

Is schizophrenia a brain disease?

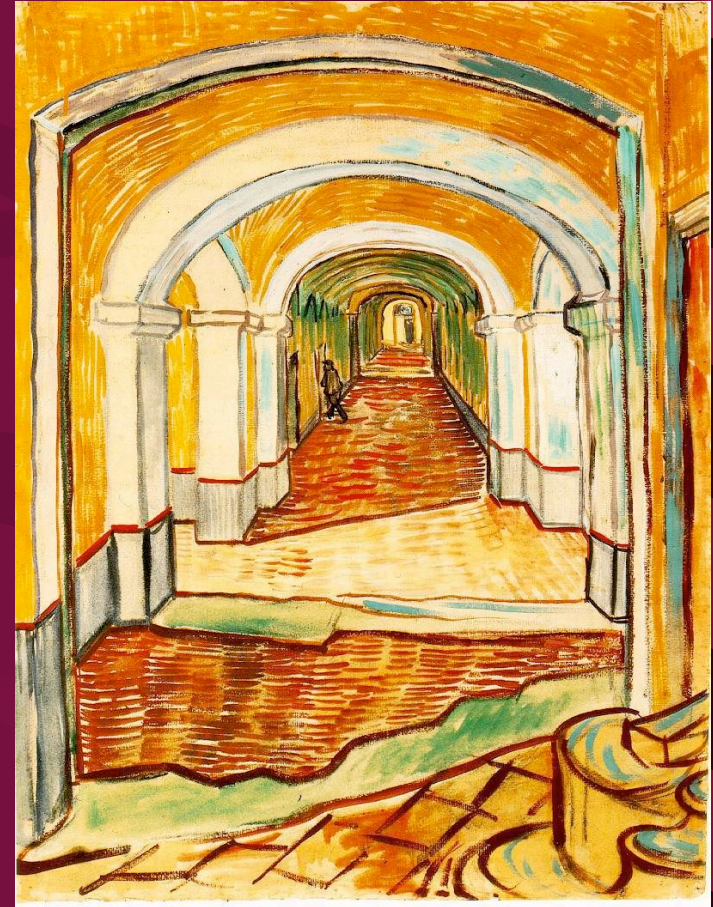
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Overview of the lecture

- The nature/nurture debate
- Two senses of “brain disease” (or “brain disorder”)
- “Organic” in DSM-IV
- Brain trauma or infections?
- Obstetric complications?
- So, the independent evidence for organic causes is *far from* being sufficient!
- The search for psychogenic components must therefore be taken up again

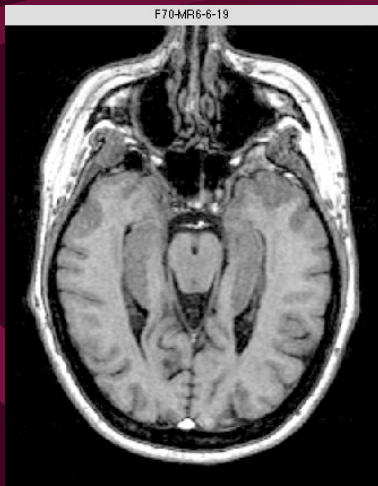
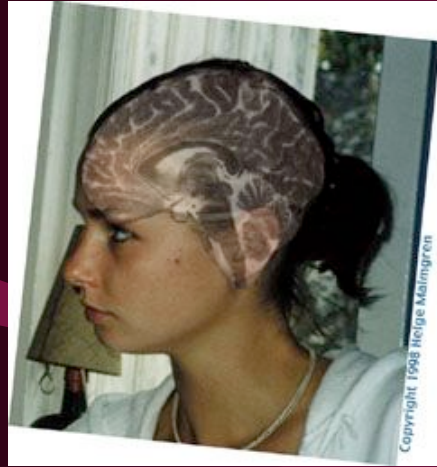


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Nature and nurture in schizophrenia

- This was a big issue in the discussion of the 60's and 70's
- However, today almost everyone agrees that there is a hereditary component in the order of 50%
- So, the issue is not the existence of a hereditary factor, or its importance, or even its nature, but the *other* causes!
- Earlier it was sometimes presumed that non-hereditary factors are psychological in nature
- However, epidemiological studies point to a contribution from pre-, peri- and postnatal non-psychological factors
- And recently, *many* imaging studies have shown changes in (for example) limbic and frontal areas in the brains of schizophrenics (and sometimes their relatives)
- So, is it not *obvious* that schizophrenia is a brain disease?

