

Cognitive Neuroscience of Language: 17: Autism and language

Richard Shillcock

Today's goals



Look at autism and language, and the “linguistic savant” Christopher, in particular

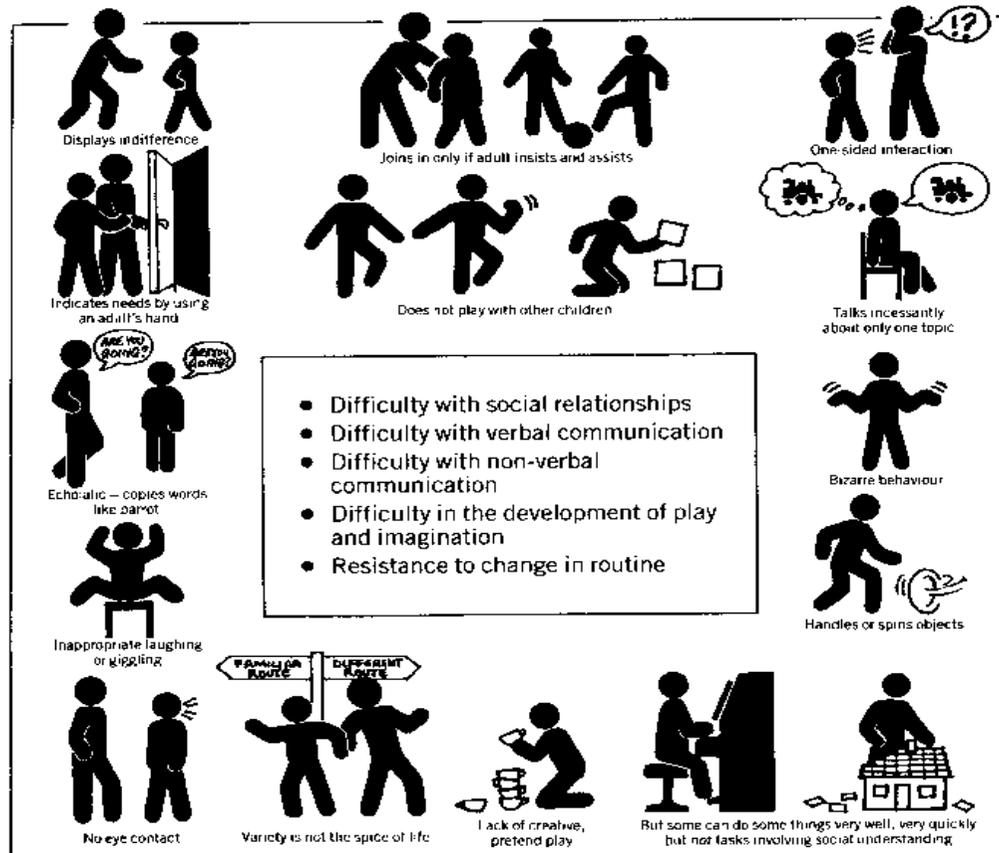
Today's reading

Bates, E. (1998). On language savants and the structure of the mind: A review of Neil Smith and Ianthi-Maria Tsimpli, "The mind of a savant: Language learning and modularity"

Autism is...

a perplexing life long mental disability affecting more than 115,000 people in Britain today.
Isolated in a world of their own, people with autism need help to fit in.
The first step towards progress is recognition of the condition.

These pin people illustrate some ways in which autism is displayed.



Early diagnosis is essential if people with autism are to achieve full potential. It is only when their disability is understood that they can be helped to maximise skills and minimise problems.



For more information contact:
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Graphic design based on illustrations used by Prof. J. Rendle-Short, Australia and National Society for Autistic Children, USA

