

## Additional file 5: Mixed linear regression models with the single NPI-Q items defining the construct of agitation

**Table S1** Mixed linear regression model for dimension *positive affect* as dependent variable, the severity of each NPI-Q item defining the construct of agitation and the matching variables as fixed factors and care units nested in nursing homes as random factor

Independent Variables (fixed effects)	Coefficients	95% CI	SE	t	p
<b>(Intercept)</b>	<b>9.64</b>	<b>6.91, 12.40</b>	<b>1.42</b>	<b>6.80</b>	<b>&lt;0.001</b>
<b>NPI-Q Severe Agitation/Aggression (yes)</b>	<b>-1.53</b>	<b>-2.24, -0.83</b>	<b>0.36</b>	<b>-4.20</b>	<b>&lt;0.001</b>
NPI-Q Severe Disinhibition (yes)	-0.28	-1.23, 0.68	0.49	-0.56	0.575
<b>NPI-Q Severe Irritability/Lability (yes)</b>	<b>-1.36</b>	<b>-2.16, -0.55</b>	<b>0.42</b>	<b>-3.24</b>	<b>0.001</b>
Age	0.01	-0.03, 0.04	0.02	0.45	0.654
Sex (female)	-0.36	-0.97, 0.25	0.31	-1.16	0.246
Visits (no)	-0.71	-1.87, 0.44	0.60	-1.19	0.234
DSS score	-0.14	-0.24, -0.04	0.05	-2.61	0.009
Duration of stay	0.01	-0.01, 0.01	0.01	0.97	0.333
NPI-Q Delusions (no)	-0.02	-0.60, 0.57	0.30	-0.05	0.960
NPI-Q Anxiety (no)	-0.24	-0.82, 0.34	0.30	-0.79	0.430
NPI-Q Aberrant Motor (no)	-0.70	-1.34, -0.07	0.33	-2.16	0.031
NPI-Q Hallucinations (no)	0.49	-0.18, 1.51	0.34	1.43	0.153

Random effects: Care unit (intercept): Variance = 0.41; SD = 0.64; .sig01 = 0.00, 1.38;  
Nursing home (intercept): Variance = 0.63; SD = 0.80; .sig02 = 0.00, 1.31;  
Residual: Variance = 6.17; SD = 2.48; .sigma = 2.24, 2.67;  
Number of obs.: 369, Care units: 115; Nursing homes: 64

**Table S2** Mixed linear regression model for dimension *negative affect* as dependent variable, the severity of each NPI-Q item defining the construct of agitation and the matching variables as fixed factors and care units nested in nursing homes as random factor

Independent Variables (fixed effects)	Coefficients	95% CI	SE	t	p
<b>(Intercept)</b>	<b>2.73</b>	<b>1.22, 4.25</b>	<b>0.78</b>	<b>3.50</b>	<b>&lt;0.001</b>
NPI-Q Severe Agitation/Aggression (yes)	-0.20	-0.59, 0.19	0.20	-1.00	0.317
NPI-Q Severe Disinhibition (yes)	-0.08	-0.61, 0.45	0.27	-0.30	0.761
NPI-Q Severe Irritability/Lability (yes)	-0.08	-0.53, 0.37	0.23	-0.35	0.730
Age	0.02	<0.01, 0.04	0.01	1.97	0.050
<b>Sex (female)</b>	<b>-0.86</b>	<b>-1.19, -0.53</b>	<b>0.17</b>	<b>-5.07</b>	<b>&lt;0.001</b>
Visits (no)	0.43	-0.21, 1.07	0.33	1.30	0.196
DSS score	-0.03	-0.09, 0.02	0.03	-1.08	0.281
Duration of stay	<-0.01	-0.01, <0.01	<0.01	-0.64	0.522
NPI-Q Delusions (no)	0.10	-0.23, 0.42	0.17	0.59	0.556
<b>NPI-Q Anxiety (no)</b>	<b>1.23</b>	<b>0.91, 1.55</b>	<b>0.17</b>	<b>7.42</b>	<b>&lt;0.001</b>
NPI-Q Aberrant Motor (no)	-0.11	-0.46, 0.24	0.18	-0.61	0.546
NPI-Q Hallucinations (no)	0.37	<0.01, 0.73	0.19	1.95	0.052

