

# Mental Health Problems in ASD



1

## Where we were

- Anxiety/emotional disturbance conceptualised as 'part of ASD'
- Mental health problems underlying challenging behaviour often unrecognised or untreated/mistreated
- Few if any treatment options other than medication
- A few case studies and anecdotal reports



2

## Where we are now

- Robust data on the prevalence of mental health problems in ASD (eg Simonoff et al 2008)
- Several trials demonstrating efficacy of CBT for anxiety (eg Sukhodolsky, 2013 meta-analysis)
- An understanding of the atypical and typical presentations of anxiety in ASD
- Understanding of the pathways and moderating/ mediating factors to anxiety in ASD
- Development of ASD-specific assessment tools/techniques



3

SNAP study – Prevalence of psychiatric disorder  
Simonoff et al, 2008

- N=112
- Age: mean 11.5 (range 10.0-13.8)
- IQ: mean 74, (range 19-136)
- ASD dx across the range
- Psychiatric Assessment – CAPA



4

## Prevalence of psychiatric problems in children with ASD

- Any disorder 71%
- Any emotional disorder 44%
- Any anxiety disorder 41%
- Any depressive disorder 1.4%
  
- Behaviour Disorders: ADHD 28%, ODD 28%, CD 3%.
- Most had >2 disorders
- Few risk factors –not autism severity, nor IQ nor adaptive function
- Only epilepsy for any disorder or any behaviour disorder
- Does ASD ‘trump’ other risk factors?



5

## Prevalence of mental health problems in children in the typically developing population (Costello et al, 2003)

- Any disorder (including ADHD and behaviour disorders) 13.3%
- Any emotional disorder 6.8%
- Any anxiety disorder 2.4%
- Any depressive disorder 2.2%
  
- Behaviour Disorders: ADHD 0.9%, ODD 2.7%, CD 2.7%.



6

## Are we meeting the need? If not, why not?

- Diagnostic overshadowing – but anxiety neither defining feature nor universal
- Poor communicative ability, poor theory of mind: difficulty recognising/reporting
- Mis-diagnosis – eg anxiety/depression can be mistaken for an externalising disorder- eg increase in aggressive behaviour, stereotyped behaviour
- Service limitations



7

## ASD and...

- Anxiety
- Depression
- Eating disorders?
- Psychosis?
- Bipolar disorder?
- Personality Disorder?



8

## Anxiety

- Very common presenting clinical problem
- Prevalence rates of about 50%
- Typical and atypical presentations quite specific to ASD
- ASD-specific pathways to anxiety?



9

## Anxiety - Meta-analysis of prevalence studies

Van Steensel, Bogels and Perrin (2011)

- 31 studies, N=2121
- 39.6% had 1+ anxiety disorder
  - 29.8% specific phobia
  - 17.4% OCD
  - 16.6% social anxiety
  - Moderators: method of assessment, age, IQ, sub-type/ASD severity (?)
- Kent and Simonoff (2017) - rates varied widely between studies – eg 0-66% GAD in children and adolescents.



10

## Anxiety - More recent estimates

- Salazar et al 2015                      78.9%              (3 mths)
- Mattila et al (2010)                      56%                      (lifetime)
- Mukkades et al (2010)                      78.3%                      (life time)

- Majority consensus is around 50%
- Similar rates in adult studies



11

## Mental health problems usually starts early in children with ASD

**At what age did your child first experience a mental health problem?**

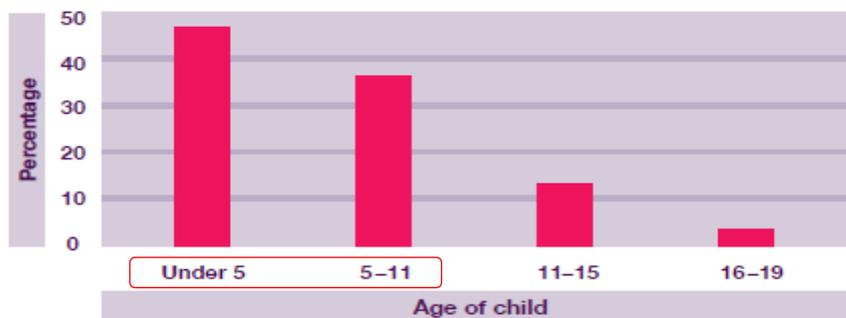


Figure 2. Based on responses from 435 parents of children and young people aged 0-21 who reported that their children had experienced mental health problems, survey conducted by the NAS in January 2010

12

## It starts early.... (Sukhodolsky et al 2019)

- Using the Early Childhood Inventory, 67% of 3-7 year olds had two or more clinical significant signs of anxiety
- There was no difference between those with IQ above or below 70