Autism

Calendrical skills

Counting skills

Drawing skills

Autism spectrum
and Asperger
syndrome

Physiological changes in autism

agenesis of the superior olive

dysgenesis of the facial nucleus

reduced numbers of Purkinje neurons

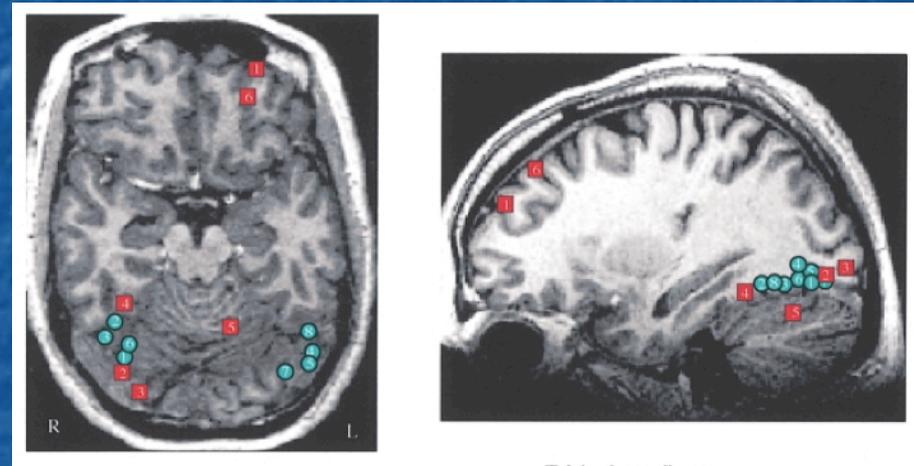
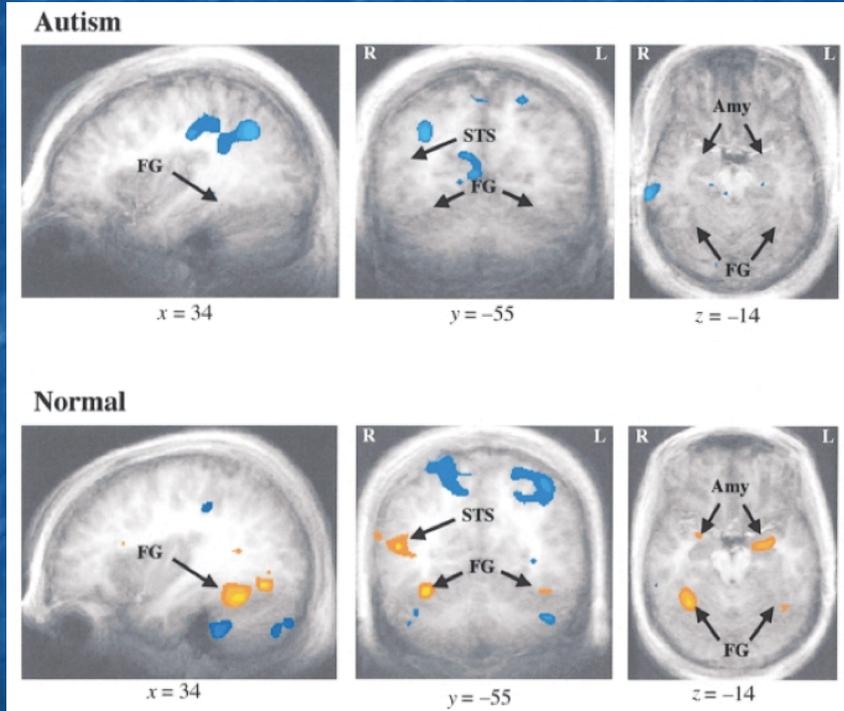
hypoplasia of the brainstem and posterior cerebellum

increased neuron-packing density of the medial, cortical and central nuclei of the amygdala and the medial septum

