



Introducing the Project

Understanding the inter-relationship of sensory impairments and cognition in Europe

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The Challenge

Seven in ten Europeans over the age of 65 suffer from either sight or hearing problems, and one in six Europeans over the age of 80 have dementia.

When combined together, the cumulative impact of these dual or triple impairments is far greater than the individual conditions.

The scale of combined sensory and cognitive problems is substantial, but poorly understood to date.

The SENSE-Cog project aims to fill this research gap.

To promote mental well-being in the aging population, the aims are to:

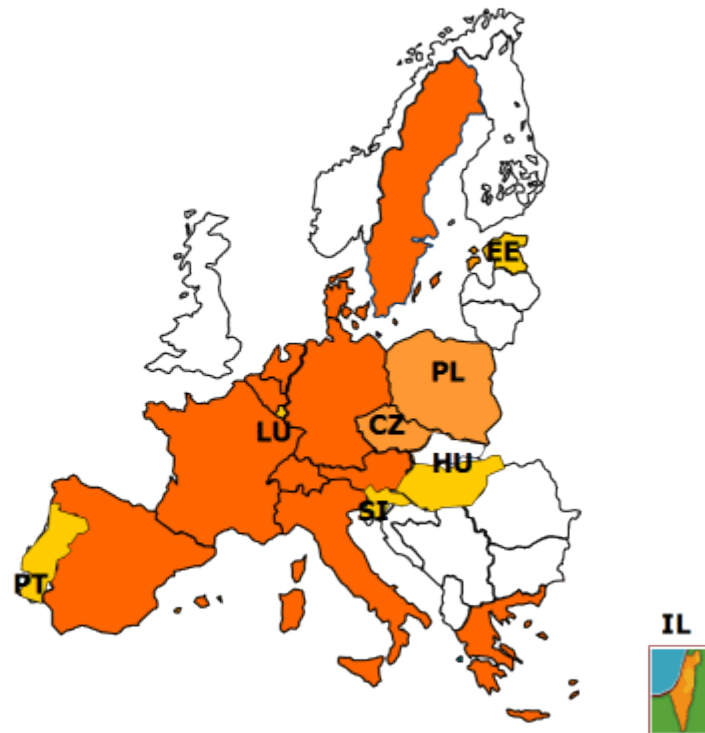
- **Understand the inter-relationship of sensory impairments and cognitive and mental health functioning;**
- **Identify** novel means of screening/detection for diagnostic and therapeutic purposes; and
- **Translate** this knowledge into clinical applications for the mental well-being of EU citizens.
- **Methods:** ‘mixed methods’ approach with a trans-EU, UK-led, multidisciplinary collaboration

