Supplementary Material

eMethods.

T1-weighted images acquisition details.

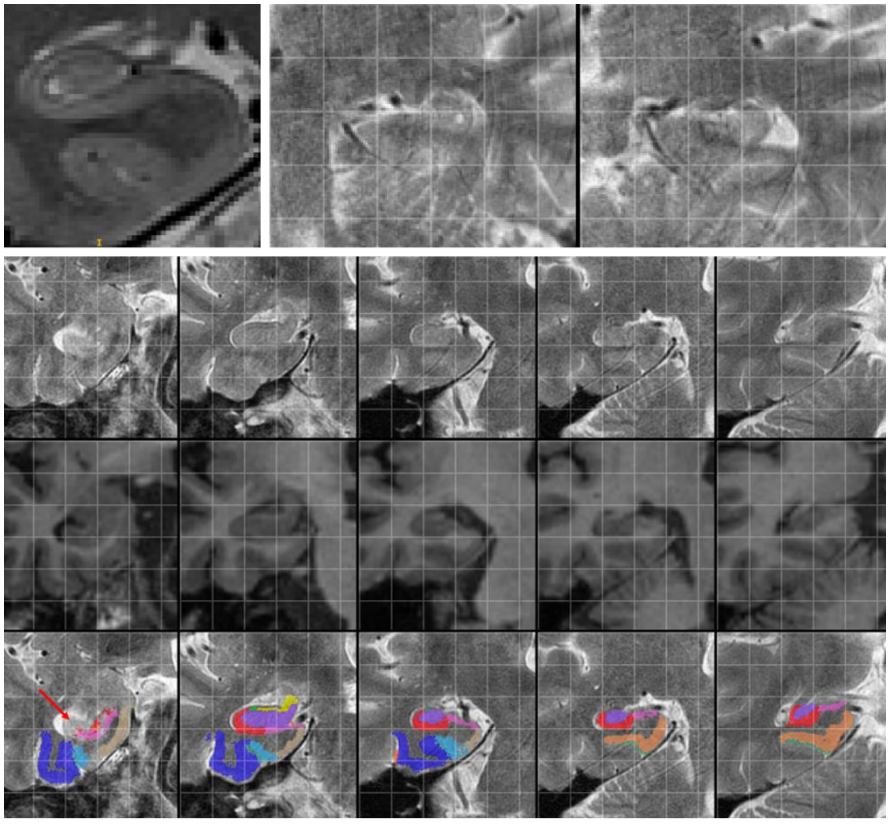
A T1-weighted anatomical image was acquired using a 3D fast-field echo sequence (3D-T1-FFE sagittal, TR =7.1 ms, TE = 3.3 ms, flip angle = 6°, 180 slices with no gap, slice thickness = 1mm, FOV = 256x256 mm^2, in-plane resolution= 1x1x1 mm^3, acquisition time= 5min16). In addition, a FLAIR image was acquired (3D-IR sagittal, TR/TE/TI = 4800/272/1650 ms; flip angle = 40°; 180 slices with no gap; slice thickness = 1 mm; field of view = 250x250 mm^2; in-plane resolution = 0.98x0.98 mm^2).

Florbetapir-PET scan acquisition details.

A dual-phase Florbetapir-PET scan was performed using a Discovery RX VCT 64 PET-CT scanner (General Electric Healthcare) with a resolution of 3.76 × 3.76 × 4.9 mm^3 (field of view = 157 mm), and forty-seven planes were obtained with a voxel size of 1.95 × 1.95 × 3.27 mm^3. A transmission scan was performed for attenuation correction before the PET acquisition. An early 10-minute acquisition began at the intravenous injection of ~4MBq/Kg of Florbetapir, reflecting brain perfusion. Then, a late 10-minute acquisition was performed 50 minutes after the intravenous injection, measuring brain amyloid deposition.

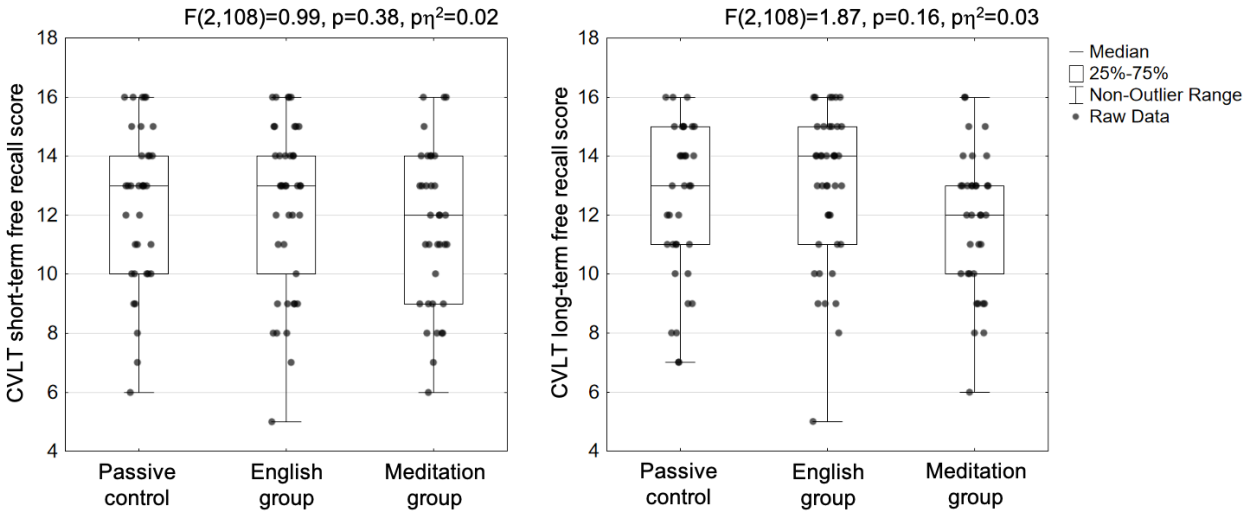
Quality check procedure of high resolution T2-weighted images and MTL segmentations.

