

JOURNÉE SCIENTIFIQUE DES COHORTES

Gazel



Synergie des facteurs psychologiques et sociaux dans le risque cardiovasculaire

Dr Cédric Lemogne

UF de Psychologie et Psychiatrie de liaison et d'urgence

Service de Psychiatrie de l'adulte et du sujet âgé

HUPO / Inserm UMR 894 / Université Paris Descartes



Inserm

UNIVERSITÉ DE
VERSAILLES
SAINT-QUENTIN-EN-YVELINES



ASSISTANCE
PUBLIQUE

HÔPITAUX
DE PARIS

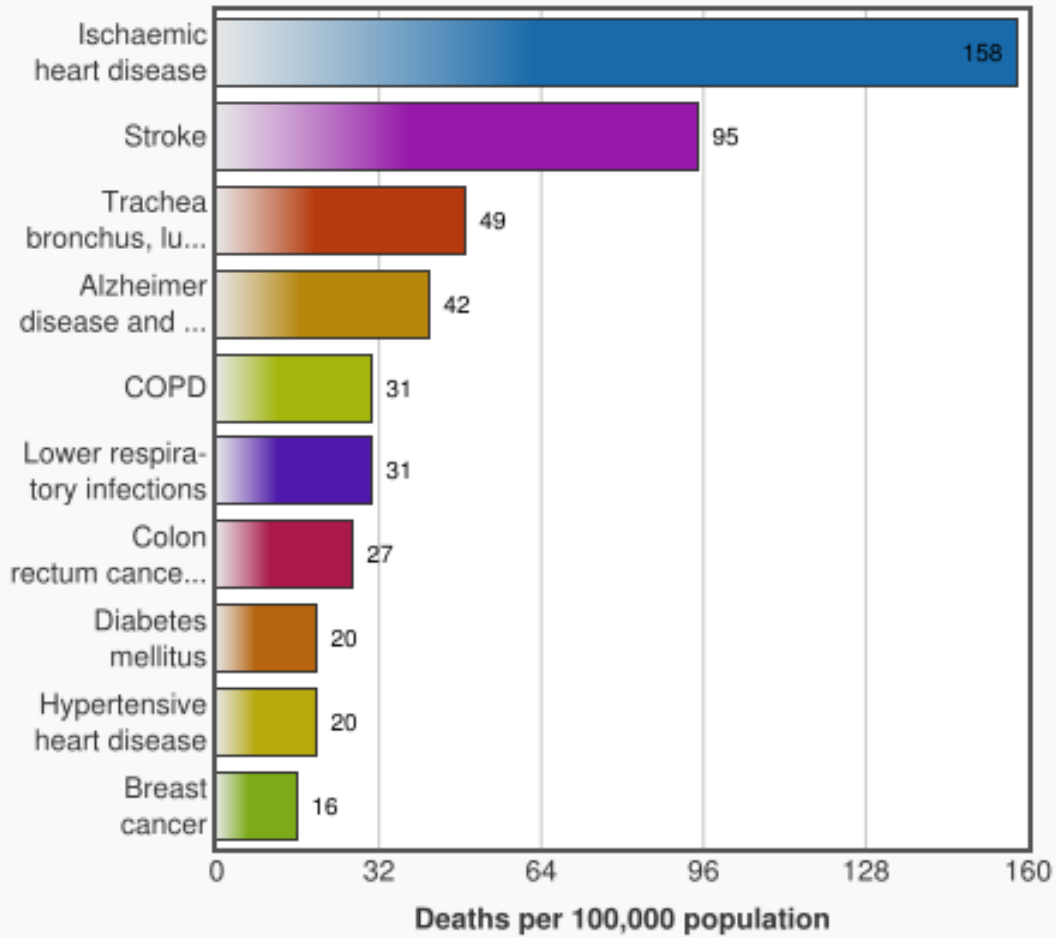


US-PC

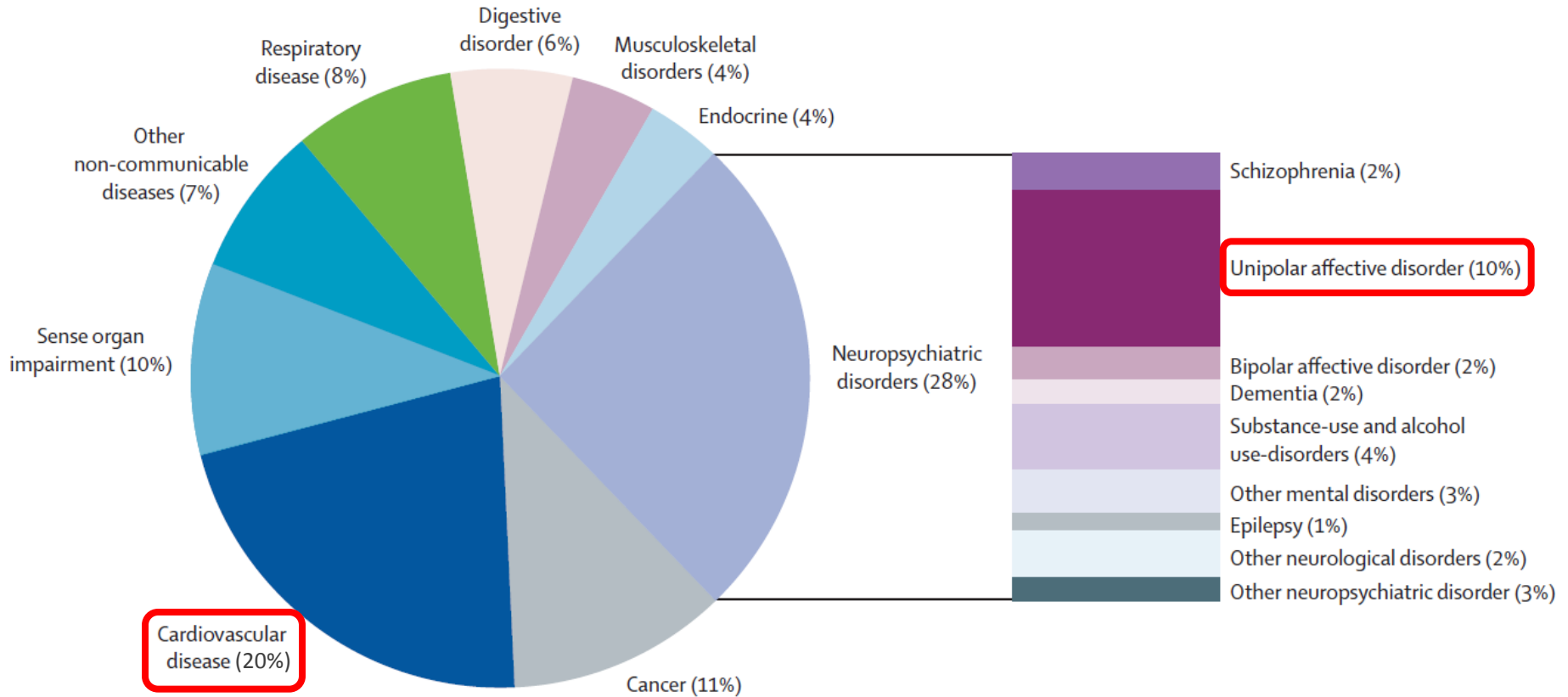
Université Sorbonne
Paris Cité



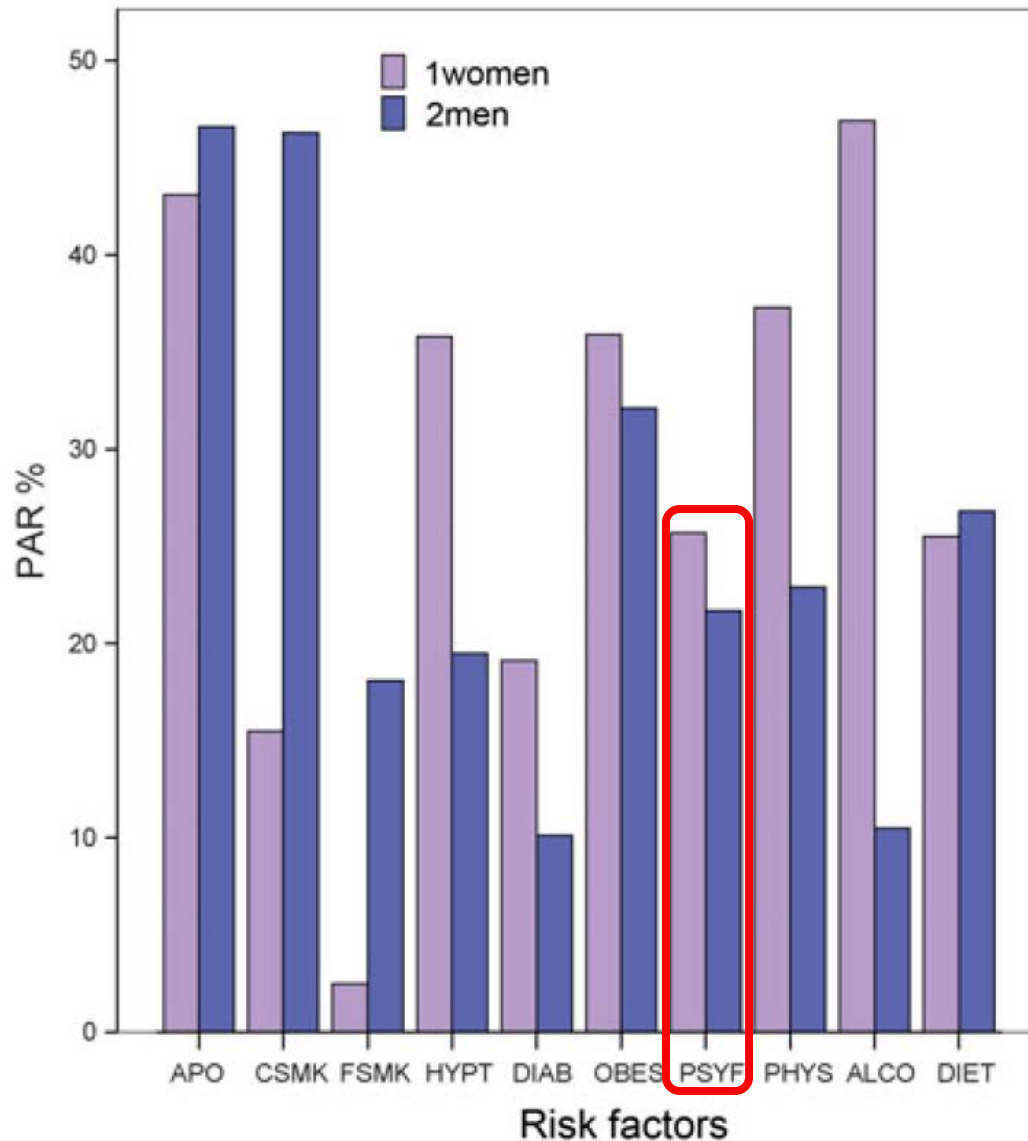
Top 10 causes of death in high income countries 2012



Maladies non transmissibles & années de « vie en bonne santé » perdues



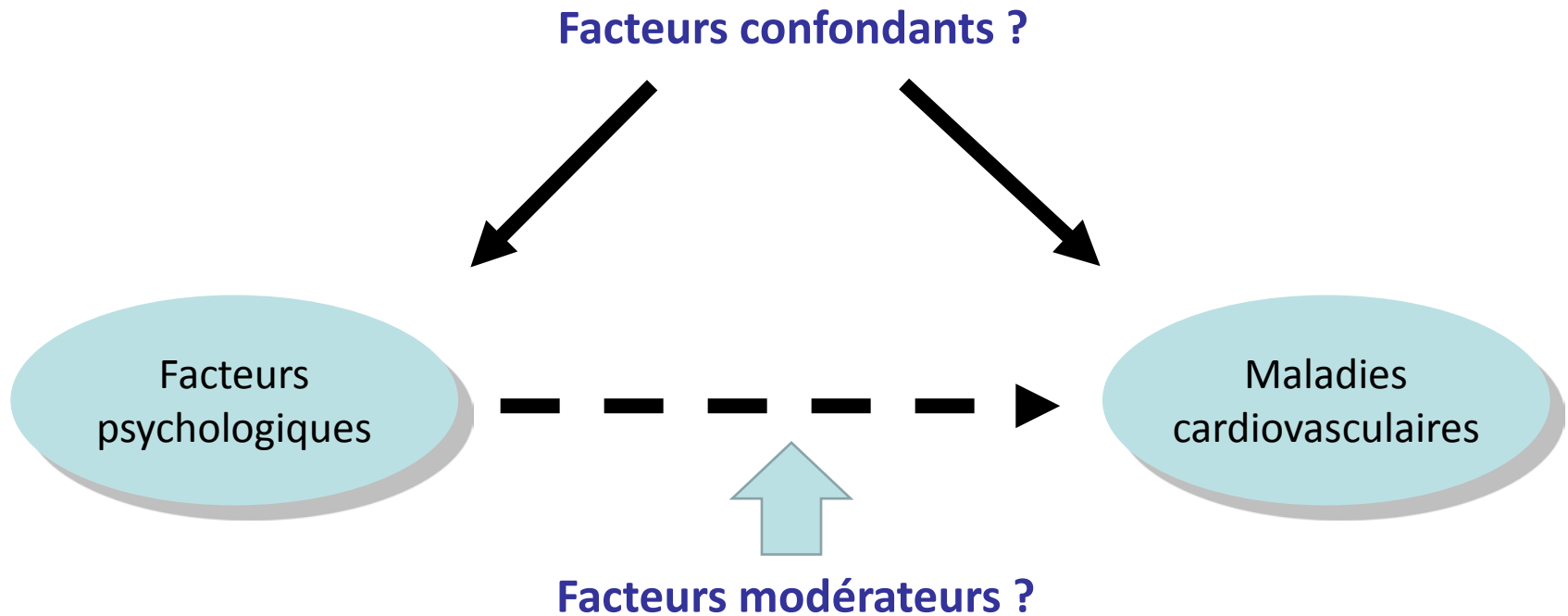
The INTERHEART global case-control study: 27,098 participants from 52 countries