Wave 1 : 2004/05
11 countries,
32 000 individuals 50+

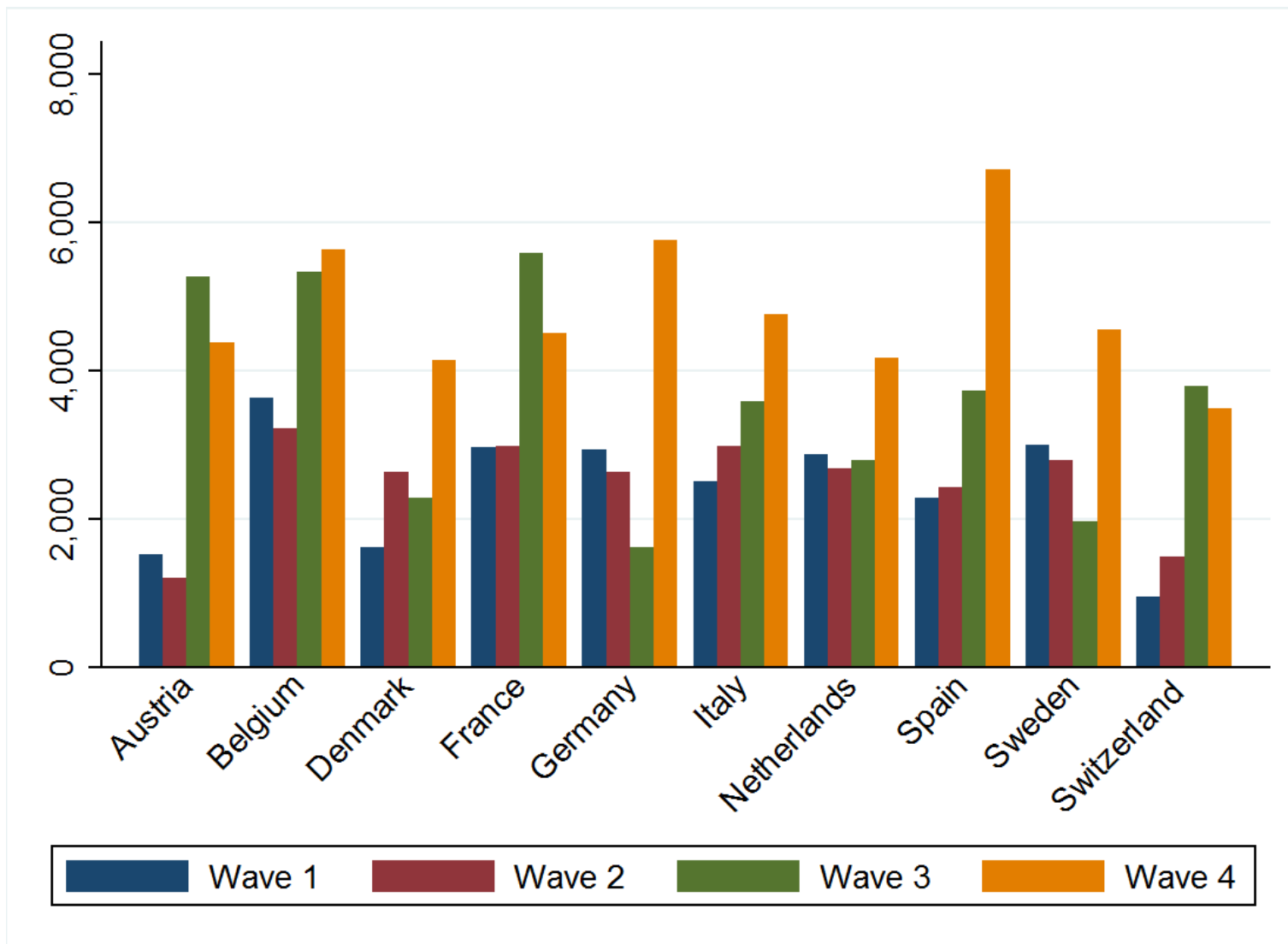
Wave 2 : 2006/07
15 countries,
38 000 individuals

Wave 3 : 2008/09
16 countries,
43 000 individuals

Wave 4 : 2010/11
20 countries,
60 000 individuals



SHARE sample size



	Mean (SD)	Range	Correlations			
			Orient ation	Episo dic mem ory	Fluen cy	Nume racy
Orient ation	3.74 (0.70)	0-4	1.000			
Episo dic mem ory	8.09 (3.62)	0-20	0.278	1.000		
Fluen cy	19.13 (7.42)	0-100	0.229	0.508	1.000	
Nume racy	3.28 (1.15)	1-5	0.246	0.455	0.440	1.000

- **Orientation (day, month, year, day of week)**
- **Episodic memory (immediate and delayed 10 word recall)**
- **Fluency (animal names in 1 minute)**
- **Numeracy (simple arithmetic and compound interest)**

Questions for hearing function in SHARE

Questions	Wave 1	Wave 2	Wave 4	Wave 5
Is your hearing [using a hearing aid as usual] excellent, very good, good, fair or poor?	x	x	x	x
Do you find it difficult to follow a conversation if there is background noise, such as a TV or a radio [using a hearing aid as usual]?	x	x		
Can you hear clearly what is said in a conversation with several people [using a hearing aid as usual]?	x			
Can you hear clearly what is said in a conversation with one person [using a hearing aid as usual]?	x	x		

