

Supplementary Data

Differential Cognitive Deterioration in Dementia: A Two Year Longitudinal Study

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BASELINE PREDICTORS OF SUBSEQUENT ADAS-COG DETERIORATION: FURTHER DETAILS

Combined AD-SMI group

A model was identified that accounted for 50% of the variance in ADAS-cog deterioration in the AD-SMI group [$F(3,33) = 10.148$, $p < 0.001$; R square = 0.480, adjusted R square = 0.433].

Two year ADAS-cog decline was predicted by: $23.886 - (1.481 \times \text{Baseline PAL stages passed}) - (1.265 \times \text{Baseline IED stages passed}) + (0.425 \times \text{Early change ADAS-cog score})$.

The breakdown of individual measures was as follows:

[Variable (beta coefficient, standardized beta coefficient, t , p)]

Baseline PAL stages passed $[-1.481, -0.360, -2.664, 0.004]$

Baseline ED stages passed $[-1.265, -3.22, -2.449, 0.020]$

Early change ADAS-cog score $[0.425, 0.308, 2.368, 0.024]$.

AD group

The best fit stepwise model predicting greatest variance in 24 month ADAS-cog decline (largest R square) accounted for 16% of the variance [$F(1,24) = 4.550$, $p = 0.043$; R square = 0.159, adjusted R square = 0.124], and comprised baseline PAL stages passed [beta coefficient = -1.430 ,

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standardized beta coefficient = -0.399 , $t = -2.133$, $p = 0.043$]. 24-month deterioration was predicted by: $15.573 - (1.430 \times \text{Baseline PAL stages passed})$

SMI group

A model was identified that accounted for 60% of the variance in 24-month ADAS-cog deterioration in the SMI group [$F(5,37) = 10.929$, $p < 0.001$; R square = 0.596, adjusted R square = 0.542]. 24-month ADAS-cog deterioration was predicted by: $2.630 + (3.221 \times \text{gender [1 = male, 2 = female]}) + (0.182 \times \text{PAL 6-stage errors early change score}) + (0.679 \times \text{ADAS-cog early change score}) - (0.087 \times \text{Baseline spatial recognition memory}) - (75.955 \times \text{Early change RVP A' score})$.

Again, the breakdown of individual variables was as follows:

Variable [beta coefficient, standardized beta coefficient, t , p].

Sex [3.221, 0.355, 3.330, 0.002] (male = 1, female = 2) (i.e., female gender associated with greater deterioration).

Baseline spatial recognition memory [-0.087 , -0.233 , -2.142 , 0.039].

Early ADAS-cog change [0.679, 0.562, 5.260, <0.001].

Early RVP A' change [-75.995 , -0.305 , -2.835 , 0.007].

Early PAL 6-stage errors change [0.182, 0.232, 2.117, 0.041].

PRINCIPAL COMPONENTS ANALYSIS (PCA)

Supplementary Figure 4 indicates a screen plot of the solutions showing eigenvalues for corresponding numbers of factors. On inspection of this plot, a six factor solution was decided upon and implemented. This model accounted cumulatively for 75.6% of the variance in baseline cognitive variables (Supplementary Table 3). The rotated component matrix (Supplementary Table 4) showed that the largest factor (factor 1) loaded most heavily on baseline ADAS-cog performance and the three measures from the PAL test (stages passed, six stage errors, and total errors); factor 2 loaded most heavily on doors recognition and Warrington faces (two tests involving visual recognition memory); factor 3 loaded most heavily on semantic naming ability; factor 4 loaded most heavily on spatial recognition memory; factor 5 loaded most heavily on RVP response latency; and finally, factor 6 loaded most heavily on stages passed on the IED test.

Supplementary Table 1
Descriptive statistics showing the mean and standard deviation (SD) for each cognitive measure of interest at each time point. Break-down scores for the SMI subjects who did and did not ultimately go on to dementia over the course of the study are also provided for information purposes

