

Impaired emotion recognition and facial expression processing: behavioral variant frontotemporal dementia versus primary psychiatric disorders and controls

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State of the art. Early diagnosis of the behavioral variant frontotemporal dementia (bvFTD) is challenging, partly due to large symptomatic overlap with primary psychiatric disorders (PPD). As social cognition impairments are key features of bvFTD, unraveling underlying processes that lead to impaired social cognition may aid in differentiating bvFTD from PPD.

Methodology. We aimed to examine emotion recognition and facial expression processing using eye tracking technology in patients with bvFTD, PPD (mood, autism and psychotic disorders) and healthy controls. Emotion recognition was assessed with the Ekman-60-Faces-test, while eye tracking metrics were collected during the first 5 seconds a face was presented. Group differences in dwell time on the total image and socially relevant areas of the eyes and mouth were analyzed using ANOVA and post-hoc comparisons.

Results. A total of 38 participants (mean age 62.2 years, 50% female) included 13 bvFTD, 10 PPD and 15 controls. BvFTD performed lowest, PPD intermediate and controls highest on recognizing emotions. Firstly, bvFTD spent less time looking at the total image than controls. Secondly, mean dwell time showed a clear trend with bvFTD spending least, PPD intermediate and controls most time in socially relevant areas of the face. In post-hoc comparisons, bvFTD spent less dwell time in the mouth area than controls, while there were no other significant differences.

Conclusion. In bvFTD, decreased emotion recognition may be related to both reduced overall attention and attention to salient facial expression hallmarks. Our findings provide important insights in the basis of social cognition deficits in bvFTD.

Table 1. Performance and eye tracking metrics on an emotion recognition test by diagnosis group.

	bvFTD	PPD	Controls	<i>p-value</i>
Ekman 60 faces test				
Total score	34.15 ± 8.57 bc	45.20 ± 5.83 a	50.67 ± 4.39 a	<0.001*
Dwell time Eyes				
ms	1612 ± 1077	1752 ± 638	1967 ± 738	0.541
%	32.2 ± 21.5	35.1 ± 12.8	39.3 ± 14.8	0.543
Dwell time Mouth				
ms	975 ± 669 c	1410 ± 718	1499 ± 542 a	0.089
%	19.5 ± 13.4 c	28.2 ± 14.4	30.0 ± 10.8 a	0.090
Dwell time Image				
ms	3737.9 ± 967.3 c	4267.3 ± 407.9	4560.2 ± 213.8 a	0.020*
%	74.8 ± 19.3 c	85.4 ± 8.1	91.2 ± 4.2 a	0.021*

Data are presented as mean ± SD; bvFTD = behavioral variant frontotemporal dementia; PPD = primary psychiatric disorders; Ekman 60 Faces test = emotion recognition performance (max. score 60); * p<0.05; a = significantly different from bvFTD, b = significantly different from PPD, c = significantly different from controls.

Conflicts of interest

The authors have no potential conflicts of interest to disclose.