Two senses of “brain disease” (or “disorder”)



1. A process which is coupled to an underlying *biological basis (substrate)* in the brain
 - In this sense schizophrenia, but also *all psychogenic conditions* (e.g. normal mourning) are (probably) brain disorders
2. A condition which does not have mental, but organic (medical, somatic etc.) *causes*
 - We need *independent* evidence to decide whether the exogenous component(s) in schizophrenia is (are) organic in nature
 - **Finding visible brain changes in MRI or fMRI does *not* answer this question!**

“Organic mental disorders” and the DSM

- In DSM-III, but not in DSM-IV, there is a distinction between “organic” and other mental disorders
- Spitzer 1992: the distinction suggests that some *but not all* mental disorders have a biological basis (a brain substrate)
- But this suggestion works only if you confuse *having a brain substrate* with *having organic (somatic) causes*
- As a substitute, DSM-IV includes the possibility of adding “due to a medical disorder” to characterize conditions which would formerly have been called “organic”
- But this is very imprecise. Is a gunshot a medical disorder? If so, why not severe mental stress? How should the consequences of the two be classified? (Arguing that the gunshot, but not the stress, involves a brain lesion begs the question and starts a vicious conceptual regress.)

“Late” brain injury or infection?

- The direct evidence for a contribution from postnatal brain injuries is *very* weak (meta-analysis by David et al 2005).
- The known, adult organic mental syndromes (disorders which are “due to medical conditions”) all differ clearly from *typical* schizophrenia in their presentation.
- Brain tumours may produce schizophrenia-like syndromes with hallucinations etc, but the core symptoms are lacking.

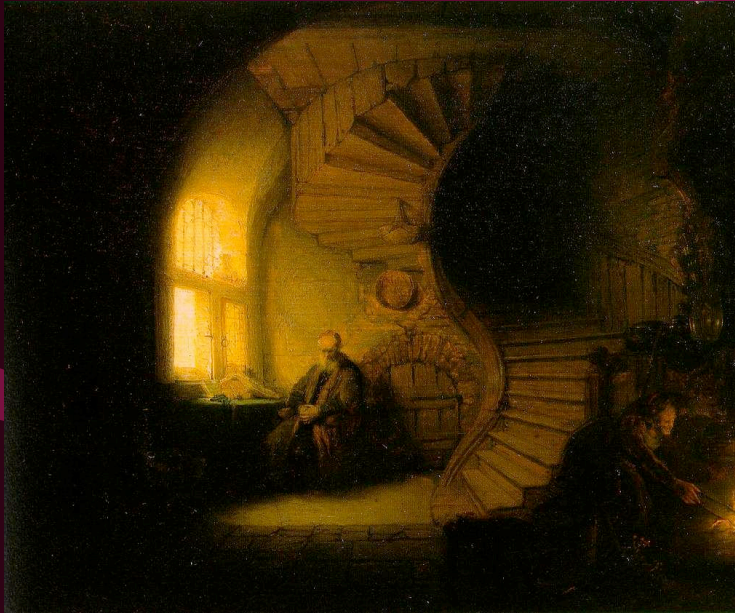


The evidence for a role for infections known to affect the nervous system (measles, influenza) is contradictory (cf. Battle et al 1999).

The role of obstetric complications

- In contrast to the case of brain trauma and infection, the evidence that obstetric complications are overrepresented in schizophrenics is fairly consistent and generally accepted (Cannon 2002).
- However, recent re-analyses of some big data samples have shown much smaller effects than the original analyses (Kendell et al 2000), and other methodological faults may be there to discover.
- But even apart from this, the mean effect sizes are so small that it is difficult to believe that obstetric complications could constitute a *major* part of the non-hereditary influences in schizophrenia

My overall considered judgement is...



- *that* the independent evidence for somatic causes as the *only*, or even the *main* non-hereditary factor in schizophrenia is not sufficient
- *that* the many findings of MRI and fMRI changes in schizophrenia does not make *any* difference with respect to this issue

- *that* any judgement to the effect that schizophrenia is due to heredity plus *somatic* (organic) factors is premature
- *that* a confusion with the obvious fact that schizophrenia has a biological basis may contribute to such a premature judgement
- *that* the search for a psychogenic contribution has to be continued
- *that* schizophrenia is probably ***a partly sociogenic brain disorder***

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