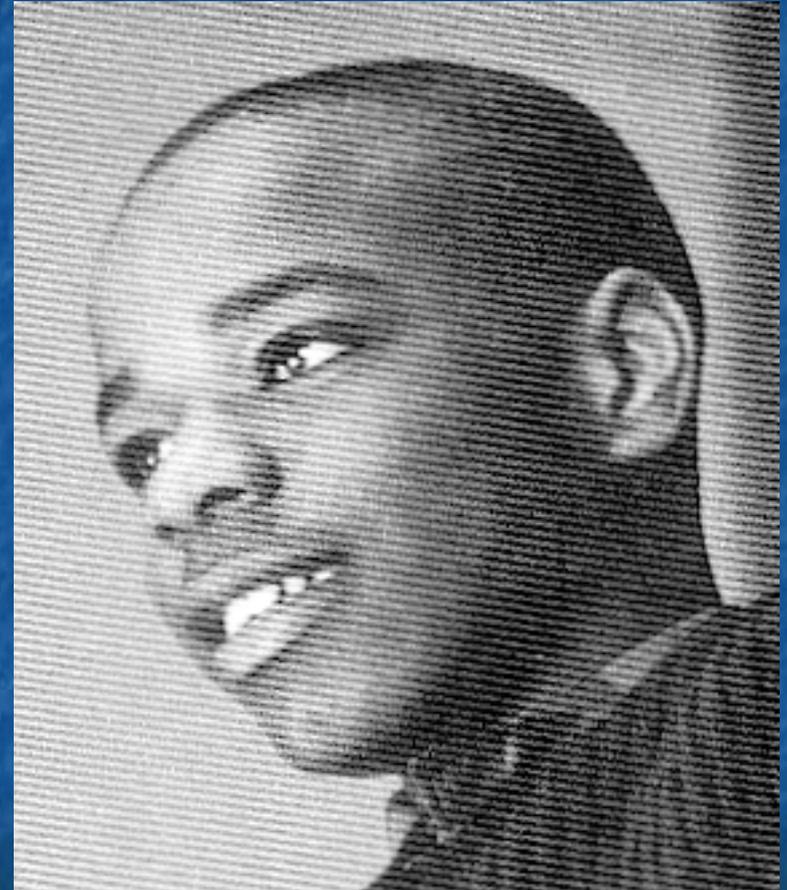
abnormal brain growth regulation

Face processing in autism

Pierce et al. (1992)



Stephen Wiltshire



Asperger Syndrome and language

Gillberg (1992)

Delayed development

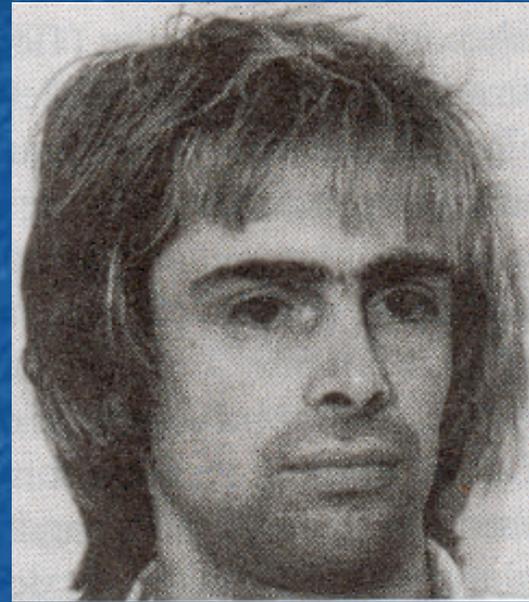
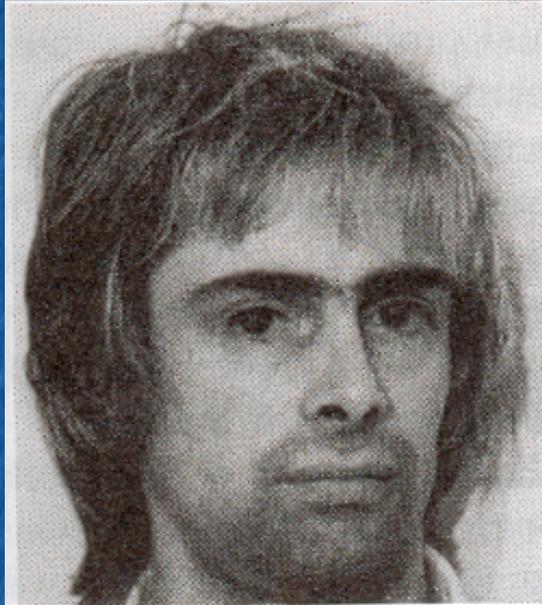
Superficially perfect expressive language

Formal pedantic language

Odd prosody, peculiar voice characteristics

Impairment of comprehension including
misinterpretations of literal/implied meanings