Questions for visual function in SHARE

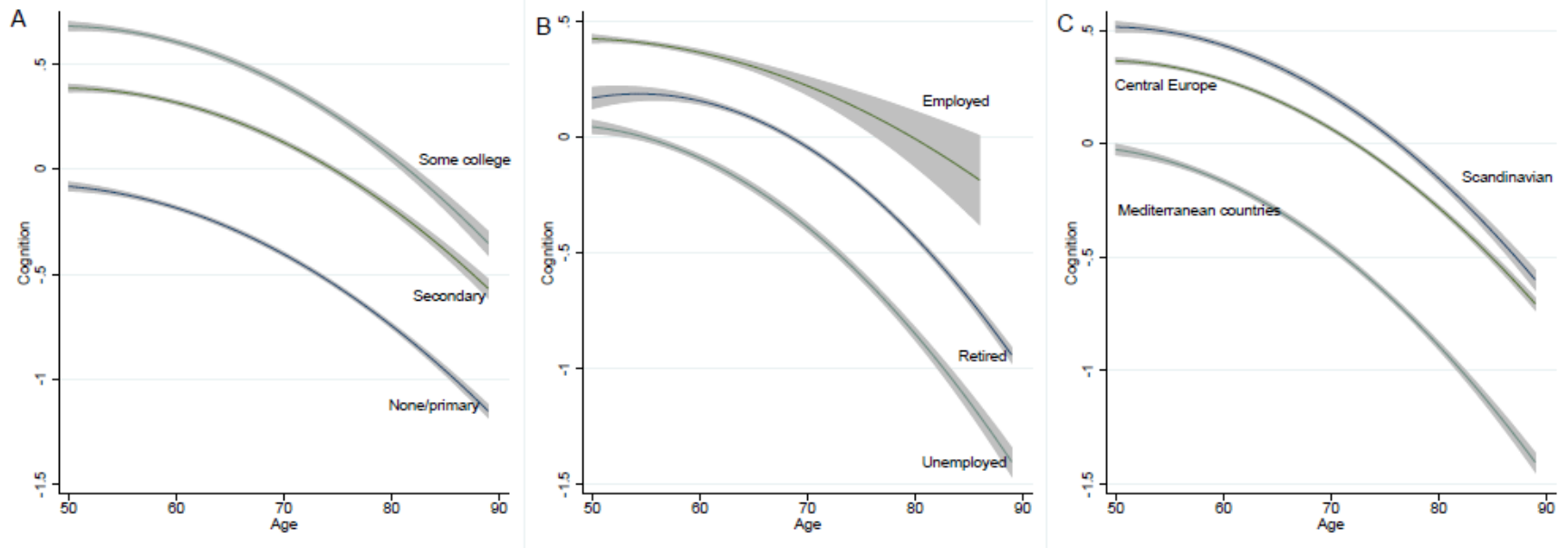
Questions	Wave 1	Wave 2	Wave 4	Wave 5
Is your eyesight [using glasses or contact lenses as usual] excellent, very good, good, fair or poor?	x			
How good is your eyesight for seeing things at a distance, like recognising a friend across the street [using glasses or contact lenses as usual]?	x	x	x	x
How good is your eyesight for seeing things up close, like reading ordinary newspaper print [using glasses or contact lenses as usual]?	x	x	x	x

Descriptive statistics of cohort and sensory measures

	Wave 1 (n=24,287)	Wave 2 (n=24,544)	Wave 4 (n=35,427)	Wave 5 (n=46,893)
<i>Sensory function</i>				
Hearing	2.61 (1.04)	2.63 (1.04)	2.62 (1.03)	2.65 (1.03)
Eyesight distance	2.41 (1.03)	2.42 (1.05)	2.44 (1.04)	2.41 (1.05)
Eyesight reading	2.76 (1.14)	2.65 (1.14)	2.70 (1.14)	2.61 (1.13)
Age	64.75 (10.08)	65.96 (10.11)	66.55 (10.26)	67.04 (10.20)
Female	54.28%	54.62%	55.18%	54.49%