Random effects: Care unit (intercept): Variance = 0.06; SD = 0.25; .sig01 = 0.00, 0.67;  
Nursing home (intercept): Variance = 0.45; SD = 0.67; .sig02 = 0.29, 0.93;  
Residual: Variance = 1.82; SD = 1.35; .sigma = 1.22, 1.44;  
Number of obs.: 369, Care units: 115; Nursing homes: 64

**Table S3** Mixed linear regression model for dimension *restless tense behaviour* as dependent variable, the severity of each NPI-Q item defining the construct of agitation and the matching variables as fixed factors and care units nested in nursing homes as random factor

Independent Variables (fixed effects)	Coefficients	95% CI	SE	t	p
(Intercept)	2.15	-0.25, 4.56	1.24	1.73	0.084
<b>NPI-Q Severe Agitation/Aggression (yes)</b>	<b>-1.21</b>	<b>-1.83, -0.59</b>	<b>0.32</b>	<b>-3.79</b>	<b>&lt;0.001</b>
NPI-Q Severe Disinhibition (yes)	-0.47	-1.30, 0.37	0.43	-1.08	0.282
NPI-Q Severe Irritability/Lability (yes)	-0.74	-1.46, -0.04	0.36	-2.04	0.042
Age	0.02	-0.01, 0.05	0.01	1.33	0.184

Independent Variables (fixed effects)	Coefficients	95% CI	SE	t	p
Sex (female)	0.56	0.04, 1.09	0.27	2.07	0.040
Visits (no)	0.14	-0.86, 1.15	0.52	0.28	0.781
DSS score	-0.12	-0.21, -0.04	0.05	-2.75	0.006
Duration of stay	<0.01	-0.01, 0.01	<0.01	0.74	0.460
NPI-Q Delusions (no)	-0.01	-0.52, 0.50	0.26	-0.03	0.973
<b>NPI-Q Anxiety (no)</b>	<b>1.09</b>	<b>0.58, 1.61</b>	<b>0.26</b>	<b>4.13</b>	<b>&lt;0.001</b>
<b>NPI-Q Aberrant Motor (no)</b>	<b>1.70</b>	<b>1.14, 2.25</b>	<b>0.29</b>	<b>5.94</b>	<b>&lt;0.001</b>
NPI-Q Hallucinations (no)	0.17	-0.40, 0.75	0.30	0.58	0.561

Random effects: Care unit (intercept): Variance = 0.96; SD = 0.98; .sig01 = 0.45, 1.46;  
Nursing home (intercept): Variance = 0.37; SD = 0.61; .sig02 = 0.00, 1.16;  
Residual: Variance = 4.48; SD = 2.12; .sigma = 1.91, 2.27;  
Number of obs.: 369, Care units: 115; Nursing homes: 64

**Table S4** Mixed linear regression model for dimension *social relations* as dependent variable, the severity of each NPI-Q item defining the construct of agitation and the matching variables as fixed factors and care units nested in nursing homes as random factor