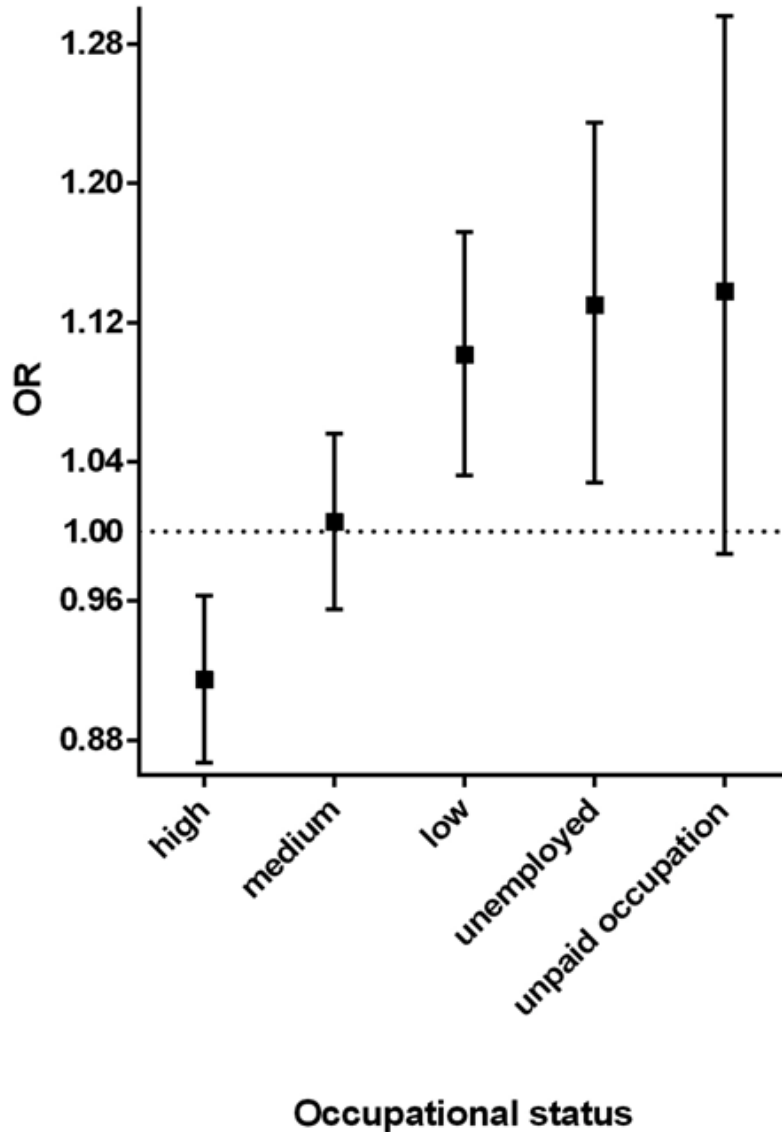
Psychosocial risk factors in INTERHEART:

- *depression*
- *locus of control,*
- *global stress,*
- *financial stress,*
- *life events* including marital separation, job loss, family conflict

Articulation des facteurs psychologiques et sociaux



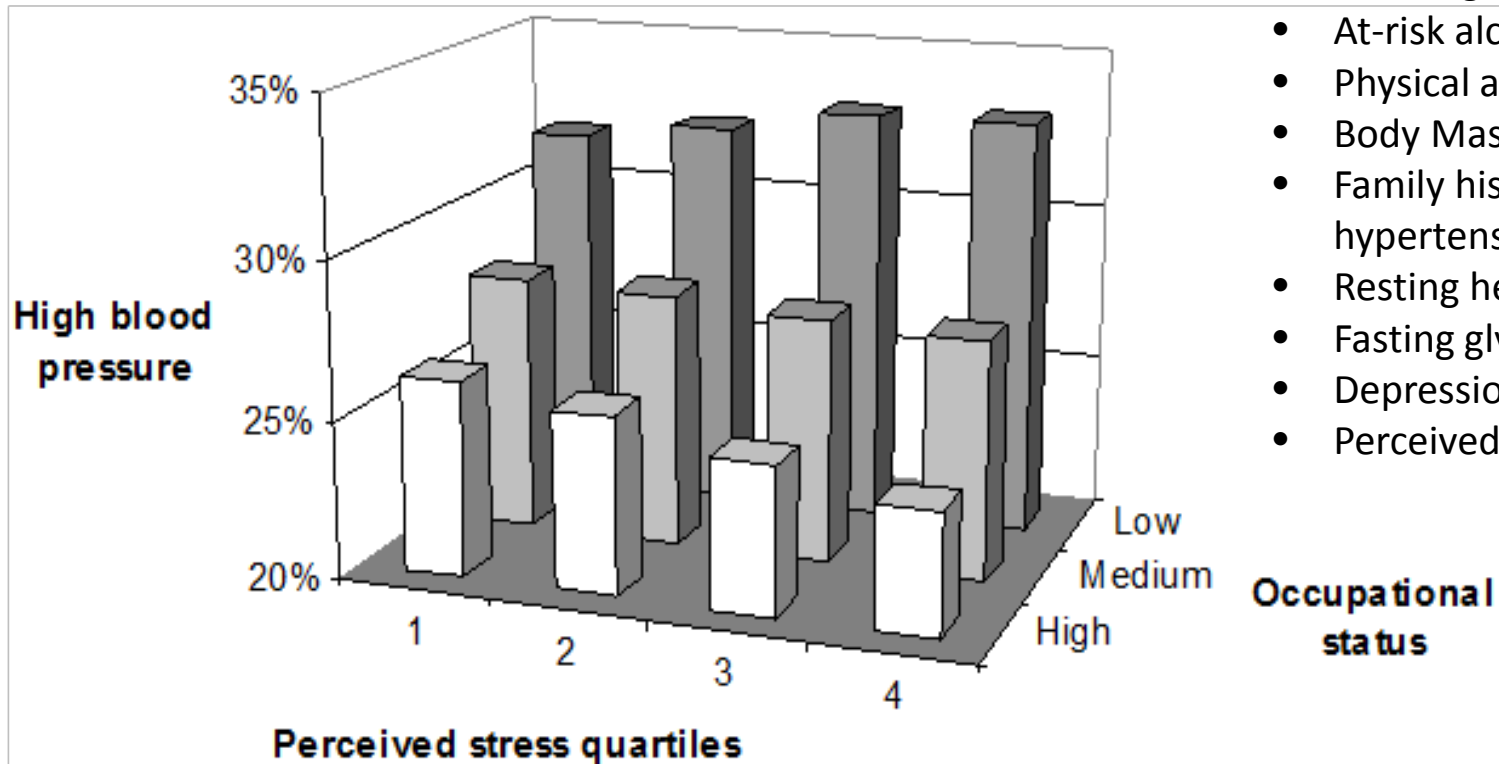
IPC Cohort Study (N = 122 816)



Adjusted for:

- Age
- Sex
- Living status
- Smoking status
- At-risk alcohol intake
- Physical activity
- Body Mass Index
- Family history of hypertension
- Resting heart rate
- Fasting glycemia
- Depression
- Perceived health status

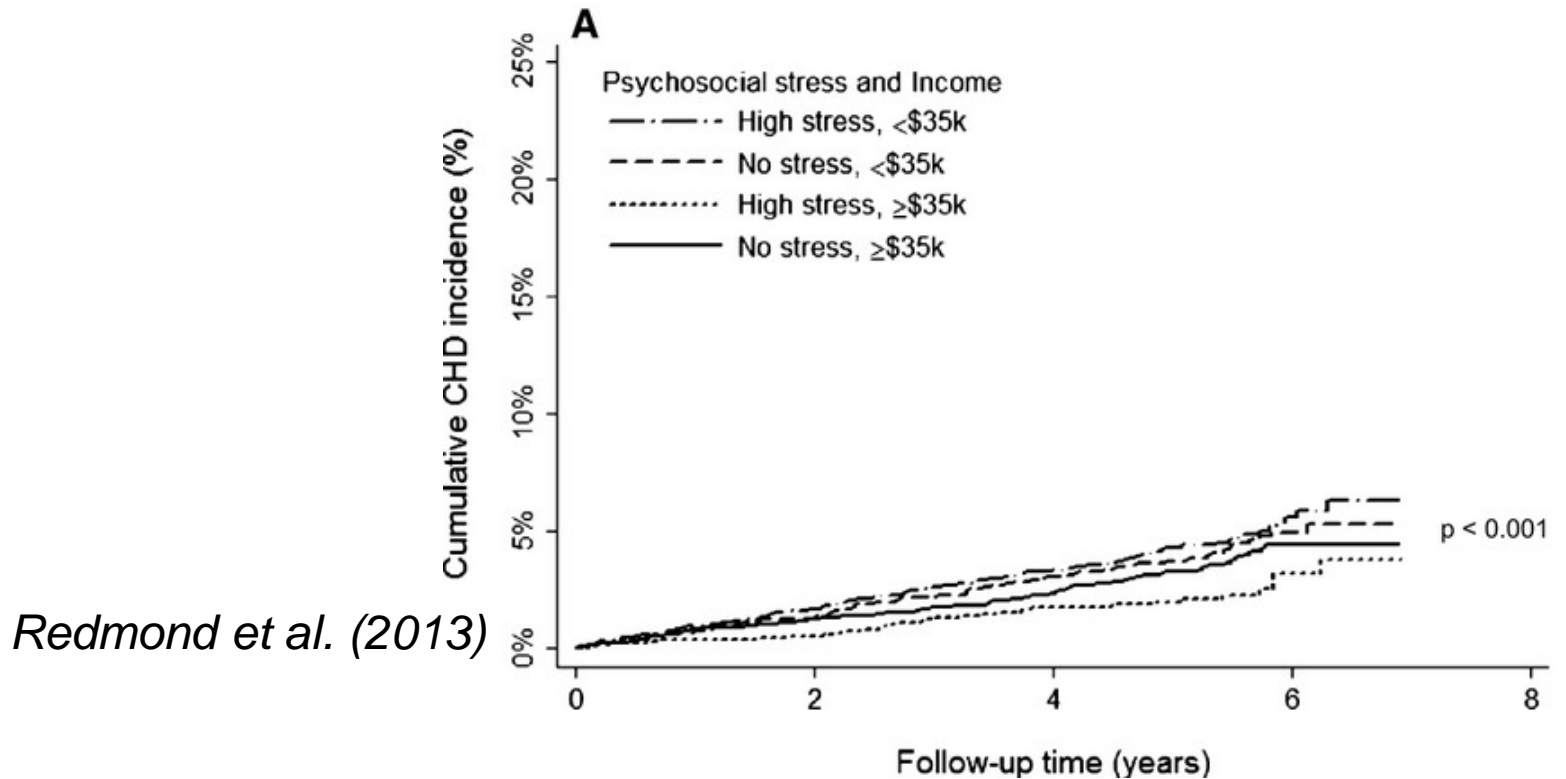
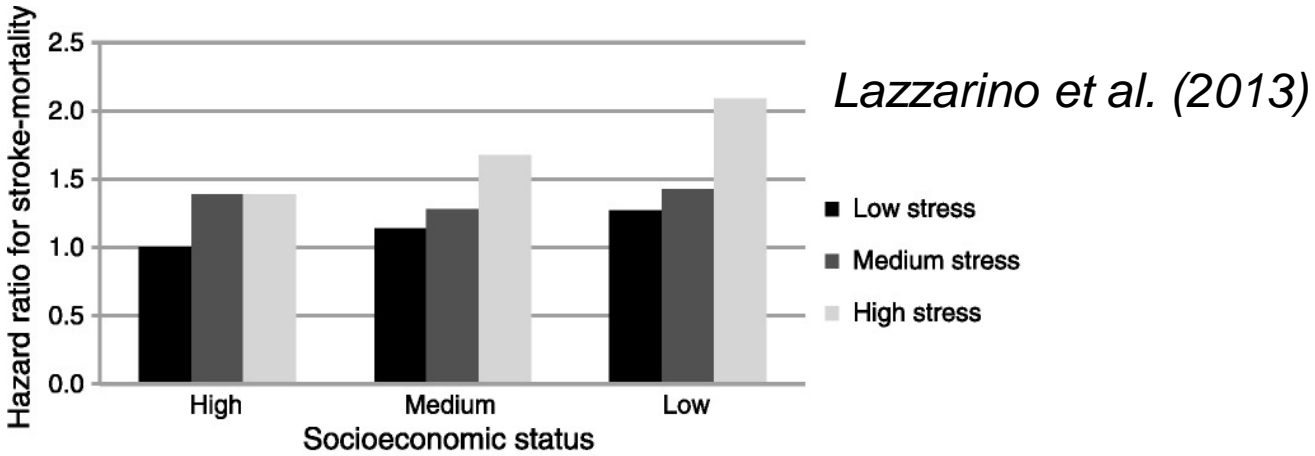
IPC Cohort Study (N = 122 816)



Adjusted for:

- Age
- Sex
- Living status
- Smoking status
- At-risk alcohol intake
- Physical activity
- Body Mass Index
- Family history of hypertension
- Resting heart rate
- Fasting glycemia
- Depression
- Perceived health status

