

Table S1. Results of joint models for the association between the annual change in depressive symptoms and phenoconversion risk

Longitudinal variable of the joint model	Longitudinal component		Survival component	
	Time estimate [95% CI]	P-value	Hazard Ratio [95% CI]	P-value
All phenoconversion (n=19)				
HADS-D total (0-21)	0.15 [0.01;0.29]	0.025*	8.86 [0.29;274.35]	0.213
Starkstein Apathy Scale (0-42)	0.24 [0.06;0.42]	0.006*	0.56 [0.01;30.04]	0.775
Phenoconversion to PD (n=9)				
HADS-D total (0-21)	0.13 [-0.01;0.27]	0.044*	19.97 [0.15;2632.06]	0.229
Starkstein Apathy Scale (0-42)	0.26 [0.16;0.36]	<0.001*	0.05 [0;28.61]	0.362
Phenoconversion to DLB (n=10)				
HADS-D total score (0-21)	0.10 [-0.02;0.22]	0.105	21.11 [0.02;23386.26]	0.394
Starkstein Apathy Scale (0-42)	0.20 [0.02;0.38]	0.022*	7.5 [0.01;4133.37]	0.532

Notes. The association is modeled through the slope parametrization of the joint models. In the longitudinal component, estimates represent the annual change in score over time since iRBD diagnosis. In the survival component, hazard ratios represent the relative change in risk of phenoconversion associated with a one-point-per-year increase in the individual annual change of score. Models were adjusted for age at diagnosis.

CI= Confidence Interval; DLB= Dementia with Lewy bodies; HADS-D= Hospital Anxiety and Depression Scale – Depression subscale; PD= Parkinson's disease.

Table S2. Results of joint models for the association between the current level of depressive symptoms and phenoconversion risk, stratified by time since iRBD diagnosis

Longitudinal variable of the joint model	Longitudinal component		Survival component	
	Time estimate [95% CI]	P-value	Hazard Ratio [95% CI]	P-value
All phenoconversion (n=19)				
HADS-D total (0-21)				
0-5 years	0.10 [-0.12;0.32]	0.330	1.02 [0.66;1.56]	0.935
5-15-years	0.34 [0.09;0.59]	0.010*	1.56 [1.13;2.14]	0.006*
Starkstein Apathy Scale (0-42)				
0-5 years	0.38 [0.07;0.69]	0.021*	0.92 [0.71;1.20]	0.532
5-15-years	0.82 [0.23;1.41]	0.005*	1.41 [0.77;2.56]	0.263
Phenoconversion to PD (n=9)				
HADS-D total (0-21)				
0-5 years	0.09 [-0.13;0.31]	0.422	1.02 [0.52;2.00]	0.945
5-15-years	0.31 [0.04;0.58]	0.028*	1.80 [1.11;2.94]	0.018*
Starkstein Apathy Scale (0-42)				
0-5 years	0.39 [0.06;0.72]	0.019*	0.96 [0.63;1.47]	0.849
5-15-years	0.54 [0.23;0.85]	0.001*	1.39 [0.82;2.36]	0.222
Phenoconversion to DLB (n=10)				
HADS-D total score (0-21)				
0-5 years	0.08 [-0.14;0.30]	0.467	1.02 [0.58;1.80]	0.933
5-15-years	0.23 [-0.01;0.47]	0.061	1.42 [0.79;2.56]	0.235
Starkstein Apathy Scale (0-42)				
0-5 years	0.37 [0.04;0.70]	0.026*	0.92 [0.67;1.26]	0.601
5-15-years	0.54 [0.11;0.97]	0.015*	0.72 [0.38;1.37]	0.317

Notes. The association is modeled through the current value parametrization of the joint models. In the longitudinal component, estimates represent the annual change in score over time since iRBD diagnosis. In the survival component, hazard ratios represent the relative change in risk of phenoconversion associated with a one-point-per-year increase in the individual annual change of score. Models were adjusted for age at diagnosis.

CI= Confidence Interval; DLB= Dementia with Lewy bodies; HADS-D= Hospital Anxiety and Depression Scale – Depression subscale; PD= Parkinson's disease.