Independent Variables (fixed effects)	Coefficients	95% CI	SE	t	p
<b>(Intercept)</b>	<b>6.37</b>	<b>4.48, 8.27</b>	<b>0.98</b>	<b>6.50</b>	<b>&lt;0.001</b>
<b>NPI-Q Severe Agitation/Aggression (yes)</b>	<b>-1.02</b>	<b>-1.51, -0.53</b>	<b>0.25</b>	<b>-4.03</b>	<b>&lt;0.001</b>
NPI-Q Severe Disinhibition (yes)	0.30	-0.36, 0.96	0.34	0.87	0.384
<b>NPI-Q Severe Irritability/Lability (yes)</b>	<b>-1.12</b>	<b>-1.68, -0.56</b>	<b>0.29</b>	<b>-3.87</b>	<b>&lt;0.001</b>
Age	0.01	-0.02, 0.03	0.01	0.59	0.558
Sex (female)	0.25	-0.17, 0.66	0.22	1.15	0.249
Visits (no)	-0.68	-1.48, 0.12	0.41	-1.65	0.101
DSS score	<0.01	-0.07, 0.07	0.04	0.04	0.970
Duration of stay	0.01	<-0.01, 0.01	<0.01	1.40	0.164
NPI-Q Delusions (no)	-0.13	-0.54, 0.28	0.21	-0.63	0.529
<b>NPI-Q Anxiety (no)</b>	<b>-0.61</b>	<b>-1.01, -0.21</b>	<b>0.21</b>	<b>-2.93</b>	<b>0.004</b>
NPI-Q Aberrant Motor (no)	-0.59	-1.02, -0.14	0.23	-2.60	0.010
NPI-Q Hallucinations (no)	0.64	0.19, 1.10	0.24	2.72	0.007

Random effects: Care unit (intercept): Variance = 0.10; SD = 0.32; .sig01 = 0.00, 0.93;  
Nursing home (intercept): Variance = 0.36; SD = 0.60; .sig02 = 0.00, 0.96;  
Residual: Variance = 2.98; SD = 1.73; .sigma = 1.56, 1.85;  
Number of obs.: 369, Care units: 115; Nursing homes: 64

**Table S5** Mixed linear regression model for dimension *social isolation* as dependent variable, the severity of each NPI-Q item defining the construct of agitation and the matching variables as fixed factors and care units nested in nursing homes as random factor

Independent Variables (fixed effects)	Coefficients	95% CI	SE	t	p
<b>(Intercept)</b>	<b>7.72</b>	<b>5.44, 10.01</b>	<b>1.18</b>	<b>6.54</b>	<b>&lt;0.001</b>
<b>NPI-Q Severe Agitation/Aggression (yes)</b>	<b>-1.47</b>	<b>-2.06, -0.88</b>	<b>0.30</b>	<b>-4.84</b>	<b>&lt;0.001</b>
<b>NPI-Q Severe Disinhibition (yes)</b>	<b>-1.52</b>	<b>-2.32, -0.72</b>	<b>0.41</b>	<b>-3.69</b>	<b>&lt;0.001</b>
<b>NPI-Q Severe Irritability/Lability (yes)</b>	<b>-1.10</b>	<b>-1.78, -0.43</b>	<b>0.35</b>	<b>-3.16</b>	<b>0.002</b>
Age	-0.03	-0.05, <0.01	0.01	-1.85	0.065
Sex (female)	0.13	-0.37, 0.63	0.26	0.51	0.612
Visits (no)	0.25	-0.72, 1.21	0.50	0.50	0.619
DSS score	-0.04	-0.12, 0.05	0.04	-0.89	0.374
Duration of stay	<0.01	-0.01, 0.01	<0.01	0.04	0.968
NPI-Q Delusions (no)	0.29	-0.20, 0.78	0.25	1.14	0.253
NPI-Q Anxiety (no)	0.71	0.22, 1.20	0.25	2.83	0.005
NPI-Q Aberrant Motor (no)	0.35	-0.17, 0.87	0.27	1.29	0.197
NPI-Q Hallucinations (no)	0.40	-0.15, 0.95	0.29	1.41	0.161

Random effects: Care unit (intercept): Variance = 0.20; SD = 0.45; .sig01 = 0.00, 1.07;  
Nursing home (intercept): Variance = 0.57; SD = 0.75; .sig02 = 0.00, 1.16;  
Residual: Variance = 4.27; SD = 2.07; .sigma = 1.87, 2.21;  
Number of obs.: 369, Care units: 115; Nursing homes: 64