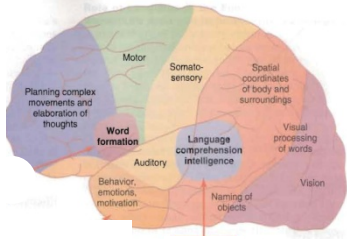
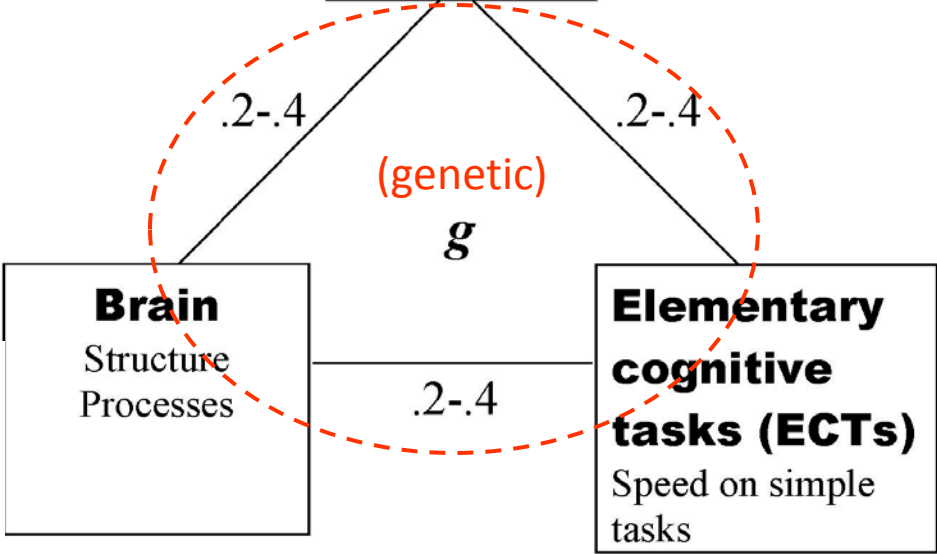


Figure 1

# g is genetically enmeshed in brain physiology

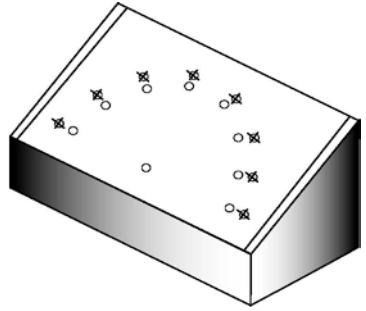
Privilege	0	0	0	0					
Useful tool	1	1	1	1					

**IQ tests**  
Accuracy on complex tasks



Size of brain (MRI)  
Metabolic (PET scan)  
Electrical (ERPs)

Inspection time  
Reaction time

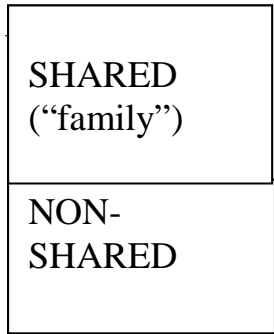




# 5. Are higher jobs really more cognitive?

## Background Influences

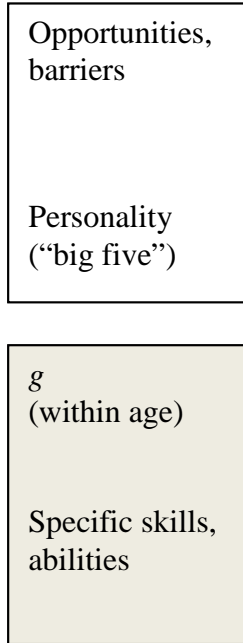
Variation in environments:



Variation in genotypes:



## Personal Attributes



## Socioeconomic Outcomes: Social Rungs & Task Performances

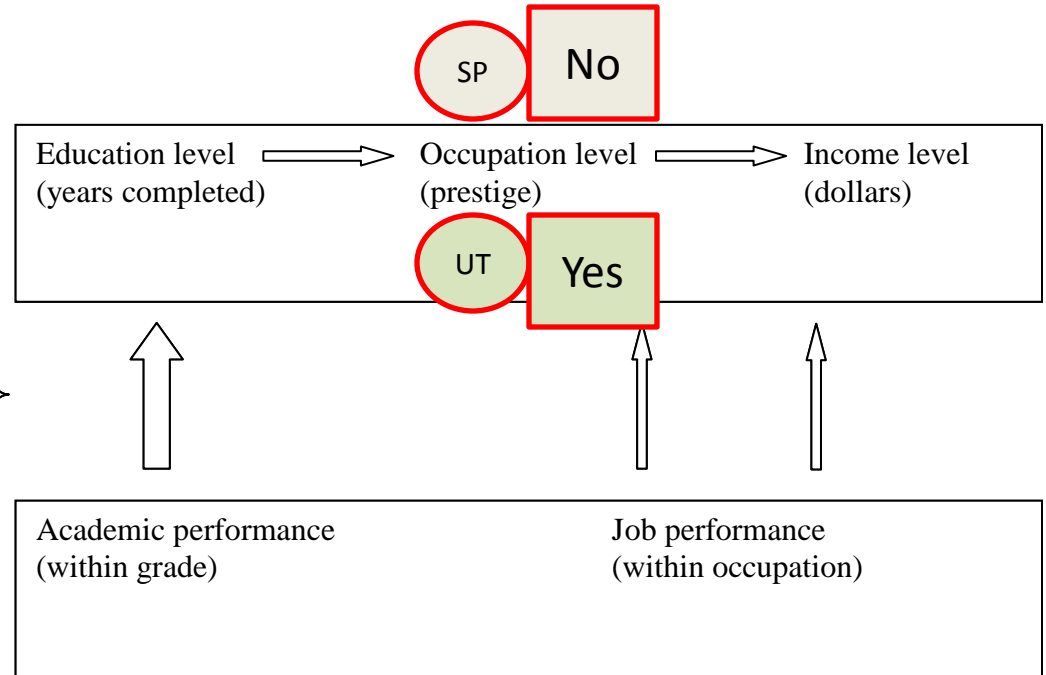


Figure 1

Percentile of median (among all adults)

Position applied for:	WAIS IQ:	80	90	100	110	120	128	138
	WPT:	10	15	20	25	30	35	40

91	Attorney							
	Research Analyst							
	Editor & Assistant							
88	Manager, Advertising							
	Chemist							
	Engineer							
86	Executive							
	Manager, Trainee							
	Systems Analyst							
	Auditor							
83	Copywriter							
	Accountant							
	Manager/Supervisor							
	Privilege	0	0	0	0	0		
	Useful tool	1	1	1	1	1		
	Manager, Store							
	Bookkeeper							
	Clerk, Credit							
	Drafter, Designer							
66	Lab Tester & Tech.							
	Manager, Assistant							
	Sales, General							
	Sales, Telephone							
	Secretary							
	Clerk, Accounting							
	Collector, Bad Debt							
60	Operator, Computer							
	Rep., Cust. Svcs.							
	Sales Rep., Insurance							
	Technician							
	Automotive Salesman							
	Clerk, Typist							
55	Dispatcher							
	Office, General							
	Police, Patrol Off.							
	Receptionist							
	Cashier							
	Clerical, General							
50	Inside Sales Clerk							
	Meter Reader							
	Printer							
	Teller							
	Data Entry							
	Electrical Helper							
45	Machinist							
	Manager, Food Dept.							
	Quality Control Chkr.							
	Claims Clerk							
	Driver, Deliveryman							
	Guard, Security							
42	Labor, Unskilled							
	Maintenance							
	Operator, Machine							
	Arc Welder, Die Sett.							
	Mechanic							
	Medical-Dental Asst.							
37	Messenger							
	Production, Factory							
	Assembler							
	Food Service Worker							
	Nurse's Aide							
31	Warehouseman							
	Custodian & Janitor							
25	Material Handler							
21	Packer							