All images were visually inspected, and considered of good quality when (i) the dark band was clearly visible as it is used as a landmark to segment the hippocampal formation (up-left image of the figure below) and ii) the scan did not contain motion artifacts (up-right images). Then, all segmentations were inspected slice by slice using the ITK-snap software. Minor segmentation errors (e.g., choroid plexus labeled as the hippocampus) were manually edited. In case of more important segmentation errors (bottom left image), subjects were excluded from the analyses.



Illustrations of (i) a good quality image with a clearly visible dark band (up-left), (ii) two images containing motion artifacts (up-right) and (iii) a major segmentation error (bottom panel, red arrow).

<u>eFigure 1.</u> Impact of the intervention group on follow-up CVLT scores.



Boxplots showing the distribution of CVLT scores at follow-up, according to the intervention group (i.e., passive control, English-learning group and meditation group). One-way ANOVAs assessing the impact of the intervention group on CVLT scores at follow-up in the whole cohort were not significant.
<u>Abbreviations</u>: CVLT, California Verbal Learning Test.

<u>eTable 1.</u> Multiple regression analyses between medial temporal subregions volumes and the oxygen desaturation index.

Dependent variables	Independent variables	Adjusted R2	β	Confidence interval		p	pη²
				-95%	95%		
WH	*Whole model*	0.19				<0.001	
	Sex		0.23	0.06	0.4	0.01	0.06
	ApoE		0.1	-0.08	0.28	0.271	0.011
	Aβ status		0.95	0.43	1.47	<0.001	0.107
	Age		-0.18	-0.36	-0.01	0.041	0.038
	Education		0.05	-0.12	0.22	0.577	0.003
	log(ODI)		-0.28	-0.46	-0.09	0.004	0.075
	Aβ status*log(ODI)		**-0.99**	**-1.5**	**-0.48**	**<0.001**	**0.119**
ERC	*Whole model*	0.25				<0.001	
	Sex		0.19	0.03	0.36	0.023	0.047
	ApoE		0.05	-0.12	0.22	0.582	0.003
	Aβ status		1.15	0.64	1.65	<0.001	0.159
	Age		-0.07	-0.24	0.09	0.393	0.007
	Education		0.03	-0.14	0.19	0.756	0.001
	log(ODI)		-0.43	-0.61	-0.25	<0.001	0.176
	Aβ status*log(ODI)		**-1.24**	**-1.73**	**-0.75**	**<0.001**	**0.187**
PRC	*Whole model*	0.04				0.141	
	Sex		0.03	-0.16	0.23	0.733	0.001
	ApoE		0	-0.2	0.2	0.99	<0.001
	Aβ status		0.51	-0.07	1.1	0.085	0.031
	Age		-0.22	-0.43	-0.02	0.029	0.049
	Education		-0.06	-0.26	0.14	0.552	0.004
	log(ODI)		-0.21	-0.42	0.01	0.056	0.037
	Aβ status*log(ODI)		-0.44	-1.01	0.14	0.135	0.023
PHC	*Whole model*	0.13				0.002	
	Sex		0.31	0.13	0.48	0.001	0.096
	ApoE		0.07	-0.12	0.25	0.471	0.005
	Aβ status		0.31	-0.24	0.85	0.265	0.011
	Age		-0.08	-0.26	0.1	0.399	0.007
	Education		-0.1	-0.27	0.08	0.279	0.011
	log(ODI)		-0.2	-0.4	-0.01	0.038	0.039
	Aβ status*log(ODI)		-0.34	-0.87	0.19	0.209	0.015
Subiculum	*Whole model*	0.16				0.001	
	Sex		0.26	0.08	0.44	0.004	0.074
	ApoE		0.07	-0.11	0.25	0.471	0.005
	Aβ status		0.92	0.38	1.45	0.001	0.097
	Age		-0.07	-0.25	0.11	0.43	0.006
	Education		0.04	-0.14	0.21	0.671	0.002
	log(ODI)		-0.23	-0.43	-0.04	0.016	0.052
	Aβ status*log(ODI)		**-0.99**	**-1.51**	**-0.46**	**<0.001**	**0.115**
CA1	*Whole model*	0.17				<0.001	
	Sex		0.2	0.03	0.37	0.025	0.046
	ApoE		0.11	-0.07	0.29	0.24	0.013
	Aβ status		0.91	0.38	1.44	0.001	0.097
	Age		-0.19	-0.37	-0.02	0.031	0.042
	Education		0.08	-0.09	0.26	0.339	0.008
	log(ODI)		-0.25	-0.43	-0.06	0.011	0.058