Occupational status



Visite 1 :
Mesure du stress
+ des covariables

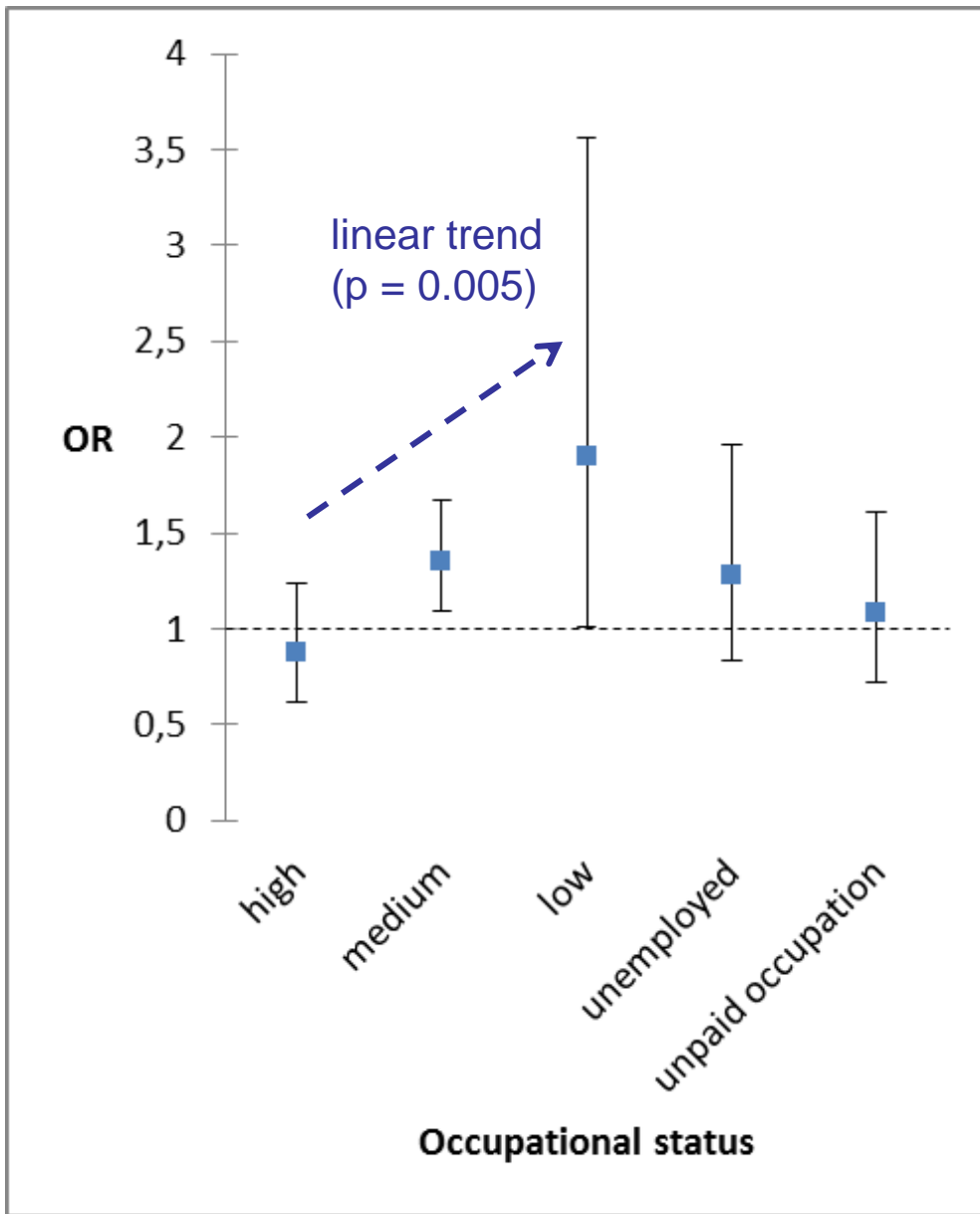
Visite 2 :
pression artérielle
élevée ?

Délai > 1 an

PA élevée



PAS \geq 140mmHg
PAD \geq 90mmHg



Association
between baseline
stress and high BP
at follow-up

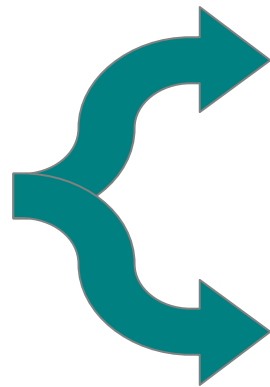
N = 6114 women; fully-adjusted model.

Visite 1 :
Mesure du stress
+ des covariables

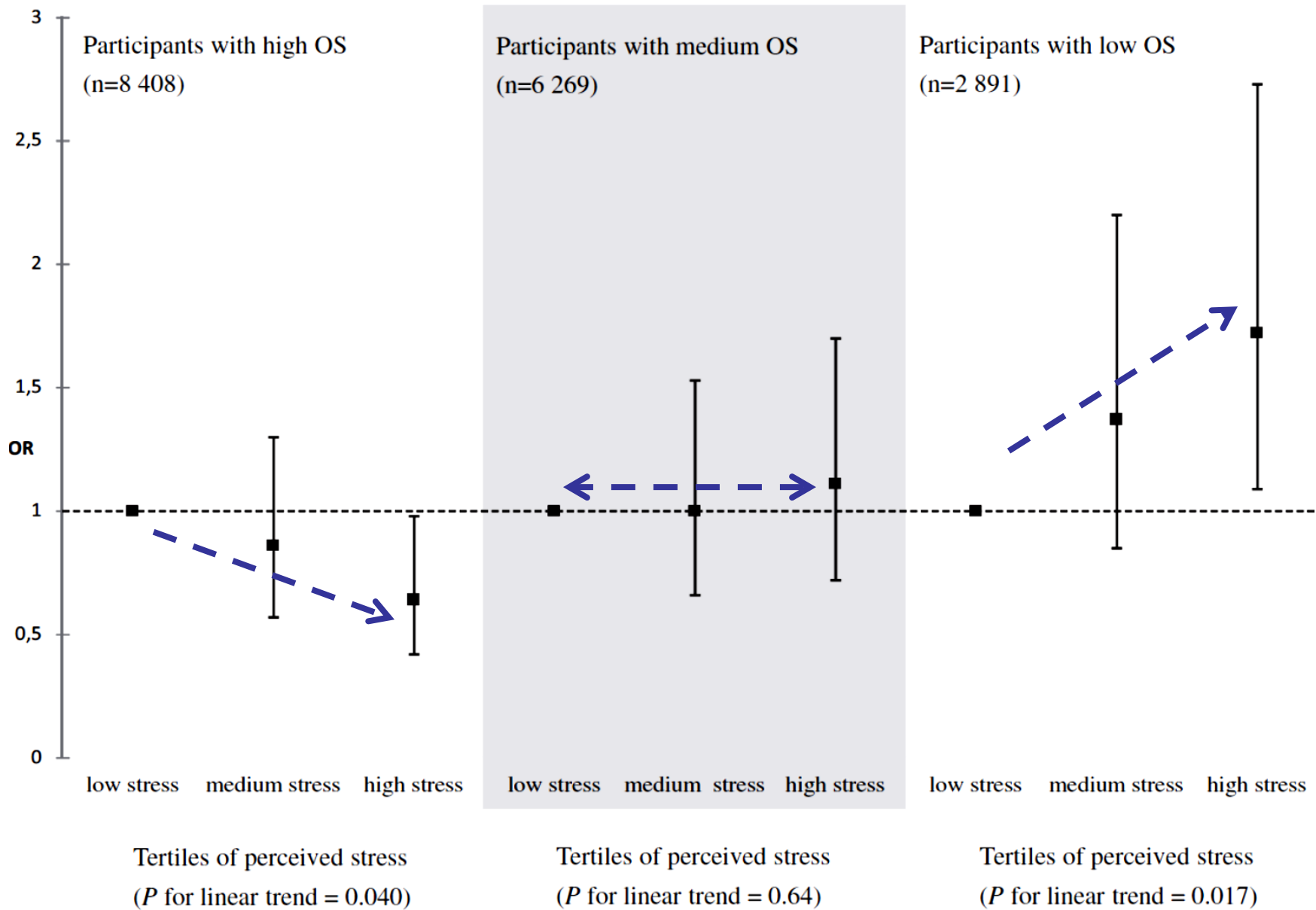
Visite 2 :
diabète ?

Délai > 1 an

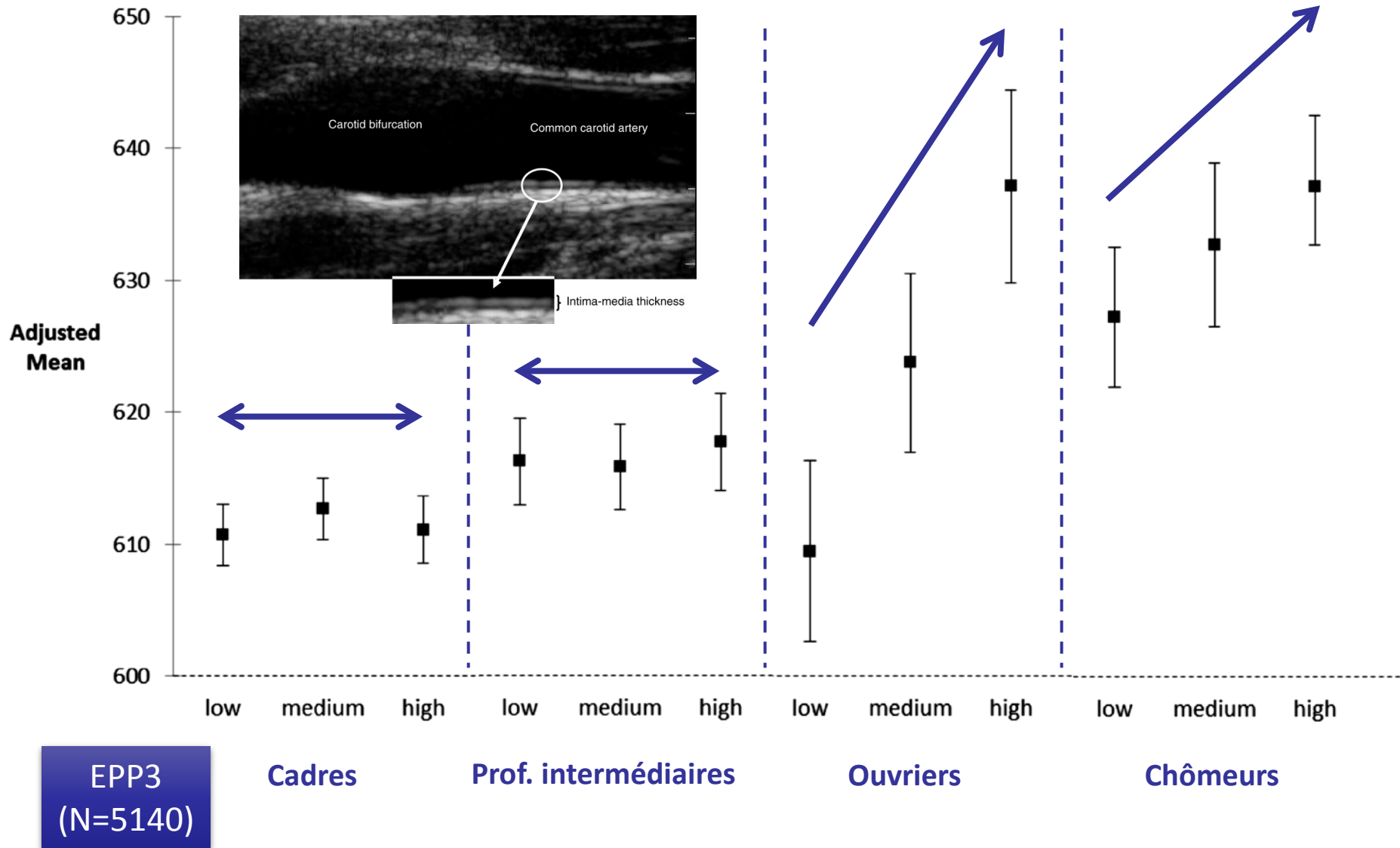
Diabète



Glycémie à jeun
 ≥ 7 mmol/L



Stress, statut occupationnel et athérosclérose



(Wiernik, Lemogne et al., *soumis*)

Dépression et risque cardiovasculaire à 20 ans chez 10 541 volontaires de la cohorte Gazel

	Occupational grade								
	Low			Medium			High		
	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P
Sex-specific thresholds ^a									
Adjusted for age and gender	1.95	1.15-3.28	0.01	Interaction depression × occupational grade: P=0.008 and P=0.009 in age-gender- and multi-adjusted models, respectively.					
Adjusted for all the variables ^b	1.99	1.12-3.48	0.02						

CES-D: Center of Epidemiologic Studies Depression scale;

CI: Confidence Interval;

HR: Hazard Ratios;

^a CESD score ≥ 17 among men or ≥ 23 among women;

^b age, gender, history of parental CVD, alcohol consumption, smoking, physical activity, BMI, hypertension, dyslipidemia, diabetes, sleep complaints.

