The Effect of Retirement on Cognition

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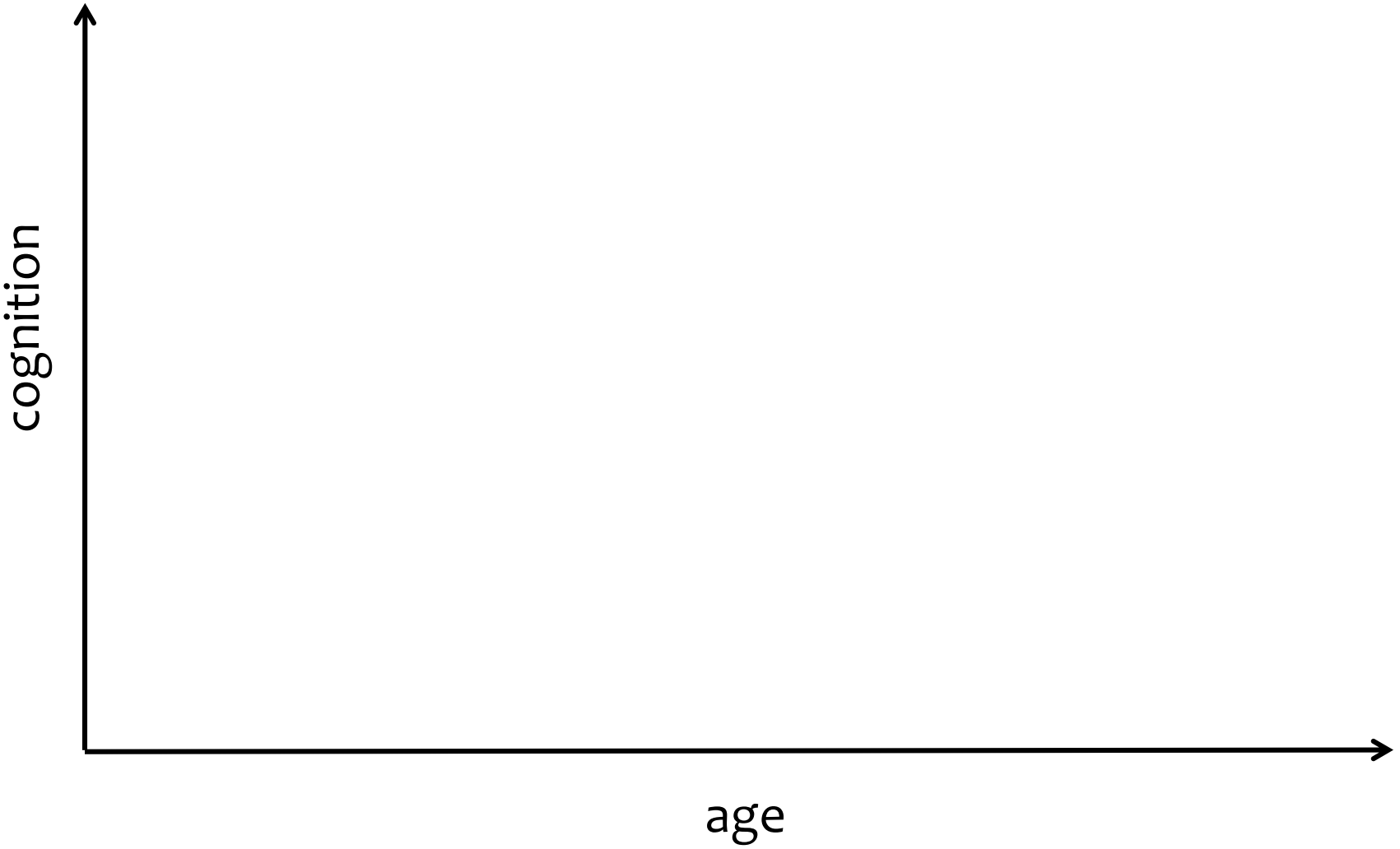
Clarify definitions

Cognition ⇗ fluid

crystallized

Retirement ⟹ not working

Motivation



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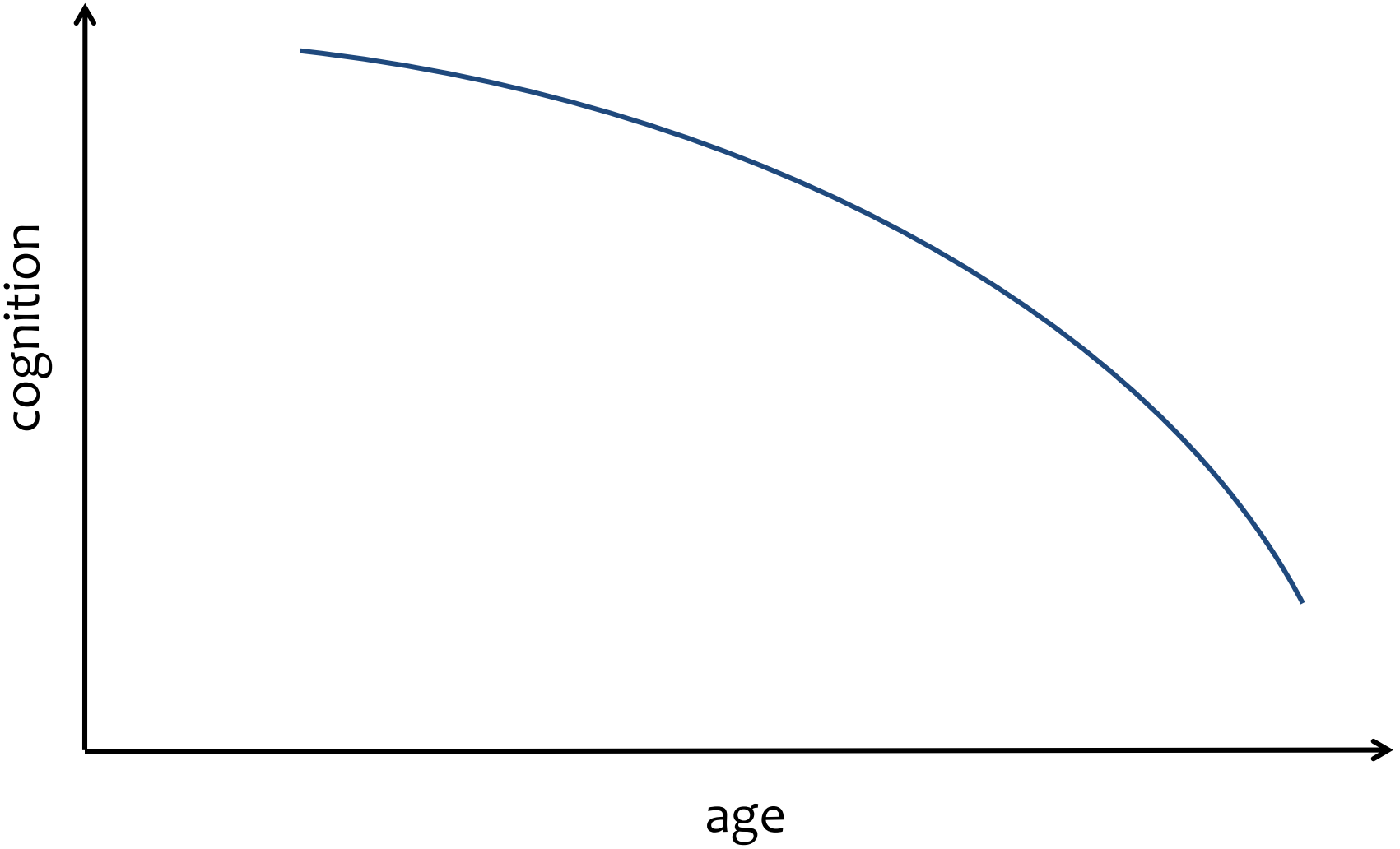