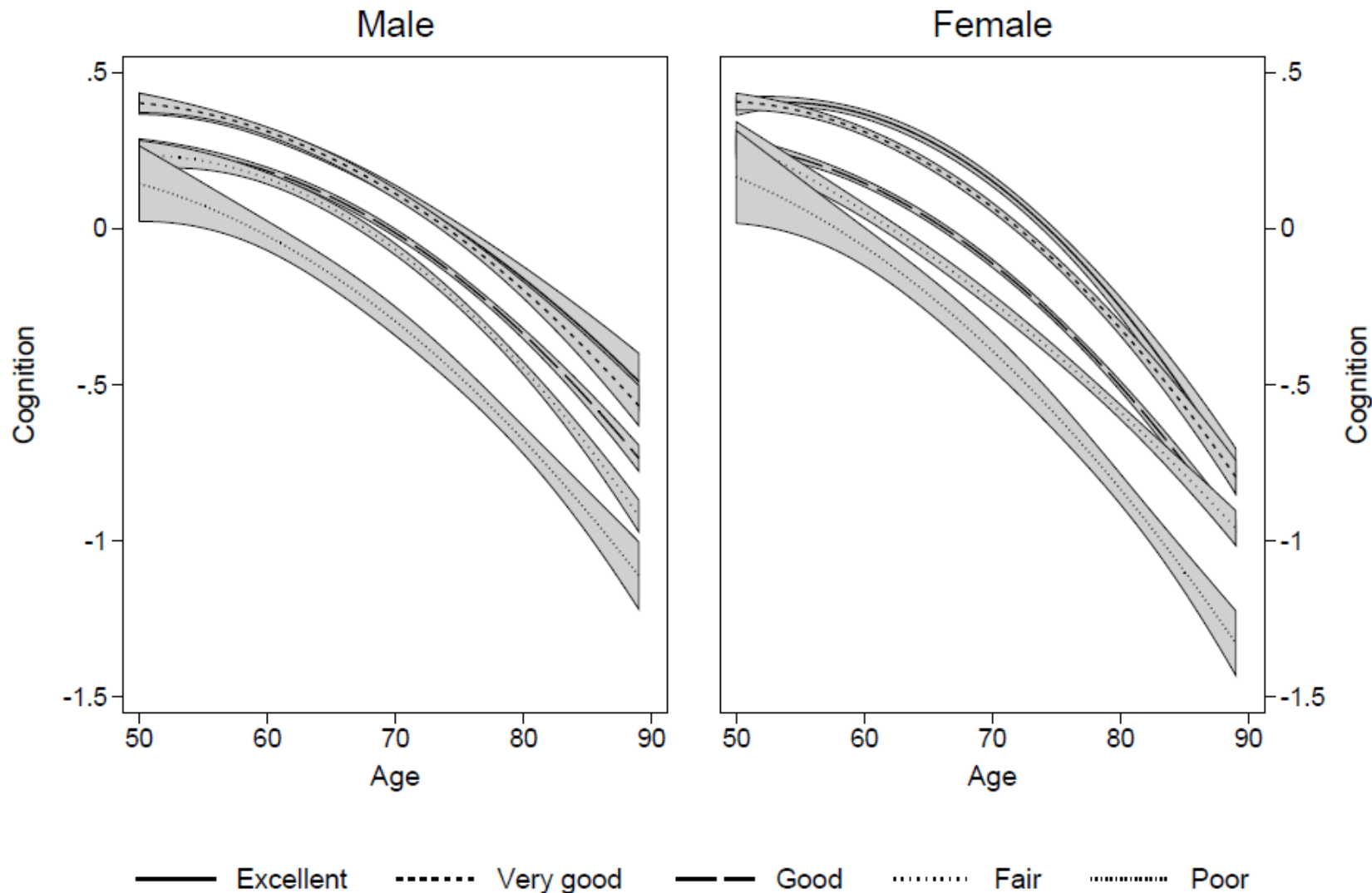
Notes: Presented are means (standard deviations) or percentages.