Asperger syndrome

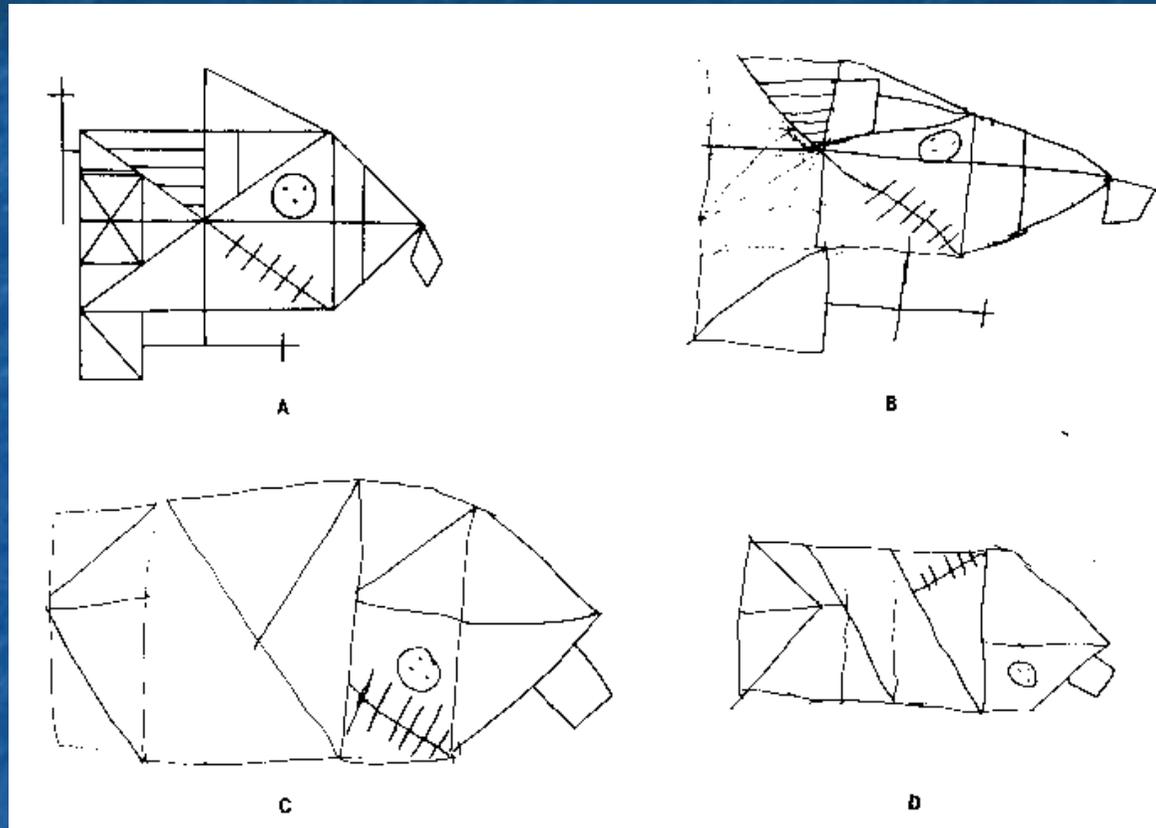


Gaze judgement task

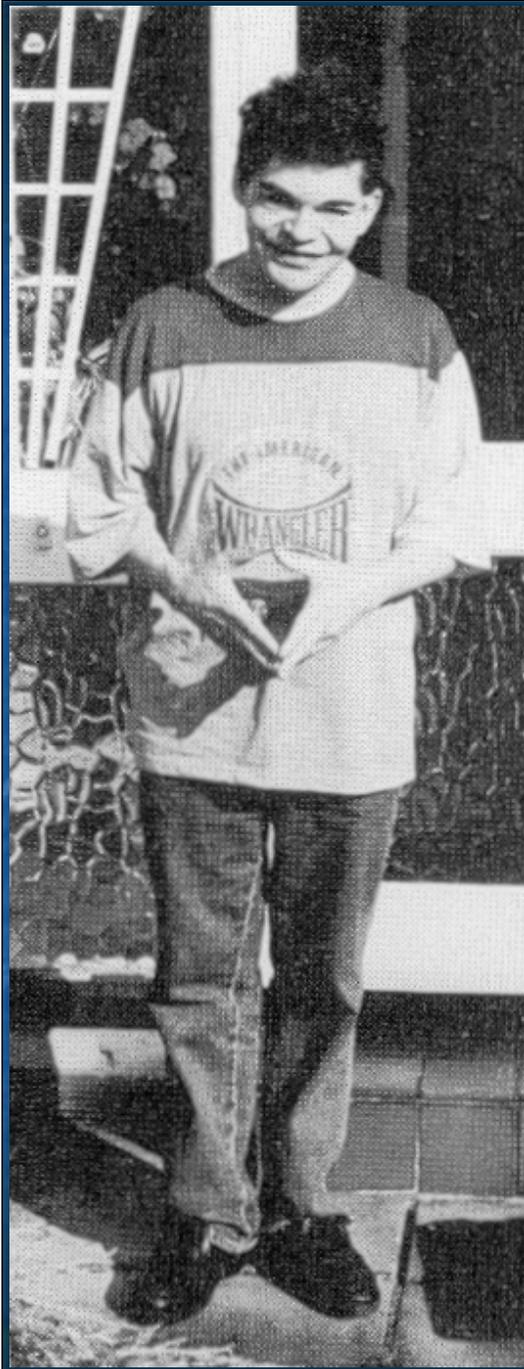
Sally-Anne task

Theory of Mind deficit

Asperger syndrome

