INTRODUCTION

Current tasks measuring social cognition have a number of problems when assessing individuals with behavioural variant frontotemporal dementia (bvFTD). They typically have complex test instructions and require a significant amount of conversation to complete the tasks.

METHODS

18 bvFTD and 21 Controls completed two instructionless novel emotion processing (EP) eye tracking tasks, specifically designed to overcome these issues. The Reading the Mind in the Eyes Test (RMET) was modified to assess complex EP. Four RMET images were places in the corners of a computer screen for 10 seconds, and these were replaced by an emotional word for two seconds, the the images reappeared alongside the word for five seconds. Items from the NineStim Face Stimulus Set were also used to create a similar task for simple EP. An Eyelink 1000 Plus eye tracker was used and participants basic oculomotor functions were assessed. A dwell time difference score was calculated for each image using the time before and after the emotional label appeared.

RESULTS

Using a mixed effects model, the bvFTD group performed significantly worse than controls on the target image (Complex: Controls = 15%, bvFTD = 2%; Simple: Controls = 35%, bvFTD = 5%; p < 0.001 on both tasks). The target image was looked at significantly more than the distractor images, for each group, on the two tasks and this was not due to oculomotor problems. When looking at the valence of the simple emotions, those with bvFTD performed significantly worse than controls on both positive and negative emotions (p < 0.001). Across the individual simple emotions in the control group, fear was processed significantly worse than all other emotions; this pattern was not seen in the bvFTD group. However, the bvFTD group did perform significantly worse than controls across all emotions.

CONCLUSIONS

These novel tasks demonstrate that eye tracking is a viable tool to assess EP in bvFTD, allowing for a quantitative analysis whilst minimizing the test instructions. This suggests that other domains may also be tested using eye tracking, allowing the development of a range of tasks to quantitatively assess cognitive abilities in FTD.

Acknowledgements: LRR, KMM, SC, JDR, and JDR acknowledge the support of the NIHR Queen Square Dementia Biomedical Research Unit and the Leonard Wolfson Experimental Neurology Centre. The Dementia Research Centre at UCL is an Alzheimer’s Research UK coordinating centre and received equipment funded by Alzheimer’s Research UK and the Brain Research Trust. JDR is an MRC Clinician Scientist and has received funding from the NIHR Rare Diseases Translational Research Collaboration.