Age-profiles of cognitive function by education, employment and region

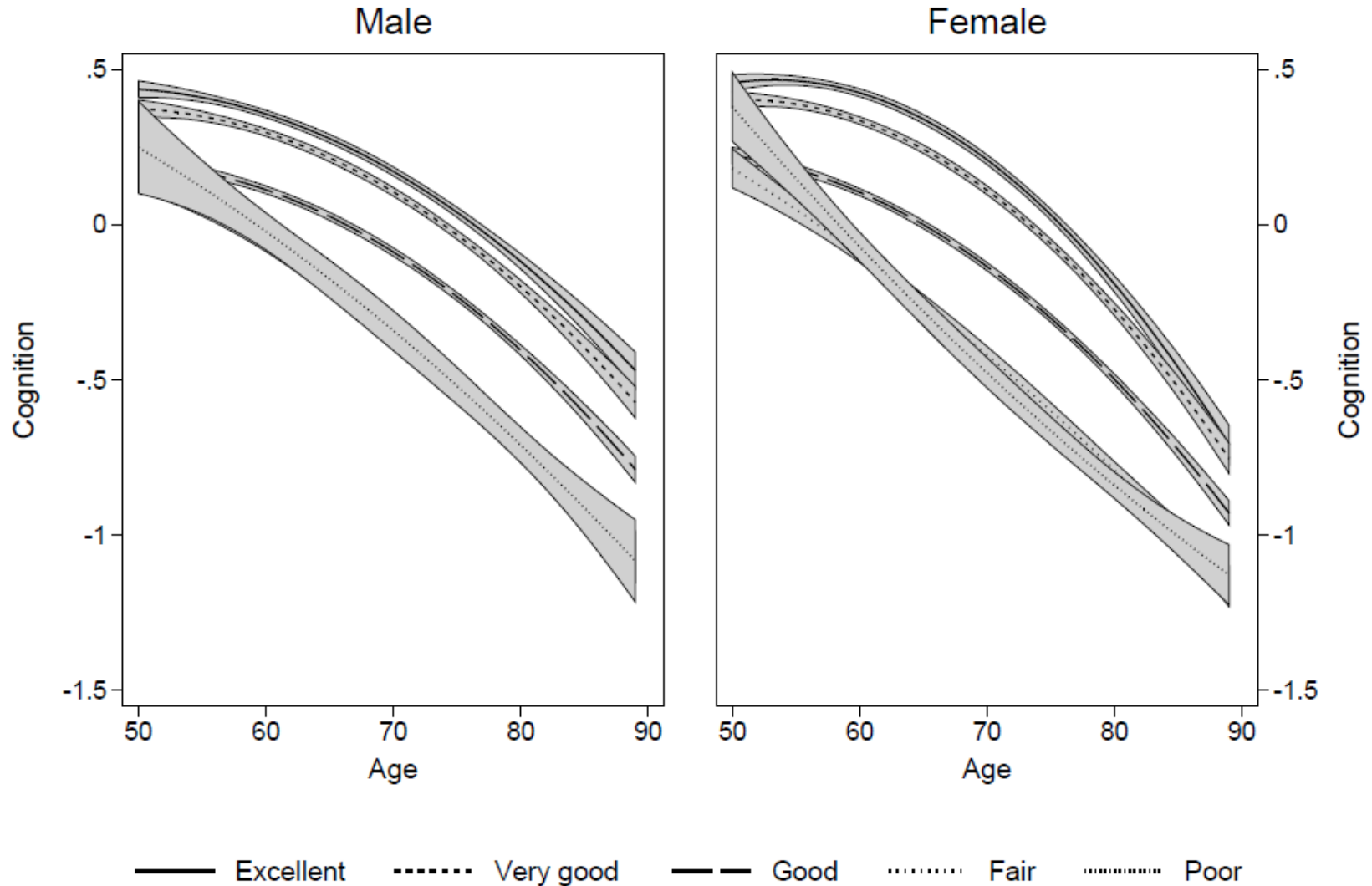


Notes: Cognitive score is the mean of standardised scores of fluency, numeracy and episodic memory. Author calculated based on SHARE data Waves 1, 2, 4 and 5.

