

SUPPLEMENTAL MATERIALS

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Table S1.

Excluded self-reported neurological diseases.

Brain cancer/primary malignant tumour
Brain haemorrhage
Brain/intracranial abscess
Cerebral aneurysm
Cerebral palsy
Chronic/degenerative neurological problem
Dementia/Alzheimer's disease/cognitive impairment
Encephalitis
Epilepsy
Head injury
Infection of nervous system
Ischaemic stroke
Meningeal cancer/malignant meningioma
Meningioma (benign)
Meningitis
Motor neurone disease
Multiple sclerosis
Neurological injury/trauma
Neuroma (benign)
Other demyelinating condition
Other neurological problem
Parkinson's disease
Spina bifida
Stroke
Subarachnoid haemorrhage
Subdural haematoma
Transient ischaemic attack

Table S2.

Baseline sociodemographic characteristics, longitudinal alcohol use and cognitive scores of 19,124 participants by frequency of alcohol consumption. Values are numbers (percentages) unless stated otherwise.

Variables	Weekly drinkers (n=14,349)	Monthly drinkers (n=3,724)	Previous drinkers (n=468)	Non drinkers (n=575)	P value
Age Mean (SD)	57.64 (7.34)	56.94 (7.65)	57.23 (7.57)	57.89 (7.81)	<0.001 (F=9.54)
Women	6,761 (47)	2,466 (66)	261 (56)	386 (67)	<0.001 ($\chi^2=492.87$)
Undergraduate degree or higher	6,445 (46)	1,349 (37)	170 (38)	220 (39)	<0.001 ($\chi^2=108.63$)
Smoking status:					<0.001 ($\chi^2=416.78$)
Non smokers	8,046 (56)	2,545 (68)	237 (51)	508 (89)	
Previous smokers	5,374 (38)	953 (26)	196 (42)	50 (9)	
Smokers	895 (6)	221 (6)	33 (7)	16 (3)	
BMI categories:					<0.001 ($\chi^2=140.68$)
Normal weight	5315 (38)	1,283 (35)	168 (36)	228 (40)	
Overweight	6,231 (44)	1,421 (39)	177 (38)	199 (35)	
Obese	2,610 (18)	969 (26)	121 (26)	141 (25)	
Townsend deprivation score Mean (SD)	-2.19 (2.57)	-1.70 (2.90)	-1.36 (3.08)	-1.28 (3.11)	<0.001 (F=60.23)
Walking activity (days/week) Mean (SD)	5.22 (1.98)	5.12 (2.07)	5.10 (2.17)	5.34 (1.97)	0.006 (F=4.21)
Daily alcohol use (grams) at baseline Mean (SD)	21.77 (19.65)	-	-	-	-

Daily alcohol use (grams) at follow-up <i>Mean (SD)</i>	18.80 (17.03)	-	-	-	-
Years between assessments <i>Mean (SD)</i>	4.31 (0.92)	4.36 (0.92)	4.39 (0.95)	4.40 (0.93)	<0.001 (F=5.63)
RT at baseline <i>Mean (SD)</i>	546.15 (101.35)	551.62 (103.70)	562.56 (106.58)	576.31 (127.12)	<0.001 (F=20.34)
RT at follow-up <i>Mean (SD)</i>	553.84 (107.35)	558.45 (112.07)	565.58 (108.93)	582.30 (127.72)	<0.001 (F=14.74)
IIV at baseline <i>Mean (SD)</i>	76.55 (54.84)	77.93 (56.30)	79.68 (61.72)	90.01 (81.64)	<0.001 (F=10.79)
IIV at follow-up <i>Mean (SD)</i>	78.37 (56.96)	78.18 (56.34)	80.86 (61.58)	86.54 (71.21)	<0.01 (F=3.99)

RT=Mean reaction time; IIV=Intra-individual variability in reaction time.

Table S3.**Linear multiple regression model results with baseline measures predicting mean reaction time (RT) at follow-up (N=13,342).****Categorical variables are reported with the reference category (RC) in brackets.**

Predictors	RT			
	B	SE B	β (95% CI)	P value
RT at baseline	0.570	0.009	0.549 (0.530 to 0.562)	<0.001
Daily alcohol use	-0.004	0.002	-0.019 (-0.049 to -0.005)	0.015
Age with years between assessments	0.001	0.001	0.135 (0.125 to 0.154)	<0.001
Male (RC: Female)	-0.008	0.003	-0.021 (-0.035 to -0.007)	0.004
Townsend deprivation score	-0.001	0.001	-0.007 (-0.022 to 0.007)	0.330
Academic degree or higher (RC: No academic degree)	-0.010	0.003	-0.028 (-0.040 to -0.013)	<0.001
Walking activity	0.001	0.001	0.011 (-0.002 to 0.024)	0.103
Overweight BMI (RC: Normal or underweight)	-0.004	0.003	-0.010 (-0.024 to 0.005)	0.211
Obese BMI (RC: Normal or underweight)	0.001	0.004	0.002 (-0.013 to 0.019)	0.713
Previously used tobacco (RC: Non-smoker)	0.007	0.003	0.020 (0.005 to 0.033)	0.006
Uses tobacco (RC: Non-smoker)	0.005	0.006	0.007 (-0.017 to 0.018)	0.354
Fit	R²=0.35; AIC=-13,687.48			

B=Unstandardized regression coefficient; SE B=Standard error for the unstandardized regression coefficient; β (95% CI)=Standardized regression coefficient and 95% Confidence Intervals.