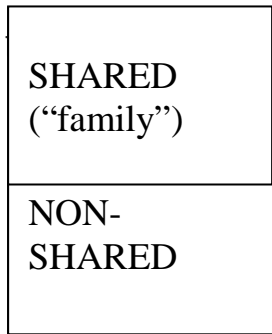
The work is more complex

	<i>r</i>
Compile information	.90
Advise	.86
Plan	.83
Negotiate	.79
Responsibility	.76
Instruct	.67
Code/decode	.68
Recognize/identify	.36
Specified pace of work	-.26
Repetitive activities	-.49
Physical exertion	-.56
Supervision	-.73
Structure	-.79

# 6. Does $g$ really predict job performance?

## Background Influences

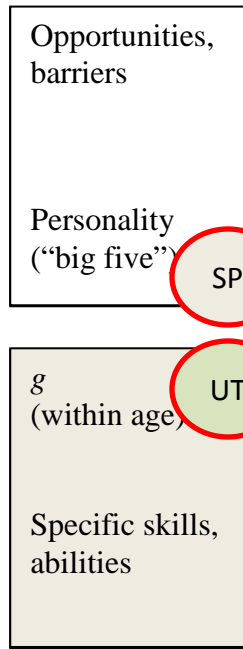
Variation in environments:



Variation in genotypes:



## Personal Attributes



## Socioeconomic Outcomes: Social Rungs & Task Performances

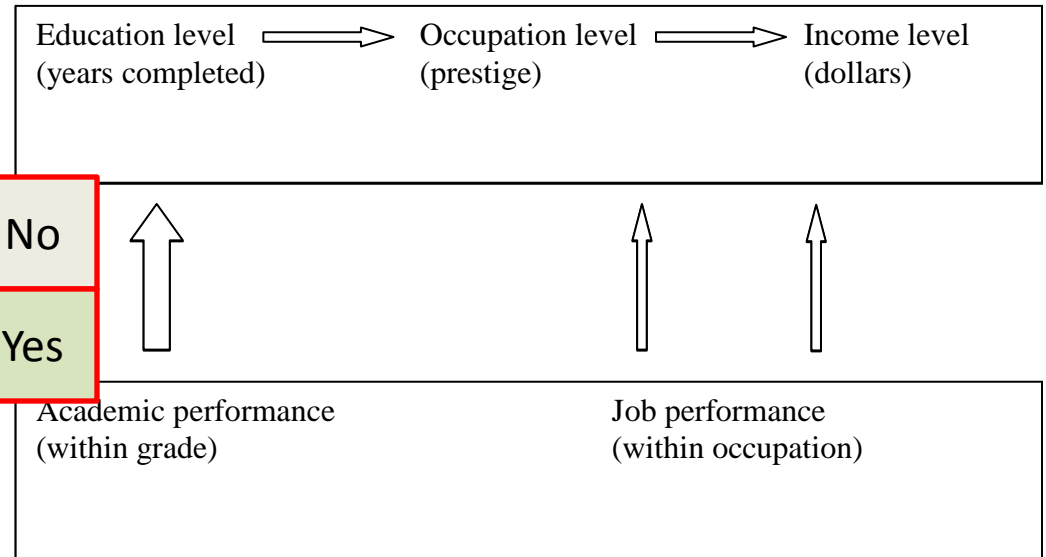


Figure 1

predictive validity of g

.8



.5



.2

Percentile	Position applied for	WAIS IQ: WPT	80	90	100	110	120	128	138
			10	15	20	25	30	35	40
88	Attorney								
	Research Analyst								
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	Manager, Advertising								
	Chemist								
	Engineer								
	Executive								
	Manager, Trainee								
	Systems Analyst								
	Auditor								
83	Copywriter								
	Accountant								
81	Manager/Supervisor								
	Manager, Sales								
	Programmer, Analyst								
	Teacher								
	Adjuster								
77	Manager, General								
	Purchasing Agent								
	Nurse, Registered								
	Sales, Account Exec.								
70	Administrative Asst.								
	Manager, Store								
	Bookkeeper								
	Clerk, Credit								
	Drafter, Designer								
66	Lab Tester & Tech.								
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	Cashier								
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31	Nurse's Aide								
	Warehouseman								
	Custodian & Janitor								
25	Material Handler								
21	Packer								