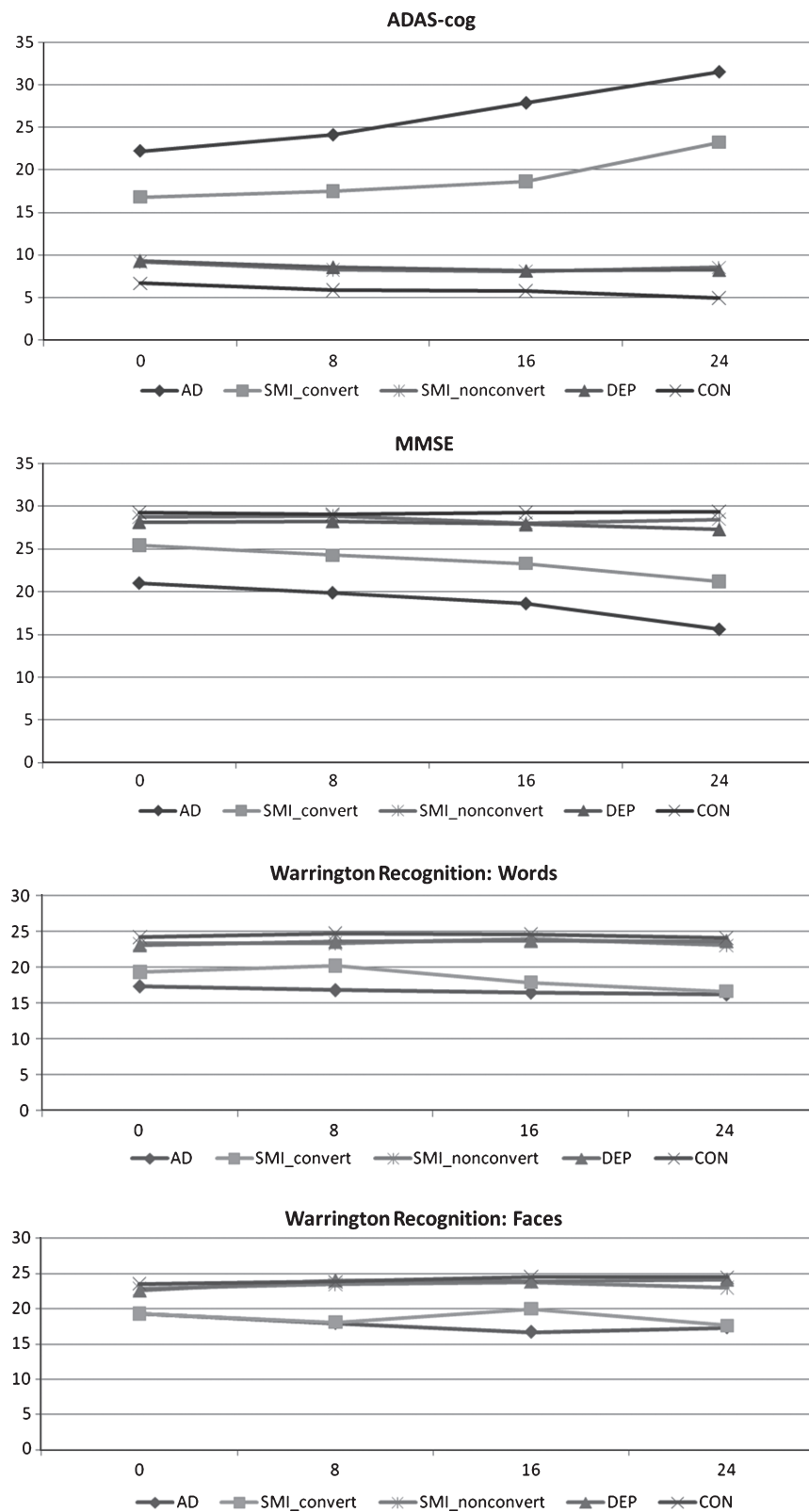
Task	Alzheimer's Disease (Mean, SD)				Subjective Memory Impairment (Mean, SD)			
	0 m [n = 26]	8 m [24]	16 m [21]	24 m [18]	0 m [43]	8 m [43]	16 m [38]	24 m [37]
Global cognitive function								
ADAS-cog	22.23 (5.84)	24.13 (7.19)	27.9 (6.79)	31.56 (9.05)	11.16 (5.93)	10.51 (5.37)	10.32 (6.32)	11.63 (7.67)
MMSE	21 (2.98)	19.88 (3.76)	18.62 (3.83)	15.61 (4.16)	27.84 (2.43)	27.61 (2.73)	26.88 (2.87)	26.76 (3.75)
Recognition								
Warrington SRMT words	17.35 (2.8)	16.83 (3.31)	16.5 (3.61)	16.24 (3.11)	22.28 (3.57)	22.56 (3.74)	22.72 (3.43)	21.65 (4.2)
Warrington SRMT faces	19.31 (2.68)	17.96 (4.48)	16.71 (4.65)	17.35 (3.95)	21.95 (3.37)	22.15 (3.93)	23.03 (3.12)	21.89 (4.39)
PRM	58.17 (10.17)	58.33 (10.44)	56.04 (11.27)	57.6 (7.83)	80.04 (13.87)	80.1 (13.82)	81.58 (16.11)	83.55 (14.53)
SRM	60.96 (13.93)	56.74 (10.4)	55.75 (10.29)	58.82 (8.93)	75.47 (12.19)	74.25 (13.18)	74.21 (13.83)	73.55 (11.38)
Doors recognition	9.46 (2.45)	9.43 (2.25)	8 (2.62)	7.31 (3.18)	14.91 (3.78)	15.98 (4.33)	17.53 (4.61)	16.08 (5.05)
DMS (correct, 12 s delay)	45.6 (15.02)	43.75 (16.89)	40 (14.87)	38.75 (23.63)	60.98 (19.08)	63.17 (20.67)	66.92 (21.9)	59.21 (24.65)
Cued/free recall								
Logical memory (30 min)	1.96 (3.4)	1.61 (3.23)	1.6 (4.08)	1.28 (4.28)	12.42 (9.42)	12.41 (10.25)	12.92 (10)	12.13 (10.09)
PAL (stages passed)	4.68 (1.75)	4.79 (1.41)	5.05 (1.28)	3.72 (1.64)	7.51 (1.33)	7.22 (1.33)	7.16 (1.35)	7.08 (1.53)
PAL (6-pattern errors)	51.12 (8.35)	48.25 (9.72)	50.71 (6.35)	53.5 (5.25)	16 (18.17)	16.27 (18.74)	16.92 (20.17)	13.82 (20.03)
PAL (total errors)	154.83 (32.52)	154.71 (31.34)	151.24 (25.41)	173 (30.89)	50.33 (51.64)	50.93 (57.58)	51.79 (56.44)	54.5 (62.15)
Semantic naming/fluency								
Graded naming test	14.15 (6.57)	13.13 (6.74)	13.3 (7.71)	10.89 (6.38)	23.17 (3.99)	24.1 (3.73)	23.95 (4.05)	23.97 (4.06)
Semantic naming	57.35 (4.85)	56.61 (6.08)	53.9 (8.22)	52.31 (9.01)	61.98 (2.14)	62.68 (1.75)	62.61 (1.69)	62.39 (2.14)
Category fluency	28.46 (9.27)	23.58 (12.4)	21.33 (10.69)	19.25 (7.74)	48.63 (13.05)	46.84 (16.76)	47.74 (15.78)	47.95 (16.11)
Divided attention								
5-choice RTI (accuracy)	23.48 (2.6)	22.7 (3.52)	23.53 (1.84)	22.59 (3.18)	24.65 (0.65)	24.53 (1.11)	24.26 (1.25)	24.14 (1.93)
5-choice RTI (latency, m sec)	492.04 (149.06)	607.63 (308.61)	571.12 (319.46)	643.76 (227.92)	415.04 (77.25)	448.72 (249.17)	431.24 (106.23)	449.41 (128.57)
Sustained attention								
RVP (A')	0.92 (0.09)	0.92 (0.06)	0.89 (0.11)	0.9 (0.05)	0.98 (0.03)	0.98 (0.02)	0.97 (0.03)	0.97 (0.04)
RVP (latency, m sec)	570.38 (174.05)	580.59 (197.18)	617.34 (194.66)	583.09 (191.78)	482.36 (150.83)	441.86 (69.43)	470.63 (105.11)	455.45 (120.04)
Executive function								
Letter fluency	26.31 (12.35)	20.65 (13.27)	21.29 (14.26)	18.11 (11.96)	44.47 (15.95)	43.53 (16.12)	43.08 (15.73)	45.61 (14.57)
IED (stages completed)	5.52 (3.23)	6.22 (2.78)	5.6 (3.02)	4.81 (2.97)	8.49 (0.88)	8.48 (1.88)	8.05 (1.84)	8.11 (1.94)
OFS (attempts, 5 moves)	3.35 (0.99)	2.88 (1.28)	3.13 (0.72)	1.63 (2.3)	1.98 (0.81)	1.86 (0.68)	1.9 (0.82)	1.73 (0.71)

Supplementary Table 1
(Continued)