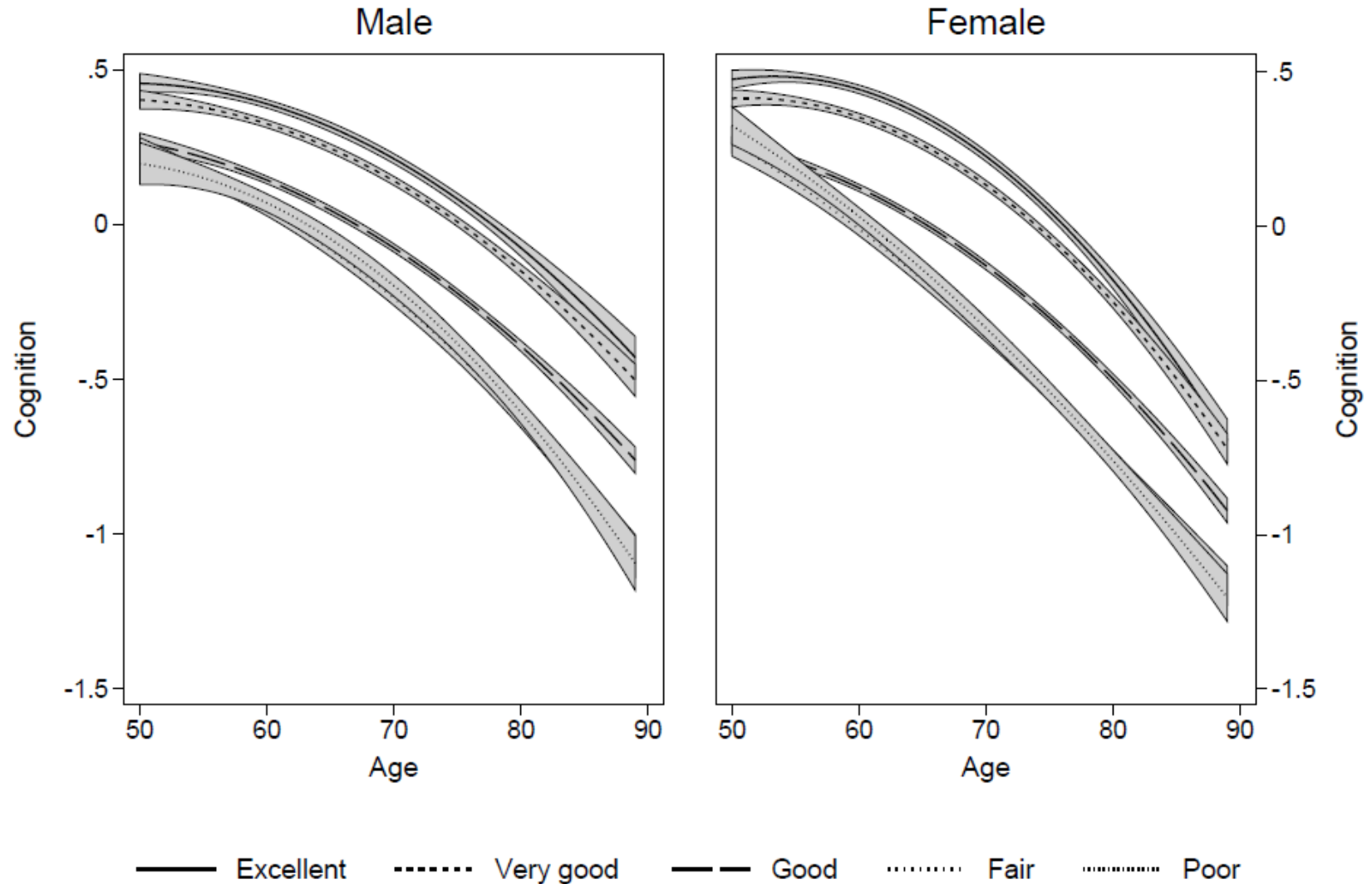
Hearing and cognitive functions



Eyesight distance and cognitive function

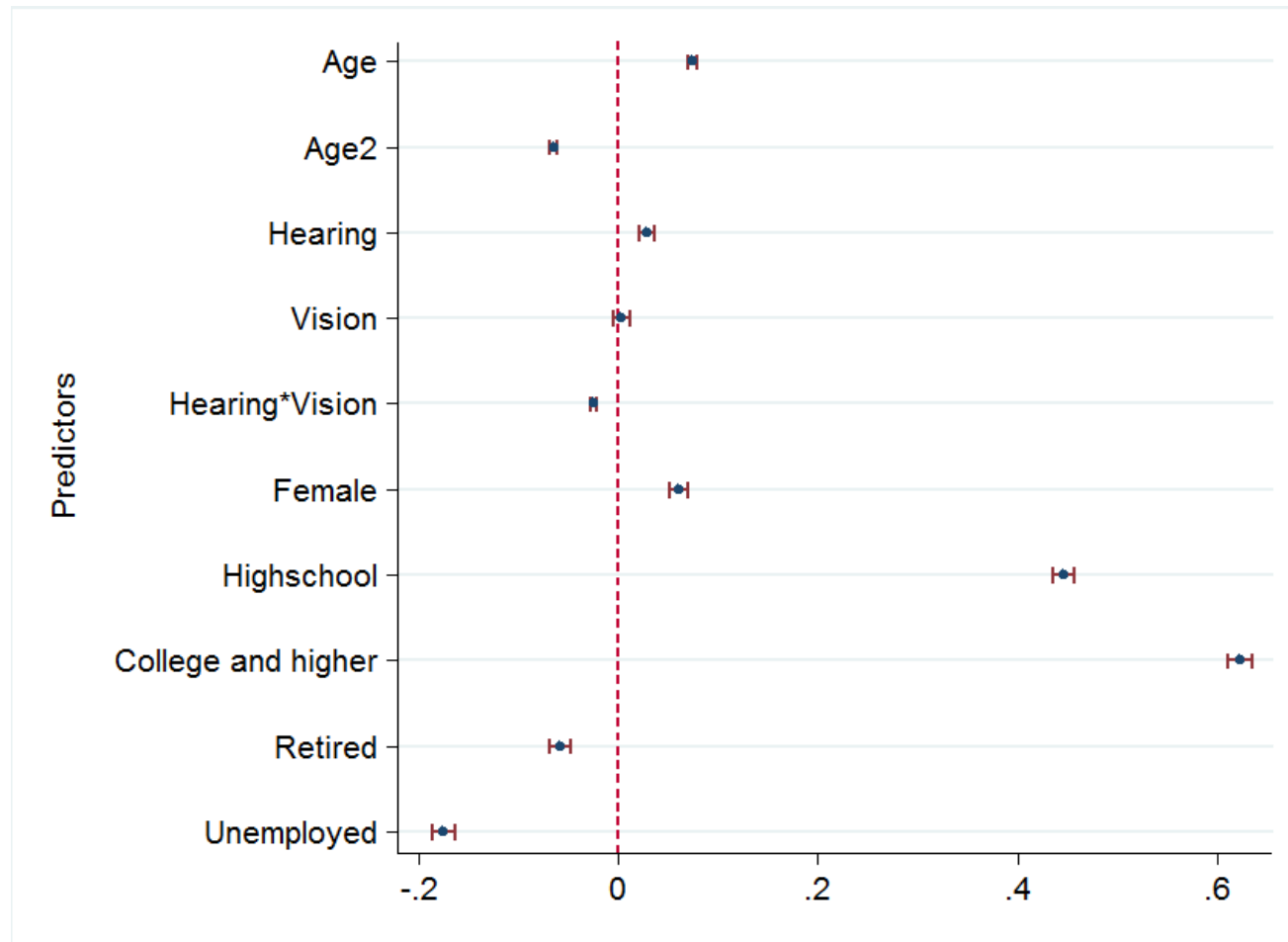


Eyesight reading and cognitive function



Determinants of cognitive function: SENSE-Cog

A growth curve analysis



Notes: After controlled by marital status, wealth, health behaviour, and the presence of chronic diseases