	Aβ status*log(ODI)		-0.97	-1.49	-0.45	<0.001	0.112
CA2-3	*Whole model*	0.07				0.037	
	Sex		0	-0.18	0.19	0.996	<0.001
	ApoE		0.14	-0.05	0.33	0.148	0.019
	Aβ status		0.73	0.17	1.29	0.011	0.058
	Age		-0.18	-0.37	0.01	0.056	0.033
	Education		-0.08	-0.26	0.11	0.418	0.006
	log(ODI)		-0.22	-0.42	-0.02	0.034	0.041
	Aβ status*log(ODI)		-0.5	-1.06	0.05	0.072	0.03
DG	*Whole model*	0.11				0.005	
	Sex		0.21	0.03	0.39	0.024	0.046
	ApoE		0.05	-0.14	0.24	0.594	0.003
	Aβ status		0.66	0.11	1.2	0.019	0.05
	Age		-0.15	-0.33	0.03	0.105	0.024
	Education		-0.01	-0.19	0.17	0.888	<0.001
	log(ODI)		-0.26	-0.46	-0.07	0.009	0.061
	Aβ status*log(ODI)		-0.68	-1.22	-0.14	0.014	0.055

Separate multiple linear regressions models included the volume of each MTL subregion as dependent variables, the ODI and amyloid status as independent variables, controlling for age, sex, education and the APOE4 status. An interaction term was added between the ODI and amyloid status, and interactions indicated in bold are still significant after a Bonferroni correction for multiple comparison (p=0.05/8 regions=0.006).

Abbreviations: Aβ, beta-amyloid; AHI, apnea-hypopnea index; β, standardized regression coefficient; CA, Cornu Ammonis; DG, dentate gyrus; ERC, entorhinal cortex; ODI, ≥3% oxygen desaturation index; PHC, parahippocampal cortex; PRC, perirhinal cortex; SDB, sleep-disordered breathing; SUB, subiculum.

eTable 2. Multiple regression analyses between medial temporal subregions volumes and the respiratory arousals index.

Dependent variables	Independent variables	Adjusted R2	β	Confidence interval		p	pη²
				-95%	95%		
WH	*Whole model*	*0.13*				*0.001*	
	Sex		0.25	0.08	0.43	0.005	0.066
	ApoE		0.09	-0.09	0.26	0.348	0.008
	Aβ status		0.38	0.03	0.72	0.031	0.04
	Age		-0.18	-0.35	-0.004	0.046	0.035
	Education		-0.0007	-0.18	0.17	0.994	<0.001
	RMI		-0.22	-0.42	-0.02	0.032	0.04
	Aβ status*RMI		**-0.49**	**-0.83**	**-0.15**	**0.005**	**0.066**
ERC	*Whole model*	*0.23*				*<0.001*	
	Sex		0.22	0.06	0.39	0.009	0.058
	ApoE		0.03	-0.13	0.2	0.683	0.001
	Aβ status		0.57	0.24	0.89	0.001	0.096
	Age		-0.09	-0.26	0.07	0.259	0.011
	Education		-0.09	-0.25	0.08	0.291	0.01
	RMI		-0.47	-0.65	-0.28	<0.001	0.178
	Aβ status*RMI		**-0.72**	**-1.04**	**-0.4**	**<0.001**	**0.149**
PRC	*Whole model*	*-0.0006*				*0.442*	
	Sex		0.01	-0.19	0.21	0.901	<0.001
	ApoE		0.01	-0.19	0.22	0.895	<0.001
	Aβ status		0.11	-0.29	0.51	0.582	0.003
	Age		-0.26	-0.46	-0.06	0.012	0.062
	Education		-0.05	-0.26	0.15	0.599	0.003
	RMI		-0.07	-0.28	0.15	0.527	0.004
	Aβ status*RMI		-0.03	-0.41	0.35	0.869	<0.001
PHC	*Whole model*	*0.11*				*0.005*	
	Sex		0.27	0.09	0.45	0.003	0.073
	ApoE		0.03	-0.15	0.22	0.704	0.001
	Aβ status		0.17	-0.18	0.51	0.346	0.008
	Age		-0.11	-0.29	0.07	0.225	0.013
	Education		-0.12	-0.3	0.05	0.166	0.017
	RMI		-0.23	-0.43	-0.03	0.026	0.043
	Aβ status*RMI		-0.21	-0.55	0.14	0.235	0.012
Subiculum	*Whole model*	*0.09*				*0.015*	
	Sex		0.25	0.07	0.43	0.008	0.06
	ApoE		0.05	-0.14	0.23	0.627	0.002
	Aβ status		0.36	0.01	0.71	0.045	0.035
	Age		-0.1	-0.28	0.07	0.248	0.012
	Education		-0.02	-0.19	0.16	0.866	<0.001
	RMI		-0.2	-0.41	-0.0003	0.05	0.033
	Aβ status*RMI		-0.46	-0.81	-0.11	0.011	0.056
CA1	*Whole model*	*0.11*				*0.004*	
	Sex		0.23	0.05	0.41	0.012	0.055
	ApoE		0.09	-0.09	0.27	0.314	0.009
	Aβ status		0.31	-0.04	0.65	0.083	0.026
	Age		-0.19	-0.36	-0.01	0.037	0.038
	Education		0.03	-0.14	0.21	0.712	0.001
	RMI		-0.18	-0.38	0.02	0.083	0.026

	Aβ status*RMI		-0.42	-0.76	-0.07	0.018	0.048
CA2-3	*Whole model*	*0.06*				*0.048*	
	Sex		0.03	-0.16	0.21	0.769	0.001
	ApoE		0.16	-0.03	0.34	0.102	0.023
	Aβ status		0.51	0.16	0.87	0.005	0.067
	Age		-0.17	-0.35	0.01	0.065	0.03
	Education		-0.12	-0.3	0.06	0.189	0.015
	RMI		-0.22	-0.43	-0.01	0.036	0.038
	Aβ status*RMI		-0.34	-0.69	0.01	0.059	0.031
DG	*Whole model*	*0.09*				*0.013*	
	Sex		0.23	0.05	0.41	0.012	0.054
	ApoE		0.04	-0.14	0.23	0.649	0.002
	Aβ status		0.32	-0.03	0.67	0.07	0.029
	Age		-0.13	-0.3	0.05	0.167	0.017
	Education		-0.03	-0.21	0.15	0.729	0.001
	RMI		-0.21	-0.41	-0.002	0.048	0.034
	Aβ status*RMI		-0.45	-0.8	-0.1	0.012	0.054

Separate multiple linear regressions models included the volume of each MTL subregion as dependent variables, the RMI and amyloid status as independent variables, controlling for age, sex, education and the APOE4 status. An interaction term was added between the RMI and amyloid status, and interactions indicated in bold are still significant after a Bonferroni correction for multiple comparison (p=0.05/8 regions=0.006).

Abbreviations: Aβ, beta-amyloid; AHI, apnea-hypopnea index; β, standardized regression coefficient; CA, Cornu Ammonis; DG, dentate gyrus; ERC, entorhinal cortex; PHC, parahippocampal cortex; PRC, perirhinal cortex; RMI, respiratory microarousals index; SDB, sleep-disordered breathing; SUB, subiculum.

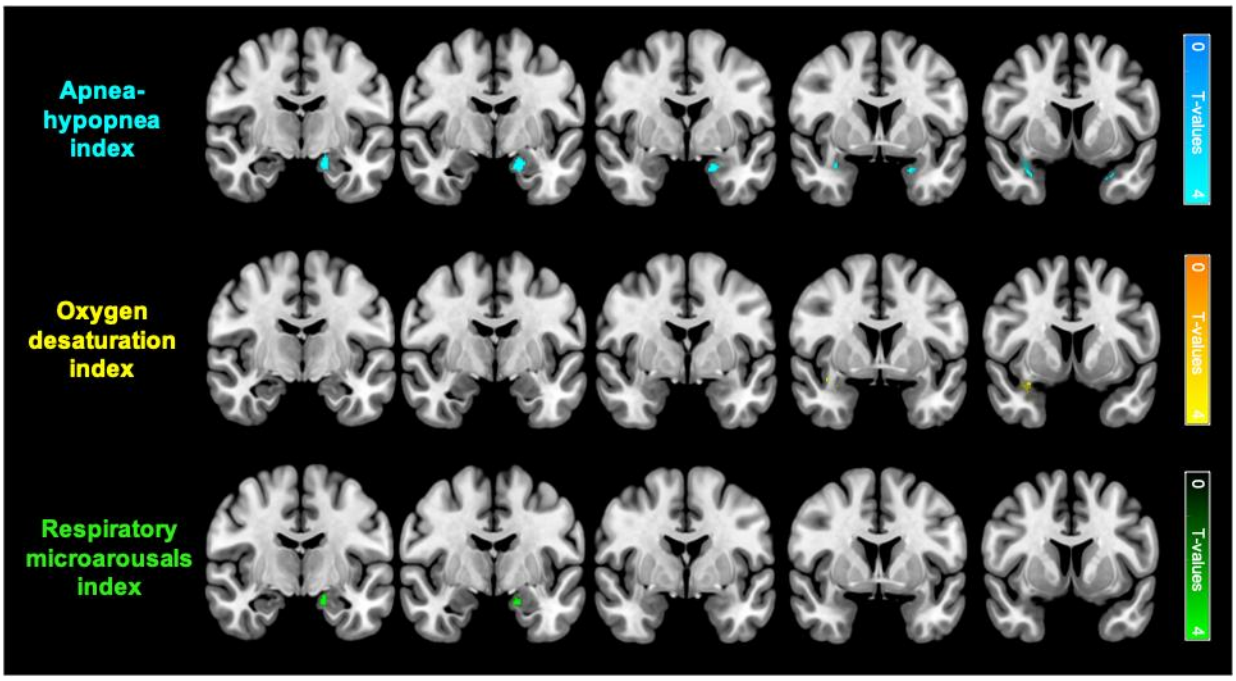
eTable 3. Multiple regression analyses between SDB parameters and medial temporal subregions volumes measured on T1-weighted images.