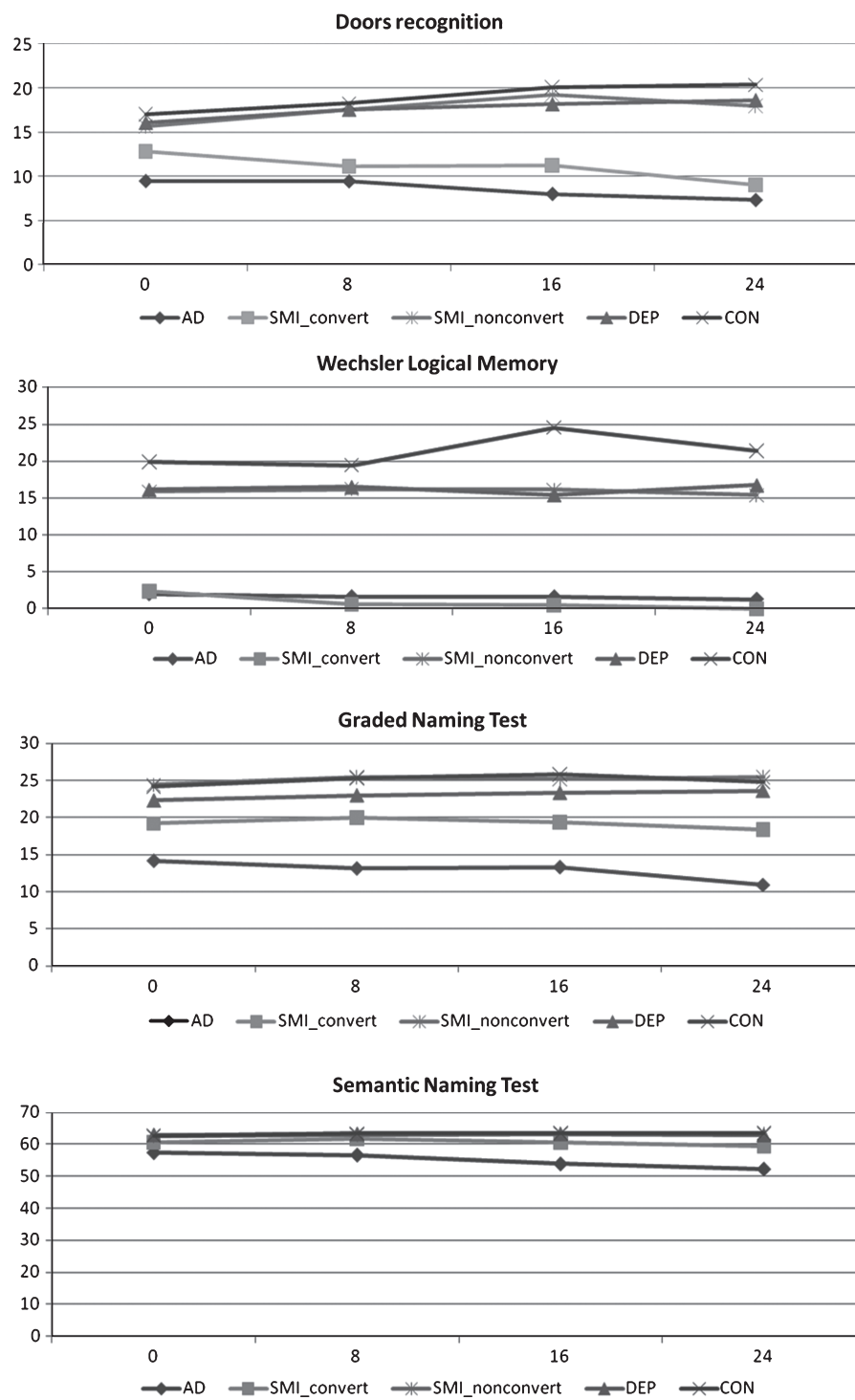
Task	Depression (Mean, SD)				Controls (Mean, SD)			
	0 m [37]	8 m [31]	16 m [31]	24 m [30]	0 m [39]	8 m [38]	16 m [37]	24 m [33]
Global cognitive function								
ADAS-cog	9.32 (3.91)	8.56 (3.85)	8.13 (4.7)	8.23 (4.38)	6.67 (2.37)	5.89 (2.46)	5.75 (2.62)	4.94 (2.56)
MMSE	28.16 (1.61)	28.25 (1.7)	27.88 (2.31)	27.29 (4.03)	29.23 (1.16)	29.08 (1.02)	29.25 (0.94)	29.33 (0.89)
Recognition								
Warrington SRMT words	23.08 (2.89)	23.56 (1.76)	23.69 (2.35)	23.65 (2.18)	24.21 (1.3)	24.68 (0.66)	24.64 (0.72)	24.09 (3.47)
Warrington SRMT faces	22.57 (3.08)	24.06 (1.56)	23.88 (2.59)	24.16 (1.55)	23.56 (1.52)	23.84 (1.37)	24.53 (0.77)	24.48 (0.87)
PRM	83.11 (10.57)	83.2 (13.07)	81.9 (13.5)	85.62 (12.58)	86.86 (9.54)	89.14 (8.42)	88.96 (9.22)	91.54 (7.62)
SRM	77.3 (9.47)	79.84 (9.88)	78.13 (10.91)	77.74 (10.79)	81.28 (10.18)	82.76 (11.49)	83.47 (9.32)	82.73 (11.86)
Doors recognition	16.03 (3.8)	17.53 (3.78)	18.13 (3.41)	18.58 (2.93)	16.97 (2.96)	18.21 (3.03)	20.06 (2.63)	20.33 (2.61)
DMS (correct, 12 s delay)	67.65 (18.6)	64 (19.76)	66 (17.34)	71 (15.39)	71.79 (18.62)	73.51 (17.51)	80.28 (13.2)	81.21 (16.35)
Cued/free recall								
Logical memory (30 min)	16.11 (6.89)	16.5 (6.99)	15.41 (7.84)	16.74 (8.1)	19.87 (6.36)	19.45 (7.05)	24.57 (8.42)	21.39 (8.62)
PAL (stages passed)	7.7 (0.52)	7.83 (0.46)	7.9 (0.3)	7.83 (0.46)	8.23 (0.78)	7.95 (0.23)	7.94 (0.23)	7.88 (0.42)
PAL (6-pattern errors)	9.89 (8.35)	9.29 (10.51)	5.97 (6.94)	7.1 (8.16)	7.79 (6.8)	5 (5.19)	5.86 (6.76)	6.21 (7.29)
PAL (total errors)	35.7 (24.87)	28.53 (24.16)	21.77 (15.24)	27.17 (25.8)	25.87 (23.4)	18.89 (15.73)	18.22 (19.22)	20.03 (21.11)
Semantic naming/fluency								
Graded naming test	22.3 (4)	23 (5.67)	23.34 (3.9)	23.61 (4.36)	24.23 (4.14)	25.32 (4.41)	25.81 (3.48)	24.79 (5.66)
Semantic naming	62.97 (1.12)	63.28 (1.25)	63.25 (1.48)	62.87 (1.8)	62.69 (2.17)	63.32 (1.3)	63.46 (1.01)	63.45 (0.9)
Category fluency	50.41 (12.21)	43.08 (20.42)	50.06 (13.18)	51.29 (16.7)	61.1 (13.11)	70.74 (49.61)	67.67 (12.13)	65.42 (11.44)
Divided attention								
5-choice RTI (accuracy)	24.7 (0.78)	24.34 (1.15)	24.66 (0.75)	24.57 (0.77)	24.74 (0.64)	24.66 (0.85)	24.61 (0.9)	24.79 (0.42)
5-choice RTI (latency, m sec)	411.7 (104.81)	448.12 (121.33)	445.51 (182.56)	429.94 (124.11)	386.59 (84.21)	395.49 (100.98)	361 (52.87)	384.48 (49.94)
Sustained attention								
RVP 1 seq (A')	0.96 (0.03)	0.97 (0.02)	0.98 (0.02)	0.98 (0.02)	0.99 (0.02)	0.99 (0.01)	0.99 (0.01)	0.99 (0.02)
RVP 1 seq (latency, m sec)	461.26 (75.89)	446.86 (68.01)	434.34 (85.69)	438.03 (104.54)	416.63 (70.21)	391.91 (64.39)	396.67 (72.92)	404.67 (85.5)
Executive function								
Letter fluency	36.19 (16.03)	36 (12.03)	38.34 (12.36)	39.06 (13.85)	49.85 (13.47)	51.59 (11.21)	54.06 (11.64)	53.85 (10.92)
IED (stages completed)	7.54 (2.08)	8.47 (1.98)	7.69 (2.04)	8.03 (1.56)	8.51 (1.07)	8.55 (1.27)	8.58 (1.05)	8.76 (0.66)
OTS (attempts, 5 moves)	2.07 (0.74)	1.74 (0.68)	1.76 (0.57)	1.87 (0.76)	1.72 (0.57)	1.65 (0.51)	1.61 (0.71)	1.57 (0.73)

