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**Objective evidence of cognitive complaints in Chronic Fatigue Syndrome: a BOLD fMRI study of verbal working memory.**

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Individuals with Chronic Fatigue Syndrome (CFS) often have difficulties with complex auditory information processing. In a series of two Blood Oxygen Level Dependent (BOLD) functional Magnetic Resonance Imaging (fMRI) studies, we compared BOLD signal changes between Controls and individuals with CFS who had documented difficulties in complex auditory information processing (Study 1) and those who did not (Study 2) in response to performance on a simple auditory monitoring and a complex auditory information processing task (mPASAT). We hypothesized that under conditions of cognitive challenge: (1) individuals with CFS who have auditory information processing difficulties will utilize frontal and parietal brain regions to a greater extent than Controls and (2) these differences will be maintained even when objective difficulties in this domain are controlled for. Using blocked design fMRI paradigms in both studies, we first presented the auditory monitoring task followed by the mPASAT. Within and between regions of interest (ROI), group analyses were performed for both studies with statistical parametric mapping (SPM99). Findings showed that individuals with CFS are able to process challenging auditory information as accurately as Controls but utilize more extensive regions of the network associated with the verbal WM system. Individuals with CFS appear to have to exert greater effort to process auditory information as effectively as demographically similar healthy adults. Our findings provide objective evidence for the subjective experience of cognitive difficulties in individuals with CFS.

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