The work is more complex

Privilege	0	0	0	0	0	0			
Useful tool	1	1	1	1	1	1			

	<i>r</i>
Information	.90
Plan	.83
Negotiate	.79
Responsibility	.76
Instruct	.67
Code/decode	.68
Recognize/identify	.36
Specified pace of work	-.26
Repetitive activities	-.49
Physical exertion	-.56
Supervision	-.73
Structure	-.79



# Social outcomes moderately heritable

BACKGROUND INFLUENCES

PERSONAL TRAITS

SOCIAL

Privilege	0	0	0	0	0	0	0		
Useful tool	1	1	1	1	1	1	1		

Environment:

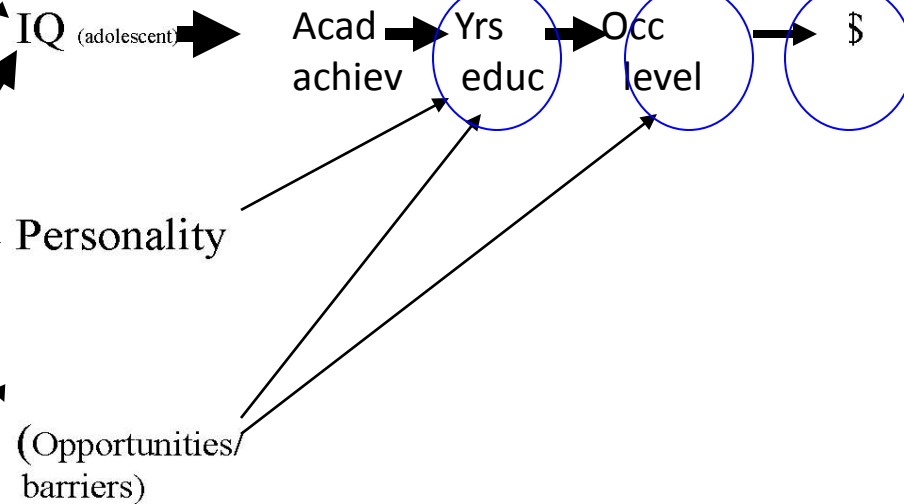
NON-SHARED

SHARED

% heritable: 60-70 50 40-50

Health

GENES



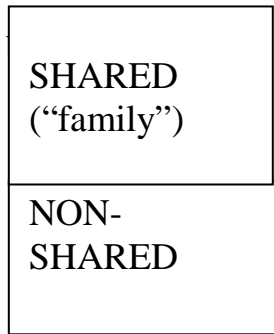
# 8. Is IQ-outcome covariation entirely social?

Background Influences

Personal Attributes

Socioeconomic Outcomes: Social Rungs & Task Performances

Variation in environments:



Variation in genotypes:

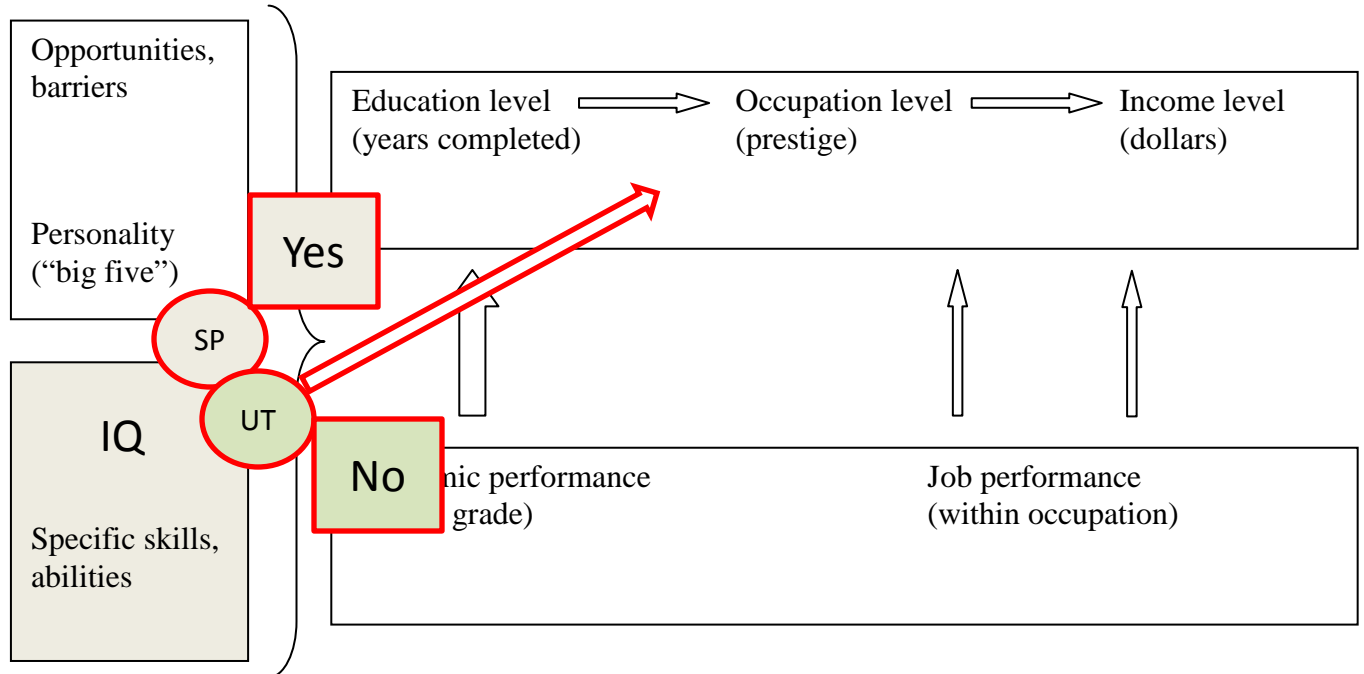
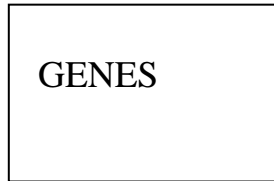


Figure 1

# Covariation also moderately heritable

BACKGROUND INFLUENCES

PERSONAL TRAITS

SOCIAL

Privilege	0	0	0	0	0	0	0	0	
Useful tool	1	1	1	1	1	1	1	1	

Environment:

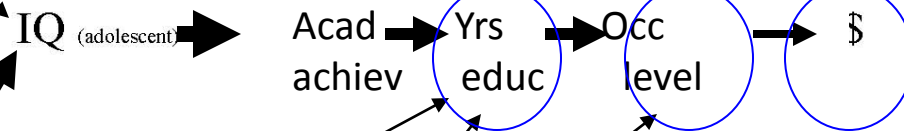
NON-SHARED

SHARED

% heritable:	60-70	50	40-50
% jointly with IQ:	40	25	20

Health

**GENES**



Personality

(Opportunities/  
barriers)

Subjective well-being



# Covariation also moderately heritable

BACKGROUND INFLUENCES

PERSONAL TRAITS

SOCIAL

Privilege	0	0	0	0	0	0	0	0	
Useful tool	1	1	1	1	1	1	1	1	

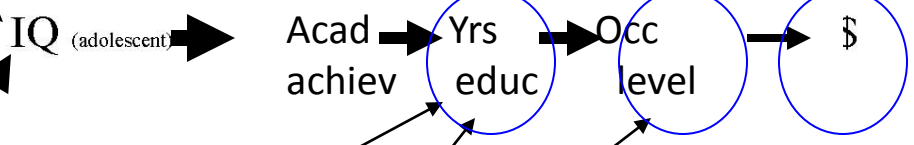
Environment:

NON-SHARED

SHARED

% heritable:                    60-70      50      40-50  
 % jointly with IQ:            40        25      20

Health



Subjective well-being

**GENES**

Also—  
 Predictions about geno components of covariance with g

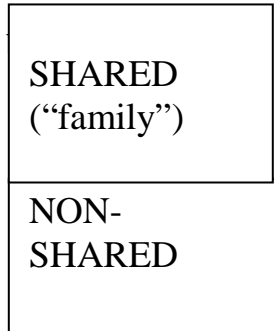
# 9. Can equal training or experience eliminate IQ-performance link?