Dependent Variable	Independent variables	Adjusted R^2	β (95% CI)	p	$p\eta^2$
Whole hippocampus	Whole model	0.13		0.001	
	AHI		-0.25 (-0.45 – -0.06)	0.01	0.06
	AHI*Aβ status		**-0.60 (-0.94 – -0.26)**	**<0.001**	**0.10**
	Whole model	0.15		0.001	
	Log(ODI)		-0.28 (-0.47 – -0.09)	0.005	0.07
	Log(ODI)*Aβ status		**-0.95 (-1.48 – -0.42)**	**<0.001**	**0.11**
	Whole model	0.09		0.01	
	RMI		-0.21 (-0.41 – -0.01)	0.04	0.04
	RMI*Aβ status		**-0.49 (-0.83 – -0.14)**	**0.007**	**0.06**
Entorhinal cortex	Whole model	0.16		<0.001	
	AHI		-0.33 (-0.52 – -0.14)	<0.001	0.09
	AHI*Aβ status		**-0.67 (-1.00 – -0.33)**	**<0.001**	**0.12**
	Whole model	0.15		<0.001	
	Log(ODI)		-0.36 (-0.55 – -0.17)	<0.001	0.11
	Log(ODI)*Aβ status		**-0.98 (-1.50 – -0.45)**	**<0.001**	**0.11**
	Whole model	0.13		0.002	
	RMI		-0.30 (-0.50 – -0.10)	0.004	0.07
	RMI*Aβ status		**-0.60 (-0.94 – -0.26)**	**<0.001**	**0.10**
Perirhinal cortex	Whole model	0.04		0.11	
	AHI		-0.06 (-0.27 – 0.14)	0.54	0.003
	AHI*Aβ status		-0.18 (-0.66 – 0.07)	0.12	0.02
	Whole model	0.09		0.02	
	Log(ODI)		-0.18 (-0.38 – 0.02)	0.07	0.03
	Log(ODI)*Aβ status		-0.67 (-1.22 – -0.11)	0.02	0.05
	Whole model	0.03		0.14	
	RMI		-0.03 (-0.24 – 0.18)	0.80	0.001
	RMI*Aβ status		-0.22 (-0.59 – 0.15)	0.24	0.01
Parahippocampal cortex	Whole model	0.14		0.001	
	AHI		-0.27 (-0.46 – -0.08)	0.006	0.06
	AHI*Aβ status		-0.21 (-0.55 – 0.13)	0.23	0.01
	Whole model	0.16		<0.001	
	Log(ODI)		-0.26 (-0.45 – -0.07)	0.007	0.07
	Log(ODI)*Aβ status		-0.33 (-0.85 – 0.20)	0.22	0.01
	Whole model	0.11		0.004	
	RMI		-0.21 (-0.41 – -0.01)	0.04	0.04
	RMI*Aβ status		-0.16 (-0.51 – 0.18)	0.35	0.01

Separate multiple linear regressions models included the volume of each MTL subregion as dependent variables, SDB parameters (i.e., AHI, ODI or RMI) and amyloid status as independent variables, controlling for age, sex, education and the APOE4 status. An interaction term was added between SDB variables and amyloid status, and interactions indicated in bold are still significant after a Bonferroni correction for multiple comparison (for each SDB parameter, p=0.05/4 regions= 0.0125).

Abbreviations: AHI, apnea-hypopnea index; β, standardized regression coefficient; CA, Cornu Ammonis; ODI, ≥3% oxygen desaturation index; RMI, respiratory microarousals index; SDB, sleep-disordered breathing.

<u>eFigure 2</u>: Voxel-wise associations between SDB parameters and gray matter volume in amyloid-positive participants.



Negative voxel-wise multiple regression between the AHI, ODI, RMI and GM volume in amyloid-positive participants, controlling for age, sex, education and the APOE4 status. Results are presented at the $p<0.005$ (uncorrected) level combined with $p<0.05$ FWE cluster-level threshold. Statistical peaks and coordinates are detailed in **eTable 4**.

<u>Abbreviations</u>: AHI, apnea-hypopnea index; ApoE4, Apolipoprotein E allele ε4; FWE, family-wise error; ODI, ≥3% oxygen desaturation index; RMI, respiratory microarousal index; SDB, sleep-disordered breathing.

<u>eTable 4.</u> Partial correlations between SDB severity parameters and left and right medial temporal subregional volumes according to amyloid status.