Supplementary Table 1
(Continued)

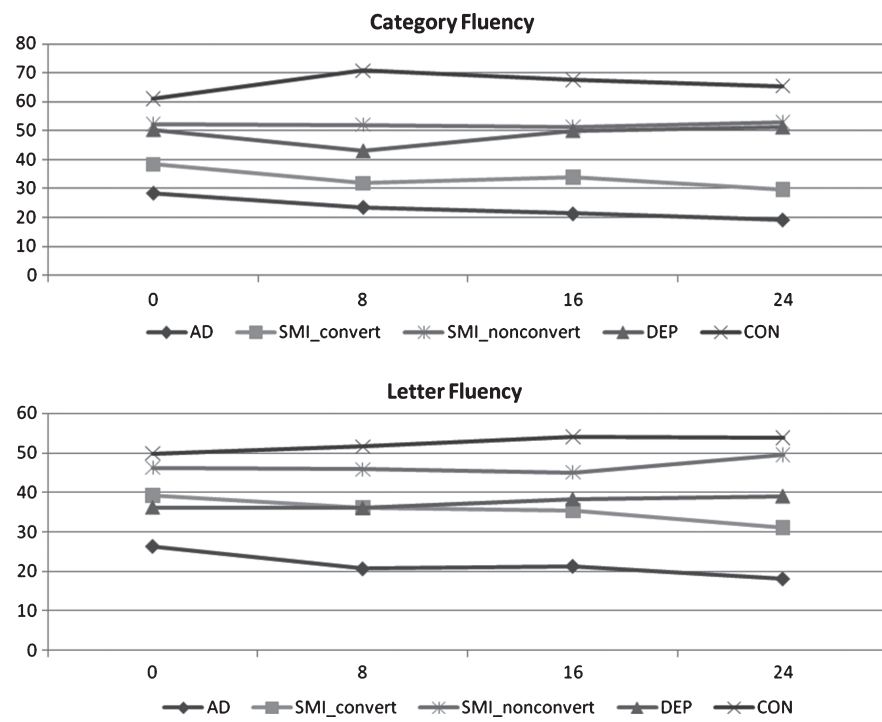
Task	SMI converters (Mean, SD)				SMI non-converters (Mean, SD)			
	0 m [11]	8 m [11]	16 m [11]	24 m [11]	0 m [32]	8 m [32]	16 m [27]	24 m [26]
Global cognitive function								
ADAS-cog	16.82 (5.12)	17.5 (4.12)	18.63 (6.28)	23.25 (7.32)	9.22 (4.89)	8.26 (3.43)	8.1 (4.16)	8.53 (3.87)
MMSE	25.42 (2.02)	24.27 (3.13)	23.3 (3.02)	21.22 (3.67)	28.77 (1.87)	28.83 (1.05)	28.07 (1.53)	28.48 (1.35)
Recognition								
Warrington SRMT words	19.36 (3.75)	20.2 (3.94)	17.88 (4.02)	16.63 (4.21)	23.28 (2.94)	23.32 (3.39)	23.97 (1.8)	23.03 (3.02)
Warrington SRMT faces	19.36 (3.26)	18.1 (3.28)	20 (4.24)	17.63 (3.34)	22.84 (2.95)	23.45 (3.19)	23.81 (2.26)	23.03 (3.94)
PRM	64.77 (11.98)	67.13 (15.65)	60.94 (18.63)	62.5 (11.14)	85.29 (10.15)	83.87 (10.85)	87.08 (9.93)	89.17 (9.19)
SRM	70.91 (13.93)	62.22 (9.72)	63.13 (11.32)	67.5 (10.35)	77.03 (11.35)	77.74 (12.03)	77.17 (13.04)	75.17 (11.26)
Doors recognition	12.82 (3.12)	11.1 (3.31)	11.25 (4.1)	9 (3.16)	15.63 (3.77)	17.55 (3.35)	19.2 (3.04)	17.97 (3.55)
DMS (correct 12 s delay)	53 (15.67)	47 (14.18)	56.25 (23.26)	36.25 (19.23)	63.55 (19.59)	68.39 (19.85)	69.68 (21.05)	65.33 (22.4)
Cued/free recall								
Logical memory (30 min)	2.36 (4.3)	0.6 (0.97)	0.5 (0.93)	0 (0)	15.88 (8.13)	16.23 (8.85)	16.13 (8.64)	15.37 (8.86)
PAL (stages passed)	5.82 (1.17)	5.4 (1.35)	5.38 (1.6)	4.63 (1.6)	8.09 (0.78)	7.81 (0.6)	7.63 (0.76)	7.73 (0.52)
PAL (6-pattern errors)	37.82 (17.27)	44.3 (12.85)	47.25 (12.13)	44.63 (19.26)	8.5 (11.13)	7.23 (8.52)	8.83 (12.74)	5.6 (9.51)
PAL (total errors)	118.91 (43.65)	133.5 (45.72)	133.25 (36.54)	158.75 (33.34)	26.75 (27.47)	24.29 (28.07)	30.07 (37.73)	26.7 (29.37)
Semantic naming/fluency								
Graded naming test	19.2 (2.74)	20 (2.62)	19.38 (2.07)	18.38 (1.92)	24.41 (3.5)	25.42 (3.01)	25.17 (3.54)	25.47 (3.03)
Semantic naming	60.55 (2.38)	61.78 (1.48)	60.63 (1.69)	59.38 (2.5)	62.47 (1.85)	62.94 (1.75)	63.13 (1.25)	63.2 (1.06)
Category fluency	38.36 (7.95)	31.82 (13.79)	34 (10.45)	29.75 (9.56)	52.16 (12.66)	52 (14.56)	51.29 (15.06)	52.8 (13.9)
Divided attention								
5-choice RTI (accuracy)	24.27 (0.9)	24.11 (1.83)	24 (1.77)	23 (2.33)	24.78 (0.49)	24.65 (0.8)	24.33 (1.09)	24.45 (1.72)
5-choice RTI (latency, m sec)	472.47 (118.9)	631.98 (491.06)	570.39 (141.13)	620.12 (175.75)	395.29 (44.17)	395.52 (58.4)	394.14 (53.15)	402.31 (53.93)
Sustained attention								
RVP 1-seq (A')	0.96 (0.03)	0.96 (0.03)	0.94 (0.04)	0.94 (0.06)	0.98 (0.02)	0.99 (0.02)	0.98 (0.02)	0.98 (0.02)
RVP 1-seq (latency, m sec)	561.27 (176.01)	483.55 (66.31)	567.08 (148.25)	589.99 (173.92)	455.23 (133.63)	429.75 (66.49)	444.91 (74.43)	418.34 (66.09)
Executive function								
Letter fluency	39.18 (14.59)	36.11 (14.39)	35.38 (15.87)	31.13 (13.37)	46.28 (16.2)	45.85 (16.16)	45.06 (15.33)	49.47 (12.43)
IED (stages completed)	8.09 (1.04)	8.67 (2.29)	7.63 (1.77)	6.13 (2.59)	8.63 (0.79)	8.42 (1.78)	8.17 (1.88)	8.63 (1.35)
OTS (attempts, 5 moves)	2.28 (0.76)	2 (0.46)	3.15 (1.05)	1.75 (1.37)	1.9 (0.81)	1.83 (0.73)	1.68 (0.56)	1.73 (0.6)



