eFigure 1. Flow diagram of participant inclusion in the present study sample.

| Variable | Speed Reserve | | | | Memory Reserve | | | |
| | Women | | Men | | Women | | Men | |
	β (SE)	p	β (SE)	p	β (SE)	p	β (SE)	p
Intercept	-0.66 (0.73)	0.37	0.31 (1)	0.76	0.49 (0.57)	0.39	0.17 (0.87)	0.85
Age	-0.01 (0.01)	0.05	-0.01 (0.01)	0.17	-0.02 (0.01)	0.00	-0.02 (0.01)	0.01
Education	0.06 (0.01)	<0.001	0.02 (0.01)	0.05	0.02 (0.01)	0.04	0.03 (0.01)	0.01
WHICAP Cohort	0.06 (0.09)	0.53	0.04 (0.11)	0.70	0.03 (0.07)	0.62	0.08 (0.09)	0.41
APOE4 (Non-Carrier)	0.13 (0.08)	0.12	0.01 (0.1)	0.91	0.07 (0.06)	0.26	0.06 (0.09)	0.48
Race/Ethnicity (Hispanic)	-0.38 (0.1)	<0.001	-0.49 (0.12)	<0.001	-0.03 (0.08)	0.74	0.24 (0.11)	0.02
Race (White)	0.12 (0.09)	0.16	0.09 (0.11)	0.43	0.22 (0.07)	0.00	0.33 (0.09)	0.001
Diagnosis (MCI)	0.45 (0.13)	0.001	0.11 (0.19)	0.57	0.18 (0.1)	0.07	0.34 (0.16)	0.04
Diagnosis (Normal)	0.8 (0.13)	<0.001	0.5 (0.18)	0.01	0.74 (0.1)	<0.001	0.74 (0.16)	<0.001
METS	0.04 (0.02)	0.05	0 (0.02)	0.85	0.01 (0.01)	0.68	-0.01 (0.02)	0.53

eTable 1. MET and Speed and Memory Reserves regression coefficients, stratified by sex.

	Speed Reserve				Memory Reserve			
	Women		Men		Women		Men	
Variable	**β (SE)**	**p**	**β (SE)**	**p**	**β (SE)**	**p**	**β (SE)**	**p**
Intercept	-0.78 (0.74)	0.29	0.1 (0.95)	0.92	0.4 (0.57)	0.49	0.07 (0.84)	0.93
Age	-0.01 (0.01)	0.06	-0.01 (0.01)	0.21	-0.02 (0.01)	0.001	-0.02 (0.01)	0.01
Education	0.06 (0.01)	<0.001	0.02 (0.01)	0.13	0.02 (0.01)	0.05	0.03 (0.01)	0.01
WHICAP Cohort	0.1 (0.09)	0.22	0.03 (0.1)	0.76	0.04 (0.07)	0.52	0.08 (0.09)	0.42
APOE4 (Non-carrier)	0.14 (0.08)	0.09	-0.01 (0.1)	0.95	0.08 (0.06)	0.23	0.07 (0.09)	0.42
Race/Ethnicity (Hispanic)	-0.35 (0.1)	0.001	-0.44 (0.12)	0.001	-0.01 (0.08)	0.91	0.23 (0.11)	0.03
Race/Ethnicity (White)	0.13 (0.09)	0.13	0.11 (0.11)	0.30	0.22 (0.07)	0.001	0.32 (0.09)	0.001
Diagnosis (MCI)	0.45 (0.13)	0.001	0.09 (0.18)	0.62	0.18 (0.1)	0.09	0.34 (0.16)	0.04
Diagnosis (Normal)	0.77 (0.13)	<0.001	0.47 (0.18)	0.01	0.72 (0.1)	<0.001	0.74 (0.16)	<0.001
COGACT	0.1 (0.05)	0.07	0.18 (0.07)	0.01	0.06 (0.04)	0.15	-0.04 (0.06)	0.52

eTable 2. COGACT and Speed and Memory Reserves regression coefficients, stratified by sex.

Participant Characteristics by Wave	Wave 2	Wave 3	p	Effect size
N	410	348	--	--
Age, years	79.2 (5.27)	72.48 (5.44)	<0.001	1.26
Education, years	11.48 (4.40)	12.92 (4.48)	<0.001	0.33
Frequency of APOE4 carriers	24.15%	32.76%	0.01	0.1
Sex (Female/Male)	273/137	201/147	0.01	0.09
Race/ethnicity, n (Black/Hispanic/White)	150/124/136	142/100/106	0.48	0.04
Diagnosis n (Normal/MCI/Dementia)	199/156/55	250/86/12	<0.001	0.25
Physical activity (METS)	5.57 (1.99)	6.76 (1.88)	<0.001	0.61
Cognitive Activities (COGACT)	1.35 (0.68)	1.51 (0.72)	0.002	0.23
Speed Reserve	-0.1 (0.97)	0.25 (0.81)	<0.001	0.38
Memory Reserve	-0.14 (0.73)	0.17 (0.70)	<0.001	0.43

eTable 3: Participant characteristics stratified by recruitment wave.

