

repeatedly be demonstrated, mainly by PET and SPECT. Besides the use of radioactive tracers, a major disadvantage of these methods consists in the minor spatial resolution.

We used a functional MRI-approach to overcome this difficulty and investigated 15 chronic schizophrenic inpatients (diagnosed according DSM-III-R) and 30 age- and sex-matched controls. Four sequences of activation (Wisconsin Card Sort) and rest were measured with a clinical 1.5 T scanner (Philips Gyroscan ASC II). The individual correlation slices were matched to an overall correlation map and projected onto the matched anatomical slice after normalization procedures. A priori defined anatomical regions in both groups were compared using the Wilcoxon rank-sign test. Schizophrenics showed a statistically significant decreased activation in the right mesial and lateral prefrontal cortex. There was a trend of an increased activation in the left medial temporal lobe in the schizophrenic patients.

It was possible using fMRI to demonstrate hypofrontality in schizophrenics. Methodological issues concerning the different brain imaging methods will be discussed.

AUDITORY HALLUCINATIONS IN SCHIZOPHRENIA ALTER CORTICAL RESPONSE TO EXTERNALLY PRESENTED SPEECH- AN fMRI STUDY

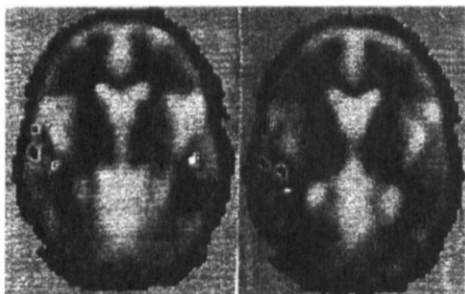
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Functional MRI (fMRI) has been used to demonstrate that auditory hallucinations activate regions of auditory cortex that subserve perception of external speech (e.g. Brodmann's Areas 21, 22 and 42) [1]. We wished to test the hypothesis that schizophrenics experiencing auditory hallucinations, compared with those not experiencing them, exhibit reduced responsibility to external speech in cortical regions activated by auditory hallucinations.

Five schizophrenics experiencing ongoing auditory verbal hallucinations (mean age 31.5) and three schizophrenics with a history of hallucinations but not actively hallucinating (mean age 35.0), all right handed, were presented with alternating 40 s epochs of speech and blank tape through headphones whilst being scanned. Analysis of data, grouped and transformed into standardised space, revealed that activation in predominantly right-sided auditory association cortex (BA 22 and 42) was *less* in the hallucinating than non-hallucinating group.

Figure 1 shows *differences* in response to external speech between 5 hallucinating and 3 non-hallucinating schizophrenics (black pixels: hallucinator's response < non-hallucinator's; white pixels: hallucinator's response > non-hallucinator's). (Left of fig is right side of brain).

Auditory hallucinations appear to alter the pattern of auditory cortex activation in response to external speech. Regions of right-sided auditory association cortex (BA 22 and 42) previously reported to be



active during the perception of auditory hallucinations may become "saturated" and hence less able to respond to external speech.

- [1] Woodruff PWR, Brammer M et al., *Lancet*. 1995, 346, 1035.
[2] Bullmore E, Brammer M, et al., *Mag. Res. Med.*. (in press).

S88. Anhedonia: clinical features and mobility across different diagnoses

Chairmen: P Boyer, G Loas

MEASUREMENT OF ANHEDONIA: A REVIEW OF THE INSTRUMENTS

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The term "anhedonia" was coined by the French psychologist Théodule Ribot, in contrast to "analgesia", to denote a complete absence of pleasure. In 1970 a first attempt was made to operationalize the concept. Instruments developed to measure anhedonia are reviewed and their psychometric properties and conceptual framework discussed. Mostly they have been designed considering anhedonia to be a symptom either of schizophrenia or of depression. Some reliability data are available for most scales, but only some have been investigated as to validity. Of these the MMPI Anhedonia Scale was shown to be more sensitive to neurotic disturbance than to anhedonia. The Anhedonia (Interview) Scale correlated significantly with numerous MMPI scales, which questions its construct validity. The Scales for Physical and Social Anhedonia have been most extensively investigated. They were explicitly developed to measure a lifelong, characterological deficit in pleasure capacity, as it was assumed to exist in schizophrenia. Validation studies yield controversial results, which is partly to be explained by the different methods used. Moreover most studies did not use the revised versions of these scales.

The Pleasure Scale of Fawcett et al was designed to measure a state dependent pleasure capacity deficiency, considered to be specific of a subtype of depression. Its psychometric properties have been investigated by different authors and will be discussed. The distinction between life-long, characterological or trait-dependent and state-dependent seems rather forward. However, when one uses a measure to evaluate current anhedonia, the part played by the trait capacity to experience pleasure is not taken into account. This is a major methodological flaw which must be considered in developing new instruments. Recently developed instruments will be analysed in that vein.

ANHEDONIA IN CHRONIC SCHIZOPHRENIA: A SPECIFIC DIMENSION?

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Introduction: Anhedonia is a common characteristic of schizophrenia namely in the early stage of the disease. For Andreasen anhedonia is a component of the negative syndrome of schizophrenia; for Kirkpatrick and Buchanan anhedonia constitutes one of the main characteristics of the deficit syndrome. But anhedonia is also a common characteristic of depression. Moreover Harrow et al have recently shown that depression in chronic schizophrenia is partly