Additional File 4. Prospective associations of social network characteristics with specific

cognitive functions

Mone	cognitive functions								
Nome									
Network 1 or 2	T 1	111	D	95% CI	D	95% CI	D	95% CI	
Network Size - Seference Network Size - Size - Nore than 5 O.02 O.07 (0.11 O.09), 0.07 O.01 O.07 (0.09) O.07 (0.01 O.07), 0.09 O.07 (0.01 O.07), 0.09	Immediate wo		0.02	0.00.004	0.02	0.00.0.02	0.02	0.00.004	
Size	Matricali								
Friends More than 5 0.12 0.03 co.05 0.03 0.011, 0.17 0.02 0.12, 0.15 Network size - Size	size -					1			
Network None									
None					0.03		0.02		
Network size - 3 to 2					-0.05		-0.04		
Size - Nor ethan 5	Network								
Relatives	size -								
Pstrend									
No friends					0.07		0.03		
Less than once a month					-0 14		-0.05		
About once a month									
frequency- Friends Several times a month -0.01 -0.08, 0.06 -0.02 -0.08, 0.04 -0.02 -0.09, 0.04 Friends About once a week -0.03 -0.01, 0.05 -0.02 -0.08, 0.05 0.01 -0.05, 0.09 P-trend 0.335 0.585 0.389 No relatives -0.06 -0.21, 0.09 -0.07 -0.20, 0.07 -0.05 -0.18, 0.08 Contact frequency- regulary About once a month -0.06 -0.21, 0.09 -0.01 -0.02 -0.03 -0.04, 0.10 -0.06 -0.13, 0.01 -0.06 -0.12, 0.01 -0.06 -0.13, 0.01 -0.06 -0.12, 0.01 -0.06 -0.13, 0.01 -0.06 -0.12, 0.01 -0.06 -0.01, 0.00 -0.01 -0.06 -0.03 -0.04, 0.10 -0.03 -0.04, 0.10 -0.03 -0.09, 0.04 -0.02 -0.09, 0.04 -0.09 -0.06 -0.03 -0.09, 0.04 -0.03 -0.09, 0.04 -0.03 -0.09, 0.04 -0.03 -0.09, 0.04 -0.03 -0.09, 0.03 -0.09, 0.04 -0.09 -0.05	Contact					,			
Priends About once a week 0.01 -0.06, 0.09 -0.01 -0.08, 0.05 0.01 -0.05, 0.07 P-trend 0.335 0.585 0.389 No relatives -0.06 -0.21, 0.09 -0.07 -0.20, 0.07 -0.05 -0.18, 0.08 Less than once a month -0.09 -0.16, -0.01 -0.06 -0.13, 0.01 -0.06 -0.12, 0.01 Frequency - Relatives About once a month -0.09 -0.16, -0.01 -0.03 -0.04, 0.10 -0.06 -0.12, 0.01 Several times a month 0.07 -0.01, 0.15 0.03 -0.04, 0.10 0.03 -0.04, 0.10 About once a week -0.02 -0.10, 0.05 -0.03 -0.08, 0.04 -0.02 -0.09, 0.04 Several times a week -0.01 -0.08, 0.07 -0.02 -0.08, 0.04 -0.03 -0.10, 0.03 P-trend 0.605 0.953 0.570 New or or not a member Reference Reference Reference At least several times a year 0.17 0.09, 0.25 0.10 0.03, 0.18 0.03 -0.04, 0.10 Several times a month or more 0.20 0.13, 0.28 0.09 0.22, 0.16 0.01 -0.06, 0.08 P-trend 0.001 0.002 0.0665 Delayed word vecal									
Several times a week									
P-trend									
No relatives							5.02		
Less than once a month							-0.05		
