Age differences in risk-taking propensity: A coordinated analysis of longitudinal studies

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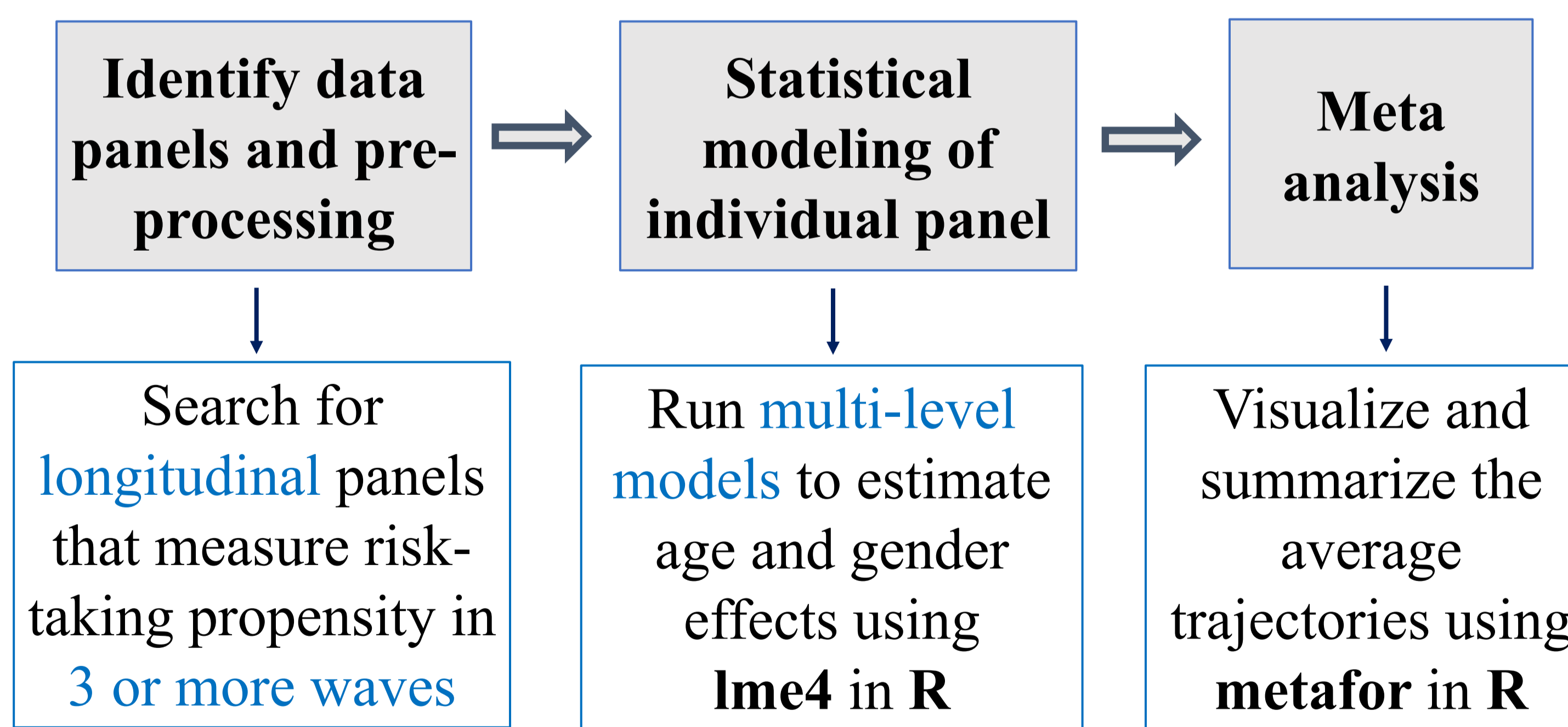
Introduction:

How does risk-taking propensity change across the life span? We conducted a coordinated analysis of 10 longitudinal panels (168,925 unique respondents) across three or more waves spanning up to 28 years, to obtain the first meta-analytic estimates of age differences in general and domain-specific risk-taking propensity.

Research questions

- What are the overall age patterns of mean-level change in risk-taking propensity?
- Do gender differences moderate mean-level trajectories?
- To what extent are age and gender patterns domain-specific?