- The shape of trajectories of cognitive ageing are diverse in population representative cohorts
- Variation in cognitive ageing across Europe
- In part these are explained by acknowledged factors such as gender and education
- Better self reported hearing and vision are associated with better cognition
- However, when one accounts for the effects of other contributors the relationship is more complex: remains for hearing; vision equivocal
- Future plans: comparison with England (ELSA) and explore potential interactions

- Asri Maharani (produced work shown), Gindo Tampubolon and James Nazroo
 - THANK YOU
 - QUESTIONS

Descriptive statistics of determinants of cognitive function at each wave (1)

	Wave 1 (n=24,287)	Wave 2 (n=24,544)	Wave 4 (n=35,427)	Wave 5 (n=46,893)
<i>Marital status</i>				
Single	5.73%	5.38%	6.09%	5.98%
Married/cohab	73.20%	73.50%	71.53%	72.89%
Divorced	6.46%	6.77%	8.52%	8.29%
Widowed	14.52%	14.04%	13.54%	12.82%

Notes: Presented are means (standard deviations) or percentages.

Descriptive statistics of determinants of cognitive function at each wave (2)

	Wave 1 (n=24,287)	Wave 2 (n=24,544)	Wave 4 (n=35,427)	Wave 5 (n=46,893)
<i>Education</i>				
Primary school or less	51.64%	47.71%	42.85%	41.50%
Secondary school	29.74%	31.82%	35.06%	34.33%
College or higher	18.61%	20.46%	22.08%	24.16%
<i>Employment status</i>				
Employed	27.42%	28.33%	27.30%	28.49%
Retired	49.62%	50.30%	53.69%	54.47%
Unemployed	22.95%	21.35%	18.99%	17.03%
Wealth (in EUR 1,000)	245 (509)	295 (386)	343 (598)	334 (505)

Descriptive statistics of determinants of cognitive function at each wave (3)

	Wave 1 (n=24,287)	Wave 2 (n=24,544)	Wave 4 (n=35,427)	Wave 5 (n=46,893)
<i>Social capital</i>				
Do voluntary/charity work	13.53%	15.75%	21.17%	20.95%
Attend educational course	6.83%	8.71%	13.41%	13.92%
Join sport and/or social club	20.57%	23.70%	30.93%	32.18%
Join political/community	4.13%	5.06%	6.48%	7.10%
<i>Smoking behaviour</i>				
Non-smoker	51.89%	51.45%	51.20%	51.11%
Current smoker	18.51%	17.79%	18.30%	17.41%
Past smoker	29.59%	30.77%	30.49%	31.48%
Drink 5-7 days/week	0.20 (0.78)	0.21 (0.81)	0.24 (0.86)	0.25 (0.90)
ADL	88.08%	88.25%	87.25%	87.62%

Descriptive statistics of determinants of cognitive function at each wave (4)

	Wave 1 (n=24,287)	Wave 2 (n=24,544)	Wave 4 (n=35,427)	Wave 5 (n=46,893)
Moderate exercise	88.08%	88.25%	87.32%	87.62%
Vigorous exercise	56.57%	56.48%	54.98%	56.26%
<i>Presence of chronic diseases</i>				
Diabetes	9.62%	9.99%	11.41%	11.65%
Heart attack	12.21%	11.50%	11.28%	10.29%
Hypertension	31.28%	33.16%	35.05%	36.82%
Chronic lung diseases	5.34%	5.49%	6.37%	6.31%
Stroke	3.82%	3.34%	3.56%	3.67%
Cancer	5.87%	4.35%	5.19%	5.79%

Notes: Presented are means (standard deviations) or percentages.