Contact frequency - frequency - Relatives About once a month -0.09 -0.16, -0.01 -0.06 -0.13, 0.01 -0.06 -0.12, 0.01 Relatives Several times a month 0.07 -0.01, 0.15 0.03 -0.04, 0.10 0.03 -0.04, 0.10 0.09, 0.04 -0.02 -0.09, 0.04 -0.02 -0.09, 0.04 -0.02 -0.09, 0.04 -0.02 -0.09, 0.04 -0.02 -0.09, 0.04 -0.03 -0.01, 0.03 -0.09, 0.04 -0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.10, 0.03 -0.04, 0.10 in social activities 0.08 veeral times a weer 0.07 0.09, 0.25 0.10 0.03, 0.18 0.03 -0.04, 0.10 in social activities 0.02 0.0665 0.08 -0.02 0.0665 0.08 -0.02 0.065 0.08 0.09 0.22, 0.16 0.01 -0.06, 0.08 0.08 0.09 0.22, 0.16 0.01 -0.06, 0.08 0.02 0.00 0.02 <td< td=""><td></td><td></td><td></td><td colspan="2"></td><td colspan="2"></td></td<>									
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Relatives About once a week -0.02 -0.10, 0.05 -0.03 -0.09, 0.04 -0.02 -0.09, 0.04									
Several times a week -0.01 -0.08, 0.07 -0.02 -0.08, 0.04 -0.03 -0.10, 0.03 P-trend 0.605 0.953 0.570 Never or not a member Reference Reference Reference At least several times a year 0.17 0.09, 0.25 0.10 0.03, 0.18 0.03 -0.04, 0.10 Several times a month or more 0.20 0.13, 0.28 0.09 0.22, 0.16 0.01 -0.06, 0.08 P-trend -0.03 -0.10, 0.03 -0.04 -0.10, 0.02 -0.03 -0.10, 0.03 Network 1 or 2 Reference Reference Reference None -0.03 -0.10, 0.03 -0.04 -0.10, 0.02 -0.03 -0.10, 0.03 P-trend -0.05 -0.08, 0.21 0.09 -0.07, 0.10 0.02 -0.06, 0.10 Pirend -0.07 -0.08, 0.21 0.09 -0.07, 0.10 0.02 -0.06, 0.10 P-trend -0.05 -0.08, 0.21 0.09 -0.05, 0.22 0.05 -0.08, 0.19 P-trend -0.05 -0.08, 0.05 -0.08 -0.086 Network 1 or 2 Reference Reference Reference Reference None -0.01 -0.08, 0.05 -0.02 -0.08, 0.04 -0.01 -0.07, 0.05 Network 1 or 2 Reference Refer									
P-trend									
Never or not a member Reference Ref									
At least several times a year 0.17 0.09, 0.25 0.10 0.03, 0.18 0.03 -0.04, 0.10 Several times a month or more 0.20 0.13, 0.28 0.09 0.22, 0.16 0.01 -0.06, 0.08 P-trend									
Several times a month or more 0.20 0.13, 0.28 0.09 0.22, 0.16 0.01 -0.06, 0.08 P-trend									
Note			0.20		0.09		0.01	· · · · · · · · · · · · · · · · · · ·	
None	activities	P-trend	<						
Network size - 3 to 5 0.03 -0.06, 0.12 0.01 -0.07, 0.10 0.02 -0.06, 0.10	Delayed word	recall							
Size - Friends 3 to 5 0.03 -0.06, 0.12 0.01 -0.07, 0.10 0.02 -0.06, 0.10	•	None	-0.03 -0.10, 0.03		-0.04 -0.10, 0.02		-0.03 -0.10, 0.03		