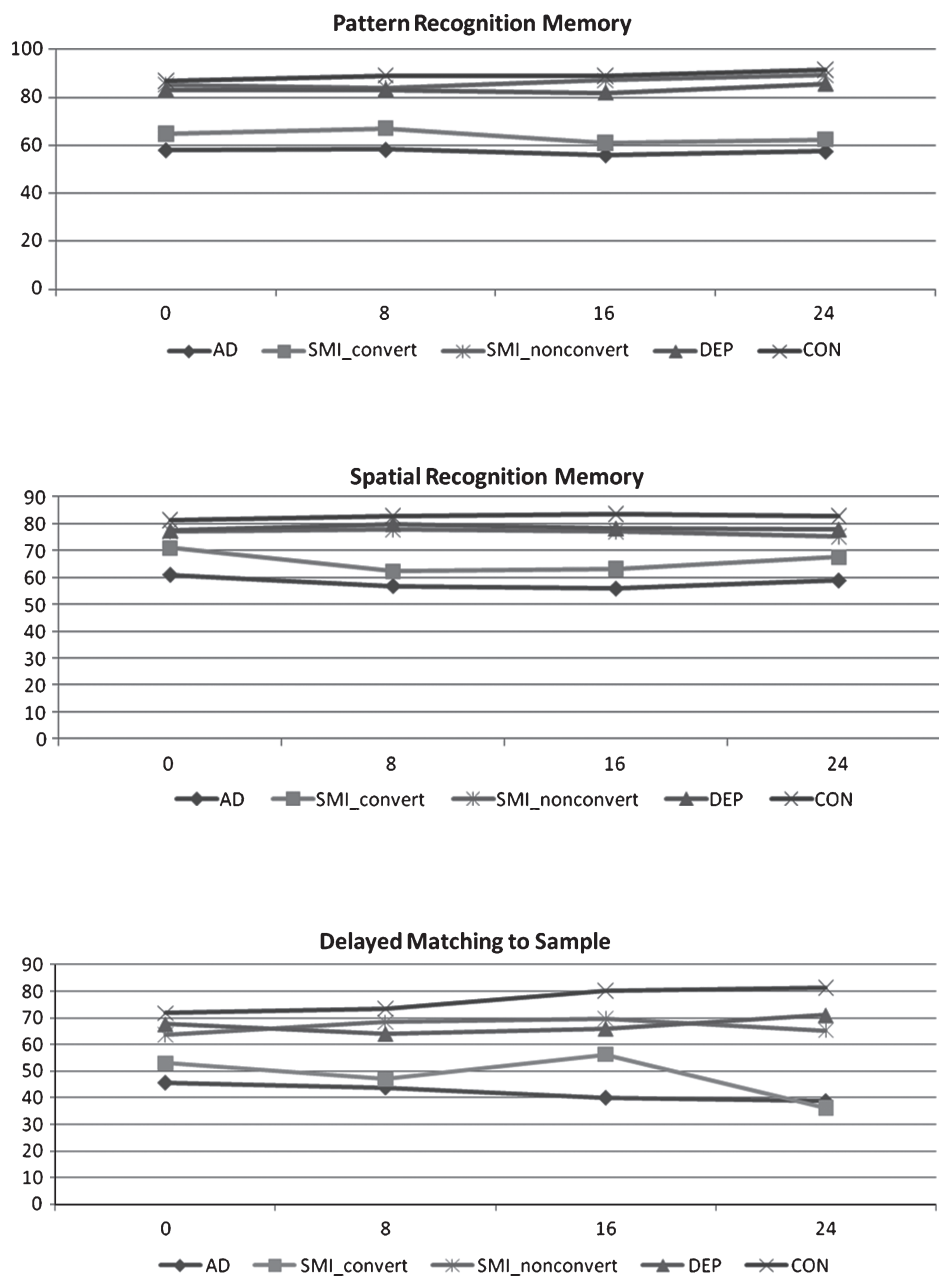
Supplementary Figure 1. Mean performance over time for each study group including subgroups of SMI, for pen/paper measures.



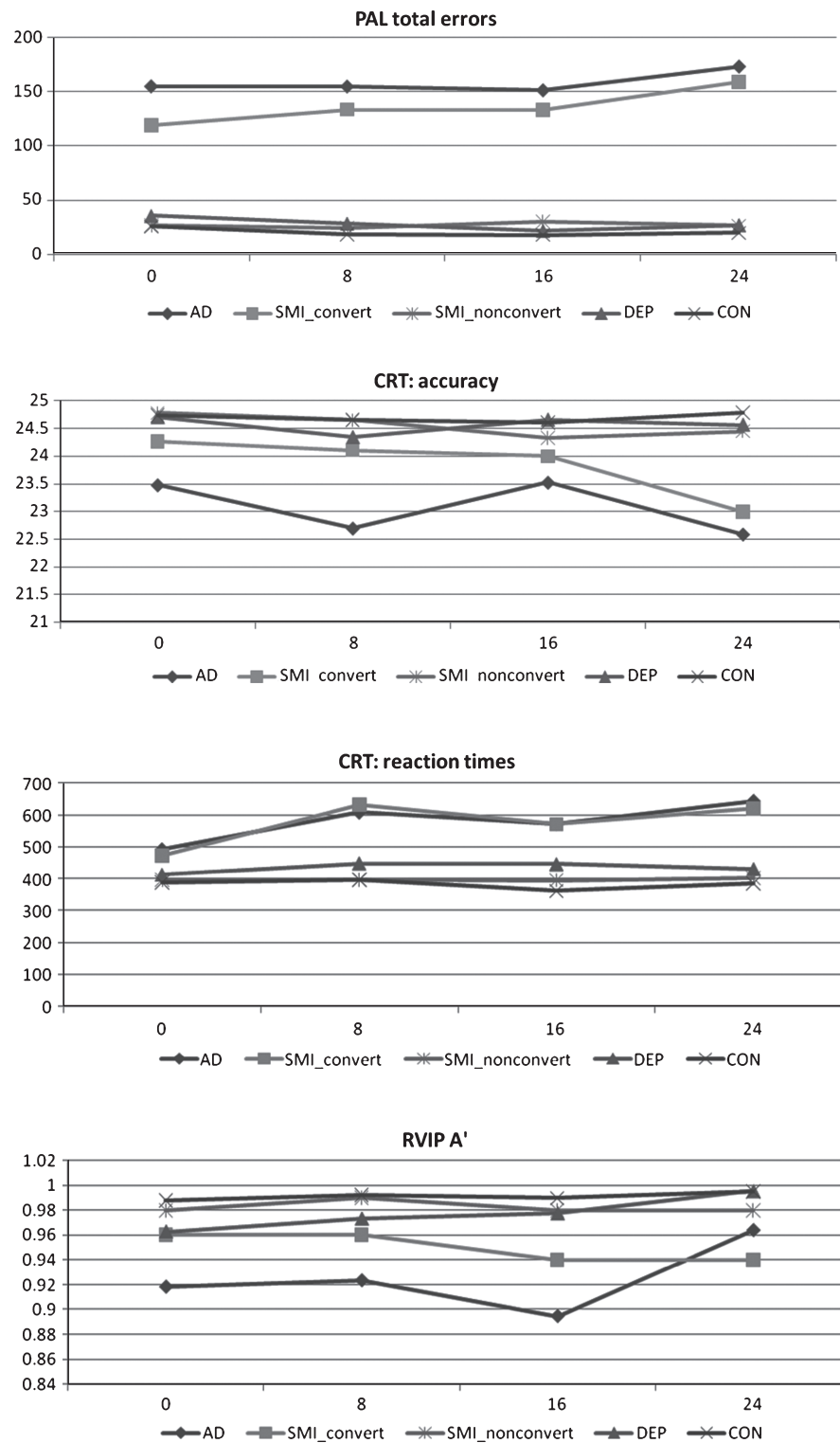
Supplementary Figure 1. (Continued.)