Dépression et risque cardiovasculaire à 20 ans chez 10 541 volontaires de la cohorte Gazel

	Occupational grade								
	Low			Medium			High		
	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P
Sex-specific thresholds ^a	Interaction depression × occupational grade: P=0.008 and P=0.009 in age-gender- and multi-adjusted models, respectively.								
Adjusted for age and gender									
Adjusted for all the variables ^b	1.99	1.12-3.48	0.02						
Threshold ≥16									
Adjusted for age and gender	1.76	1.04-2.97	0.03	1.14	0.88-1.46	0.31	0.86	0.62-1.17	0.34
Adjusted for all the variables ^b	1.82	1.04-3.16	0.04	1.07	0.83-1.39	0.59	0.83	0.59-1.15	0.27
CES-D continuous score ^c									
Adjusted for age and gender	1.39	1.04-1.81	0.02	1.14	0.98-1.32	0.08	0.90	0.74-1.08	0.28
Adjusted for all the variables ^b	1.39	1.03-1.87	0.03	1.09	0.93-1.27	0.30	0.88	0.72-1.07	0.19

CES-D: Center of Epidemiologic Studies Depression scale;

CI: Confidence Interval;

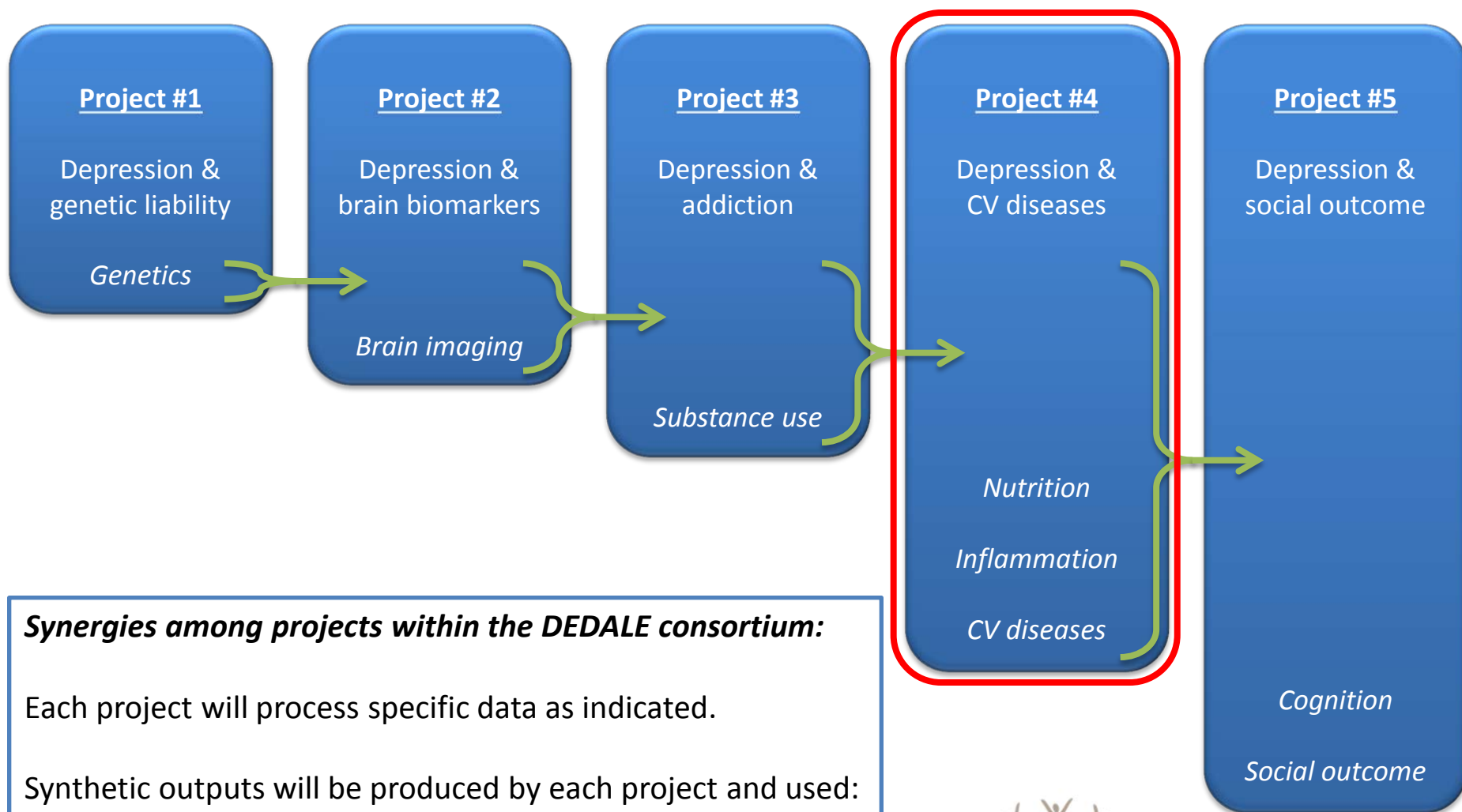
HR: Hazard Ratios;

^a CESD score ≥ 17 among men or ≥ 23 among women;

^b age, gender, history of parental CVD, alcohol consumption, smoking, physical activity, BMI, hypertension, dyslipidemia, diabetes, sleep complaints;

^c The 25th and 75th percentile value were used for scaling.

The *DEDALE* Research Consortium



Synergies among projects within the DEDALE consortium:

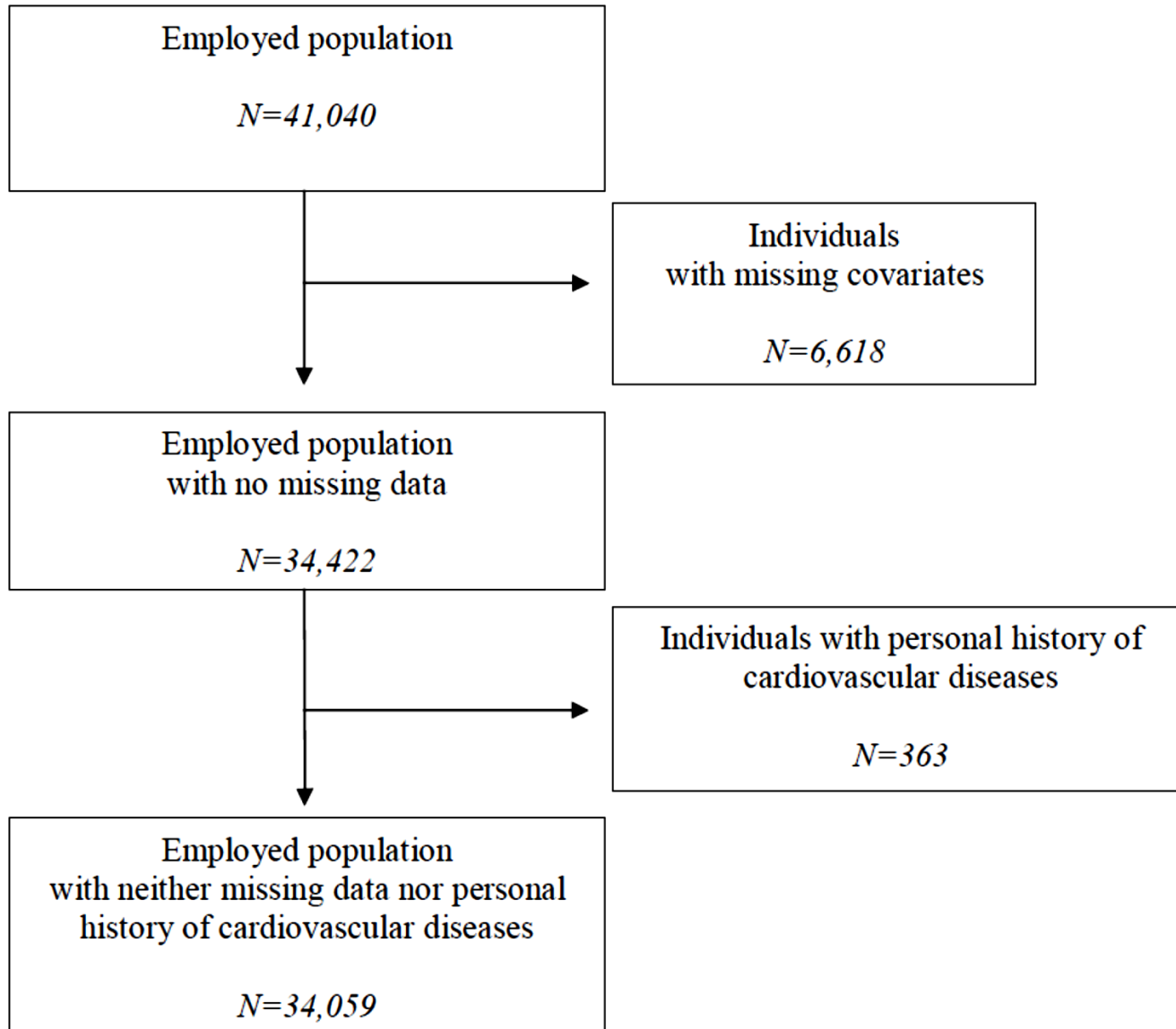
Each project will process specific data as indicated.

Synthetic outputs will be produced by each project and used:

- to achieve the main objectives of the project;
- to inform the analyses of the next projects.

No project will fully depend upon the previous one.



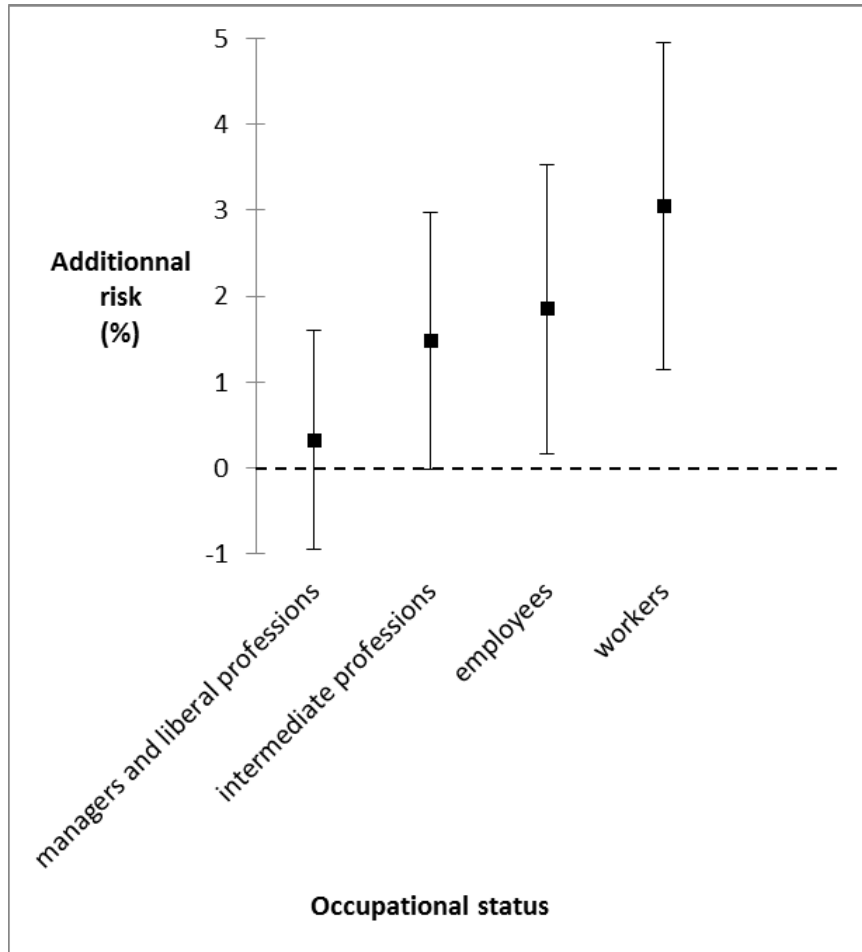


Estimated 10-year CHD probability = $1 - 0.97832^{\exp(c)}$

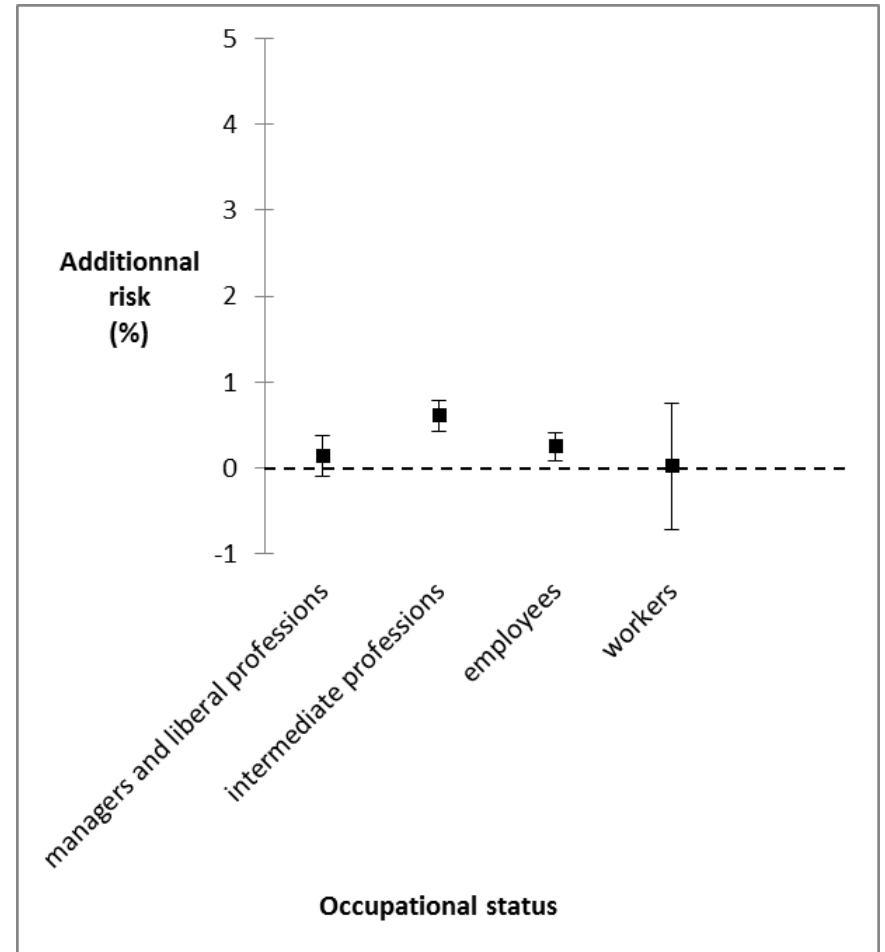
$$\begin{aligned}
 C = & 6.53 * (\log(\text{Age}) - 3.753801) + 15.04 * (\text{Male sex} - 0.462) \\
 & - 3.28 * (\text{Male sex} * (\log(\text{Age})) - 1.734256) + 0.51 * (\text{Smoker} - 0.2076) \\
 & + 1.03 * (\text{Diabetes} - 0.0188) + 1.87 * (\log(\text{Systolic BP}) - 4.821135) \\
 & + 2.02 * (\log(\text{Total cholesterol}) - 0.7199913) \\
 & - 1.21 * (\log(\text{HDL cholesterol}) + 0.5412195)
 \end{aligned}$$