size - Friends 3 to 5 0.03 -0.06, 0.12 0.01 -0.07, 0.10 0.02 -0.06, 0.10 Friends More than 5 0.07 -0.08, 0.21 0.09 -0.05, 0.22 0.05 -0.08, 0.19 P-trend 0.057 0.038 0.086 None -0.01 -0.08, 0.05 -0.02 -0.08, 0.04 -0.01 -0.07, 0.05 Network size - Relatives 3 to 5 0.01 -0.07, 0.09 -0.00 -0.07, 0.07 0.00 -0.07, 0.07 More than 5 0.04 -0.11, 0.19 0.02 -0.12, 0.16 0.01 -0.13, 0.15 P-trend 0.452 0.396 0.644 No friends -0.16 -0.26, -0.06 -0.13 -0.22, -0.04 -0.06 -0.15, 0.03 Less than once a month Reference Reference Reference Reference Reference About once a week 0.05 -0.02, 0.12 0.01 -0.05, 0.07 0.00 -0.06, 0.06 Friends -0.04 -0.03 -0.11, 0.05 <td< td=""><td>Network</td><td>1 or 2</td><td>Re</td><td colspan="2">Reference</td><td colspan="2">Reference</td><td colspan="2"></td></td<>	Network	1 or 2	Re	Reference		Reference			
Friends More than 5 0.07 -0.08, 0.21 0.09 -0.05, 0.22 0.05 -0.08, 0.19 P-trend 0.057 0.038 0.086 None -0.01 -0.08, 0.05 -0.02 -0.08, 0.04 -0.01 -0.07, 0.05 Network size - Relatives 3 to 5 0.01 -0.07, 0.09 -0.00 -0.07, 0.07 0.00 -0.07, 0.07 Relatives More than 5 0.04 -0.11, 0.19 0.02 -0.12, 0.16 0.01 -0.13, 0.15 P-trend 0.452 0.396 0.644 No friends -0.16 -0.26, -0.06 -0.13 -0.22, -0.04 -0.06 -0.15, 0.03 Less than once a month Reference Reference Reference Reference About once a month 0.05 -0.02, 0.12 0.01 -0.05, 0.07 0.00 -0.06, 0.06 Friends 0.05 -0.03, 0.12 0.04 -0.03, 0.10 0.05 -0.02, 0.11 Several times a month -0.01 -0.08, 0.06 -0.01 -0.07, 0.06 <td></td> <td>3 to 5</td> <td>0.03</td> <td>-0.06, 0.12</td> <td>0.01</td> <td>-0.07, 0.10</td> <td>0.02</td> <td>-0.06, 0.10</td>		3 to 5	0.03	-0.06, 0.12	0.01	-0.07, 0.10	0.02	-0.06, 0.10	
P-trend		More than 5		-0.08, 0.21			0.05	-0.08, 0.19	
Network size - Relatives None -0.01 -0.08, 0.05 -0.02 -0.08, 0.04 -0.01 -0.07, 0.05 -0.07, 0.07 -0.07							· ·		
Network size - Relatives 1 or 2 Reference Reference Reference Reference Relatives 3 to 5 0.01 -0.07, 0.09 -0.00 -0.07, 0.07 0.00 -0.07, 0.07 More than 5 0.04 -0.11, 0.19 0.02 -0.12, 0.16 0.01 -0.13, 0.15 P-trend 0.452 0.396 0.644 No friends -0.16 -0.26, -0.06 -0.13 -0.22, -0.04 -0.06 -0.15, 0.03 Less than once a month Reference Reference Reference Reference About once a month 0.05 -0.02, 0.12 0.01 -0.05, 0.07 0.00 -0.06, 0.06 Friends Several times a month -0.01 -0.08, 0.06 -0.01 -0.07, 0.06 -0.02 -0.08, 0.05 Friends About once a week 0.05 -0.03, 0.12 0.04 -0.03, 0.10 0.05 -0.02, 0.11 Several times a week -0.03 -0.11, 0.05 -0.02 -0.09, 0.05 0.01 -0.06, 0.08 P-trend 0.2									
Size - Relatives 3 to 5 0.01 -0.07, 0.09 -0.00 -0.07, 0.07 0.00 -0.07, 0.07	Network								