Method

Procedure

- Identify data panels and pre-processing → Statistical modeling of individual panel → Meta analysis

- Search for longitudinal panels that measure risk-taking propensity in 3 or more waves

- Run multi-level models to estimate age and gender effects using lme4 in R

- Visualize and summarize the average trajectories using metafor in R

M1: Intercept-only model

M2: Age fixed effects model

M3: Age fixed and random effects model

M4: Age fixed and random effects model with gender

M5: Age fixed and random effects model with interaction

M6: Age quadratic growth model

M7: Age quadratic growth model with gender

Samples

Overview of Samples

Sample	Country	Continent	n	Female (%)	Mean age	Age range	Scale	Number of waves						
								G	F	D	R	O	H	S
DHS	NL	EU	9,445	46.36	52.28	18-90	1-7	-	28	-	-	-	-	-
GCOE Japan	JP	AS	7,014	52.32	50.96	20-77	0-10	7	-	-	-	-	-	-
GCOE USA	USA	NA	7,618	53.61	50.24	18-90	0-10	6	-	-	-	-	-	-
HILDA	AU	OC	20,617	48.46	50.08	18-90	1-4	-	16	-	-	-	-	-
HRS	USA	NA	17,811	58.53	67.06	51-90	0-10	3	3	3	3	3	3	-
LIKS	KG	As	8,351	53.25	41.26	18-90	0-10	5	-	-	-	-	-	-
PHF	DE	EU	6,961	50.25	55.00	18-90	0-10, 1-4	-	3	-	-	-	-	-
SAVE	DE	EU	3,886	47.56	52.85	18-90	1-7	-	9	9	9	9	9	-
SHARE Austria	AT	EU	3,651	57.57	65.60	50-90	1-4	-	6	-	-	-	-	-
SHARE Belgium	BE	EU	3,185	53.06	64.34	50-90	1-4	-	6	-	-	-	-	-
SHARE Czech Republic	CZ	EU	3,452	59.73	65.43	50-90	1-4	-	5	-	-	-	-	-
SHARE Denmark	DK	EU	1,458	48.01	62.73	50-90	1-4	-	5	-	-	-	-	-
SHARE Estonia	EE	EU	5,178	61.65	66.85	50-90	1-4	-	3	-	-	-	-	-
SHARE France	FR	EU	3,317	55.98	65.40	50-90	1-4	-	5	-	-	-	-	-
SHARE Germany	DE	EU	722	50.69	65.56	50-90	1-4	-	3	-	-	-	-	-
SHARE Israel	IL	AS	800	49.75	68.30	50-90	1-4	-	3	-	-	-	-	-
SHARE Italy	IT	EU	1,913	51.75	65.56	50-90	1-4	-	6	-	-	-	-	-
SHARE Netherlands	NL	EU	1,598	53.94	64.37	50-90	1-4	-	4	-	-	-	-	-
SHARE Slovenia	SI	EU	1,853	56.77	65.90	50-90	1-4	-	4	-	-	-	-	-
SHARE Spain	ES	EU	2,179	55.48	66.15	50-90	1-4	-	5	-	-	-	-	-
SHARE Sweden	SE	EU	1,172	52.13	67.05	50-90	1-4	-	5	-	-	-	-	-
SHARE Switzerland	CH	EU	2,549	53.32	64.85	50-90	1-4	-	6	-	-	-	-	-
SOEP	DE	EU	53,608	51.57	48.95	18-90	0-10	14	3	3	3	3	3	3
USoc	UK	EU	587	56.56	51.47	18-90	0-10	3	-	-	-	-	-	-

* Note: For each sample, the 2-letter country code is a code set by the International Organization for Standardization (ISO) to identify each country. The continent code is a 2-letter code that identifies each continent. G = General, F = Financial, D = Driving, R = recreational, O = Occupational, H = Health, S = Social.

