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Autism Spectrum Disorder in the Scottish Prison Population

Louise Robinson
University of Edinburgh

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Background

Autism spectrum disorders (ASD): impairments in social interaction, abnormalities in communication and restricted, repetitive and stereotyped patterns of behaviour (Wing and Gould, 1979).

Majority law abiding –less likely to offend as a result of “concrete” rule-based thinking?

Concerns when contact with the criminal justice system:

- vulnerable to bullying or exploitation
- prone to mental ill health, with increased risk of suicide
- management problems due to lack of understanding of subtle rules and interpretation of language
- risk of re-offending due to impaired empathy and understanding of the impact of behaviour

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What is known?

Study using a self-completion pro forma in the Scottish Prison Service :19 people across 16 prisons with a diagnosis or strongly thought to have a diagnosis, of learning disability and/or ASD (Myers and Scottish Development Centre for Mental Health, 2004).

The author of the report identified significant limitations in the methodology of the study, no reliable prevalence figures of ASD within the prison population.

Individuals with ASD are present in excess in high-security psychiatric settings:

- Point prevalence of Asperger's Syndrome in a special hospital male population 1.5 – 2.5% (Scragg and Shah, 1994)
- Rate of Asperger's Syndrome was found to be between 3.6 – 7.1 per 1,000 children aged 7-16 years (Ehlers and Gillberg, 1993)

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Screening Instrument


Devised by Research Autism

Completed by a prison officer who knows the prisoner well


Based on ASDI areas

1.5 minutes to complete

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Validation

Attempt to validate in the Scottish prison population


Validate against three other brief assessments:

- the Adult Autism Spectrum Quotient (AQ) (Baron-Cohen et al);
- the Ekman 60 faces test (Young et al, 2002);
- the Asperger Syndrome (and High-Functioning Autism) Diagnostic Interview (ASDI) (Gillberg et al, 2001)

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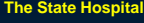



Validation

The Adult Autism Spectrum Quotient (AQ) (Baron-Cohen et al, 2001)
Self-report questionnaire

Asperger Syndrome (and High-Functioning Autism) Diagnostic Interview (ASDI)
Structured clinical interview
With relative
(Gillberg and Gillberg (1989) criteria)

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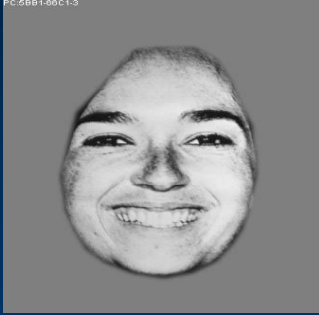
  

The Ekman 60 Faces Test


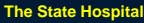

(Young et al, 2002; Sprengelmeyer et al., 1996)

Facial Emotion Recognition

- Anger
- Happiness
- Fear
- Sadness
- Surprise
- Disgust



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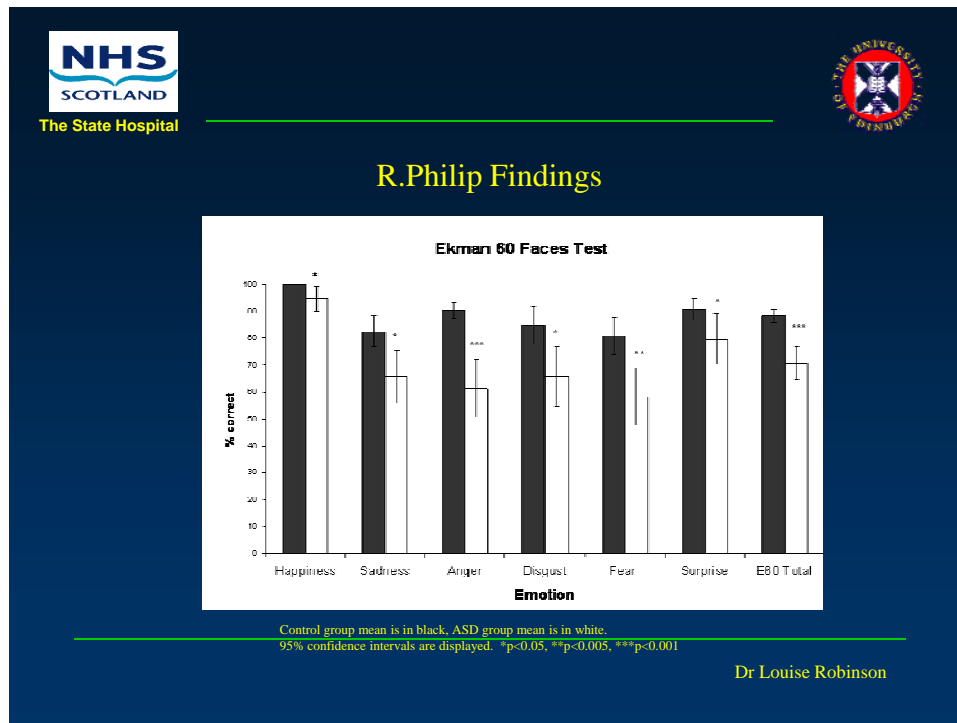
  