Relatives More than 5 0.04 -0.11, 0.19 0.02 -0.12, 0.16 0.01 -0.13, 0.15 P-trend 0.452 0.396 0.644 No friends -0.16 -0.26, -0.06 -0.13 -0.22, -0.04 -0.06 -0.15, 0.03 Less than once a month Reference Reference Reference Reference About once a month -0.05 -0.02, 0.12 0.01 -0.05, 0.07 0.00 -0.06, 0.06 Friends Several times a month -0.01 -0.08, 0.06 -0.01 -0.07, 0.06 -0.02 -0.08, 0.05 Several times a week 0.05 -0.03, 0.12 0.04 -0.03, 0.10 0.05 -0.02, 0.11 Several times a week -0.03 -0.11, 0.05 -0.02 -0.09, 0.05 0.01 -0.06, 0.08 P-trend 0.206 0.127 0.139 Contact frequency – Relatives Reference Reference Reference Reference About once a month -0.07 -0.15, 0.01 -0.05 -0.13, 0.02 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>									
P-trend 0.452 0.396 0.644									
No friends	110111111111								
Less than once a month Reference Reference Reference						,	-0.06		
About once a month 0.05 -0.02, 0.12 0.01 -0.05, 0.07 0.00 -0.06, 0.06	frequency -								
Several times a month -0.01 -0.08, 0.06 -0.01 -0.07, 0.06 -0.02 -0.08, 0.05									
About once a week 0.05 -0.03, 0.12 0.04 -0.03, 0.10 0.05 -0.02, 0.11									
Several times a week -0.03 -0.11, 0.05 -0.02 -0.09, 0.05 0.01 -0.06, 0.08 P-trend 0.206 0.127 0.139 No relatives -0.03 -0.18, 0.12 -0.02 -0.16, 0.11 -0.02 -0.15, 0.12 Reference Reference Reference Reference Reference About once a month -0.07 -0.15, 0.01 -0.05 -0.13, 0.02 -0.05 -0.12, 0.02 Several times a month 0.06 -0.02, 0.14 0.04 -0.03, 0.11 0.03 -0.04, 0.11 About once a week -0.01 -0.08, 0.06 -0.02 -0.09, 0.04 -0.02 -0.08, 0.04 Several times a week -0.00 -0.08, 0.07 -0.02 -0.09, 0.04 -0.03 -0.10, 0.03									
P-trend 0.206 0.127 0.139 Contact frequency – Relatives No relatives -0.03 -0.18, 0.12 -0.02 -0.16, 0.11 -0.02 -0.15, 0.12 Several times a month About once a week -0.07 -0.15, 0.01 -0.05 -0.13, 0.02 -0.05 -0.12, 0.02 Several times a week -0.01 -0.08, 0.06 -0.02 -0.09, 0.04 -0.02 -0.08, 0.04 Several times a week -0.00 -0.08, 0.07 -0.02 -0.09, 0.04 -0.03 -0.10, 0.03									
Contact frequency – Relatives No relatives -0.03 -0.18, 0.12 -0.02 -0.16, 0.11 -0.02 -0.15, 0.12 About once a month Several times a month About once a week Several times a week -0.07 -0.15, 0.01 -0.05 -0.13, 0.02 -0.05 -0.12, 0.02 -0.02 -0.03, 0.11 0.03 -0.04, 0.11 -0.02, 0.14 0.04 -0.03, 0.11 0.03 -0.04, 0.11 -0.01 -0.08, 0.06 -0.02 -0.09, 0.04 -0.02 -0.08, 0.04 -0.02 -0.09, 0.04 -0.03 -0.10, 0.03							,		
Less than once a month Reference Reference Reference	Contact								
Relatives About once a month -0.07 -0.15, 0.01 -0.05 -0.13, 0.02 -0.05 -0.12, 0.02 Several times a month 0.06 -0.02, 0.14 0.04 -0.03, 0.11 0.03 -0.04, 0.11 About once a week -0.01 -0.08, 0.06 -0.02 -0.09, 0.04 -0.02 -0.08, 0.04 Several times a week -0.00 -0.08, 0.07 -0.02 -0.09, 0.04 -0.03 -0.10, 0.03									