Variable	AHI		Log(ODI)		RMI	
	Aβ+ individuals (n=26)	Aβ - individuals (n=96)	Aβ + individuals (n=25)	Aβ - individuals (n=91)	Aβ + individuals (n=26)	Aβ - individuals (n=96)
Left WH	**r=-0.68**	r=0.03	**r=-0.65**	r=0.02	**r=-0.59**	r=0.03
	p<0.001	p=0.76	**p=0.001**	p=0.83	**p=0.004**	p=0.81
Right WH	**r=-0.76**	r=0.10	**r=-0.70**	r=0.13	**r=-0.70**	r=0.09
	p<0.001	p=0.35	**p=0.001**	p=0.24	**p<0.001**	p=0.40
Left ERC	**r=-0.75**	r=-0.02	**r=-0.77**	r=-0.03	**r=-0.68**	r=-0.02
	p<0.001	p=0.82	**p<0.001**	p=0.82	**p=0.001**	p=0.89
Right ERC	**r=-0.73**	r=-0.06	**r=-0.64**	r=0.04	**r=-0.66**	r=-0.08
	p<0.001	p=0.57	**p=0.002**	p=0.74	**p=0.001**	p=0.43
Left PHC	r=-0.21	r=-0.09	r=-0.32	r=-0.10	r=-0.16	r=-0.07
	p=0.36	p=0.42	p=0.15	p=0.36	p=0.47	p=0.50
Right PHC	**r=-0.59**	r=-0.15	r=-0.34	r=-0.06	**r=-0.55**	r=-0.12
	p=0.004	p=0.17	p=0.14	p=0.60	**p=0.008**	p=0.25
Left PRC	r=-0.13	r=-0.03	r=-0.32	r=0.02	r=-0.19	r=0.006
	p=0.62	p=0.84	p=0.22	p=0.90	p=0.47	p=0.97
Right PRC	r=-0.22	r=-0.07	**r=-0.57**	r=-0.07	r=-0.24	r=-0.05
	p=0.41	p=0.59	**p=0.022**	p=0.60	p=0.36	p=0.67
Left subiculum	**r=-0.70**	r=0.01	**r=-0.66**	r=0.06	**r=-0.57**	r=0.01
	p<0.001	p=0.92	**p=0.001**	p=0.60	**p=0.005**	p=0.91
Right subiculum	**r=-0.49**	r=0.1109	**r=-0.56**	r=0.18	**r=-0.43**	r=0.11
	p=0.021	p=0.30	**p=0.009**	p=0.10	**p=0.048**	p=0.31
Left CA1	**r=-0.56**	r=0.06	**r=-0.56**	r=0.07	**r=-0.48**	r=0.04
	p=0.007	p=0.57	**p=0.008**	p=0.52	**p=0.024**	p=0.70
Right CA1	**r=-0.70**	r=0.10	**r=-0.66**	r=0.13	**r=-0.63**	r=0.09
	p<0.001	p=0.36	**p=0.001**	p=0.23	**p=0.002**	p=0.43
Left CA2-3	**r=-0.51**	r=0.04	r=-0.43	r=-0.0001	**r=-0.49**	r=0.04
	p=0.016	p=0.72	p=0.052	p=0.99	**p=0.021**	p=0.69
Right CA2-3	r=-0.42	r=-0.13	r=-0.24	r=-0.04	r=-0.39	r=-0.12
	p=0.054	p=0.22	p=0.30	p=0.73	p=0.07	p=0.25
Left DG	**r=-0.64**	r=-0.02	**r=-0.61**	r=-0.10	**r=-0.55**	r=-0.01
	p=0.001	p=0.84	**p=0.004**	p=0.38	**p=0.008**	p=0.92
Right DG	**r=-0.72**	r=0.08	**r=-0.62**	r=0.05	**r=-0.68**	r=0.07
	p<0.001	p=0.46	**p=0.003**	p=0.62	**p=0.001**	p=0.49

Partial correlations between SDB severity parameters and medial temporal subregional volumes were performed separately in amyloid positive (Aβ+) and amyloid negative (Aβ-) participants, controlling age, sex, education and the APOE4 status.

<u>Abbreviations</u>: Aβ, beta-amyloid; AHI, apnea-hypopnea index; CA, Cornu Ammonis; DG, dentate gyrus; ERC, entorhinal cortex; ODI, ≥3% oxygen desaturation index; PHC, parahippocampal cortex; PRC, perirhinal cortex; RMI, respiratory microarousals index; SDB, sleep-disordered breathing; SUB, subiculum.

eTable 5. Results of the negative voxel-wise multiple regression analyses between SDB parameters and GM volume in amyloid-positive participants.

SDB parameter	Cluster labelling	Cluster extent		MNI coordinates			P (cluster-level)	T-value
		Nb of voxels	mm^3	x	y	z		
AHI	L Temporal Pole Sup, Hippocampus, Amygdala, Parahippocampal gyrus	613	2069	-28	9	-28	0.001	3.85
	R Temporal Pole Sup, Amygdala, Parahippocampal gyrus	191	644.6	32	6	-27	0.046	3.59
ODI	R Temporal Pole Sup, Amygdala, Parahippocampal gyrus	181	610.9	33	6	-18	0.050	4.00

Negative voxel-wise multiple regression between SDB parameters and GM volume in amyloid-positive participants, controlling for age, sex, education and the APOE4 status. Results are presented at the $p<0.005$ (uncorrected) level, combined with $p<0.05$ cluster-level threshold. MNI coordinates are given for the main peak of each significant cluster. The first labelled region corresponds to the statistical peak, and the other regions listed compose the rest of the cluster.