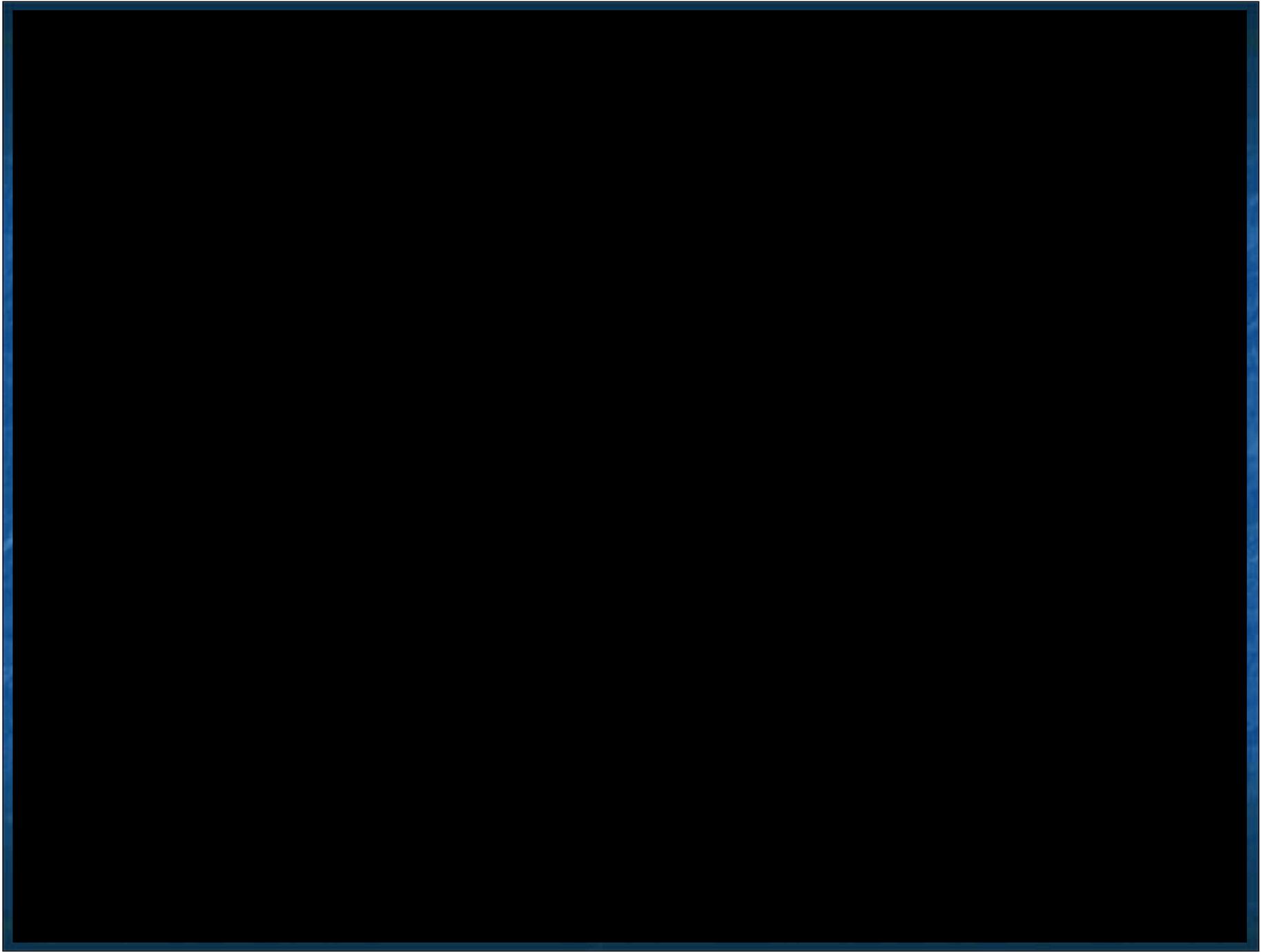


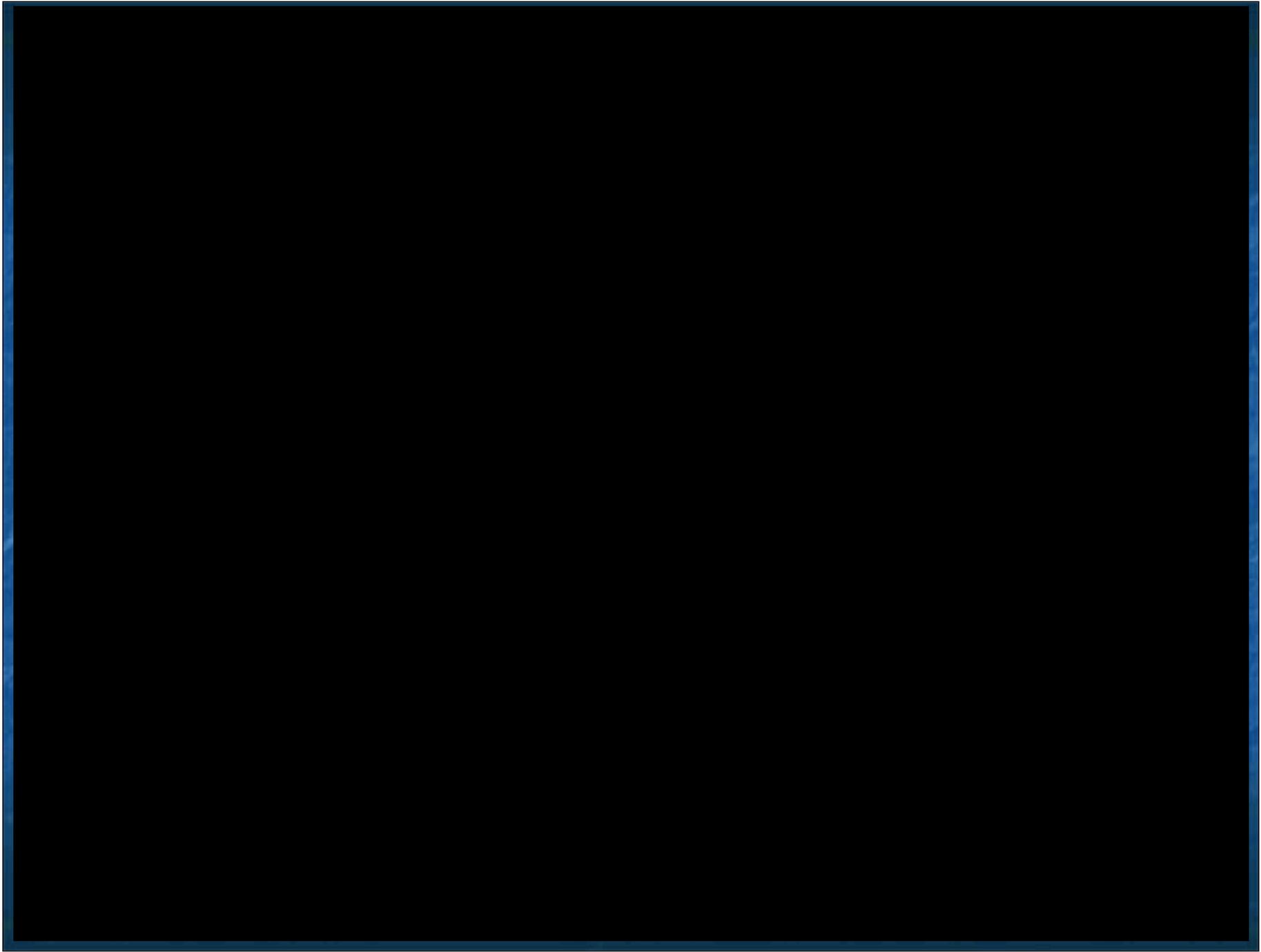
Similarities with RH dysfunction

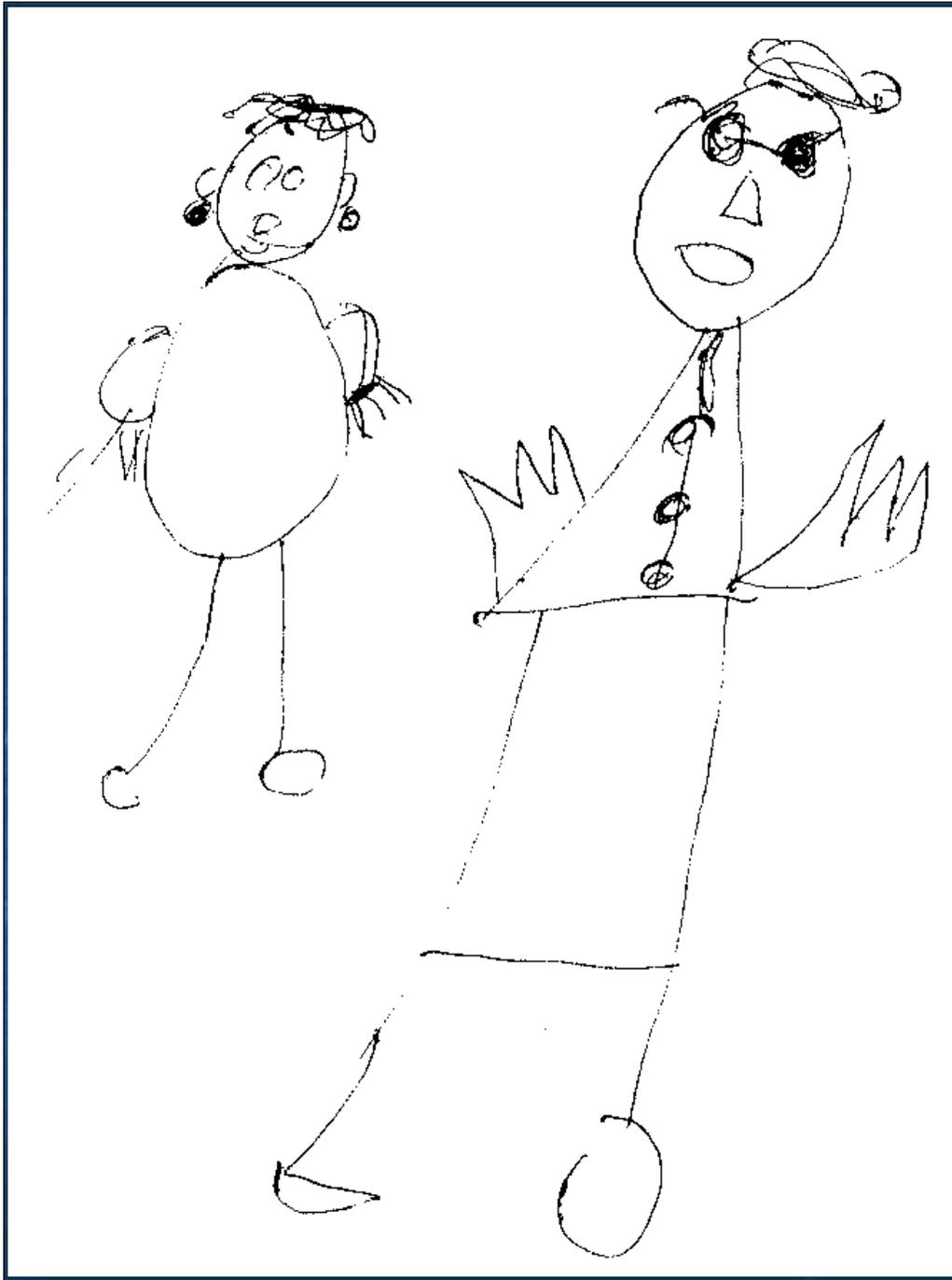