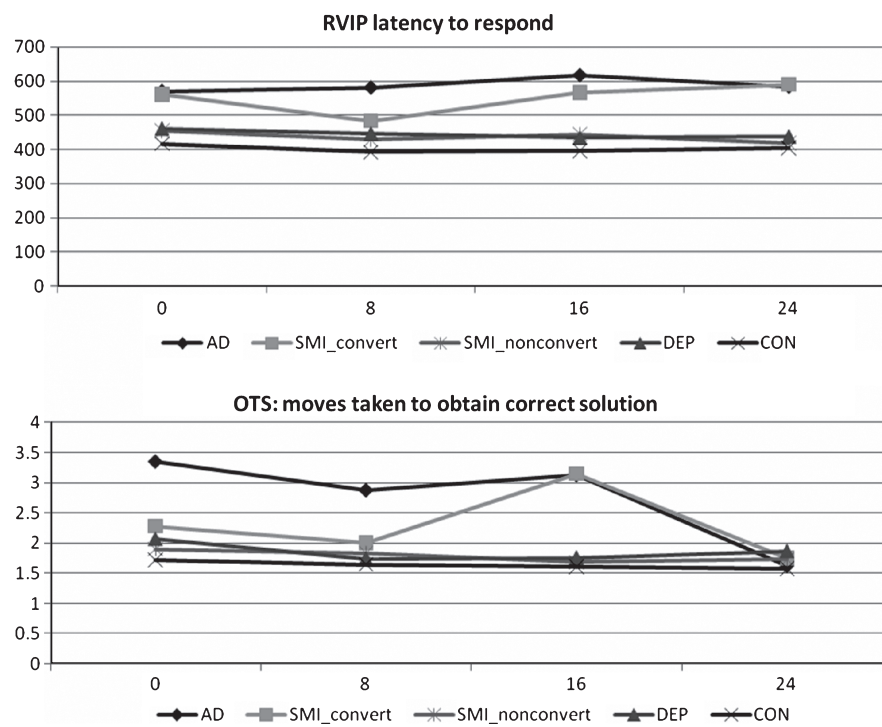
Supplementary Figure 1. (Continued.)



Supplementary Figure 2. Mean performance over time for each study group including subgroups of SMI, for computerized measures.



Supplementary Figure 2. (Continued.)

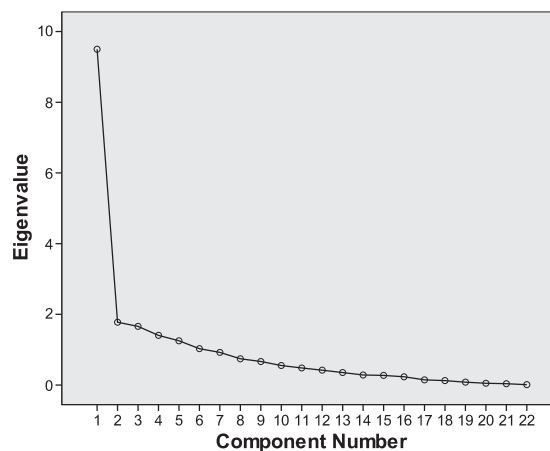


Supplementary Figure 2. (Continued.)

	Time-point											
	AD			SMI			Dep			Controls		
	8	16	24	8	16	24	8	16	24	8	16	24
Measure												
Global cognitive function												
ADAS-cog												
MMSE												
Recognition												
Warrington SRMT words												
Warrington SRMT faces												
PRM												
SRM												
Doors recognition												
DMS (correct, 12s delay)												
Cued/free recall												
Logical memory (30 min)												
PAL (stages passed)												
PAL (6-pattern errors)												
PAL (total errors)												
Semantic naming/fluency												
Graded Naming Test												
Semantic naming												
Category fluency												
Divided attention												
5-choice RTI (accuracy)												
5-choice RTI (latency, msec)												
Sustained attention												
RVP (A')												
RVP (latency, msec)												
Executive function												
Letter fluency												
IED (stages completed)												
OTS (attempts, 5 moves)												

In orange $p < 0.05$, red $p < 0.01$ significant impairment versus own group baseline at time point.

Supplementary Figure 3. Overview of domains that significantly deteriorated over time within specific groups, according to t -tests versus own group baseline. In orange $p < 0.05$, red $p < 0.01$ significant impairment versus own group baseline at time point.



Supplementary Figure 4. Screen plot detailing results from the factor analysis of baseline cognitive variables in the combined AD-SMI group.

Supplementary Table 2

Descriptive statistics showing the mean and standard deviation (SD) of absolute change in performance over time for each cognitive measure of interest. Changes are defined as performance at the given time point minus performance at study entry (baseline). Break-down scores for the SMI subjects who did and did not ultimately go on to dement over the course of the study are also provided for information purposes