Variable	Speed Reserve				Memory Reserve			
	Cognitively Normal		MCI/Dementia		Cognitively Normal		MCI/Dementia	
	β (SE)	*p*	β (SE)	*p*	β (SE)	*p*	β (SE)	*p*
Intercept	0.42 (0.51)	0.41	0.75 (0.84)	0.37	0.92 (0.62)	0.14	0.85 (0.45)	0.06
Age	-0.01 (0.01)	0.02	-0.02 (0.01)	0.03	-0.02 (0.01)	<0.001	-0.02 (0.01)	<0.001
Education	0.05 (0.01)	<0.001	0.02 (0.02)	0.13	0.02 (0.01)	0.12	0.03 (0.01)	<0.001
WHICAP Cohort (Wave 4)	-0.03 (0.07)	0.66	0.23 (0.12)	0.06	0.12 (0.09)	0.18	0.04 (0.07)	0.54
APOE4 (Non-carrier)	0.12 (0.07)	0.07	0.14 (0.12)	0.24	0.21 (0.09)	0.02	0.04 (0.06)	0.45
Race/Ethnicity (Hispanic)	-0.35 (0.08)	<0.001	-0.6 (0.15)	<0.001	0.27 (0.11)	0.01	-0.07 (0.07)	0.31
Race/Ethnicity (White)	0 (0.07)	0.98	0.3 (0.13)	0.03	0.35 (0.1)	<0.001	0.17 (0.06)	0.01
Sex (Male)	-0.11 (0.06)	0.09	-0.08 (0.11)	0.45	-0.21 (0.08)	0.01	-0.32 (0.06)	<0.001
METS	0.03 (0.02)	0.06	0.04 (0.03)	0.10	-0.04 (0.02)	0.08	0.03 (0.01)	0.07

eTable 4. Model estimates for METS and Speed Reserve or Memory Reserve, stratified by group (cognitively normal or MCI/Dementia).

Variable	Speed Reserve				Memory Reserve			
	Cognitively Normal		MCI/Dementia		Cognitively Normal		MCI/Dementia	
	β (SE)	p	β (SE)	p	β (SE)	p	β (SE)	p
Intercept	0.46 (0.51)	0.37	0.74 (0.82)	0.37	1.09 (0.45)	0.02	0.47 (0.61)	0.44
Age	-0.01 (0.01)	0.02	-0.02 (0.01)	0.02	-0.02 (0.01)	<0.01	-0.02 (0.01)	0.01
Education	0.05 (0.01)	<0.01	0.02 (0.02)	0.17	0.04 (0.01)	<0.01	0.01 (0.01)	0.34
WHICAP Cohort (Wave 4)	0 (0.07)	0.98	0.26 (0.12)	0.03	0.07 (0.06)	0.28	0.1 (0.09)	0.26
APOE4 (Non-carrier)	0.12 (0.07)	0.07	0.14 (0.12)	0.24	0.04 (0.06)	0.49	0.2 (0.09)	0.02
Race/Ethnicity (Hispanic)	-0.32 (0.08)	<0.01	-0.55 (0.15)	<0.01	-0.09 (0.07)	0.25	0.3 (0.11)	0.01
Race/Ethnicity (White)	0.02 (0.07)	0.79	0.28 (0.13)	0.04	0.18 (0.06)	0.01	0.33 (0.1)	0.00
Sex (Male)	-0.09 (0.06)	0.14	-0.05 (0.11)	0.66	-0.32 (0.06)	<0.01	-0.21 (0.08)	0.01
COGACT	0.08 (0.05)	0.07	0.23 (0.08)	0.01	-0.03 (0.04)	0.44	0.13 (0.06)	0.03

eTable 5. Model estimates for COGACT and Speed Reserve or Memory Reserve, stratified by group (cognitively normal or MCI/Dementia).

METS – Speed Reserve						
	Black		**Hispanic**		**White**	
Variable	**β (SE)**	***p***	**β (SE)**	***p***	**β (SE)**	***p***
Intercept	1.24 (0.93)	0.18	-2.34 (1.33)	0.08	-0.16(0.82)	0.84
Cohort	-0.06 (0.11)	0.60	0.04 (0.15)	0.76	0.28 (0.09)	<0.001
APOE status (Non-carrier)	-0.02 (0.1)	0.82	0.28 (0.13)	0.04	0.11 (0.09)	0.23
Diagnosis (MCI)	0.43 (0.19)	0.02	0.33 (0.2)	0.01	0.2 (0.16)	0.23
Diagnosis (Normal)	0.88 (0.19)	<0.001	0.77 (0.19)	<0.001	0.38 (0.16)	0.02
Age	-0.02 (0.008)	0.01	0 (0.01)	0.99	-0.01 (0.007)	0.10
Education	0.01 (0.02)	0.52	0.07 (0.014)	<0.001	0.02 (0.01)	0.15
Sex (Male)	-0.11 (0.1)	0.29	-0.06 (0.123)	0.61	-0.2 (0.07)	0.01
METS	0.02 (0.02)	0.42	0.07 (0.03)	0.02	-0.01 (0.02)	0.65