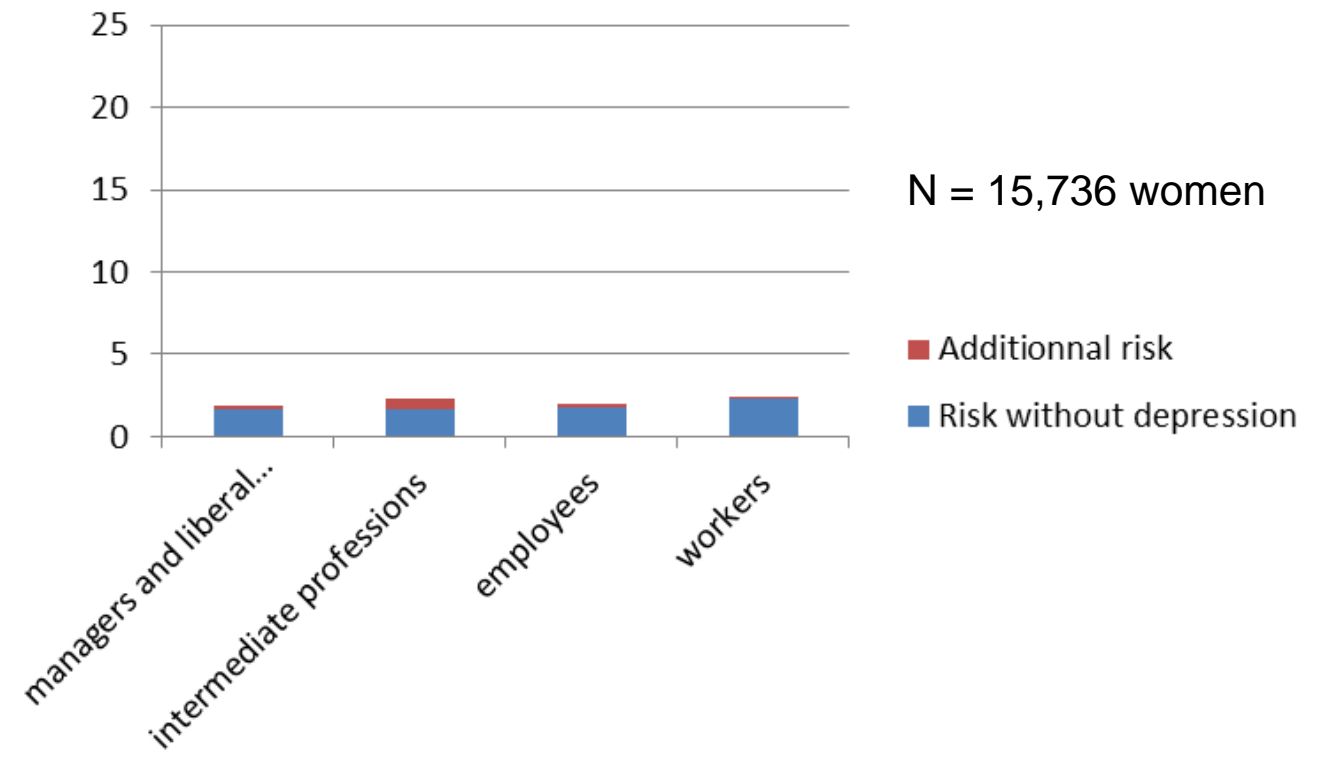
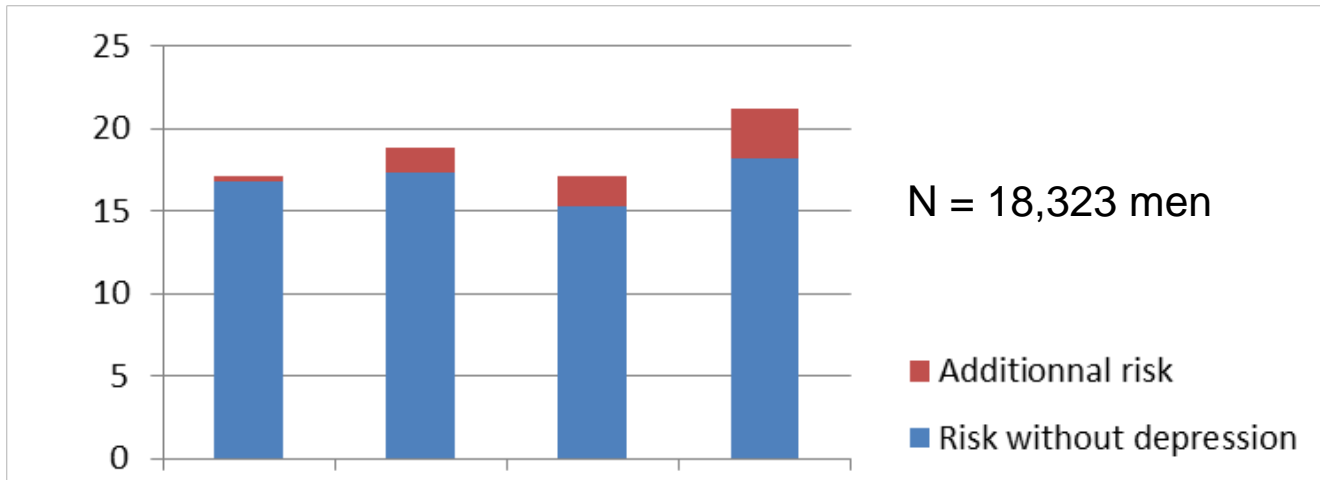
Continuous variables	Mean (sd)
Age	44.02 (10.45)
Systolic blood pressure	124.96 (14.90)
Total cholesterol	5.40 (1.01)
HDL cholesterol	1.55 (0.39)
Discrete variables	N (%)
Male gender	15,736 (46.2)
Current smoker	7069 (20.8)
Diabetes	639 (1.9)

N = 18,323 men



N = 15,736 women

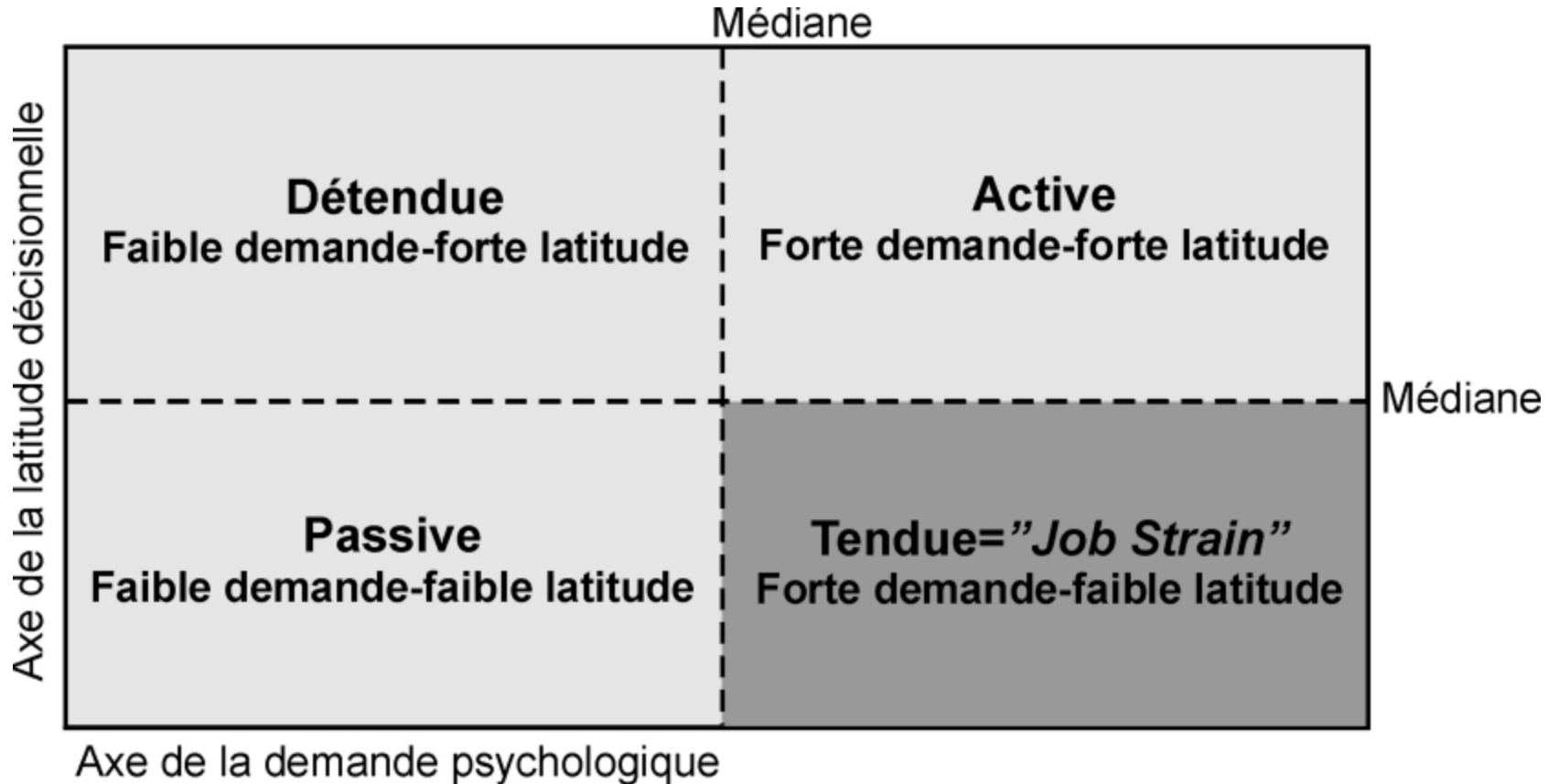




Hypothèses explicatives

- Stratégies d'ajustement au stress :
 - Comportements de santé non mesurés (p.ex. alimentation)
 - Confusion résiduelle
- Sources de stress de nature différente :
 - Stress professionnel