13

## Societal cost

- 142 million a year (van Steensel et al 2013)
  - ASD+AD 4x higher than AD alone
  - 27 higher than controls
- Quality of life
  - More ASD behaviours and higher anxiety severity predicts lower quality of life (van Steensel et al 2012)
  - Associated with high levels of self-injurious behaviour, parental stress (Kerns et al, 2015)



14

## More common than in...

- Language Disorder (Gillott et al 2001)
- Conduct Disorder (Green et al 2000)
- Down's Syndrome
- Intellectual Disability (Brereton and Tonge 2006)
- Clinically referred children with a range of externalising and internalising problems (but not internalising only) (van Steensel et al 2017)



15

## Associated factors

- Anxiety and
  - ASD severity
  - age
  - ability level
- All inconsistent and over-simplistic
- Social and communicative features, and repetitive and restrictive features may have a differential impact on anxiety
- Some disorders may vary differentially according to age
- Possibly higher functioning individuals have higher awareness of difference and hence higher anxiety
- But equally questionnaire measures may be better at picking up anxiety in high functioning individuals – we need better measures



16

## Kent and Simonoff (2017)

- Review of 16 studies – 12 Child, 4 adult
- Found similarly specific phobia was the most common, followed by OCD, then social anxiety, then GAD
- But rates varied widely between studies – eg 0-66% GAD in children and adolescents.

17

## Anxiety in autism

(Kerns and Kendall, 2013)

- Are anxiety and autism independent, co-occurring?
- If so, do they represent a 'true comorbidity', or a unique, ASD-related variant?
- Does this represent a sequela of ASD, or a shared risk, or a mixture of the two?

18

- Qualitative studies: Ozsivadjian, Magiati and Knott (2012), Trembath et al (2012), Magiati et al (2016)
  - A qualitative, bottom-up approach
  - An attempt to try and capture the atypical presentation of anxiety in ASD, qualitative differences between anxiety in ASD and the general population
- Quantitative studies  
eg Kerns et al 2014

19

## Triggers

- Typical:
  - Worries about social expectations/judgments
  - Worries about not meeting demands
  - Typical fears
- ASD-specific:
  - Worries about changes to routine and new situations
  - Social fears but not driven by fear of social negative evaluation
  - Sensory over-stimulation, unusual fears
  - Being prevented from engaging in repetitive behaviours or circumscribed interests
- School as a theme throughout

20

## Signs and symptoms of anxiety

- Typical:

- Somatic: changes in eating and sleep
- Increase in arousal
- Escape, avoidance, reassurance, safety behaviours



- ASD-specific:

- Challenging behaviour or withdrawal
- Increase in sensory, repetitive behaviours
- Increase in socially inappropriate behaviours
- Behavioural rather than verbal communication of anxiety

21

## Impact

- Impact of anxiety often greater than the ASD itself
- Impact on child, parents, sibling



22

## Cognitive pathways to anxiety in ASD

- Relationships identified between:
  - Intolerance of uncertainty (IU) and anxiety
  - Attentional bias and anxiety
  - Executive function and anxiety
  - Sensory sensitivity and anxiety



23

## Theory of mind

- Ability to attribute mental states (such as beliefs, desires, intentions, etc) to self and other people, as a way of making sense of and predicting behaviour. (Tager-Flusberg, Baron-Cohen & Cohen 1993)
- Intuitive and spontaneous
- Know what social cues indicate about thoughts and feelings of another and how to respond.



24

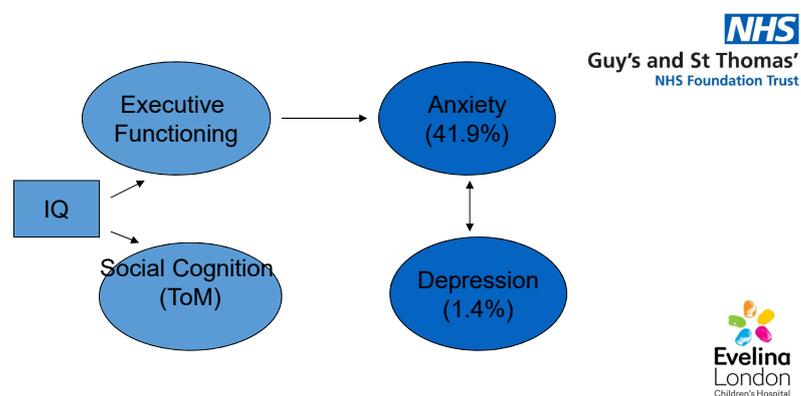
## Theory of mind and anxiety

- Misunderstanding of other people's intentions can lead to a perception of threat.
- Difficult to distinguish between deliberate and accidental acts.
- Ambiguity perceived as threatening  
e.g. Busy school corridor, get bumped into. