Supplemental Information 1 – Supplemental Methods

Subjects

All subjects underwent a multidisciplinary evaluation as part of research studies at the University of California San Francisco (UCSF) Memory and Aging Center. Diagnoses were made according to accepted criteria[1, 2]. As part of their evaluation, all subjects were tested using the Mini Mental State Examination (MMSE)[3] and subjects were included who scored >18 (controls all scored 27 or above). Subjects also were assessed by the Clinical Dementia Rating scale (CDR)[4], which measures severity of functional impairment. Those with scores higher than 2 (indicating more than moderate dementia severity) were excluded from the study as they were unlikely to be able to correctly perform the task.

Task Description

Participants were seated at a keyboard in front of a computer screen. They were told they would be awarded a minimum of $10 or up to $30 depending on task performance and told that their goal was to earn as much money as possible. The task consisted of a practice session and then four blocks of 45 trials each. The individual's reaction times during the practice session served as a baseline to ensure the subject would be successful on 66% of trials during the task blocks. Two of the blocks dealt with monetary rewards: a monetary win condition and a monetary loss condition. The other two assessed social rewards: social win and social loss. To begin each trial, a fixation cue appeared on the screen for a variable interval between 750 and 1500 ms. Subjects were instructed to press the spacebar as soon as a rapidly disappearing target appeared on the screen. For a successful trial, a subject would have to hit the spacebar before the target disappeared. The duration the target remained on the screen was based on practice session

reaction times and was adjusted based on performance throughout the task to maintain the 66% success rate. A 1 s pause with a blank screen followed the disappearance of the target. A feedback screen (lasting 2 s) then informed the subjects if they won or lost. During the monetary win block, successfully hitting the spacebar before the target disappeared resulted in winning $1 whereas a miss resulted in losing $0. During the monetary loss block, pressing the spacebar in time resulted in gaining $0 and failing to hit the target resulted in a loss of $1. In the social win condition, a picture of a smiling face was displayed as the reward for a successful trial. Failures in the social loss condition were followed by viewing an angry face. A neutral oval appeared on the screen after a failed trial in both social blocks. There were 6 possible happy and 6 angry faces displayed during the social conditions. If the subjects both prematurely pressed the button during the fixation cue and then again during the target they were not rewarded for that trial when the total score was calculated. After each block the subjects were informed of how much total money they had won or lost or how many times they had pressed the spacebar fast enough on the social reward conditions. Subjects were paid in cash upon completion of the study.

Reaction times from onset of the target to pressing the spacebar were measured, (including any spacebar presses during the 1 s after the target disappeared).

Supplemental References

1. Neary D, Snowden JS, Gustafson L, et al. Frontotemporal lobar degeneration: a consensus on clinical diagnostic criteria. *Neurology*. 1998;51:1546-1554.

2. McKhann G, Drachman D, Folstein M, et al. Clinical diagnosis of Alzheimer's disease: report of the NINCDS-ADRDA Work Group under the auspices of Department of Health and Human Services Task Force on Alzheimer's Disease. *Neurology*. 1984;34:939-944.

3. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state" : A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res*. 1975;12:189-198.

4. Morris JC. The Clinical Dementia Rating (CDR): current version and scoring rules. *Neurology*. 1993;43:2412-2414.