Ekman 60 Test


Neuropsychological test of social cognition

Previously used to characterise deficits of emotion recognition in adults with ASD, adults with schizophrenia and control samples


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- ### Process
1. Agree with prison
 2. Prison inform prisoners
 3. Prison officers fill in screening instrument over one week
 4. Interview those scoring as 'likely' plus age-matched controls if consent
 5. Where consent to contact a relative given at interview, do ASDI
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Interview

AQ


Tests of Current and Premorbid IQ:

- QUICK Test (Ammons and Ammons, 1962) of current IQ,
- Schonell Graded Word Reading Test (Schonell and Schonell, 1950) of premorbid IQ


Demographics and Historical Information

Ekman 60 faces test

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Progress

5 prisons, including women's and YOI


Approx 1000 prisoners screened

49 identified as positive by the instrument
16 identified as positive have been interviewed

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Results


The primary results: validation of the screening instrument against the results of the AQ, Ekman faces test and (where available) the ASDI.

Following validation of the instrument, secondary results of the study would comprise between-group contrasts of the Ekman faces data, based upon the ASD versus control group classification.

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Issues with the study

Ethics
Concern about remand
Concern about using as basis for appeal

Efficacy versus efficiency
Prisons/officers' engagement
Turnover, <1 week

Result of screening tool validation
Results not correlating
Is AQ valid in prison?

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Functional imaging of social cognition and autism spectrum disorder in an offender population

- Following the demonstration that behavioural tests of emotion processing and social cognition in ASD show clear separation from controls (Philip)
- fMRI study to investigate whether abnormal social cognition reflected in measurable differences in brain activity
- 'Approachability' task

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Behavioural data of from (Philip et al submitted)


Social Cognition Judgements


Attribute	Controls (n = 23)	ASD (n = 23)
age	~95	~95
trustworthiness	~80	~80
attractiveness	~85	~75**
intelligence	~85	~75*
approachability	~90	~75*
distinctiveness	~80	~70*

	Controls (n = 23)	ASD (n = 23)
AQ	13.13 (5.46)	34.39 (7.65)
NART IQ	115.9 (4.3)	111.8 (7.6)

(** p<0.01, survived controlling for IQ)

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Results in non-offender population

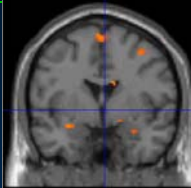
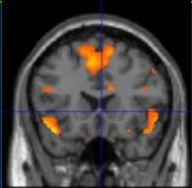
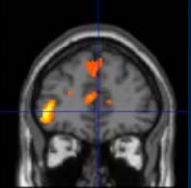
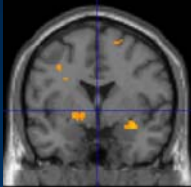
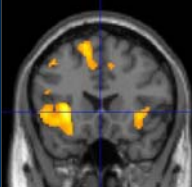

- In controls task shown to recruit brain regions consistent with those considered to sub-serve social cognition (amygdala, fusiform gyrus, superior temporal sulcus, insula, lateral and medial prefrontal cortex)
- Also shown to distinguish ASD from controls regarding activation of VLPFC

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Within group activation maps for approachability v gender

controls (n=12)			
ASD (n=12)			
	amygdala	insula/ST region and medial prefrontal	ventrolateral prefrontal cortex

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Data from VLPFC cluster extracted to examine correlations (within groups separately)
Significant correlation with AQ in control subjects not in ASD


VLPFC considered to be important part of human mirror neuron system
Thought to provide mechanism whereby others' actions and intentions can be understood

Hence proposed that dysfunction of the hMNS could potentially underlie deficits seen in ASD (Dapretto et al., Nature Neuroscience 2006)

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Proposal


Examine this further
Do offenders with ASD show same pattern and difference from control offenders?
Asked while in prison for permission to contact after liberation

However:
In our subjects no correlation between high AQ, low Ekman score, ASDI rating
Which is reflecting the underlying abnormality?

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Proposal

Request individuals with the scores at extreme ends to become subjects


ADOS Autism Diagnostic Observation Schedule:
standardised diagnostic tool, semi-structured interview, 30-45 minutes

Screen for psychopathy

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Approachability task

Test of social cognition

Used in research referred to above

Two conditions: 'approachability' and 'control'

- Approachability condition – asked to make decision between 'not approachable' or 'very approachable'
- Control condition – asked to make gender decision

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Issues with the study

- **Ethics**
- **Efficacy versus efficiency**
Prisons/officers' engagement
Turnover
- **Validity**
Results not correlating
Is AQ valid in prison?
- **Scanning**
Different population

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