Table S4.

Linear multiple regression model results with baseline measures predicting intra-individual variability in reaction time (IIV) at follow-up (N=13,342). Categorical variables are reported with the reference category (RC) in brackets.

Predictors	IIV			
	B	SE B	β (95% CI)	P value
IIV at baseline	0.177	0.009	0.178 (0.161 to 0.196)	<0.001
Daily alcohol use	-0.022	0.007	-0.027 (-0.065 to -0.013)	0.003
Age with years between assessments	0.001	0.001	0.085 (0.072 to 0.108)	<0.001
Male (RC: Female)	-0.005	0.012	-0.004 (-0.022 to 0.014)	0.663
Townsend deprivation score	0.001	0.002	0.001 (-0.016 to 0.019)	0.907
Academic degree or higher (RC: No academic degree)	-0.040	0.011	-0.031 (-0.048 to -0.015)	<0.001
Walking activity	0.004	0.003	0.013 (-0.003 to 0.030)	0.115
Overweight BMI (RC: Normal or underweight)	-0.010	0.012	-0.008 (-0.026 to 0.011)	0.426
Obese BMI (RC: Normal or underweight)	0.018	0.016	0.011 (-0.008 to 0.031)	0.252
Previously used tobacco (RC: Non-smoker)	0.011	0.012	0.009 (-0.009 to 0.026)	0.340
Uses tobacco (RC: Non-smoker)	0.001	0.023	0.001 (-0.017 to 0.018)	0.951
Fit	R²=0.05; AIC=24,987.20			

B=Unstandardized regression coefficient; SE B=Standard error for the unstandardized regression coefficient; β (95% CI)=Standardized regression coefficient and 95% Confidence Intervals.

Table S5.

Restricted cubic spline regression model results and test of interaction effects with baseline measures predicting mean reaction time (RT) at follow-up (N=13,342). Categorical variables are reported with the reference category (RC) in brackets.

Predictors	RT			
	B	SE B	β (95% CI)	P value
RT at baseline	0.566	0.010	0.547 (0.523 to 0.562)	<0.001
Daily alcohol use (Spline 1: Linear effect up to 10g/day)	-0.012	0.004	-0.051 (-0.116 to -0.028)	0.001
Daily alcohol use (Spline 2: Slope effect)	0.009	0.005	0.032 (-0.002 to 0.062)	0.069
Age with years between assessments	0.001	0.001	0.120 (0.108 to 0.140)	<0.001
Male (RC: Female)	-0.009	0.004	-0.026 (-0.044 to -0.006)	0.009
Townsend deprivation score	-0.001	0.001	-0.013 (-0.032 to 0.005)	0.163
Academic degree or higher (RC: No academic degree)	-0.010	0.003	-0.028 (-0.044 to -0.010)	0.002
Walking activity	0.001	0.001	0.001 (-0.015 to 0.016)	0.909
Overweight BMI (RC: Normal or underweight)	-0.002	0.003	-0.006 (-0.022 to 0.010)	0.463
Obese BMI (RC: Normal or underweight)	0.003	0.004	0.007 (-0.012 to 0.026)	0.462
Previously used tobacco (RC: Non-smoker)	0.006	0.003	0.016 (-0.002 to 0.033)	0.091
Uses tobacco (RC: Non-smoker)	0.005	0.007	0.007 (-0.013 to 0.026)	0.516
Daily alcohol use Spline 1 with RT at baseline	-0.006	0.005	-0.023 (-0.081 to 0.018)	0.214
Daily alcohol use Spline 2 with RT at baseline	0.007	0.003	0.040 (0.005 to 0.070)	0.022
Daily alcohol use Spline 1 with age	0.026	0.004	0.104 (0.101 to 0.176)	<0.001