METS – Memory Reserve						
	Black		**Hispanic**		**White**	
Variable	**β (SE)**	***p***	**β (SE)**	***p***	**β (SE)**	***p***
Intercept	0.97 (0.76)	0.20	-0.51 (0.83)	0.54	-0.007 (0.86)	0.99
Cohort	-0.02 (0.09)	0.84	0.18 (0.09)	0.05	0.02 (0.1)	0.83
APOE status (Non-carrier)	0.11 (0.08)	0.20	-0.006 (0.08)	0.94	0.11 (0.09)	0.24
Diagnosis (MCI)	0.48 (0.16)	0.002	0.201 (0.123)	0.1	0.06 (0.17)	0.73
Diagnosis (Normal)	1.1 (0.16)	<0.001	0.43 (0.12)	<0.001	0.64 (0.17)	<0.001
Age	-0.03 (0.007)	<0.001	-0.007(0.007)	0.35	-0.01 (0.007)	0.19
Education	0.03 (0.01)	0.02	0.02 (0.009)	0.02	0.03 (0.01)	0.03
Sex (Male)	-0.42(0.08)	<0.001	-0.17 (0.08)	0.03	-0.25 (0.08)	<0.001
METS	0.005 (0.02)	0.81	-0.02 (0.02)	0.32	0.02 (0.02)	0.43

eTable 6. Model estimates for METS and Speed Reserve or Memory Reserve, stratified by race/ethnicity (Black,

Hispanic, White). Race/ethnicity were not significant moderators of the reported associations.

COGACT – Speed Reserve						
	Black		**Hispanic**		**White**	
Variable	**β (SE)**	**p**	**β (SE)**	**p**	**β (SE)**	**p**
Intercept	1.13 (0.93)	0.22	-2.15 (1.34)	0.11	-0.22 (0.81)	0.79
Cohort	-0.03 (0.11)	0.75	0.08 (0.15)	0.59	0.26 (0.09)	<0.001
APOE status (Non-carrier)	-0.02 (0.1)	0.87	0.24 (0.14)	0.07	0.11 (0.09)	0.21
Diagnosis (MCI)	0.42 (0.19)	0.03	0.35 (0.2)	0.08	0.19 (0.16)	0.25
Diagnosis (Normal)	0.72 (0.19)	<0.001	0.74 (0.19)	<0.001	0.38 (0.16)	0.02
Age	-0.02 (0.008)	0.007	-0.0006 (0.013)	0.96	-0.01 (0.007)	0.11
Education	0.009 (0.02)	0.57	0.07 (0.014)	<0.001	0.02 (0.01)	0.17
Sex(Male)	-0.1 (0.1)	0.38	-0.02 (0.122)	0.89	-0.19 (0.08)	0.01
COGACT	0.13 (0.07)	0.08	0.16 (0.09)	0.09	0.04 (0.06)	0.44

COGACT – Memory Reserve						
	Black		**Hispanic**		**White**	
Variable	**β (SE)**	**p**	**β (SE)**	**p**	**β (SE)**	**p**
Intercept	0.98 (0.77)	0.20	-0.97 (0.83)	0.24	0.02 (0.86)	0.98
Cohort	-0.01 (0.09)	0.88	0.2 (0.09)	0.03	0.04 (0.09)	0.70
APOE status (Non-carrier)	0.11 (0.08)	0.19	0 (0.08)	0.95	0.11 (0.1)	0.23
Diagnosis (MCI)	0.48 (0.16)	0.001	0.17 (0.12)	0.17	0.06 (0.17)	0.73
Diagnosis (Normal)	1.09 (0.16)	0.001	0.4 (0.12)	0.00	0.64 (0.17)	0.001
Age	-0.03 (0.01)	0.001	0 (0.01)	0.64	-0.01 (0.01)	0.17
Education	0.03 (0.01)	0.02	0.02 (0.01)	0.08	0.03 (0.01)	0.03
Sex (Male)	-0.42 (0.08)	0.001	-0.18 (0.08)	0.02	-0.24 (0.08)	0.001
COGACT	0.01 (0.06)	0.89	0.07 (0.06)	0.23	0.04 (0.06)	0.46

eTable 7. Model estimates for COGACT and Speed Reserve or Memory Reserve, stratified by race/ethnicity (Black,

Hispanic, White). Race/ethnicity were not significant moderators of the reported associations.