Results & Discussions

Intercept-only model

The unconditional model allows to decompose variance and compare the within- to between-subject variability in the various samples.
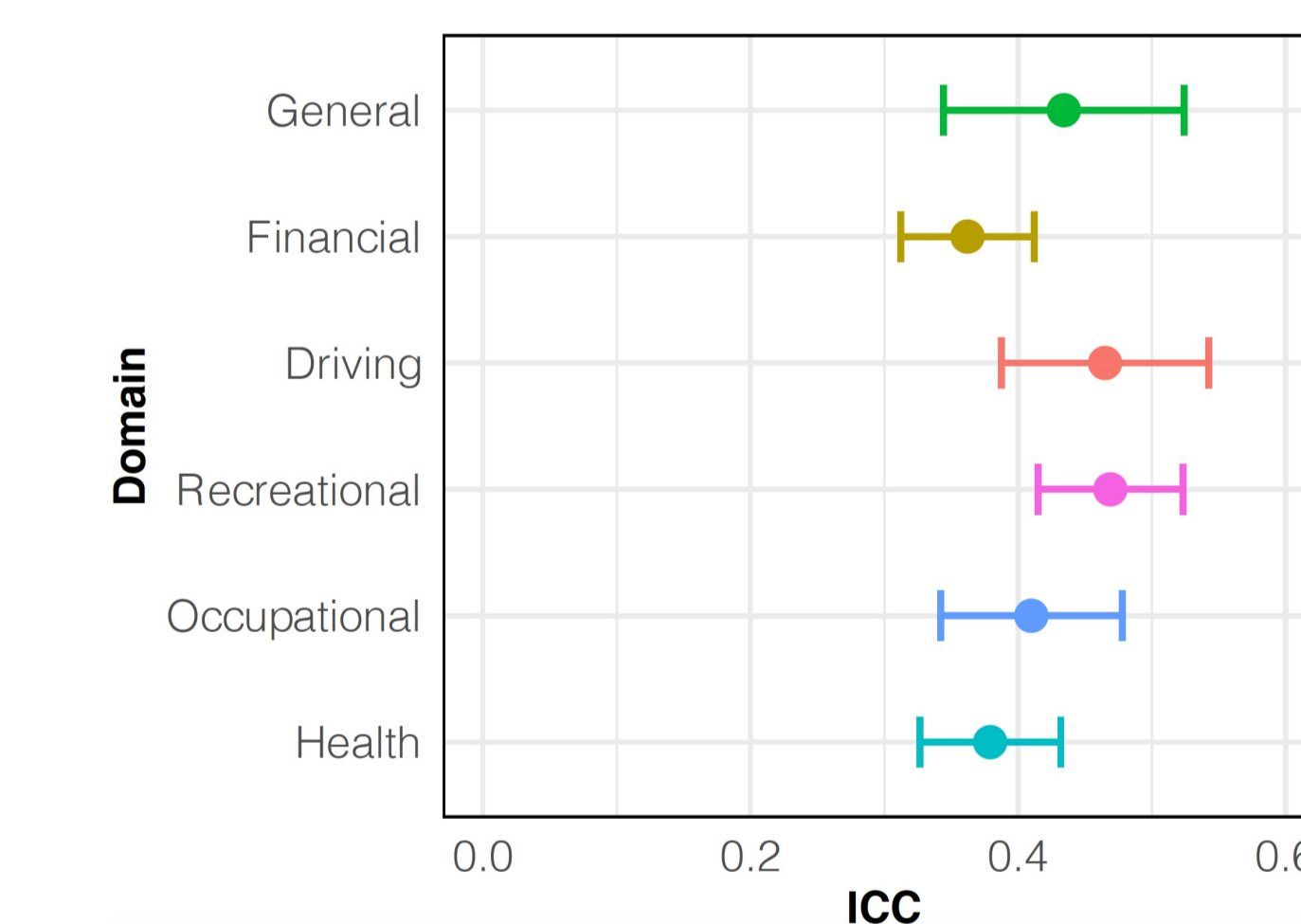
- Between-subject variation: about 40% of the total variation (median = 0.41, range = .15 − .59)

- ICC values suggest that some stable between-person variation but less than other major typical personality traits.

Model comparison: the number of panels fit best

Model comparison for samples including 3 or more waves

Domain	Samples	Best fit sample number		
		M3	M4	M5
General	7	1	5	1
Financial	20	0	17	3
Driving	3	0	2	1
Recreational	3	0	1	2
Occupational	3	0	3	0
Health	3	0	1	2

The model comparison results revealed that a model considering age and gender but no interaction (M4) was the best fitting model in 30 of 40 samples (75%) and domains.