Daily alcohol use Spline 2 with age	-0.012	0.003	-0.07 (-0.093 to -0.039)	<0.001
Daily alcohol use Spline 1 with gender	0.001	0.004	0.002 (-0.038 to 0.043)	0.887
Daily alcohol use Spline 2 with gender	0.001	0.003	0.008 (-0.021 to 0.037)	0.609
Daily alcohol use Spline 1 with Townsend deprivation score	0.003	0.004	0.013 (-0.029 to 0.064)	0.453
Daily alcohol use Spline 2 with Townsend deprivation score	-0.001	0.003	-0.003 (-0.034 to 0.029)	0.873
Daily alcohol use Spline 1 with education	-0.001	0.004	-0.001 (-0.042 to 0.040)	0.969
Daily alcohol use Spline 2 with education	0.002	0.003	0.001 (-0.018 to 0.037)	0.505
Daily alcohol use Spline 1 with walking activity	-0.002	0.003	-0.006 (-0.043 to 0.026)	0.639
Daily alcohol use Spline 2 with walking activity	0.003	0.002	0.016 (-0.009 to 0.040)	0.223
Daily alcohol use Spline 1 with BMI	-0.003	0.004	-0.010 (-0.059 to 0.028)	0.479
Daily alcohol use Spline 2 with BMI	0.003	0.003	0.015 (-0.013 to 0.041)	0.312
Daily alcohol use Spline 1 with tobacco use	-0.001	0.004	-0.003 (-0.051 to 0.043)	0.87
Daily alcohol use Spline 2 with tobacco use	0.001	0.005	0.007 (-0.026 to 0.038)	0.705
Fit			$R^2=0.35$; AIC=-12542.42	

B=Unstandardized regression coefficient; SE B=Standard error for the unstandardized regression coefficient; β (95% CI)=Standardized regression coefficient and 95% Confidence Intervals.

Table S6.

Restricted cubic spline regression model results and test of interaction effects with baseline measures predicting intra-individual variability in reaction time (IIV) at follow-up (N=13,342). Categorical variables are reported with the reference category (RC) in brackets.

Predictors	IIV			
	B	SE B	β (95% CI)	P value
IIV at baseline	0.178	0.010	0.179 (0.160 to 0.200)	<0.001
Daily alcohol use (Spline 1: Linear effect up to 10g/day)	-0.039	0.014	-0.050 (-0.121 to -0.022)	0.005
Daily alcohol use (Spline 2: Slope effect)	0.020	0.019	0.020 (-0.018 to 0.057)	0.310
Age with years between assessments	0.001	0.001	0.076 (0.061 to 0.098)	<0.001
Male (RC: Female)	-0.014	0.014	-0.011 (-0.033 to 0.011)	0.341
Townsend deprivation score	-0.001	0.002	-0.006 (-0.026 to 0.015)	0.579
Academic degree or higher (RC: No academic degree)	-0.045	0.013	-0.035 (-0.055 to -0.015)	0.001
Walking activity	0.005	0.003	0.015 (-0.004 to 0.035)	0.117
Overweight BMI (RC: Normal or underweight)	-0.008	0.013	-0.006 (-0.025 to 0.013)	0.549
Obese BMI (RC: Normal or underweight)	0.018	0.017	0.011 (-0.010 to 0.034)	0.299
Previously used tobacco (RC: Non-smoker)	0.011	0.014	0.008 (-0.012 to 0.028)	0.437
Uses tobacco (RC: Non-smoker)	0.005	0.029	0.002 (-0.020 to 0.024)	0.858
Daily alcohol use Spline 1 with IIV at baseline	-0.012	0.015	-0.015 (-0.067 to 0.027)	0.411
Daily alcohol use Spline 2 with IIV at baseline	0.005	0.010	0.008 (-0.024 to 0.040)	0.624

Daily alcohol use Spline 1 with age	0.058	0.014	0.067 (0.050 to 0.135)	<0.001
Daily alcohol use Spline 2 with age	-0.022	0.010	-0.034 (-0.063 to -0.004)	0.026
Daily alcohol use Spline 1 with gender	0.011	0.013	0.015 (-0.029 to 0.063)	0.461
Daily alcohol use Spline 2 with gender	-0.002	0.012	-0.003 (-0.037 to 0.032)	0.887
Daily alcohol use Spline 1 with Townsend deprivation score	0.024	0.015	0.028 (-0.011 to 0.090)	0.126
Daily alcohol use Spline 2 with Townsend deprivation score	-0.009	0.010	-0.015 (-0.047 to 0.017)	0.362
Daily alcohol use Spline 1 with education	0.009	0.015	0.010 (-0.033 to 0.060)	0.564
Daily alcohol use Spline 2 with education	0.002	0.010	0.004 (-0.028 to 0.035)	0.811
Daily alcohol use Spline 1 with walking activity	-0.012	0.015	-0.015 (-0.066 to 0.027)	0.405
Daily alcohol use Spline 2 with walking activity	0.011	0.010	0.018 (-0.014 to 0.050)	0.281
Daily alcohol use Spline 1 with BMI	-0.006	0.015	-0.007 (-0.062 to 0.041)	0.687
Daily alcohol use Spline 2 with BMI	0.012	0.011	0.019 (-0.014 to 0.051)	0.258
Daily alcohol use Spline 1 with tobacco use	-0.013	0.017	-0.017 (-0.073 to 0.031)	0.431
Daily alcohol use Spline 2 with tobacco use	0.013	0.010	0.024 (-0.013 to 0.060)	0.203
Fit			$R^2=0.05$; AIC=24,932.92	

B=Unstandardized regression coefficient; SE B=Standard error for the unstandardized regression coefficient; β (95% CI)=Standardized regression coefficient and 95% Confidence Intervals.