Abbreviations: AHI, Apnoea-Hypopnea Index; APOE4, Apolipoprotein E allele ε4; L, left; MNI, Montreal Neurological Institute; ODI, ≥3% oxygen desaturation index; R, right; sup, superior.

<u>eTable 6</u>. Partial correlations between medial temporal subregional volumes and episodic memory at baseline, in the whole cohort and in subgroups stratified by amyloid status.

Variable	Whole cohort (n=122)		Aβ+ individuals (n=26)		Aβ - individuals (n=96)	
	Log(CVLT STFR)	Log(CVLT LTFR)	Log(CVLT STFR)	Log(CVLT LTFR)	Log(CVLT STFR)	Log(CVLT LTFR)
Apnea-hypopnea index: nb/h	r=-0.11	r=-0.08	r=-0.05	r=-0.14	r=-0.14	r=-0.07
	p=0.25	p=0.38	p=0.82	p=0.53	p=0.18	p=0.50
Respiratory microarousal index: nb/h	r=-0.13	r=-0.08	r=-0.10	r=-0.13	r=-0.17	r=-0.07
	p=0.16	p=0.41	p=0.67	p=0.56	p=0.11	p=0.50
3% oxygen desaturation index: nb/h [a]	r=-0.14	r=-0.14	r=-0.19	r=-0.25	r=-0.12	r=-0.09
	p=0.15	p=0.15	p=0.40	p=0.27	p=0.27	p=0.41
Whole hippocampus	r=0.08	r=0.09	r=-0.001	r=0.06	r=0.05	r=0.08
	p=0.38	p=0.37	p=0.996	p=0.78	p=0.61	p=0.46
Entorhinal cortex	r=-0.05	r=-0.02	r=-0.08	r=-0.02	r=-0.04	r=-0.02
	p=0.62	p=0.84	p=0.72	p=0.94	p=0.68	p=0.86
Subiculum	r=-0.03	r=-0.01	r=0.11	r=0.21	r=-0.08	r=-0.08
	p=0.78	p=0.93	p=0.63	p=0.34	p=0.42	p=0.44
CA1 subfield	r=0.08	r=0.08	r=0.01	r=0.09	r=0.04	r=0.06
	p=0.42	p=0.42	p=0.97	p=0.69	p=0.74	p=0.58
Dentate gyrus	r=0.14	r=0.13	r=-0.07	r=-0.10	r=0.15	r=0.18
	p=0.12	p=0.16	p=0.75	p=0.68	p=0.15	p=0.10

Result of the associations between medial temporal subregional volumes and episodic memory at baseline, controlling for age, sex, education, the APOE4 status. No association reached significance at a $p<0.05$ (uncorrected) threshold.

[a] whole cohort: n=116, Aβ+ individuals: n=25, Aβ- individuals: n=91.

<u>Abbreviations</u>: Aβ, beta-amyloid; CA, Cornu Ammonis; CVLT, California Verbal Learning Test; LTFR, long-term free recall; nb, number; STFR, short-term free recall.

eTable 7. Sex differences in demographical, sleep, neuroimaging and cognitive data.

Variable	Men (n=45)		Women (n=77)		Between-group differences		
	Mean	Std.Dev.	Mean	Std.Dev.	t-value	df	p
Age	69.00	4.02	68.94	3.73	0.09	120	0.928
Education	13.78	3.12	12.65	2.94	2.00	120	**0.048**
AHI	28.57	15.60	22.95	13.73	2.07	120	**0.040**
RMI	23.19	13.02	18.88	12.04	1.85	120	0.067
Log(ODI)	1.10	0.39	1.01	0.32	1.24	114	0.219
WH	1.69	0.18	1.80	0.19	-3.07	120	**0.003**
ERC	0.39	0.04	0.42	0.05	-3.04	120	**0.003**
PHC	0.63	0.08	0.69	0.09	-3.74	120	**<0.001**
PRC	1.60	0.20	1.61	0.22	-0.33	105	0.740
CA1	0.92	0.11	0.97	0.11	-2.73	120	**0.007**
CA2-3	0.07	0.01	0.07	0.01	-0.94	120	0.350
DG	0.39	0.05	0.42	0.06	-2.79	120	**0.006**
Subiculum	0.31	0.04	0.33	0.04	-2.91	120	**0.004**
log(CVLT STFR baseline)	1.02	0.12	1.09	0.11	-3.41	120	**0.001**
log(CVLT LTFR baseline)	1.05	0.11	1.10	0.13	-2.30	120	**0.023**
log(CVLT STFR follow-up)	1.03	0.12	1.09	0.10	-2.45	109	**0.016**
log(CVLT LTFR follow-up)	1.05	0.11	1.10	0.09	-2.54	109	**0.013**

Between-group differences in demographic, sleep apnea, medial temporal subregions volumes and memory scores were assessed using Student t-tests in the whole sample.