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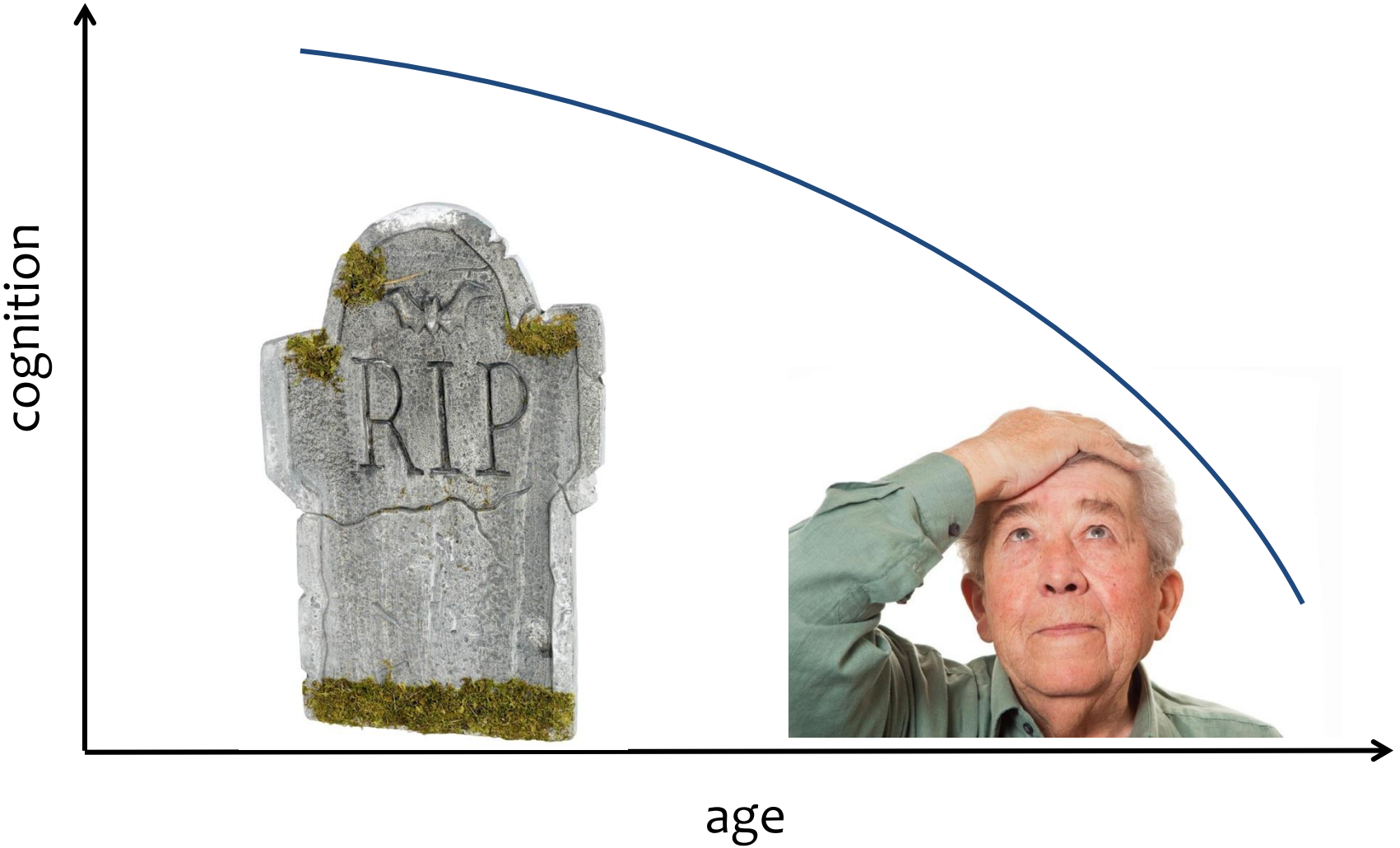

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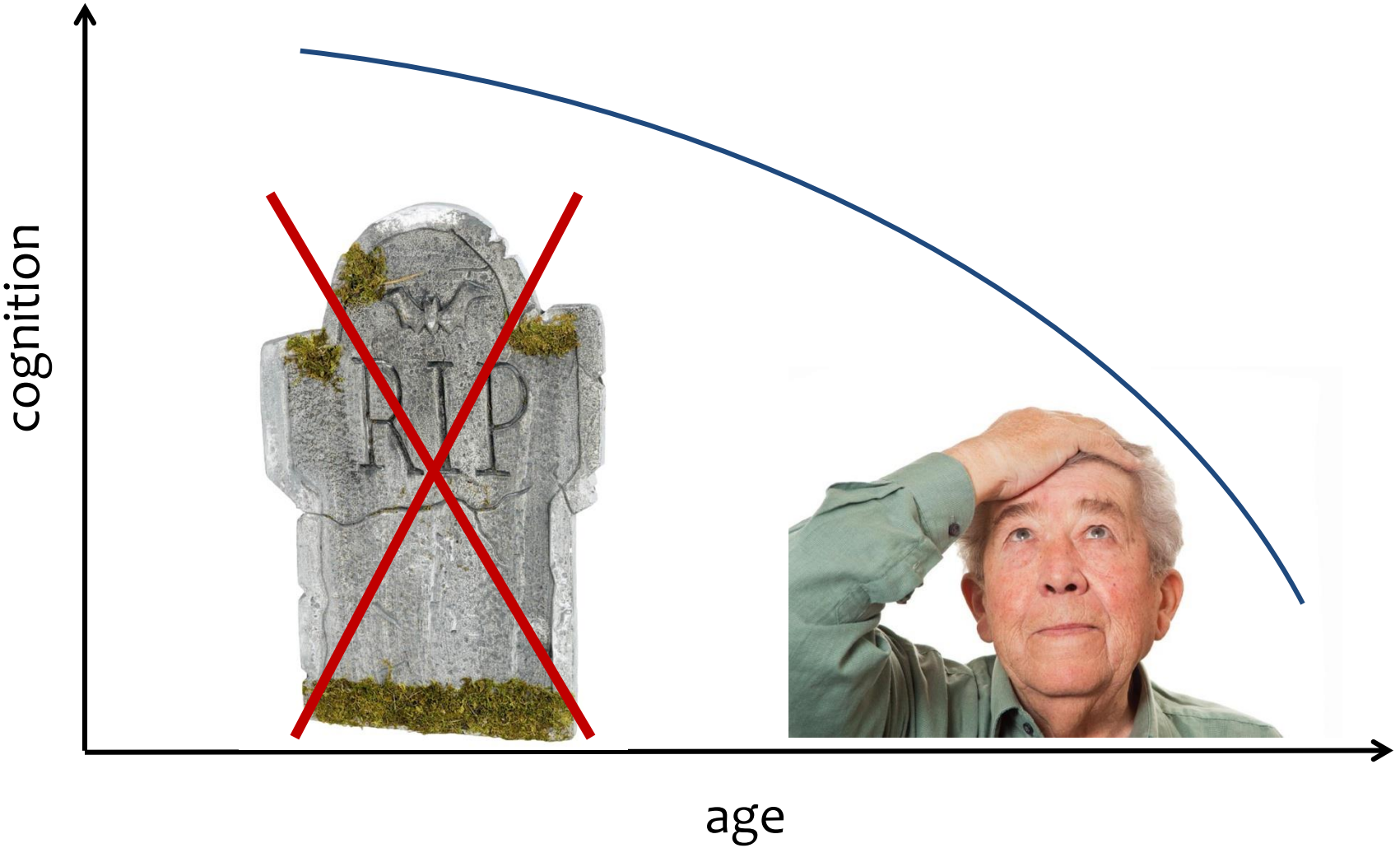
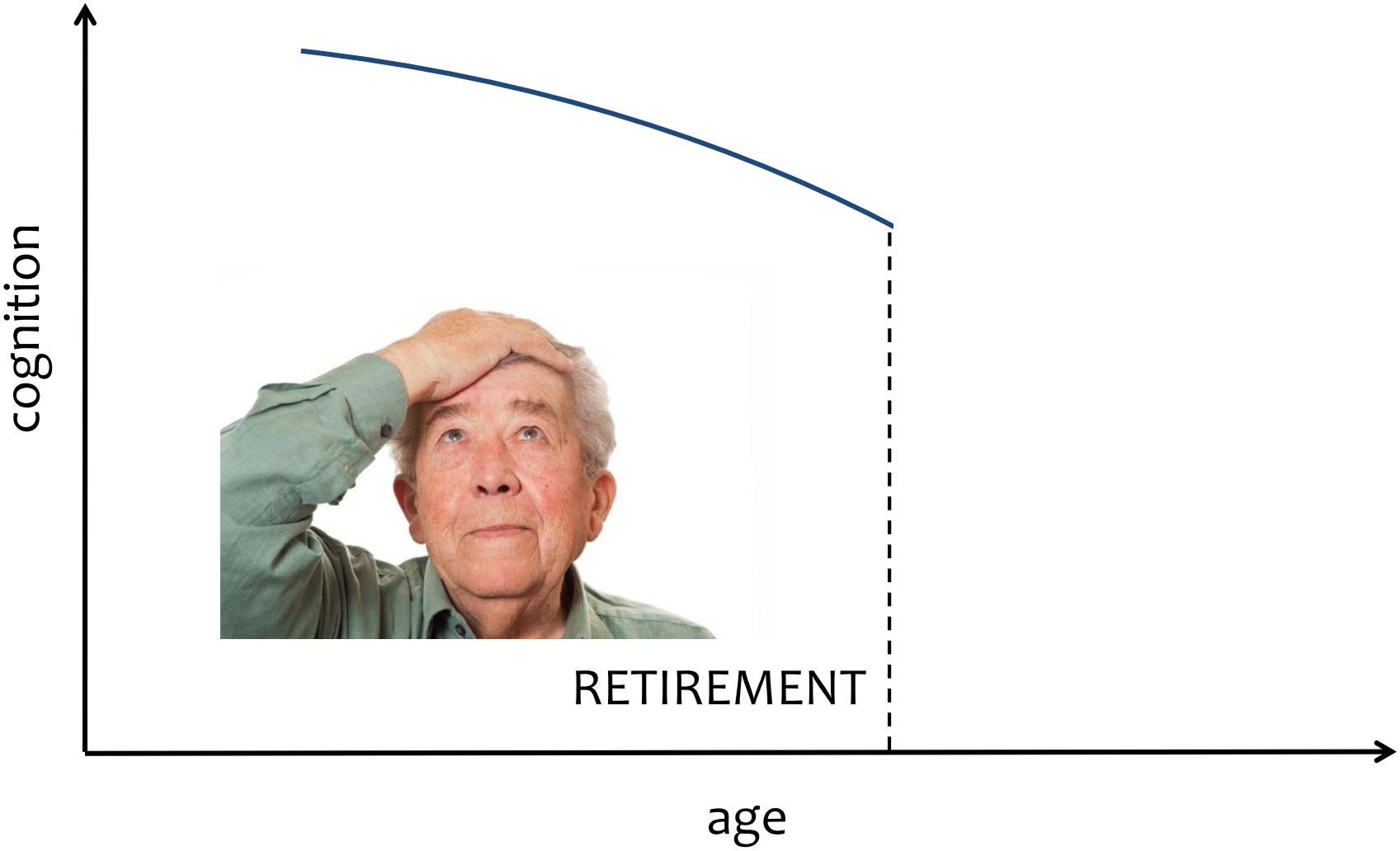


Research question

Research question



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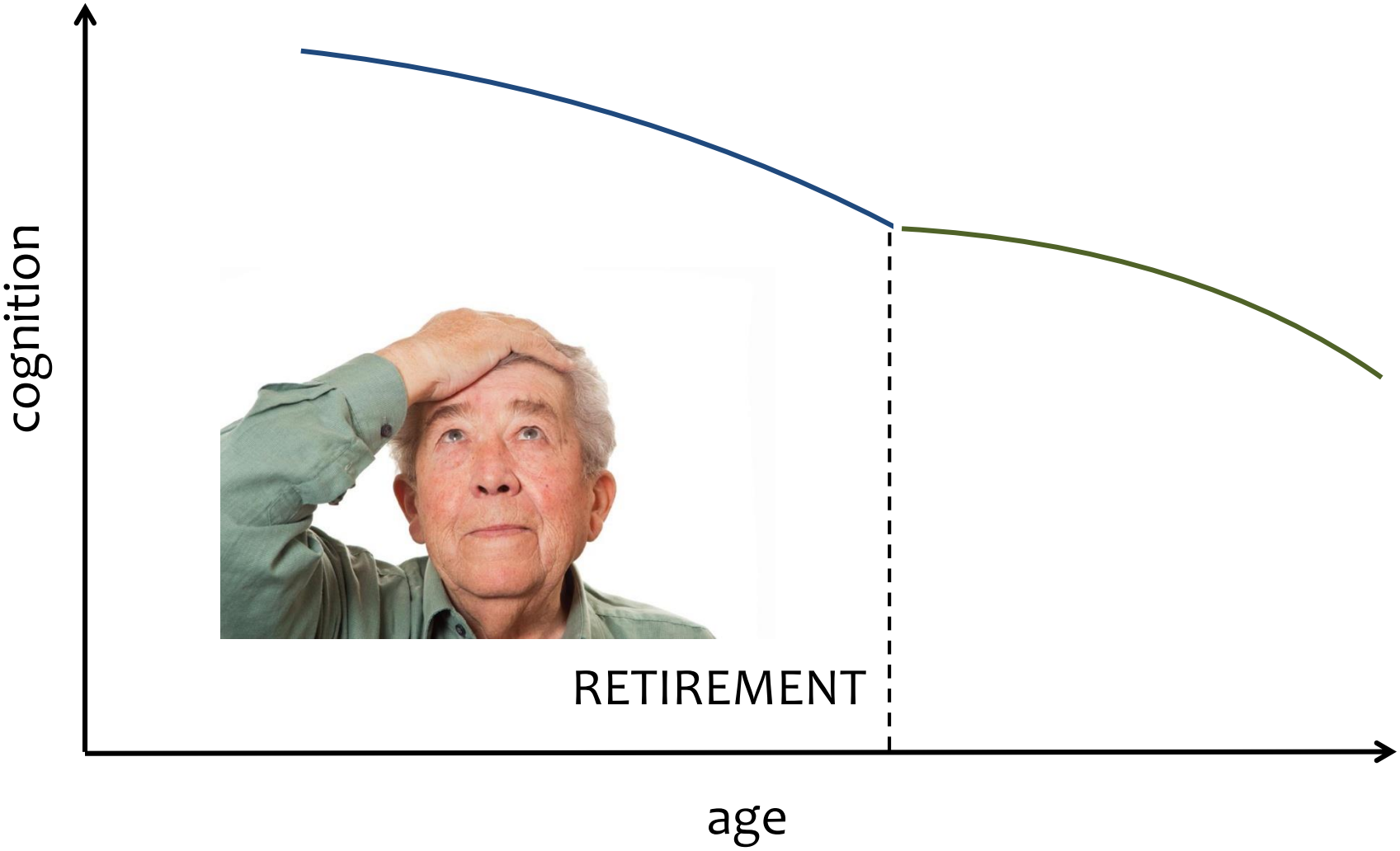

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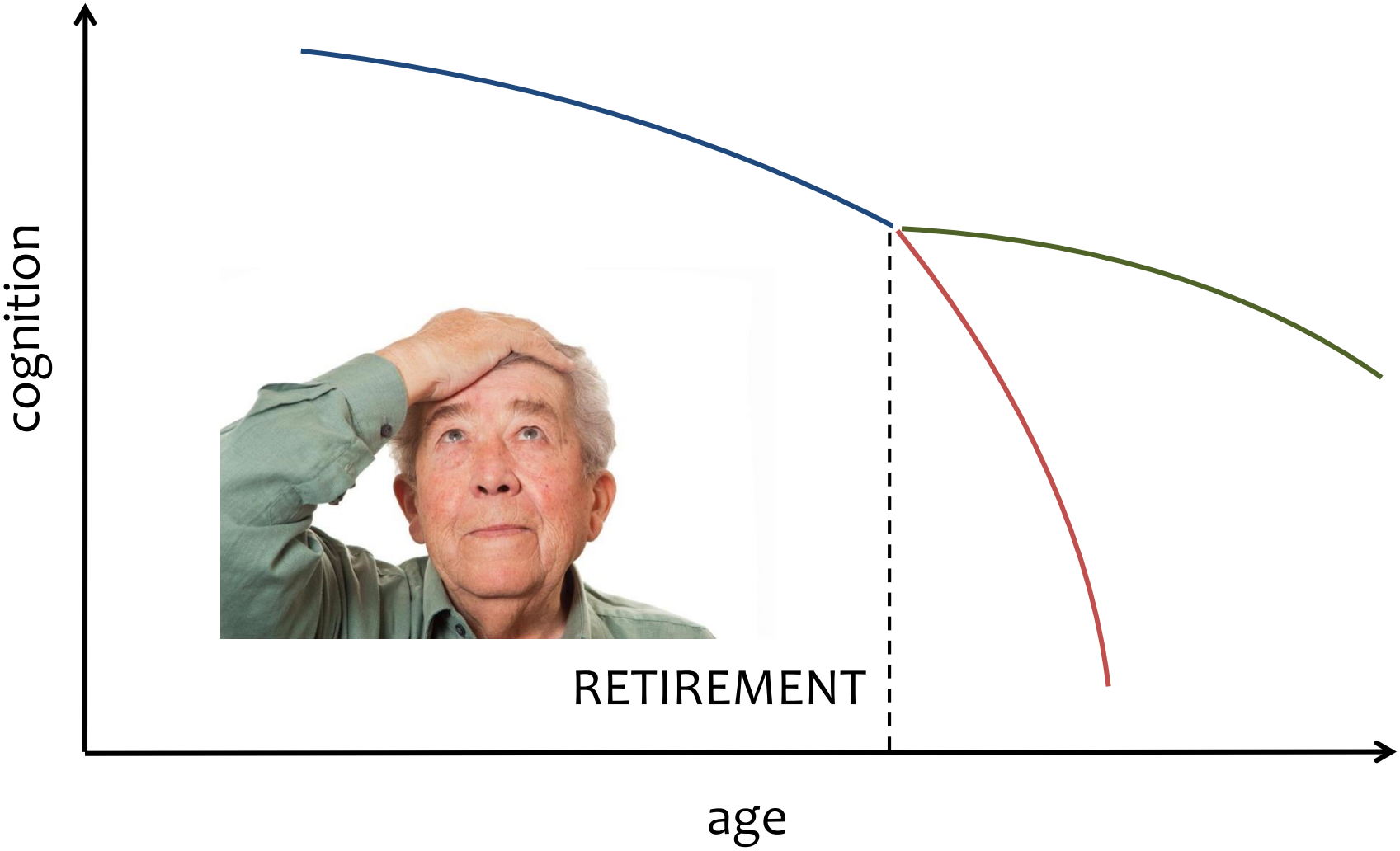

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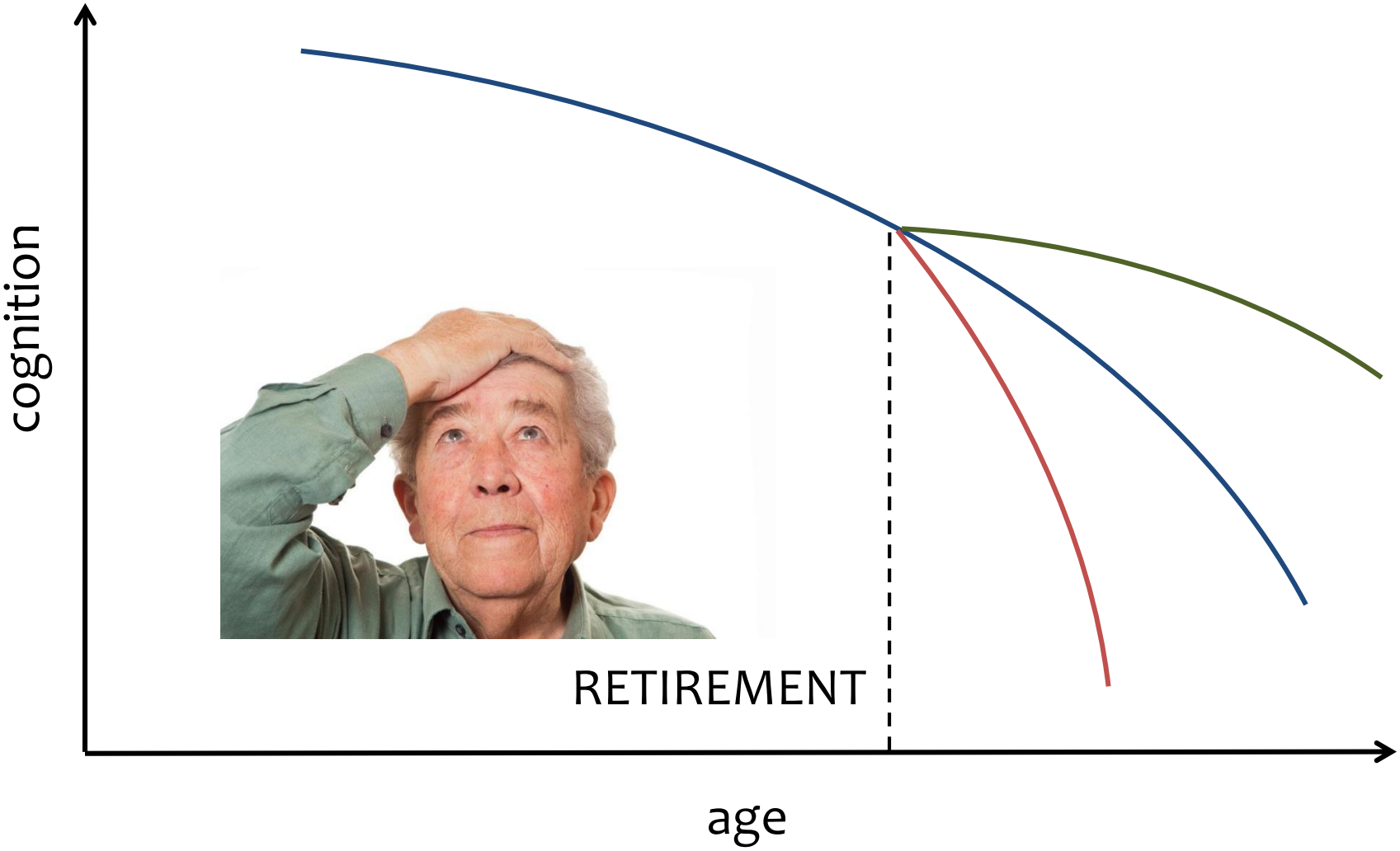


Literature

cognition

RETIREMENT

age

Bingley – Martinello (2011)

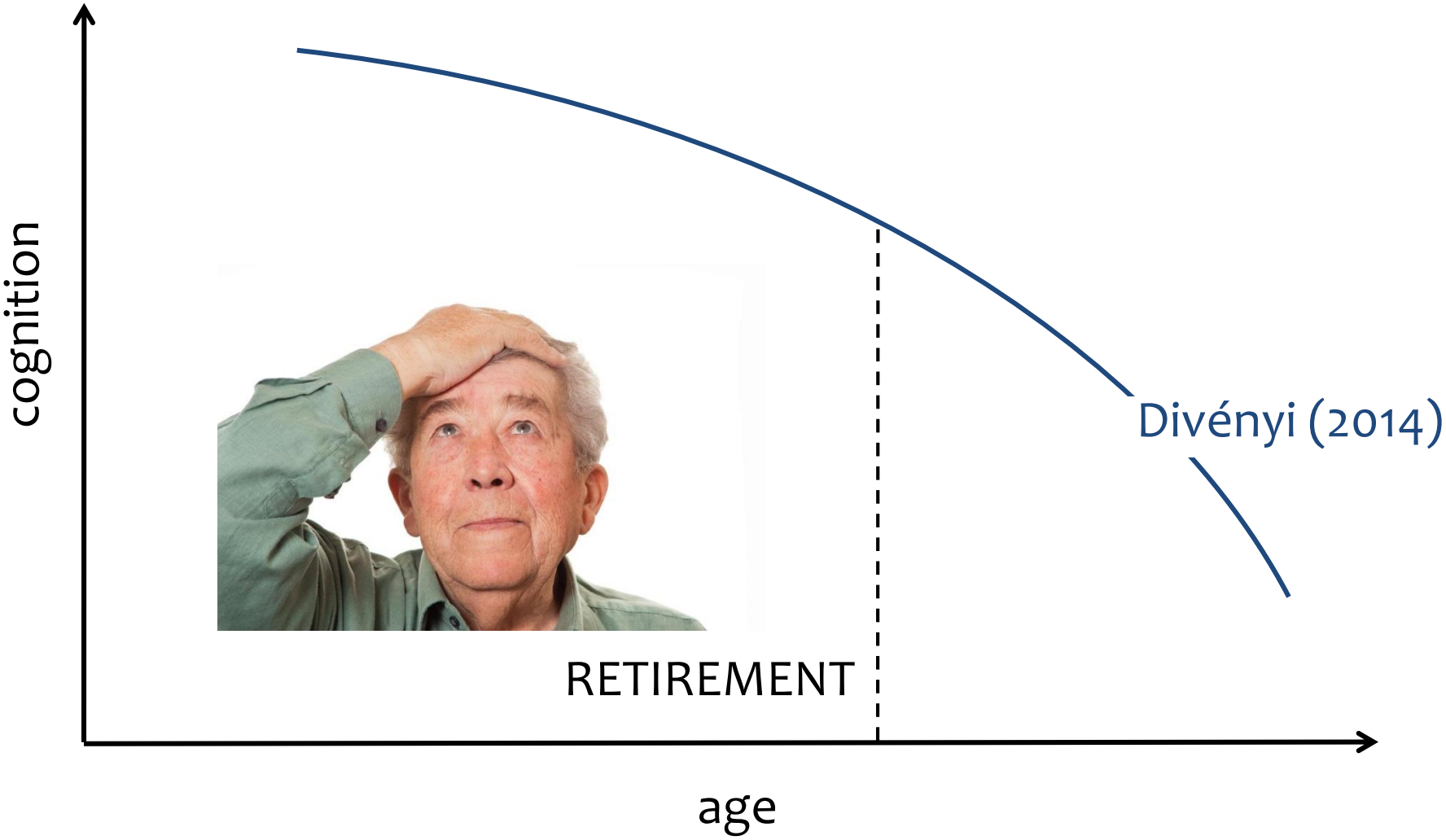
Coe et al. (2012)

Rohwedder – Willis (2010)

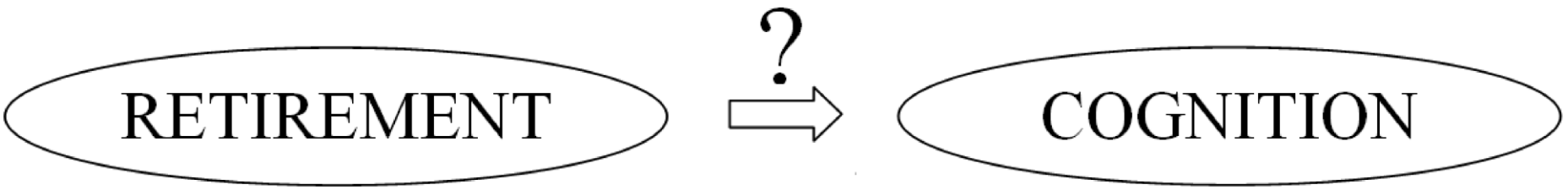
Bonsang et al. (2010)

Mazzona – Peracchi (2010)

Literature



Identification challenge



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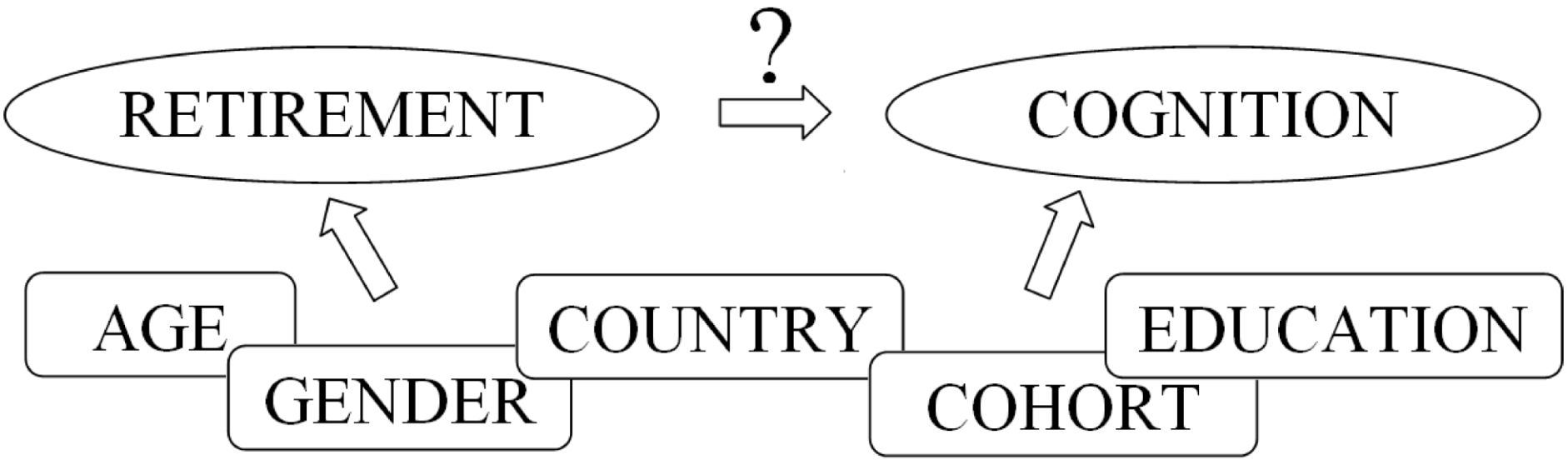

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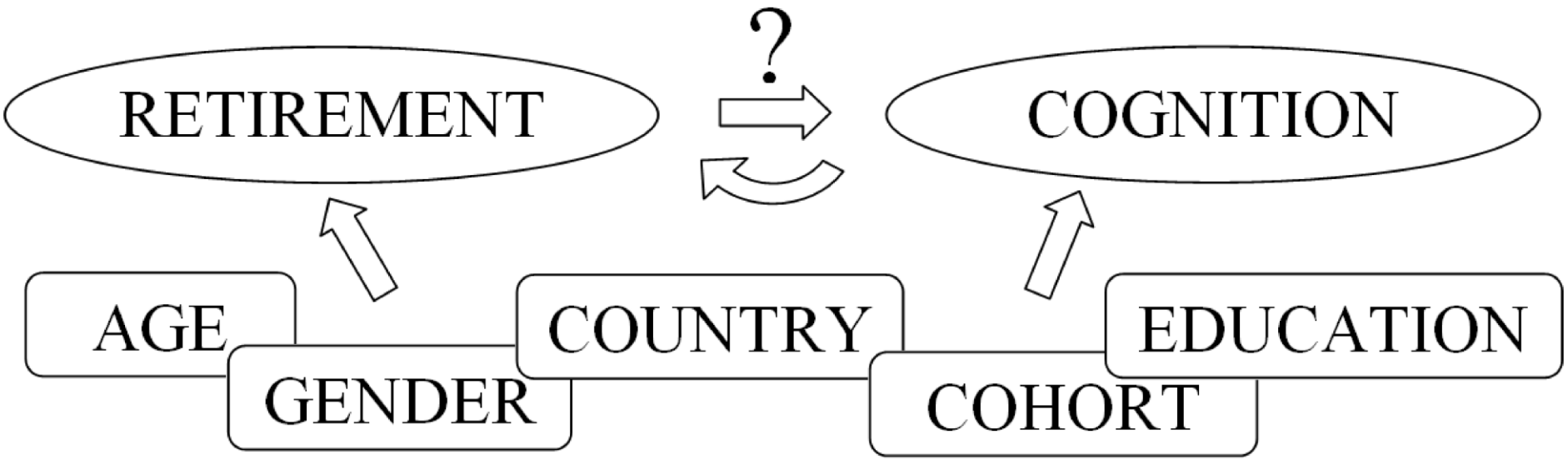

My method

1. Replication of other studies

2. Novel approach

Data

- Survey of Health, Ageing and Retirement in Europe (SHARE)
- Cross-country across Europe (10 countries)
- Targeting 50+ population
- Interdisciplinary longitudinal survey (biannual)
- Measure various cognitive skills → word recall

SHARE
Survey of Health, Ageing and Retirement in Europe
50+ in Europe

Replication I: Rohwedder and Willis (2010)

- $CS_i = \alpha + \beta R_i + u_i$
- R_i is instrumented by early and normal pension eligibility dummies
- on 60-64 years old: -1 (-1.5) standard deviation

	(1) Rohwedder and Willis (2010)
Retired	-1.009^{***}
	(0.14)
Constant	0.736^{***}
	(0.10)
Observations	4,462

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- $CS_i = \alpha + \beta R_i + u_i$
- R_i is instrumented by early and normal pension eligibility dummies
- on 60-64 years old: -0.5 sd. ~ -0.075 sd. yearly

	(1) Rohwedder and Willis (2010)	(2) Mazzonna and Peracchi (2012)
Retired	-1.009^{***}	-0.500^{***}
	(0.14)	(0.13)
Constant	0.736^{***}	0.365^{***}
	(0.10)	(0.097)
Observations	4,462	4,462

Replication II: Mazzonna and Peracchi (2012)

- $CS_i = \alpha + \beta YR_i + X_i'\gamma + u_i$
- YR_i is instrumented by distance after early and normal pension eligibility
- on 50-70 years old, worked at age 50

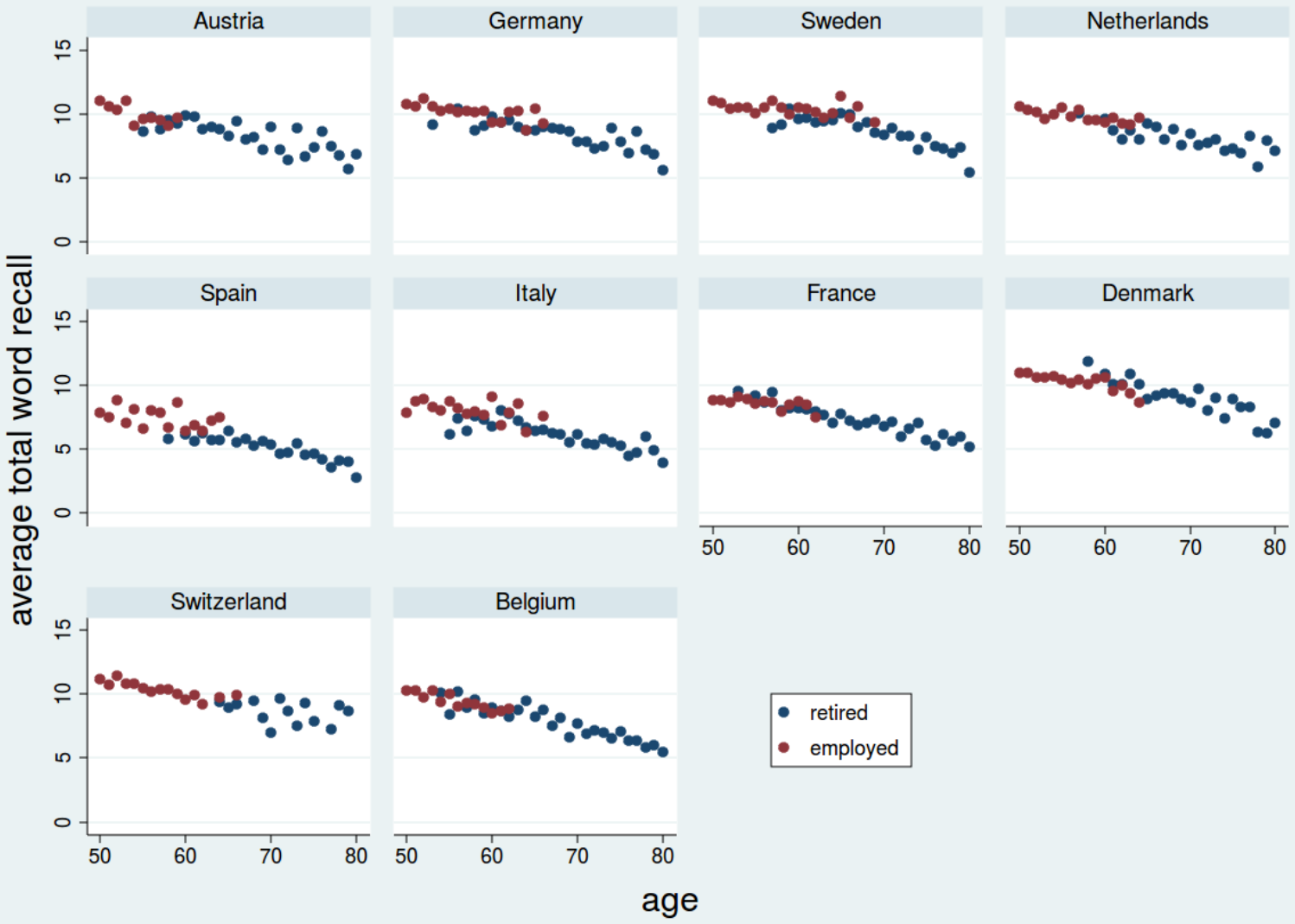
Replication II: Mazzonna and Peracchi (2012)

	(1)	(2)	(3)	(4)
Years in retirement	−0.083***	−0.176***	0.167***	−0.197***
	(0.0029)	(0.016)	(0.035)	(0.040)
Age		0.047***	−0.116***	0.059***
		(0.0077)	(0.017)	(0.019)
Female				0.291***
				(0.022)
Constant	0.223***	−2.333***	6.344***	−2.792***
	(0.011)	(0.42)	(0.86)	(1.00)
Country dummies	No	No	Yes	Yes
Observations	13,973	13,973	13,973	13,973
Weak IV F statistic	6337.18	256.62	55.57	40.23

Replication II: Mazzonna and Peracchi (2012)

	(1) TWR, men	(2) TWR, women	(3) numeracy, men	(4) numeracy, women
Years in retirement	0.017	−0.043*	−0.061	−0.036
	(0.039)	(0.025)	(0.040)	(0.025)
Age	−0.042**	−0.016	0.009	−0.009
	(0.018)	(0.012)	(0.019)	(0.013)
Constant	2.475***	1.252**	−0.006	0.830
	(0.95)	(0.63)	(0.99)	(0.64)
Country dummies	Yes	Yes	Yes	Yes
Observations	8,017	5,956	8,084	5,981
Weak IV F statistic	32.93	84.10	32.68	83.92