## Background Influences

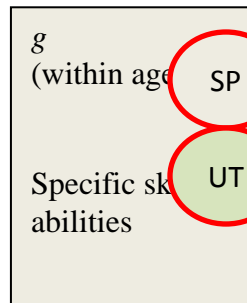
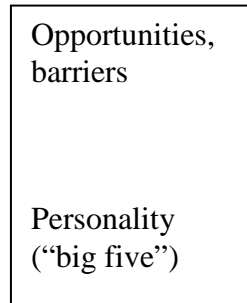
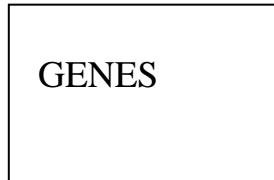
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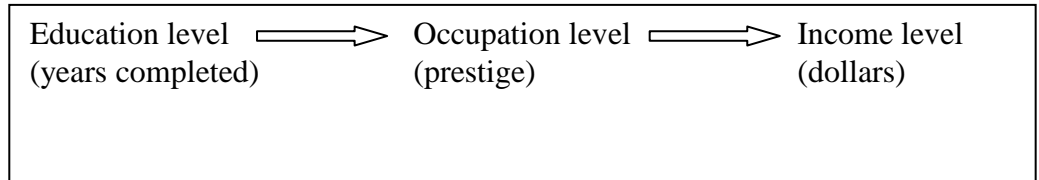
Variation in environments:



Variation in genotypes:



Privilege	0	0	0	0	0	0	0	0	0
Useful tool	1	1	1	1	1	1	1	1	1



Yes

No

$g$  remains predictive—always need to learn & reason

Figure 1

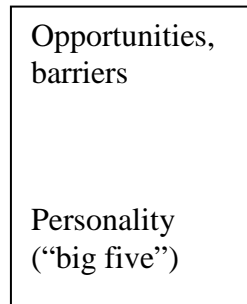
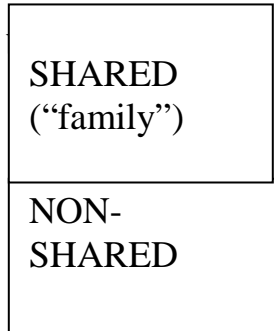
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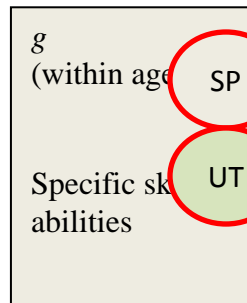
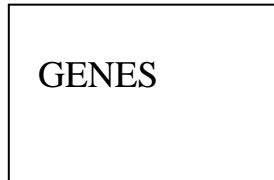
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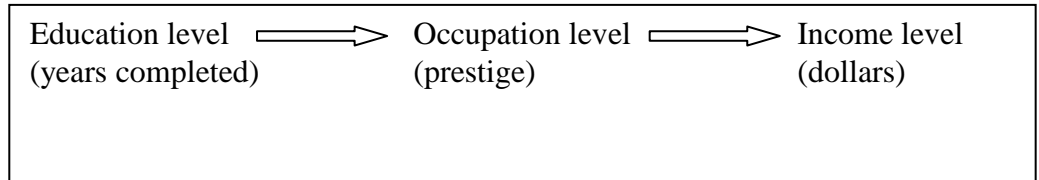
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Privilege	0	0	0	0	0	0	0	0	0
Useful tool	1	1	1	1	1	1	1	1	1



Yes

No

$g$  remains predictive—always need to learn & reason

Also—

novel predictions on social interventions aimed at changing variance or covariance

# Nomological network for biological, functional link

- All types of evidence
  - Tasks, ages, type inequalities
  - Psych, bio, neuro
  - Exper, observational
  - Pheno & geno
  - Variance, covariance, changes in
- Novel predictions
- Pattern of results
  - Consistent
  - Consilient
  - Mechanistic
  - No opportunistic omissions

Thank you