Abbreviations: AHI, apnea-hypopnea index; CA, Cornu Ammonis; CVLT, California Verbal Learning Test; LTFR, long-term free recall; DG, dentate gyrus; ERC, entorhinal cortex; ODI, ≥3% oxygen desaturation index; PHC, parahippocampal cortex; PRC, perirhinal cortex; RMI, respiratory microarousals index; STFR, short-term free recall; SUB, subiculum.

eTable 8. Associations between sleep architecture and SDB and MTL variables in the whole cohort.

Variables	Total sleep time (min)	log(sleep latency) (min)	log(WASO) (min)	log(N1%)	N2%	N3%	REM%	Sleep efficiency (%)	log(Nocturnal awakenings) (nb/h)
AHI (nb/h)	r=-0.12	r=0.12	r=0.09	**r=0.41**	r=0.13	**r=-0.26**	**r=-0.30**	r=-0.12	**r=0.25**
	p=0.18	p=0.18	p=0.34	**p<0.001**	p=0.18	**p=0.005**	**p=0.001**	p=0.21	**p=0.007**
log(ODI) (nb/h) [a]	r=0.01	r=0.10	r=0.003	**r=0.32**	r=-0.006	r=-0.10	**r=-0.23**	r=-0.002	r=0.16
	p=0.93	p=0.28	p=0.98	**p=0.001**	p=0.95	p=0.30	**p=0.02**	p=0.98	p=0.09
RMI (nb/h)	r=-0.11	r=0.15	r=0.07	**r=0.37**	r=0.17	**r=-0.28**	**r=-0.27**	r=-0.10	**r=0.21**
	p=0.23	p=0.11	p=0.46	**p<0.001**	p=0.06	**p=0.002**	**p=0.004**	p=0.28	**p=0.02**
WH	r=-0.05	r=0.07	r=0.04	r=0.05	r=-0.02	r=-0.04	r=-0.03	r=-0.10	r=0.13
	p=0.63	p=0.44	p=0.68	p=0.63	p=0.87	p=0.71	p=0.77	p=0.27	p=0.16
ERC	r=0.03	r=0.07	r=-0.09	r=0.04	r=-0.10	r=0.004	r=0.05	r=0.02	r=0.04
	p=0.79	p=0.45	p=0.31	p=0.67	p=0.30	p=0.96	p=0.60	p=0.83	p=0.68
PHC	r=0.01	r=0.04	r=-0.09	r=-0.10	r=-0.13	r=0.14	r=0.08	r=0.06	r=-0.12
	p=0.90	p=0.70	p=0.34	p=0.29	p=0.15	p=0.13	p=0.42	p=0.54	p=0.20
PRC [b]	r=0.04	r=0.04	r=-0.01	r=-0.05	r=-0.11	r=0.12	r=0.007	r=-0.0004	r=-0.11
	p=0.67	p=0.72	p=0.90	p=0.63	p=0.29	p=0.22	p=0.94	p=0.10	p=0.28
Subiculum	r=-0.10	r=0.02	r=-0.01	r=-0.04	r=-0.007	r=-0.03	r=0.05	r=-0.03	r=0.08
	p=0.28	p=0.87	p=0.91	p=0.70	p=0.94	p=0.79	p=0.61	p=0.75	p=0.41
CA1	r=-0.06	r=0.08	r=0.06	r=0.04	r=-0.0003	r=-0.05	r=-0.02	r=-0.13	r=0.14
	p=0.52	p=0.38	p=0.52	p=0.70	p=0.10	p=0.61	p=0.84	p=0.17	p=0.13
CA2-3	r=0.12	r=0.03	r=-0.08	r=0.04	r=-0.13	r=0.13	r=-0.12	r=0.03	r=-0.12
	p=0.20	p=0.76	p=0.40	p=0.68	p=0.17	p=0.17	p=0.19	p=0.78	p=0.21
DG	r=0.01	r=0.07	r=0.04	r=0.09	r=-0.02	r=-0.03	r=-0.06	r=-0.08	r=0.14
	p=0.94	p=0.47	p=0.70	p=0.31	p=0.84	p=0.72	p=0.52	p=0.41	p=0.14

Partial correlations assessing the associations between sleep architecture variables and SDB and MTL related variables in the whole cohort (n=122), controlling for age, sex, education and ApoE4 status.

[a] n=116 participants.

[b] n=107 participants.

Abbreviations: AHI, apnea-hypopnea index; CA, Cornu Ammonis; DG, dentate gyrus; ERC, entorhinal cortex; nb, number ; NREM, non-REM sleep; ODI, ≥3% oxygen desaturation index; PHC, parahippocampal cortex; PRC, perirhinal cortex; REM, rapid eye movement sleep; RMI, respiratory microarousals index; SE, sleep efficiency; SL, sleep latency; SUB, subiculum; TST, total sleep time; WASO, wake after sleep onset.