Cross section versus panel



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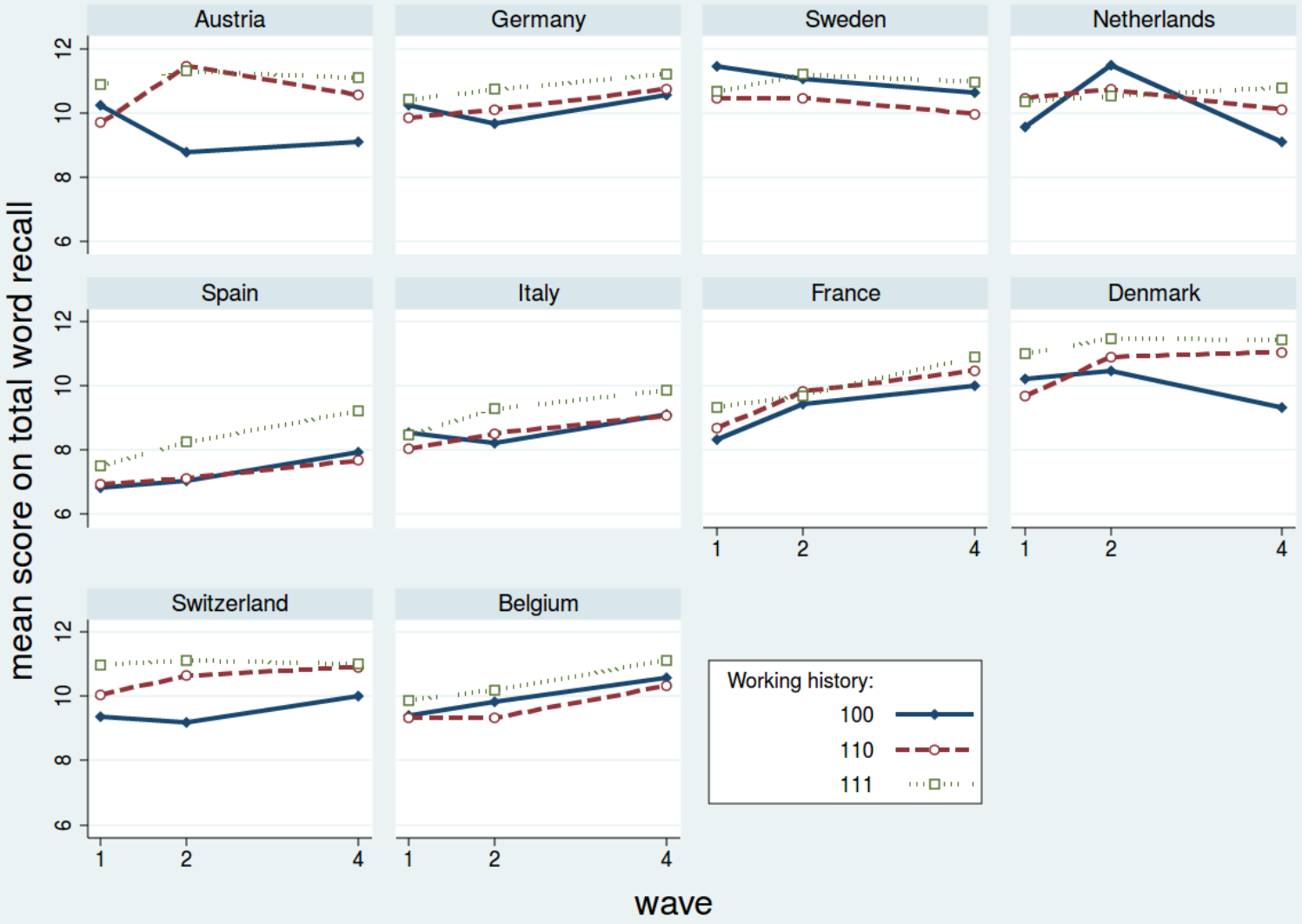

Replication III: Bonsang et al. (2012)

- $CS_{it} = \alpha + a_i + \beta R_{it} + \gamma_1 age_{it} + \gamma_2 age_{it}^2 + u_{it}$
- R_{it} is instrumented by early and normal pension eligibility dummies
- on 50-75 years old: -0.05 sd. yearly

Replication III: Bonsang et al. (2012)

- $CS_{it} = \alpha + a_i + \beta R_{it} + \gamma_1 age_{it} + \gamma_2 age_{it}^2 + u_{it}$
- R_{it} is instrumented by early and normal pension eligibility dummies

	(1) Retirement duration > 0
Retired	0.0896
	(0.14)
Age	0.202***
	(0.017)
Age (sq.)	−0.00145***
	(0.00014)
Observations	31,142
Weak IV F statistic	135.84

My novel approach: differences on panel

- $\Delta CS_i = \alpha^* + \beta \Delta YR_i + X_i' \gamma^* + \Delta u_i$
- ΔYR_i is instrumented by distance after early and normal pension eligibility
- If weak IV: sample is restricted to retirees who retire at the eligibility age and employees who are before the early eligibility age

Differences between wave 1 and 2

	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) OLS	(5) OLS
Years in retirement	−0.020*	−0.020	−0.019	−0.016	−0.007
	(0.012)	(0.012)	(0.013)	(0.016)	(0.025)
Years elapsed	−0.001	0.000	0.080*	0.047	0.045
	(0.026)	(0.026)	(0.041)	(0.058)	(0.058)
Female		0.029	0.023	0.006	0.004
		(0.021)	(0.021)	(0.029)	(0.029)
Age at first wave					−0.002
					(0.0042)
Constant	0.023	0.008	−0.086	0.005	0.125
	(0.061)	(0.062)	(0.11)	(0.16)	(0.29)
Country dummies	No	No	Yes	Yes	Yes
Observations	8,631	8,631	8,631	4,704	4,704
Weak IV F statistic	4331.52	4409.99	4384.67		

Differences between wave 2 and 4

	(1) 2SLS	(2) 2SLS	(3) 2SLS	(4) OLS	(5) OLS
Years in retirement	−0.030***	−0.030***	−0.047***	−0.030***	0.015
	(0.0077)	(0.0077)	(0.0080)	(0.011)	(0.018)
Years elapsed	0.051	0.052	−0.022	−0.101	−0.098
	(0.045)	(0.045)	(0.056)	(0.075)	(0.075)
Female		−0.015	−0.006	0.009	−0.003
		(0.025)	(0.025)	(0.034)	(0.034)
Age at second wave					−0.017***
					(0.0055)
Constant	−0.161	−0.158	0.008	0.200	1.148**
	(0.19)	(0.19)	(0.25)	(0.33)	(0.45)
Country dummies	No	No	Yes	Yes	Yes
Observations	6,781	6,781	6,781	3,775	3,775
Weak IV F statistic	4447.80	4472.96	4221.74		

Concluding remarks

- Identifying clear causal effect is hard
- Controlling for potential biases eliminates the effect → with 95% at most 0.05 sd. negative effect
  - At most 0.5 additional year of "ageing" (most likely just 0.1-0.2)
- My intuition based on the results:
  - retirement in itself does not seem to matter
  - from what type of work to what type of retirement (difference between US and Europe?)

- Way ahead: Investigate changes in lifestyle when retiring

Thanks for the attention