ONLINE SUPPLEMENT

TRAJECTORIES OF DEPRESSIVE EPISODES AND HYPERTENSION OVER 24 YEARS: THE WHITEHALL II PROSPECTIVE COHORT STUDY

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Running/short title: depression and hypertension over time

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Appendix 1: Description of the method to identify trajectories of depressive episodes overtime.

Because "complete case" analysis, particularly in long-term follow-up studies, is generally based on an increasingly healthy group, it might bias parameter estimates. Thus, we decided to include all participants with at least two measurements on depressive episode in the trajectories analysis. A total of 6,889 men and 3,413 women were therefore included in the analysis modeling the trajectories of depressive episodes over time. We identified distinct trajectories that best described the data using Bayesian Information Criterion (BIC), a measure of goodness of fit (less negative indicates a better fit) [29]. We accomplished this analysis by increasing the number of different trajectories as long as the BIC increased. The BIC was -16332.93 for 1 trajectory model, -14994.11 for a 2 trajectories model, -14993.06 for a 3 trajectories model, -14983.01 for a 4 trajectories model, and -14998.97 for a 5 trajectories model. Based on these values, the 4-trajectory model would have the best fit to describe depressive episodes trajectories over time. The 4 groups were composed of 74%, 19%, 2%, 5% of the study population; due to small number in the last 2 groups, this model could not be used in further analyses. As the fit improved only marginally after the 2-trajectories model, we chose to perform further analyses based on that model - a decision that can also be justified in terms of parsimony.

Table S1. Associations between baseline covariates, their interactions with age and hypertension over time (n observations = 40599)

	Model 1 ‖	Model 2 ¶	
	Main effect	Main effect #	Interaction effect **
Variables	Odds ratio (95% CI)	Odds ratio (95% CI)	Odds ratio (95% CI)
Age (time variable)*		1.36 (1.34, 1.38) §	
Sex			
Women		0.58 (0.51, 0.67) §	1.09 (1.06, 1.12) §
Men		1	1
Ethnicity			
White	1	1	1
Other	1.60 (1.44, 1.78) §	1.35 (1.10, 1.66) ‡	1.04 (1,00, 1.09)
Marital status			
Married/cohabiting	1	1	1
Other	1.07 (0.99, 1.15)	1.34 (1.15, 1.55) §	0.95 (0.92, 0.98) §
Missing	0.92 (0.55, 1.55)	1.52 (0.62, 3.69)	0.89 (0.73, 1.09)

|	Model 1 ‖	Model 2 ¶	#
Socioeconomic status			
High	1	1	1
Intermediate	1.10 (1.02, 1.19) †	1.09 (0.94, 1.28)	1.00 (0.97, 1.03)
Low	1.24 (1.11, 1.37) §	1.50 (1.22, 1.83) §	0.96 (0.92, 1.00) †
Physical activity			
No	1.07 (0.99, 1.15)	1.11 (0.96, 1.28)	0.99 (0.96, 1.02)
Yes	1	1	1
Missing	1.17 (1.01, 1.36) †	1.19 (0.86, 1.64)	1.00 (0.93, 1.06)
Smoking status			
Never	1	1	1
Ex	0.99 (0.92, 1.07)	0.98 (0.85, 1.14)	1.00 (0.97, 1.03)
Current	0.99 (0.91, 1.09)	0.77 (0.64, 0.93) ‡	1.06 (1.02, 1.10) ‡
Missing	1.36 (0.95, 1.94)	2.06 (1.13, 3.75) †	0.90 (0.79, 1.03)
High alcohol intake			
No	1	1	1
Yes	1.20 (1.10, 1.31) §	1.24 (1.04, 1.47) †	0.99 (0.96, 1.03)
Missing	0.97 (0.67, 1.42)	1.30 (0.68, 2.48)	0.93 (0.80, 1.08)
BMI			
<19.9	1	1	1
20-24.9	1.47 (1.24, 1.74) §	1.19 (0.87, 1.65)	1.05 (0.98, 1.13)
25-29.9	2.61 (2.20, 3.10) §	2.03 (1.47, 2.81) §	1.06 (0.99, 1.14)
>30	4.67 (3.84, 5.69) §	4.48 (3.07, 6.53) §	1.01 (0.93, 1.09)
Missing	2.85 (1.09, 7.45) †	2.43 (0.17, 35.1)	1.04 (0.67, 1.61)
Cholesterol total ≥5mg			
No	1	1	1
Yes	1.28 (1.17, 1.39) §	1.32 (1.12, 1.55) §	0.99 (0.96, 1.03)
Missing	0.94 (0.62, 1.43)	0.50 (0.20, 1.29)	1.14 (0.94, 1.39)
History of Diabetes			
No	1	1	1
Yes	1.92 (1.45, 2.54) §	1.16 (0.63, 2.14)	1.13 (0.97, 1.31)
History of MI			
No	1	1	1
Yes	1.98 (1.34, 2.92) §	1.22 (0.40, 3.71)	1.11 (0.86, 1.44)
History of stroke			
No	1	1	1
Yes	3.25 (1.97, 5.37) §	3.14 (0.94, 10.5)	1.01 (0.75, 1.35)
History of cancer			
No	1	1	1
Yes	0.82 (0.60, 1.11)	0.37 (0.18, 0.78) ‡	1.17 (1.02, 1.35) †