Best model: Age-related decline in risk-taking propensity
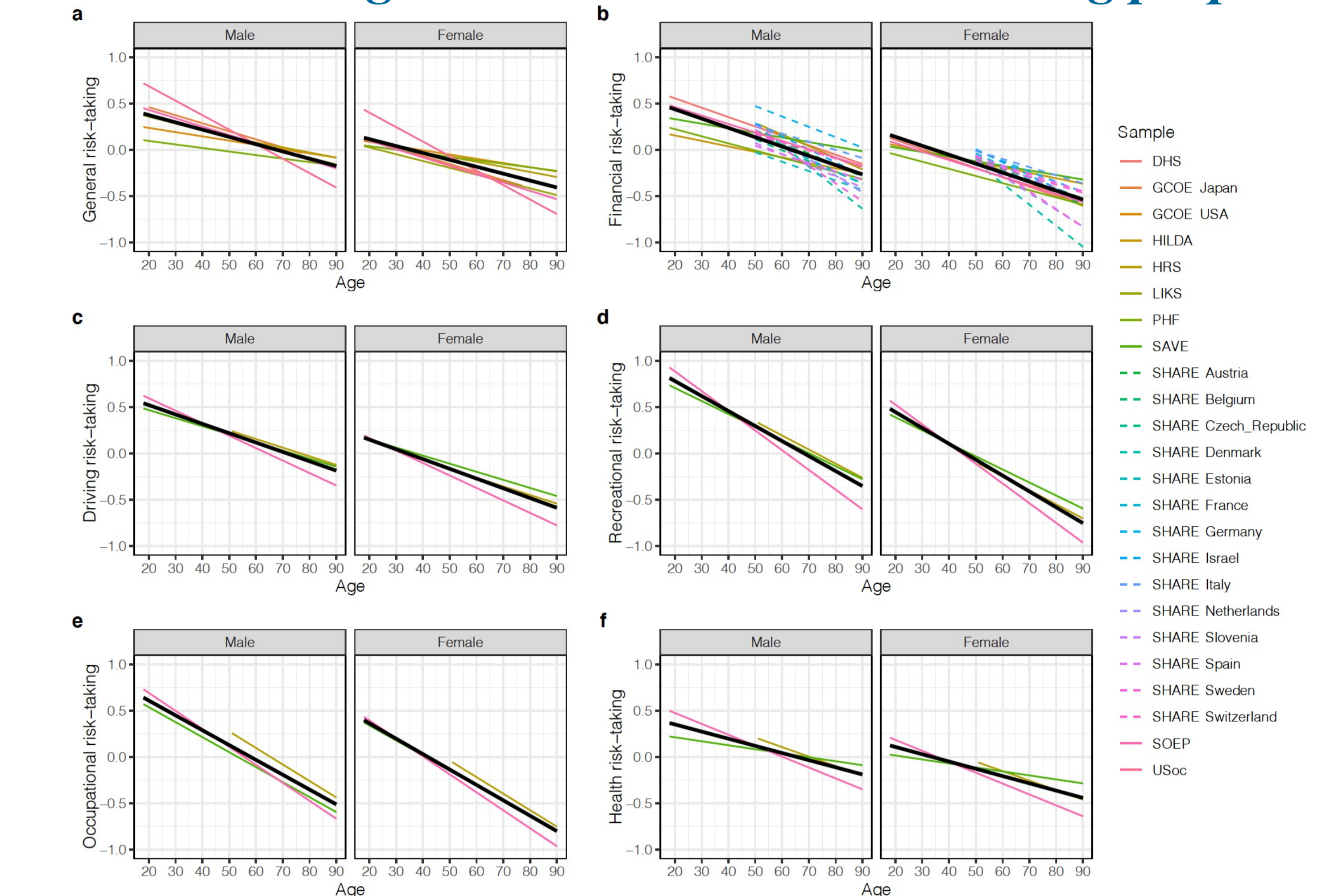
Meta-analysis: age and gender effects differ by domain

Summary

- **Age effects:** Results revealed a negative relation between age and both general and domain-specific risk-taking propensity.

- **Gender effects**: Females consistently reported lower levels of risk taking across the life span than males in all domains but little support for the idea of an age by gender interaction.

- **Domain-specificity**: The effects of age and gender are domain-specific, specially, recreational and occupational domains show larger age effects, and driving and recreational domains show lager gender effect relative to others.

- Companion website: https://cdsbasel.github.io/ageriskmeta/

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