Several times a month 0.06 -0.02, 0.14 0.04 -0.03, 0.11 0.03 -0.04, 0.11 About once a week -0.01 -0.08, 0.06 -0.02 -0.09, 0.04 -0.02 -0.08, 0.04 Several times a week -0.00 -0.08, 0.07 -0.02 -0.09, 0.04 -0.03 -0.10, 0.03									
About once a week			0.06				0.03		
Several times a week -0.00 -0.08, 0.07 -0.02 -0.09, 0.04 -0.03 -0.10, 0.03									
		Several times a week	-0.00	-0.08, 0.07	-0.02	-0.09, 0.04	-0.03	-0.10, 0.03	
		P-trend		0.655		0.765			

		Model 1*		Model 2 [†]		Model 3 [‡]	
		b 95% CI		b 95% CI		b 95% CI	
	Never or not a member	Reference		Reference		Reference	
Participation	At least several times a year	0.14	0.06, 0.22	0.11	0.03, 0.18	0.04	-0.03, 0.12
in social activities	Several times a month or more	0.18	0.10, 0.26	0.10	0.03, 0.18	0.04	-0.04, 0.11
activities	P-trend	<	< 0.001		< 0.001		0.202
Verbal fluenc	y						
	None	-0.00	-0.07, 0.07	0.00 -0.06, 0.06		-0.01	-0.07, 0.05
Network size -	1 or 2		eference		eference		Reference
	3 to 5	0.01	-0.08, 0.10	-0.03	-0.11, 0.06	-0.02	-0.11, 0.06
Friends	More than 5	0.12	-0.03, 0.28	0.05	-0.10, 0.19	0.02	-0.12, 0.16
-	P-trend		0.261		0.923	0.04	0.875
37 . 1	None	0.07	0.00, 0.14	0.06	-0.00, 0.12	0.06	-0.00, 0.12
Network	1 or 2		eference		eference		Reference
size - Relatives	3 to 5 More than 5	0.05	-0.03, 0.13 -0.06, 0.26	0.04	-0.04, 0.11	-0.00	-0.03, 0.12 -0.15, 0.14
Relatives	P-trend		0.677		-0.13, -0.16 0.324	-0.00	0.350
	No friends	-0.04	-0.14, 0.06	0.03	-0.06, 0.12	0.09	-0.00, 0.18
	Less than once a month		eference		eference		Reference
Contact	About once a month	0.07 -0.00, 0.13		0.03 -0.03, 0.09		0.04 -0.02, 0.10	
frequency -	Several times a month	0.02	-0.06, 0.09	-0.03	-0.09, 0.04	-0.01	-0.07, 0.06
Friends	About once a week	0.02	-0.05, 0.10	0.00	-0.07, 0.07	0.04	-0.03, 0.10
	Several times a week	-0.04	-0.12, 0.04	-0.03	-0.10, 0.05	0.01	-0.06, 0.09
	P-trend		0.621		0.241		0.629
	No relatives	0.09	-0.07, 0.24	0.09	-0.05, 0.23	0.09	-0.05, 0.22
	Less than once a month	Reference		Reference		Reference	
Contact	About once a month	-0.05	-0.14, 0.03	-0.04	-0.12, 0.03	-0.04	-0.11, 0.04
frequency -	Several times a month	-0.03	-0.11, 0.05	-0.07	-0.15, 0.00	-0.07	-0.14, 0.00
Relatives	About once a week	-0.12	-0.20, -0.05	-0.14	-0.20, -0.07	-0.13	-0.19, -0.06
	Several times a week	0.03	-0.05, 0.10	0.02	-0.05, 0.09	0.00	-0.06, 0.07
	P-trend	0.637		0.271		0.156	
Participation	Never or not a member		eference		eference		Reference