* Each five years increase
† $p < 0.05$; ‡ $p < 0.01$; § $p < 0.001$
‖ Model 1 shows only the main effect of each variable adjusted for age, sex, and interaction between age and sex.
¶ Model 2 shows main effects together with their interactions with age.
shows the main effect of each variable for age group 35-39 (reference) and is based on all 40 599 observations.

** shows the proportional change in the main effect of each variable associated with each 5-year increase in age.
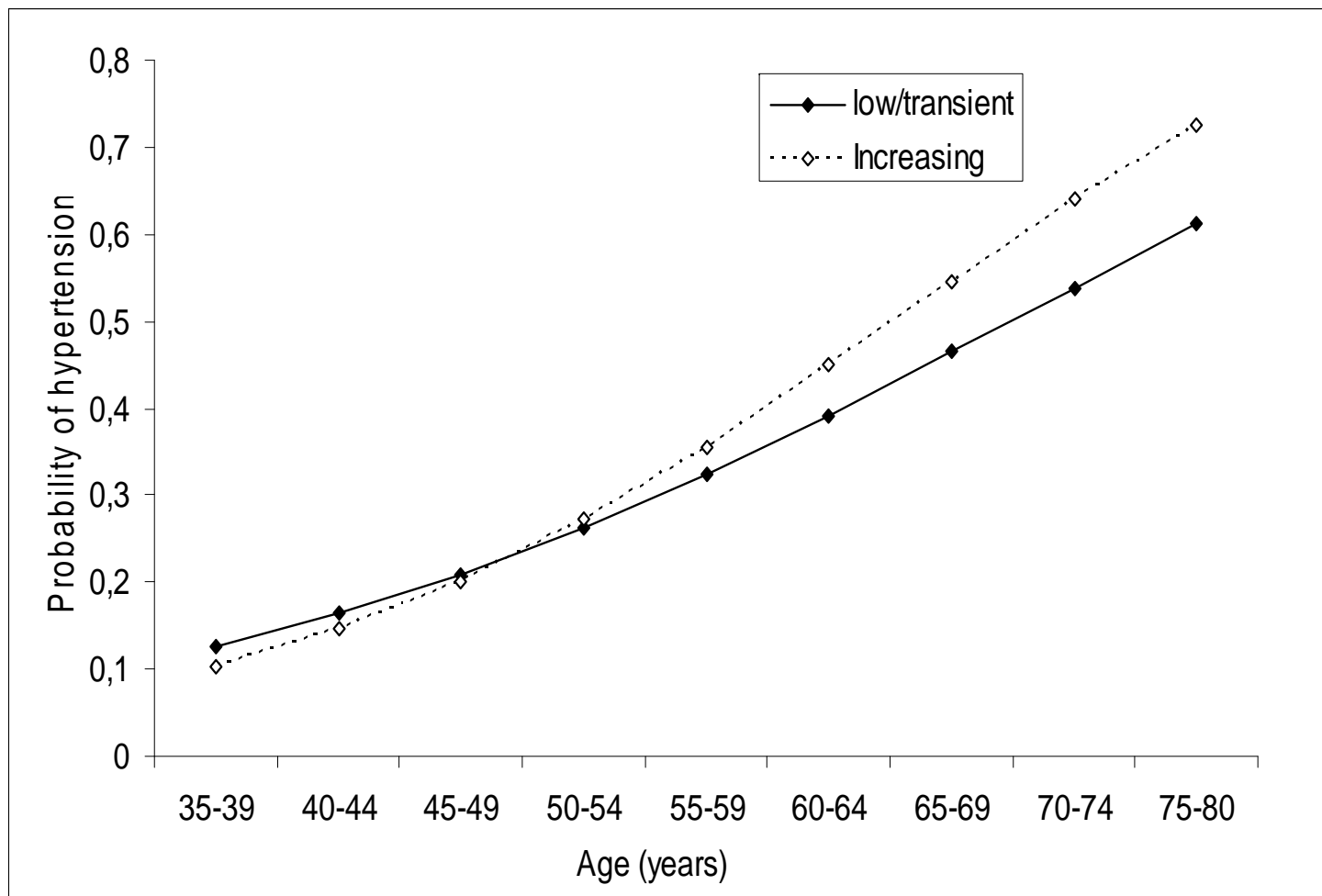
Figure S1: Probability of hypertension associated with depressive trajectories in men. The age range at the