Task	Alzheimer's Disease (Mean, SD)			Subjective Memory Impairment (Mean, SD)		
	0–8 m [24]	0–16 m [21]	0–24 m [18]	0–8 m [43]	0–16 m [38]	0–24 m [37]
Global cognitive function						
ADAS-cog	1.63 (6.62)	4.62 (6.39)	8.88 (7.67)	–0.44 (3.88)	–0.45 (3.85)	0.76 (4.87)
MMSE	–0.92 (3.35)	–2.33 (3.86)	–5.17 (4.53)	–0.46 (1.48)	–1.2 (1.99)	–1.32 (2.29)
Recognition						
Warrington SRMT words	–0.65 (2.44)	–0.85 (3.53)	–1.24 (2.97)	0.05 (2.89)	0.15 (2.55)	–1.08 (2.69)
Warrington SRMT faces	–1.52 (3.96)	–2.52 (4.52)	–1.88 (3.06)	–0.02 (2.87)	0.9 (2.4)	–0.34 (4.33)
PRM	–0.18 (16.21)	–1.87 (11.1)	–1.72 (12.33)	–0.83 (8.96)	0.11 (11.07)	2.08 (10.69)
SRM	–2.17 (11.95)	–3.25 (12.49)	2.65 (14.8)	–2.13 (13.72)	–2.24 (11.61)	–2.89 (11.78)
Doors recognition	–0.04 (2.65)	–1.35 (2.7)	–1.88 (2.5)	0.73 (3.71)	2.18 (3.42)	0.74 (3.76)
DMS (correct, 12 s delay)	–1.74 (24.8)	–4.74 (20.38)	–6.67 (25.26)	1.79 (18.05)	5.26 (19.96)	–3.51 (22.51)
Cued/free recall						
Logical memory (30 min)	–0.57 (1.93)	–0.5 (2.35)	–1 (2.54)	–0.27 (3.92)	–0.41 (3.53)	–1.34 (4.34)
PAL (stages passed)	0.13 (1.36)	0.45 (1.67)	–0.94 (1.71)	–0.37 (0.83)	–0.45 (1.01)	–0.53 (0.86)
PAL (6-pattern errors)	–2.3 (9.04)	0.6 (9.03)	4.29 (7.44)	1.49 (5.95)	2.74 (8.1)	–0.37 (15.22)
PAL (total errors)	–0.05 (23.55)	–3.42 (29.96)	19.75 (27.46)	3.66 (22.03)	5.58 (28.81)	8.29 (25.94)
Semantic naming/fluency						
Graded naming test	–1.17 (2.19)	–1.3 (2.36)	–3.33 (2.5)	0.73 (2.26)	0.37 (2.16)	0.39 (1.78)
Semantic naming	–1 (3.77)	–3.65 (5.7)	–5.94 (7.07)	0.63 (1.73)	0.55 (1.62)	0.34 (1.91)
Category fluency	–4.88 (9.75)	–7.48 (7.22)	–9.63 (6.91)	–1.79 (11.88)	–2.36 (11.44)	–2.34 (9.95)
Divided attention						
5-choice RTI (accuracy)	–0.77 (3.69)	–0.17 (2.53)	–0.53 (3.3)	–0.1 (1.22)	–0.37 (1.36)	–0.49 (1.84)
5-choice RTI (latency, m sec)	93.37 (275.29)	23.41 (164.91)	123.01 (216.9)	34.17 (184.18)	17.43 (80.38)	38.52 (83.25)
Sustained attention						
RVP 1-seq (A')	–0.01 (0.04)	–0.02 (0.09)	–0.04 (0.04)	0 (0.02)	–0.01 (0.03)	–0.01 (0.03)
RVP 1-seq (latency, m sec)	29.75 (132.18)	53.52 (227.06)	51.45 (213.67)	–30.19 (120.42)	–4.25 (138.68)	–19.87 (135.84)
Executive function						
Letter fluency	–3.85 (5.98)	–4.81 (10.07)	–9.11 (13.46)	–1.74 (9.08)	–2.28 (10.95)	0.08 (10.33)
IED (stages completed)	1 (2.33)	0.47 (3.44)	0.13 (2.07)	–0.08 (1.95)	–0.47 (1.97)	–0.42 (1.97)
OTS (attempts, 5 moves)	–0.21 (1.54)	–0.25 (0.9)	0.75 (0)	–0.06 (0.7)	–0.05 (0.77)	–0.12 (0.92)
Task	Depression (Mean, SD)			Controls (Mean, SD)		
	0–8 m [31]	0–16 m [31]	0–24 m [30]	0–8 m [38]	0–16 m [37]	0–24 m [33]
Global cognitive function						
ADAS-cog	–0.63 (3.27)	–0.81 (4.31)	–0.7 (4.44)	–0.71 (2.6)	–1 (2.04)	–1.74 (2.53)
MMSE	0 (1.61)	–0.38 (2.03)	–1.03 (3.85)	–0.24 (1.42)	–0.06 (1.43)	–0.15 (1.03)
Recognition						
Warrington SRMT words	0.75 (2.18)	0.69 (3.06)	0.65 (2.98)	0.45 (1.33)	0.31 (1.45)	–0.24 (3.81)
Warrington SRMT faces	1.66 (2.57)	1.28 (3.01)	1.55 (3.04)	0.29 (1.25)	0.89 (1.43)	0.85 (1.15)
PRM	0.39 (11.07)	–1.18 (14.01)	2.41 (12.06)	2.08 (7.1)	1.91 (9.14)	3.79 (8.29)
SRM	2.34 (11.5)	0.47 (13.16)	0.48 (11.28)	1.58 (12.63)	1.53 (11.58)	1.36 (11.06)
Doors recognition	0.91 (3.58)	1.69 (4.07)	2.26 (3.96)	1.16 (2.72)	2.81 (2.3)	3.03 (2.69)
DMS (correct, 12 s delay)	–4.83 (21.32)	–0.34 (22.6)	3.93 (18.12)	1.35 (22.01)	7.5 (22.6)	7.58 (23.05)
Cued/free recall						
Logical memory (30 min)	0.26 (4.48)	–1.55 (5.17)	0.13 (6.04)	–0.53 (5.71)	3.86 (5.62)	1.36 (6.22)
PAL (stages passed)	0.07 (0.45)	0.16 (0.58)	0.1 (0.4)	–0.29 (0.77)	–0.31 (0.71)	–0.39 (0.56)
PAL (6-pattern errors)	0.16 (8.89)	–3.84 (6.12)	–2.4 (7.5)	–2.76 (6.33)	–2.14 (5.97)	–1.27 (6.23)
PAL (total errors)	–6.17 (13.07)	–13.65 (18.21)	–7.67 (15.94)	–7.16 (13.11)	–7.44 (12.37)	–4.06 (12.08)
Semantic naming/fluency						
Graded naming test	0.69 (3.03)	1 (1.67)	1.32 (2.06)	1.13 (1.77)	1.11 (1.56)	0.27 (5.33)
Semantic naming	0.16 (1.02)	0.13 (1.13)	–0.23 (1.56)	0.66 (1.77)	0.43 (1.14)	0.61 (1.17)
Category fluency	–7.32 (18.17)	–1.31 (7.34)	–0.26 (10.6)	9.64 (49.32)	5.31 (8)	4.48 (10.69)

Supplementary Table 2
(Continued)

