Conclusions

Hidden pathway maze learning may be a valuable probe of short-term memory and executive function in AD. Whilst the removal of complex rule sets may mute the test more feasible in the demands stages of the disease, increasing severity of disease may still be apparent for some patients.

- The test is acceptable to AD dementia patients and could be completed by moderate-mild patients with MMSE ≤17.
- Test retest reliability was adequate for both the total error and reverse maze scores, which is a common finding in the literature for executive function tests.

- Construct validity was evident between both beta-2-arrestin2 (total errors and reverse) and only limited evidence was seen for a direct association to global cognition (MMSE) and neuropsychiatric symptoms (NPI), which is consistent with practice effects.

- Known groups validity was evident versus age matched healthy controls for the total error score and there was evidence for poorer performance on both subtests measures in the moderate versus the mild AD dementia groups.

- The total error score may be adversely affected by small numbers of outliers values.
- Min/Max total error at baseline: 0/100 total errors at baseline.
- This may impact reliability, variance and other measures properties.
- Correlation did not support a clear association between very high error rates and clinical status (MMSE or NPI), but errors during practice were typically also high for these conditions.
- Assessment of executive processes may be more feasible in mild AD dementia, but may be more challenging in some moderate dementia patients.
- For the total error score, a cap on maximum errors may improve psychometric properties and if applied during test performance could reduce patient burden, while still reflecting maximized improvement on the test.

- This is a common approach applied to other tests of executive function used in AD and dementia research e.g. Trail Making Test Part B is usually discontinued after 300 seconds and this applied as the achieved score.