in social	At least several times a year	0.17	0.01, 0.26	0.06	-0.02, 0.13	0.00	-0.07, 0.08
activities	Several times a month or more <i>P-trend</i>		0.10, 0.26 <0.001	0.08	0.01, 0.16 0.012	0.01	-0.06, 0.09 0.708
Processing sp	l e e e e e e e e e e e e e e e e e e e		<u>.0.001</u>		0.012		0.708
Frocessing spo	None	-0.03	-0.10, 0.03	-0.03	-0.09, 0.03	-0.04	-0.10, 0.02
Network	1 or 2	Reference		Reference		Reference	
size -	3 to 5	-0.00	-0.09, 0.08	-0.04	-0.12, 0.04	-0.03	-0.11, 0.05
Friends	More than 5	-0.03	-0.18, 0.11	-0.14	-0.27, -0.00	-0.15	-0.28, -0.02
	P-trend		0.558		0.428		0.535
	None	-0.00 -0.06, 0.06		0.02 -0.04, 0.08		0.03 -0.03, 0.08	
Network	1 or 2	Re	eference	Re	eference	F	Reference
size -	3 to 5	-0.00	-0.08, 0.07	-0.02	-0.09, 0.05	-0.01	-0.08, 0.06
Relatives	More than 5	0.09	-0.06, 0.24	0.03	-0.11, 0.17	0.03	-0.11, 0.17
	P-trend		0.560		0.444		0.373
Contact frequency - Friends	No friends	-0.15	-0.24, -0.05	-0.10	-0.19, -0.01	-0.02	-0.10, 0.07
	Less than once a month		eference		eference		Reference
	About once a month	0.07	0.01, 0.14	0.05	-0.01, 0.11	0.05	-0.01, 0.11
	Several times a month	-0.01	-0.08, 0.06	-0.00	-0.07, 0.06	-0.01	-0.07, 0.06
Friends	About once a week	-0.06	-0.07, 0.08	-0.02	-0.05, 0.08 -0.12, 0.02	-0.01	-0.04, 0.09 -0.08, 0.06
	Several times a week P-trend		-0.14, 0.02 0.933		0.919	-0.01	0.986
	No relatives	-0.04	-0.19, 0.11	-0.07	-0.21, 0.07	-0.05	-0.19, 0.08
	Less than once a month	Reference		Reference			Reference
Contact frequency – Relatives	About once a month	-0.08 -0.16, -0.00		-0.09	-0.17, -0.02	-0.09	-0.16, -0.02
	Several times a month	0.03	-0.05, 0.11	-0.01	-0.08, 0.06	-0.02	-0.09, 0.05
	About once a week	-0.01	-0.08, 0.06	-0.03	-0.10, 0.03	-0.03	-0.10, 0.03
	Several times a week	0.01	-0.06, 0.08	-0.03	-0.10, 0.04	-0.04	-0.11, 0.02
	P-trend		0.252		0.945		0.724

		Model 1*		Model 2 [†]		Model 3 [‡]	
		b	95% CI	b	95% CI	b	95% CI
Participation in social activities	Never or not a member	Reference		Reference		Reference	
	At least several times a year	0.12	0.04, 0.20	0.08	0.01, 0.16	0.01	-0.06, 0.08
	Several times a month or more	0.20	0.12, 0.28	0.15	0.08, 0.23	0.07	-0.00, 0.14
	P-trend	< 0.001		< 0.001		0.084	

^{*}Adjusted for country, age and sex.

[†]Adjusted for country, age, sex and baseline cognitive function. ‡Adjusted for country, age, sex, baseline cognitive function, education, household amenities, work status, marital status, smoking status, alcohol drinking frequency, alcohol intake, physical activity, self-rated health, number of chronic diseases and depressive symptoms.