Task	Depression (Mean, SD)			Controls (Mean, SD)		
	0–8 m [31]	0–16 m [31]	0–24 m [30]	0–8 m [38]	0–16 m [37]	0–24 m [33]
Divided attention						
5-choice RTI (accuracy)	–0.38 (1.31)	–0.06 (1.16)	–0.23 (1.07)	–0.11 (1.15)	–0.17 (0.86)	0.09 (0.86)
5-choice RTI (latency, m sec)	29.55 (96.03)	47.71 (173.07)	23.28 (125.87)	9.68 (115.39)	–27.56 (85.68)	–5.3 (84.58)
Sustained attention						
RVP 1-seq (A')	0.01 (0.02)	0.01 (0.03)	0.02 (0.02)	0 (0.02)	0 (0.02)	0 (0.02)
RVP 1-seq (latency, m sec)	–19.43 (81.6)	–21.69 (93.47)	–23.82 (91.5)	–25.39 (55.01)	–18 (57.48)	–10.31 (58.32)
Executive function						
Letter fluency	0 (9.59)	1.66 (8.17)	1.45 (9.33)	–0.28 (10.45)	3.14 (7.26)	3.88 (8.73)
IED (stages completed)	1.03 (2.39)	0.31 (2.76)	0.58 (2.39)	0.05 (1.35)	0 (0.68)	0.15 (1.12)
OTS (attempts, 5 moves)	–0.29 (0.76)	–0.23 (0.76)	–0.09 (0.85)	–0.05 (0.61)	–0.11 (0.63)	–0.16 (0.61)
Task	SMI Converters (Mean, SD)			SMI Non-Converters (Mean, SD)		
	0–8 m [11]	0–16 m [11]	0–24 m [11]	0–8 m [32]	0–16 m [27]	0–24 m [26]
Global cognitive function						
ADAS-cog	0.2 (3.55)	–0.25 (5.28)	4.38 (4.96)	–0.39 (3.63)	–0.43 (3.38)	0 (4.17)
MMSE	–1.2 (1.81)	–1.89 (3.26)	–3.75 (3.24)	–0.2 (1.32)	–0.97 (1.47)	–0.59 (1.4)
Recognition						
Warrington SRMT words	0.6 (4.4)	–1.25 (3.85)	–2.5 (2.62)	–0.13 (2.28)	0.52 (2.03)	–0.69 (2.62)
Warrington SRMT faces	–1.6 (3.57)	1.13 (3.4)	–1.25 (4.89)	0.48 (2.46)	0.84 (2.15)	–0.1 (4.22)
PRM	2.78 (10.62)	–1.56 (13.9)	0 (12.4)	–1.88 (8.32)	0.56 (10.42)	2.64 (10.35)
SRM	–10.56 (11.02)	–8.13 (10.67)	–3.75 (11.88)	0.32 (13.6)	–0.67 (11.5)	–2.67 (11.94)
Doors recognition	–2 (3.06)	–1 (3.7)	–3.25 (2.49)	1.61 (3.5)	3.03 (2.85)	1.8 (3.32)
DMS (correct, 12 s delay)	–5.56 (10.14)	5 (22.04)	–15 (16.04)	4 (19.4)	5.33 (19.78)	–0.34 (23.22)
Cued/free recall						
Logical memory (30 min)	–0.6 (1.51)	–1 (2.2)	–1.5 (2.14)	–0.16 (4.44)	–0.26 (3.81)	–1.3 (4.79)
PAL (stages passed)	–0.4 (1.17)	–0.13 (1.36)	–0.88 (1.13)	–0.35 (0.71)	–0.53 (0.9)	–0.43 (0.77)
PAL (6-pattern errors)	–1.43 (9.33)	6 (9.32)	6.25 (9.66)	3.63 (28.99)	0.03 (3.5)	1.8 (7.54)
PAL (total errors)	13.4 (28.43)	1.63 (28.15)	27.13 (26.31)	0.52 (19.04)	6.63 (29.37)	3.27 (23.82)
Semantic naming/fluency						
Graded naming test	0.78 (3.38)	0.5 (3.21)	–0.5 (2.78)	0.71 (1.9)	0.33 (1.86)	0.63 (1.38)
Semantic naming	1.67 (2.18)	0.63 (1.77)	–0.63 (2.92)	0.32 (1.49)	0.53 (1.61)	0.6 (1.5)
Category fluency	–6.55 (14.16)	–6 (7.29)	–10.25 (5.99)	–0.16 (10.76)	–1.42 (12.21)	–0.23 (9.79)
Divided attention						
5-choice RTI (accuracy)	0 (2)	–0.13 (2.03)	–1.13 (1.73)	–0.13 (0.92)	–0.43 (1.17)	–0.31 (1.85)
5-choice RTI (latency, m sec)	150.12 (367.04)	79.45 (128.62)	129.18 (108.62)	0.51 (54.51)	0.88 (53.9)	13.51 (54.46)
Sustained attention						
RVP 1-seq (A')	0.01 (0.02)	–0.02 (0.06)	–0.02 (0.07)	0 (0.02)	0 (0.03)	0 (0.01)
RVP 1-seq (latency, m sec)	–39.55 (72.89)	45.73 (83.44)	68.64 (114.33)	–27.47 (131.92)	–17.58 (148.27)	–44.28 (132.66)
Executive function						
Letter fluency	–4.11 (8.81)	–3.13 (8.79)	–7.38 (11.94)	–1 (9.18)	–2.06 (11.56)	2.07 (9.07)
IED (stages completed)	0.56 (2.46)	–0.38 (1.51)	–1.88 (2.75)	–0.26 (1.79)	–0.5 (2.1)	–0.03 (1.54)
OTS (attempts, 5 moves)	–0.25 (1.07)	0.7 (1.24)	–0.69 (1.86)	–0.01 (0.59)	–0.18 (0.6)	–0.04 (0.73)

Supplementary Table 3
Principal Component results for the AD-SMI analysis, indicating the percentage of variance accounted for by each component

Component	Total variance explained					
	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	9.499951	43.18159	43.18159	5.625115	25.5687	25.5687
2	1.7769	8.076817	51.25841	2.90021	13.18277	38.75148
3	1.658942	7.540645	58.79906	2.633266	11.96939	50.72087
4	1.405349	6.38795	65.18701	2.284668	10.38485	61.10572
5	1.251323	5.687831	70.87484	1.809049	8.222949	69.32867
6	1.028465	4.674839	75.54968	1.368621	6.221005	75.54968
7	0.923362	4.1971	79.74678			
8	0.741518	3.370534	83.11731			
9	0.665686	3.025846	86.14316			
10	0.551772	2.508052	88.65121			
11	0.483136	2.196072	90.84728			
12	0.420653	1.91206	92.75934			
13	0.352995	1.604525	94.36387			
14	0.283866	1.290298	95.65416			
15	0.272709	1.239585	96.89375			
16	0.233034	1.059245	97.95299			
17	0.146418	0.665537	98.61853			
18	0.12489	0.567681	99.18621			
19	0.081977	0.372624	99.55884			
20	0.050417	0.229169	99.788			
21	0.036476	0.1658	99.9538			
22	0.010163	0.046195	100			

Supplementary Table 4

Rotated component matrix indicating loading of baseline cognitive variables onto each factor. A cut-off of ≥ 0.7 was employed. The rotation converged in 12 iterations

Baseline values for task	Component					
	1	2	3	4	5	6
Global cognitive function						
ADAS-cog	-0.81211					
MMSE						
Recognition						
Warrington SRMT words						
Warrington SRMT faces		0.78162				
PRM						
SRM				0.821606		
Doors recognition		0.742534				
DMS (correct, 12 s delay)						
Cued/free recall						
Logical memory (30 min)						
PAL (stages passed)	0.892972					
PAL (6-pattern errors)	-0.90655					
PAL (total errors)	-0.90982					
Semantic naming/fluency						
Graded naming test						
Semantic naming			0.885451			
Category fluency						
Divided attention						
5-choice RTI (accuracy)						
5-choice RTI (latency)						
Sustained attention						
RVP A'						
RVP latency					-0.82834	
Executive function						
Letter fluency						
IED (stages completed)						0.701032
OTS (attempts, 5 moves)						