Stress professionnel : modèle de Karasek



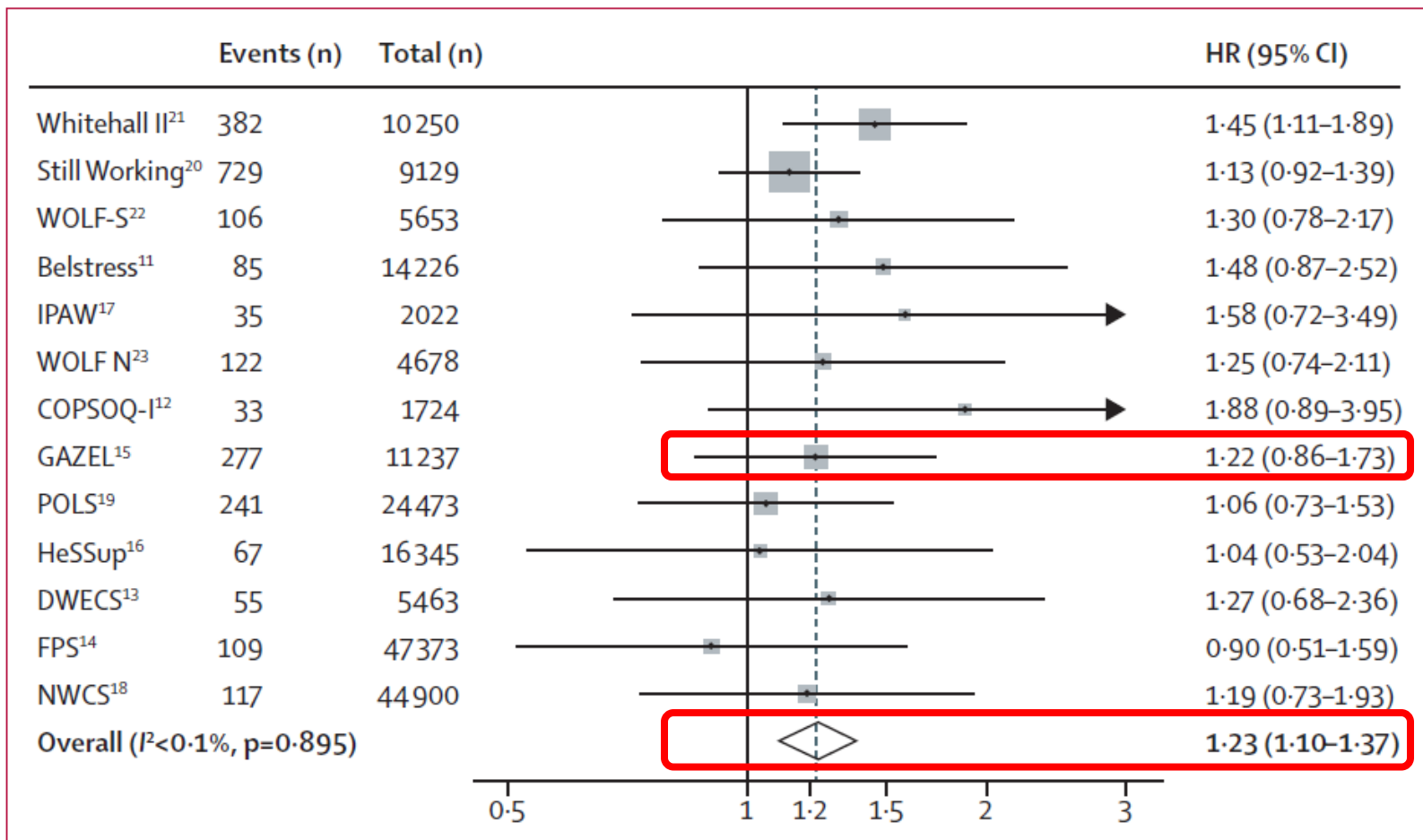


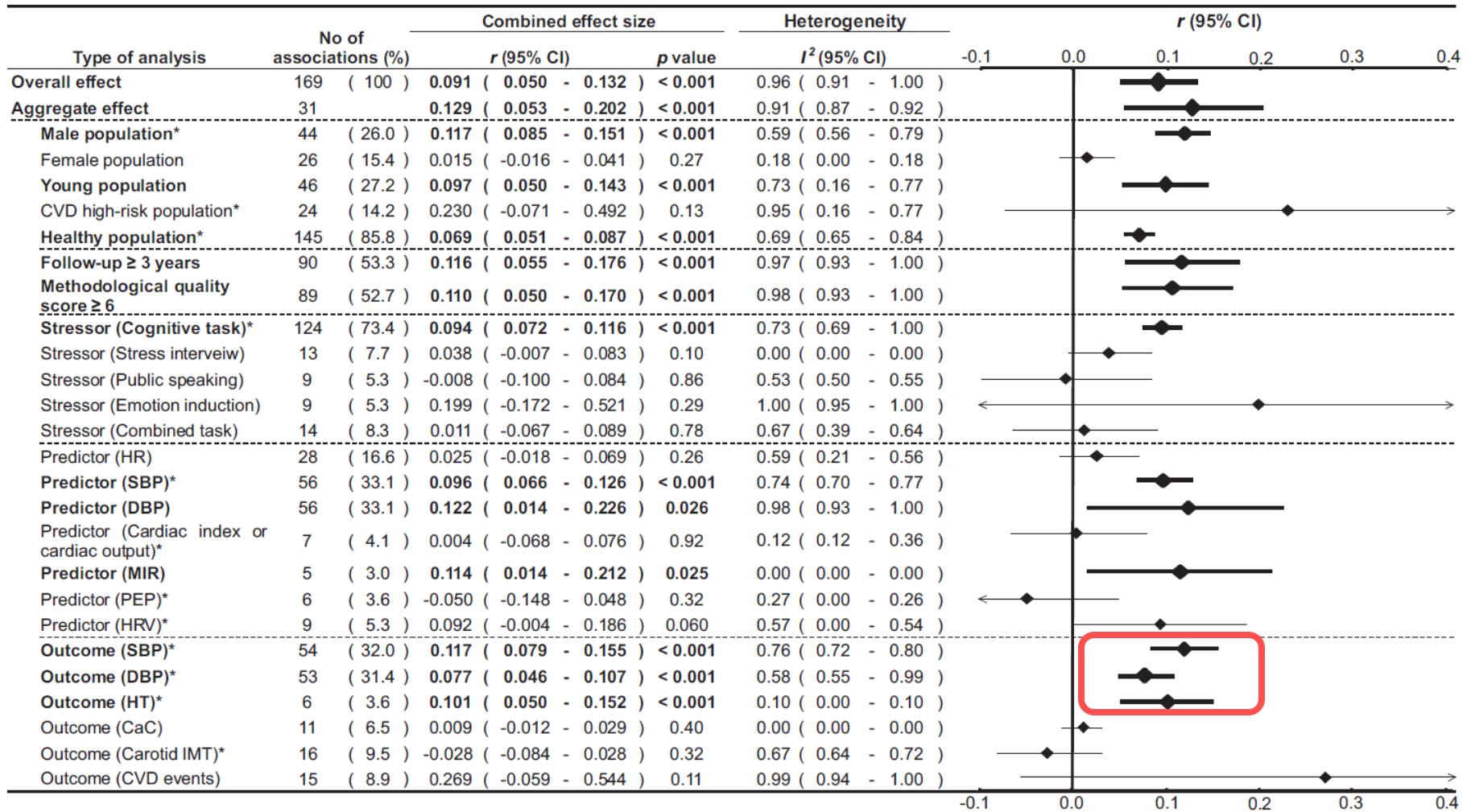
Figure 1: Random-effects meta-analysis of the association between job strain and incident coronary heart disease

Estimates are adjusted for age and sex. WOLF-S=Work, Lipids, Fibrinogen-Stockholm. IPAW=Intervention Project on Absence and Well-being. WOLF-N=Work, Lipids, Fibrinogen-Norrland. COPSOQ-I=Copenhagen Psychosocial Questionnaire version I. GAZEL=Electricité De France-Gaz De France. POLS=Permanent Onderzoek Leefsituatie. HeSSup=Health and Social Support. DWECS=Danish Work Environment Cohort Study. FPS=Finnish Public Sector Study. NWCS=Netherlands Working Conditions Survey.

Hypothèses explicatives

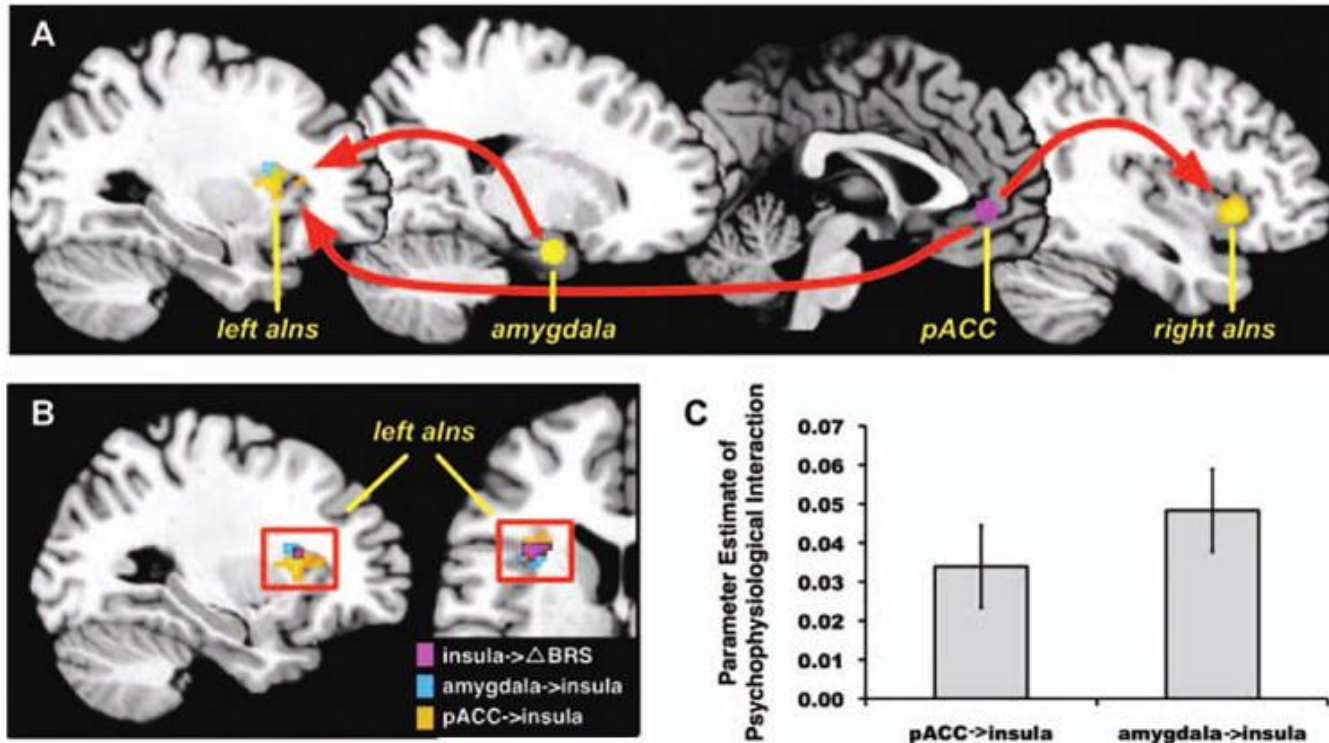
- Stratégies d'ajustement au stress :
 - Comportements de santé non mesurés (p.ex. alimentation)
 - Confusion résiduelle
- Sources de stress de nature différente :
 - Stress professionnel
 - Stress non professionnel

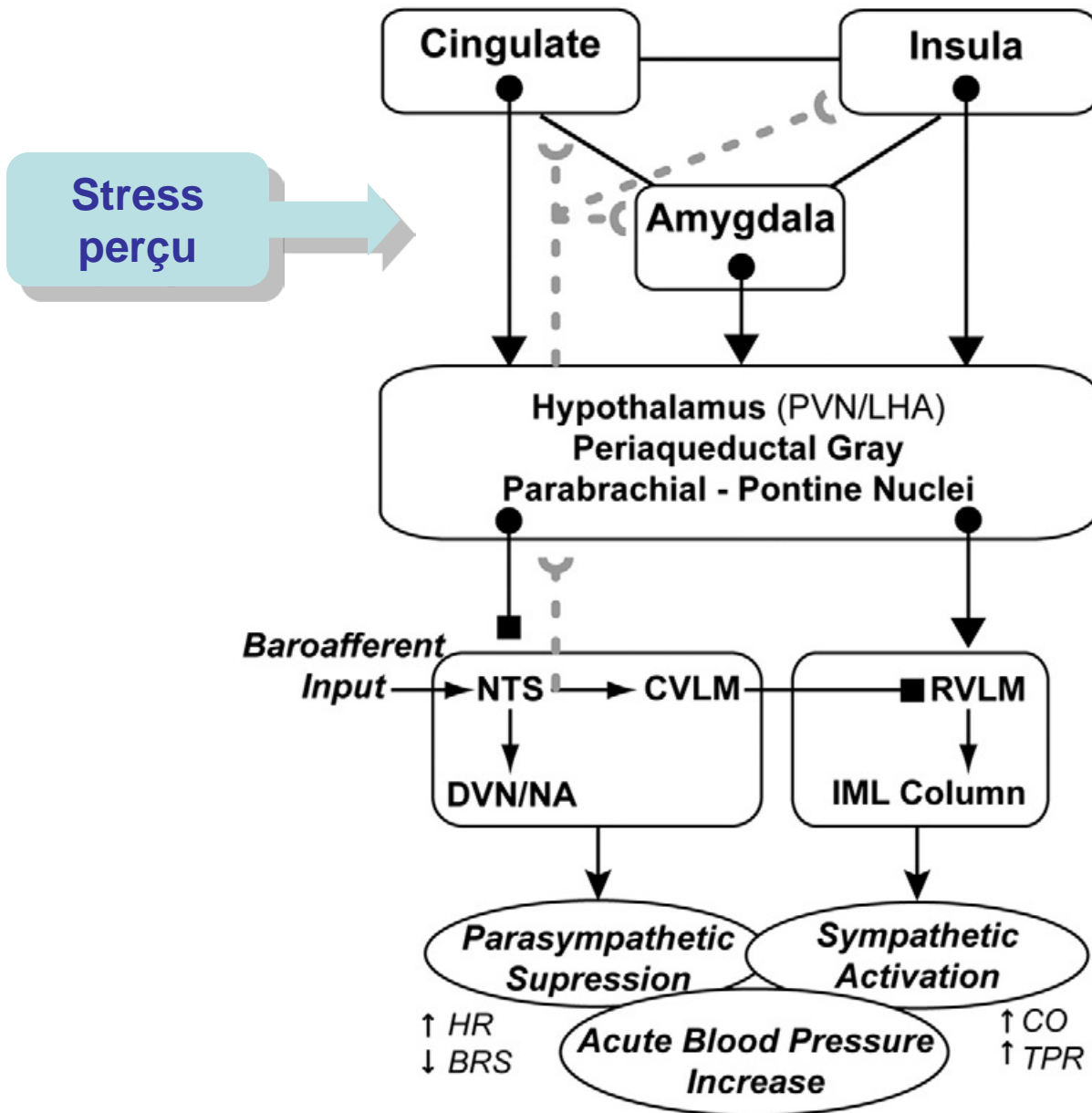
Réactivité au stress mental et risque cardiovasculaire