The mind of a savant: Language learning and modularity

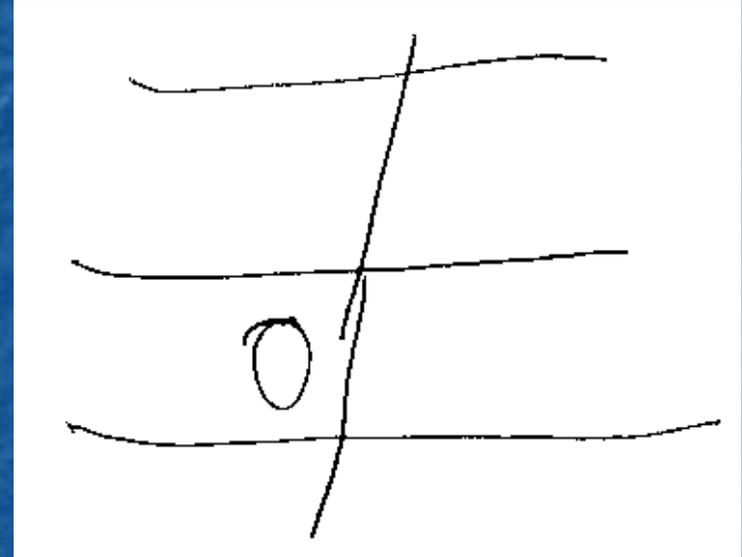
Neil Smith & Ianthi-Maria Tsimpli
(1995)







Christopher's spatial skills



Noughts and crosses

Christopher's language skills

First language: minor deficits

How come you goed home so early?

“How come did you go home so early?”

Problems with jokes, meta-level representations ...

John said that Harry is leaving the next day

Second languages: translation skills in 15–20
languages, but more lexical than syntactic

Specific Language Impairment

Deficits in phonology, morphology, syntax

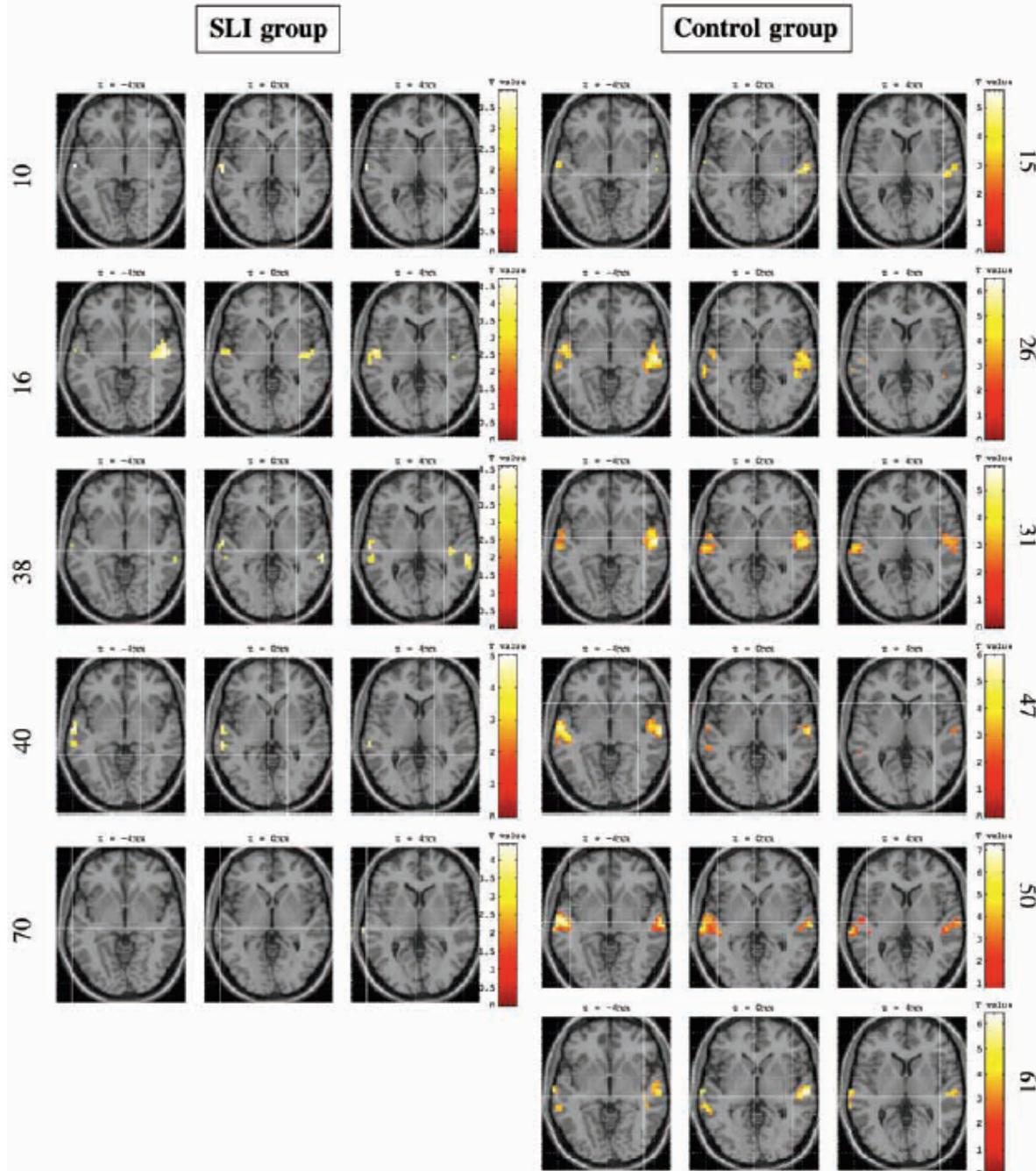
Also, oral-motor control (dyspraxia), speech perception, working memory, analogical reasoning, visual imagery

cf. verbal auditory agnosia ('word deafness'), verbal dyspraxia, phonological programming syndrome, phonological–syntactic deficit, lexical–syntactic deficit syndrome, semantic–pragmatic deficit syndrome

The modularity issue, and the relationship with autism

Imaging SLI

Hugdahl et al.
(2004)



Conclusions

Autistic savants exist with advanced skills in a variety of non-social behaviours

Non-social, lexically oriented aspects of language is just one such skill

SLI may have important phonological underpinnings, but other issues such as memory need to be considered