study baseline (phase 1) was 35 to 55 years and 55-80 at the follow-up (phase 9). The probabilities were calculated from models that include age, depressive trajectories group and interaction between depressive trajectories groups and age.
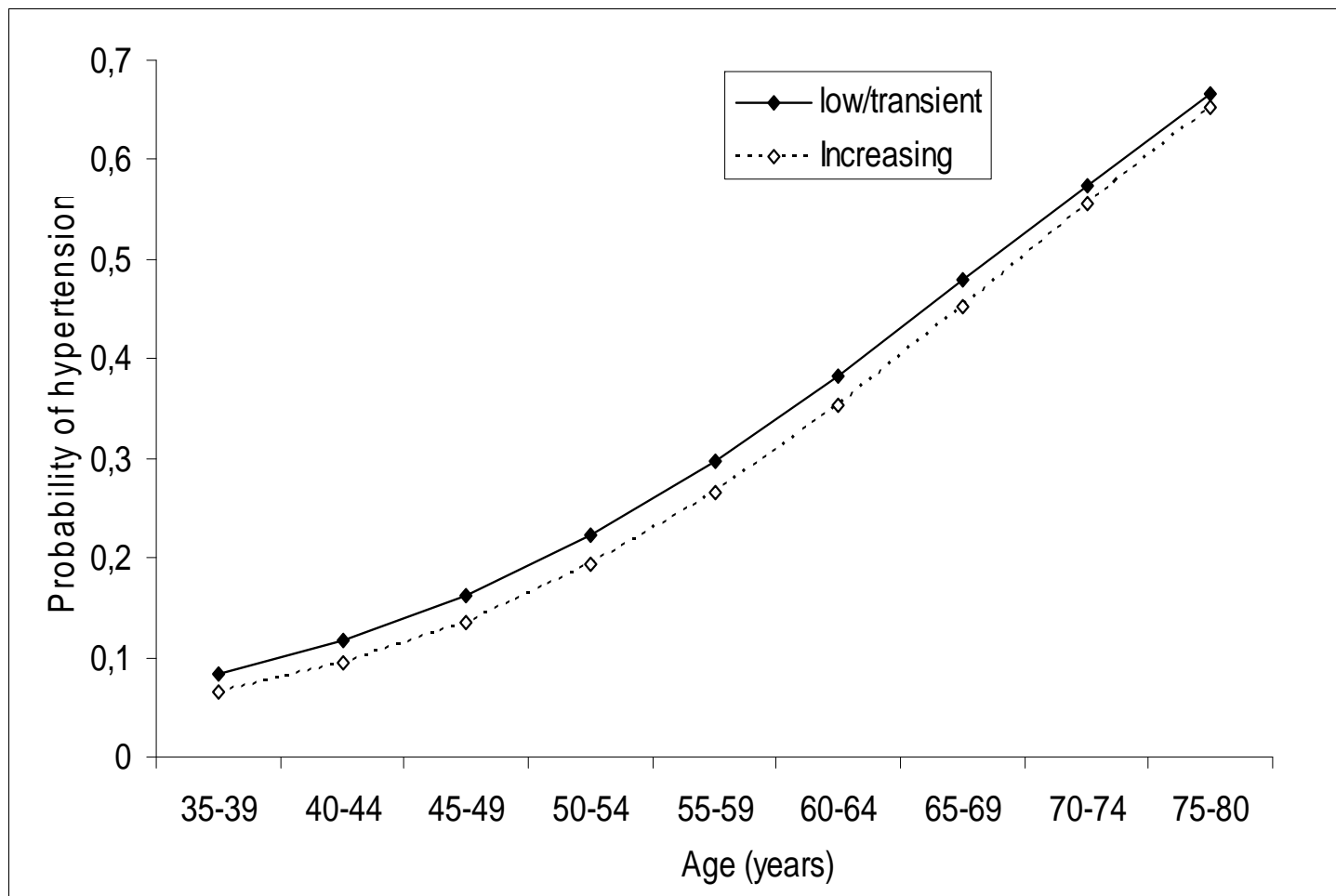
Figure S2: Probability of hypertension associated with depressive trajectories in women. The age range at the study baseline (phase 1) was 35 to 55 years and 55-80 at the follow-up (phase 9). The probabilities were calculated from models that include age, depressive trajectories group and interaction between depressive trajectories groups and age