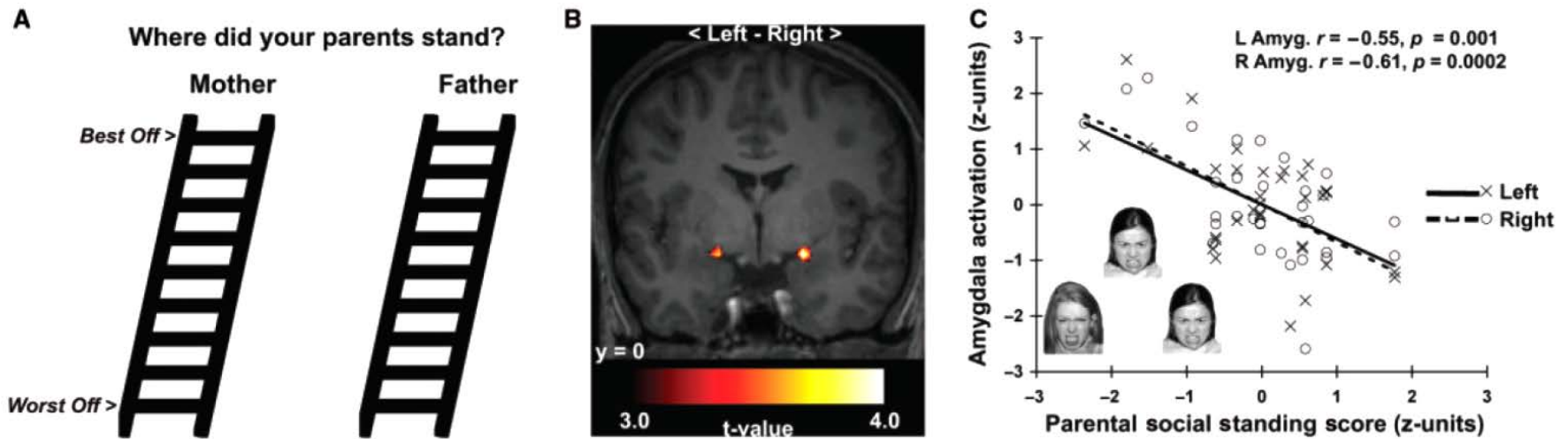
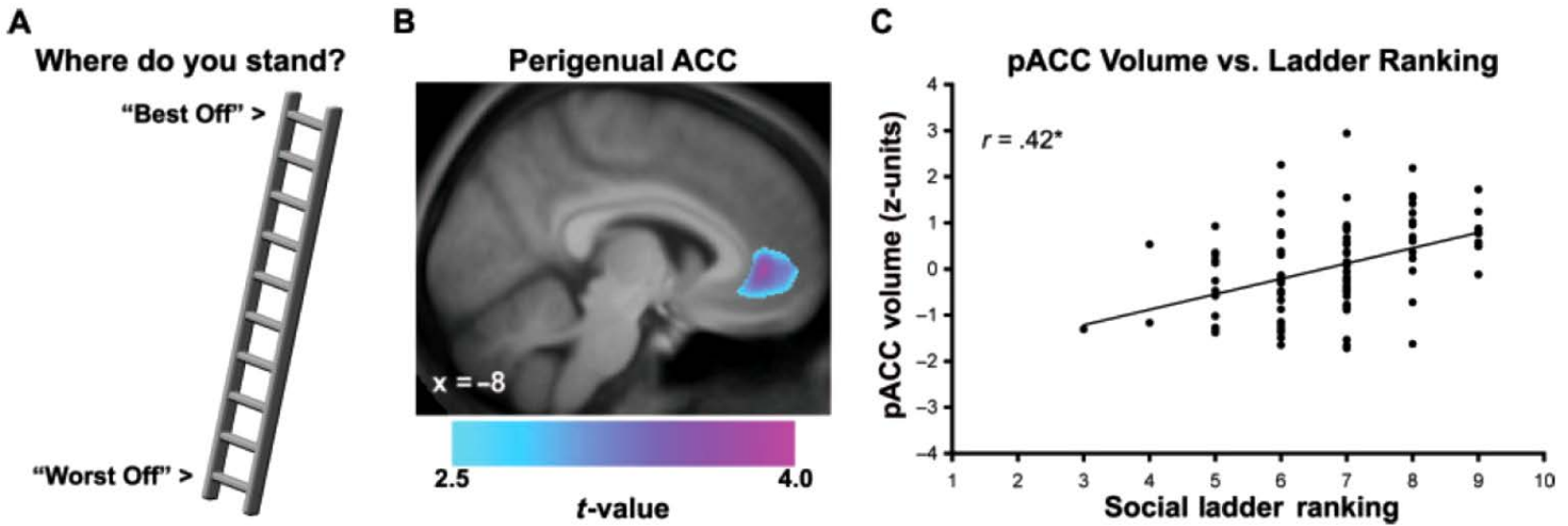
(Chida & Steptoe, *Hypertension* 2010)

Stress mental & baro-réflexe

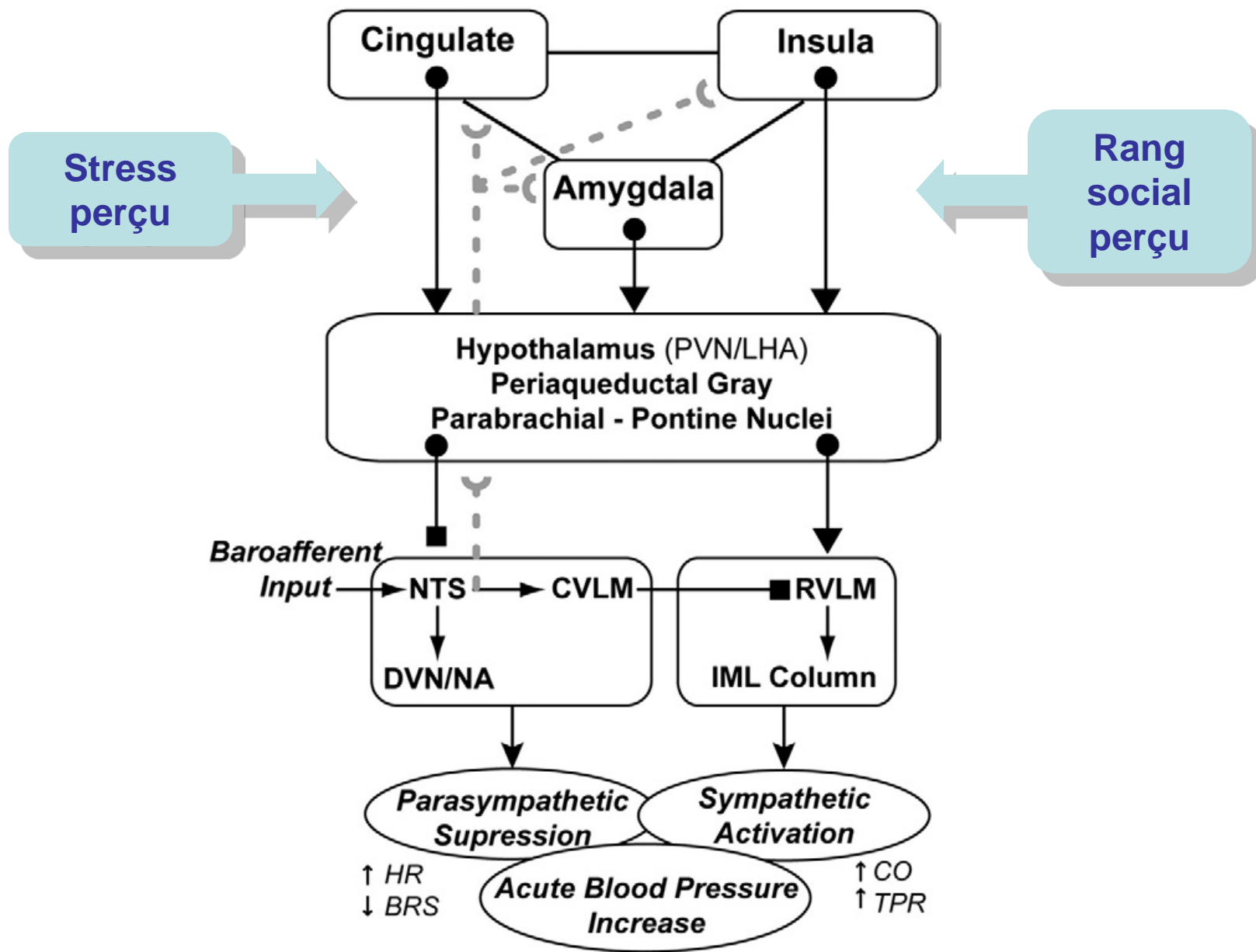




(Gianaros & Sheu, *Neuroimage* 2009)



(Gianaros et al., *Soc Cogn Affect Neurosci* 2007, 2008)



Hypothèses explicatives

- Stratégies d'ajustement au stress :
 - Comportements de santé non mesurés (p.ex. alimentation)
 - Confusion résiduelle
- Sources de stress de nature différente :
 - Stress professionnel
 - Stress non professionnel
 - Exclusion sociale

Cyberball game



Marcel



Cédric



Marie

Cyberball game



Marcel



Cédric



Marie

Cyberball game



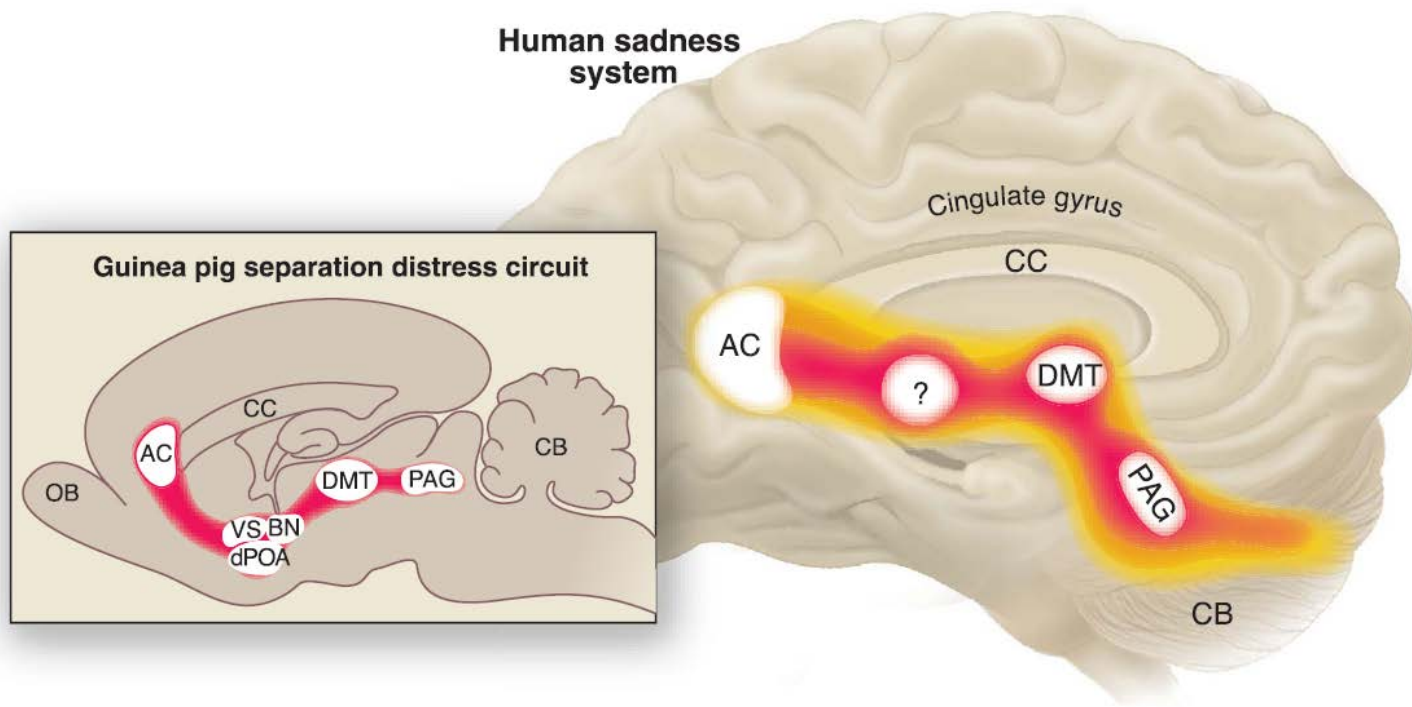
Marcel

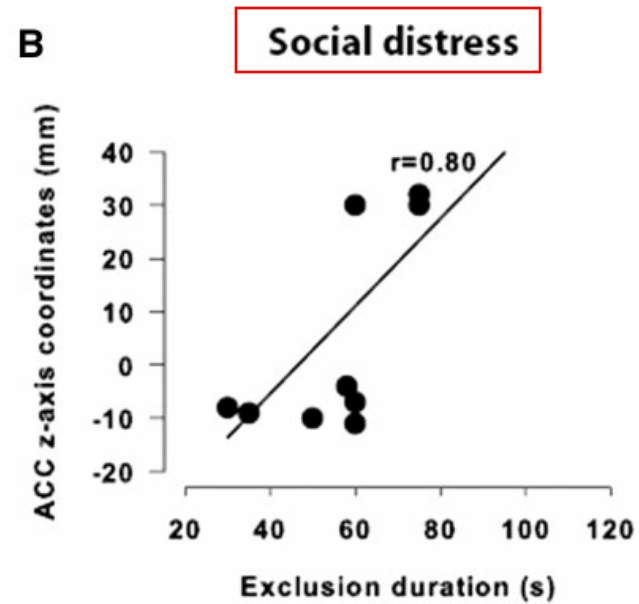
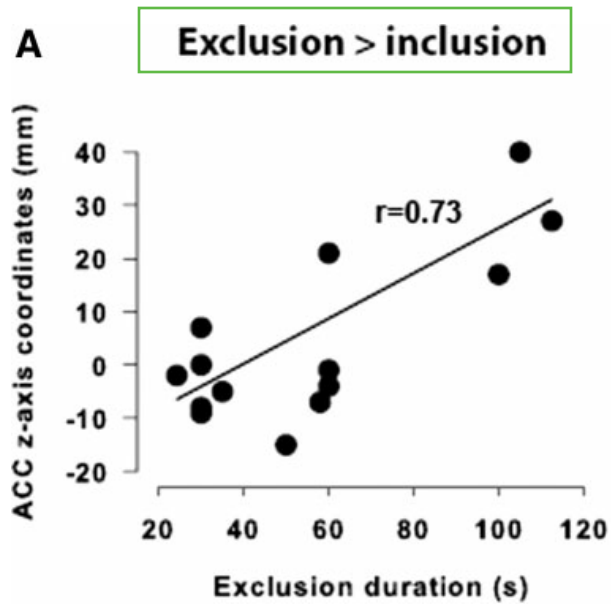
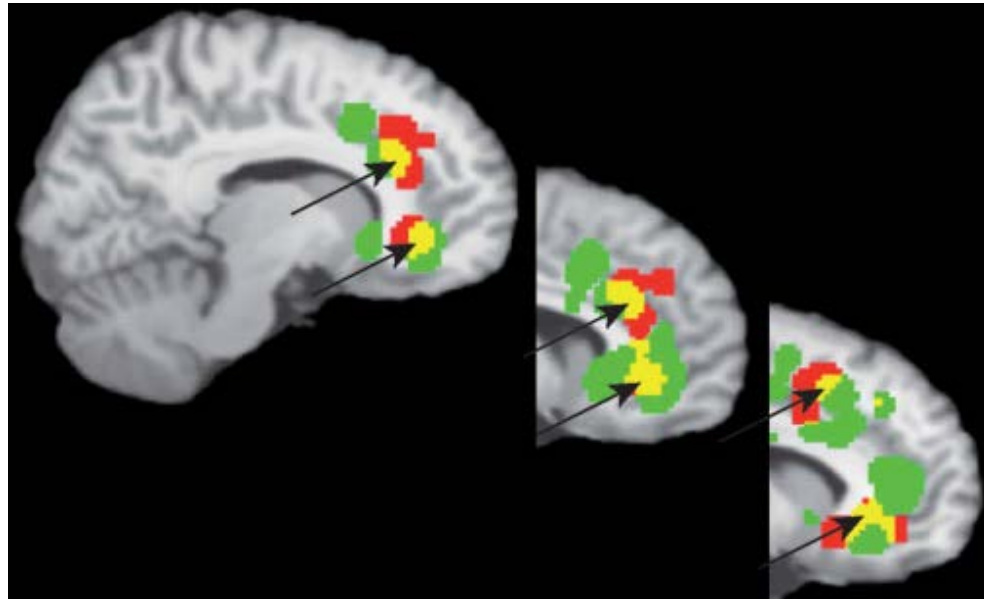


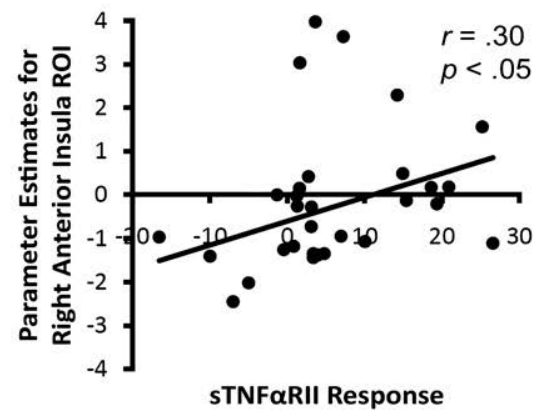
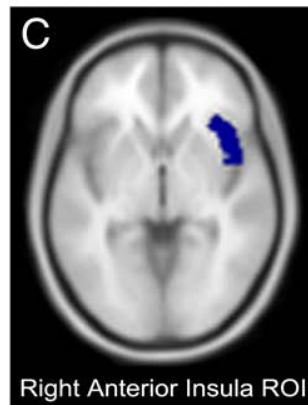
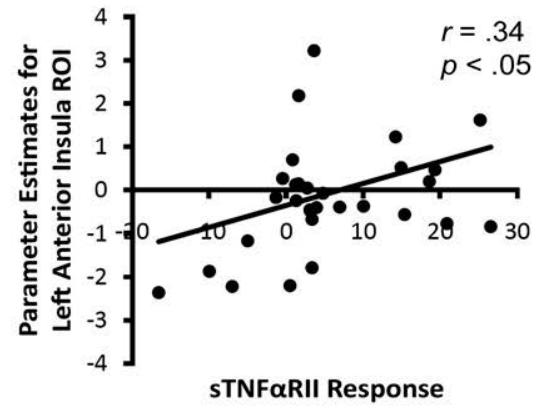
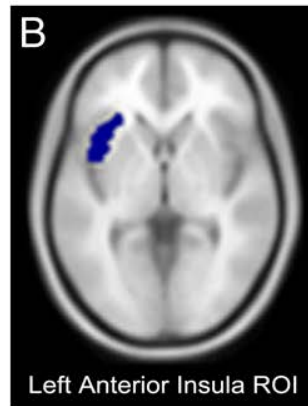
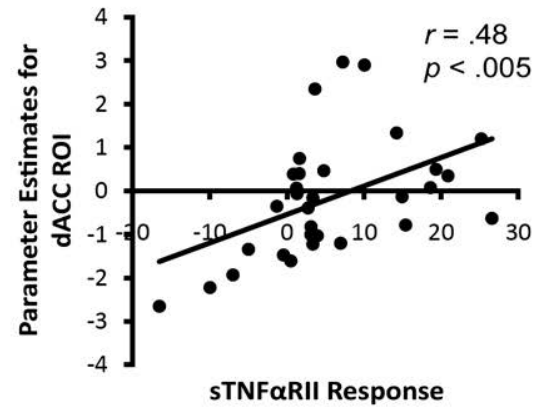
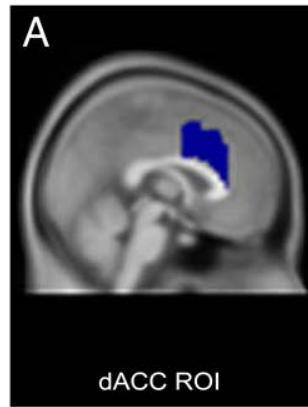
Cédric



Marie







Hypothèses explicatives

- Stratégies d'ajustement au stress :
 - Comportements de santé non mesurés (p.ex. alimentation)
 - Confusion résiduelle
- Sources de stress de nature différente :
 - Stress professionnel
 - Stress non professionnel
 - Exclusion sociale
- Corrélats de la dépression
 - Facteurs de risque cardio-métabolique
 - Réactivité cardiovasculaire
 - Inflammation

Cortex médian préfrontal & dépression

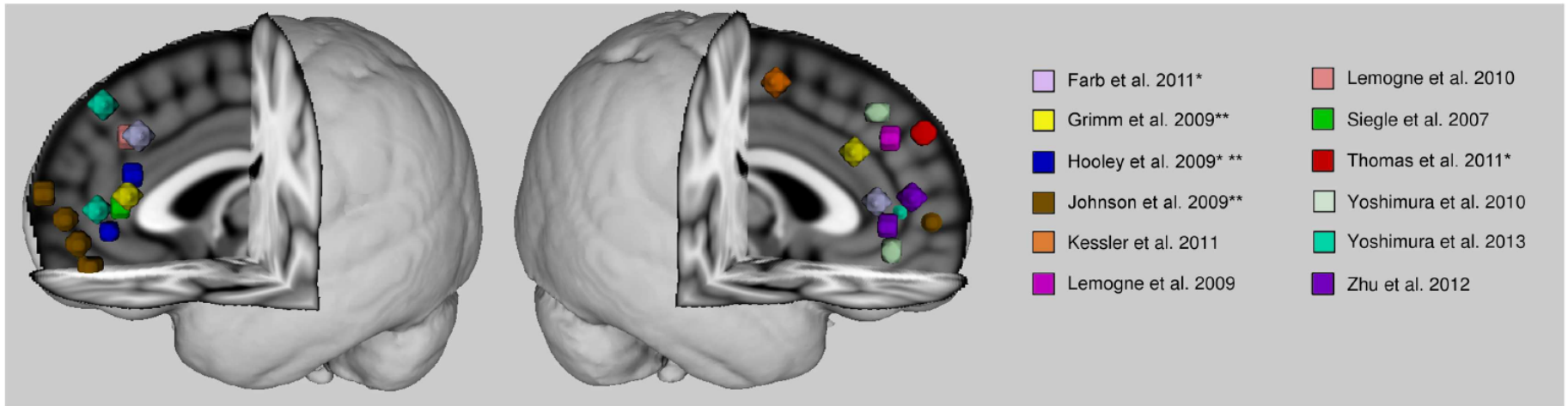
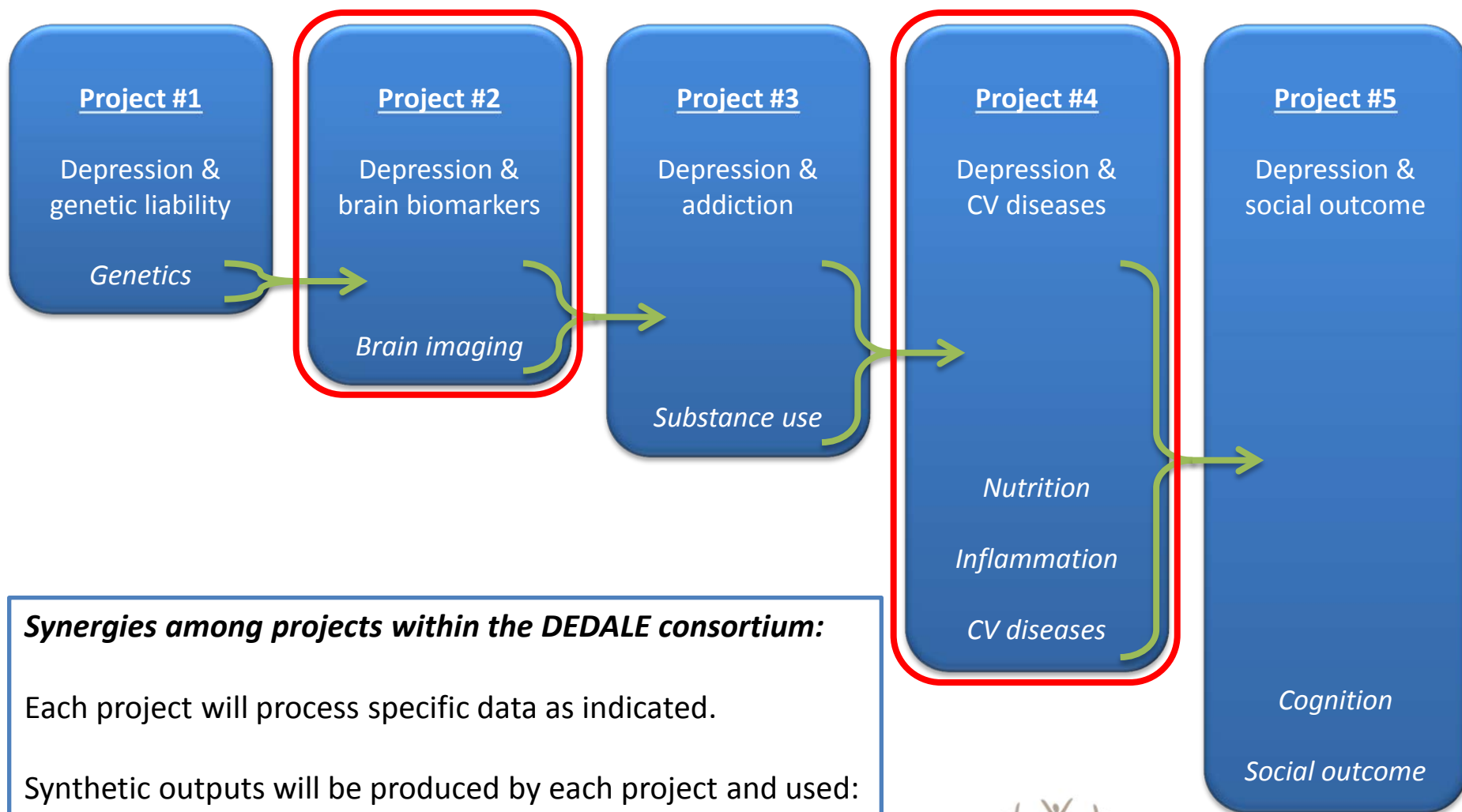


FIGURE 1 | Anterior cortical midline findings of previous studies reporting self-related abnormalities in depression. Spheres are centered on peak voxel values of regions whose activities are reported significantly different in major depressive patients from healthy control subjects during self-referential processing, or during another paradigm (e.g., rest or emotional

face processing) where activity was associated with rumination scores. Talairach coordinates were converted into MNI space with BrainMap toolbox (brainmap.org). Activity is greater in patients than control subjects unless otherwise indicated. *With a remitted patient sample. **Hypoactivity in patients.

The *DEDALE* Research Consortium



Synergies among projects within the DEDALE consortium:

Each project will process specific data as indicated.

Synthetic outputs will be produced by each project and used:

- to achieve the main objectives of the project;
- to inform the analyses of the next projects.

No project will fully depend upon the previous one.



Conclusions

- Pour les chercheurs, une invitation à ré-analyser leurs données ?
 - Stratification selon des indicateurs du SES
- Pour les cliniciens, une invitation à mieux considérer les facteurs psychologiques dans l'évaluation du risque cardiovasculaire des patients les moins favorisés.

Remerciements



Emmanuel Wiernik



Pierre Meneton



Jean-Philippe Empana



QUI C'EST?

LE FACTEUR
PSYCHOLOGIQUE.

N'OUVRE PAS! IL NE
M'APPORTE QUE DES
MAUVAISES NOUVELLES!!!

DRING!
DRING!

DRING!
DRING!

GABS.

JOURNÉE SCIENTIFIQUE DES COHORTES

Gazel



Synergie des facteurs psychologiques et sociaux dans le risque cardiovasculaire

Dr Cédric Lemogne

UF de Psychologie et Psychiatrie de liaison et d'urgence

Service de Psychiatrie de l'adulte et du sujet âgé

HUPO / Inserm UMR 894 / Université Paris Descartes



Inserm

UNIVERSITÉ DE
VERSAILLES
SAINT-QUENTIN-EN-YVELINES



ASSISTANCE
PUBLIQUE
HÔPITAUX
DE PARIS



US-PC

Université Sorbonne
Paris Cité

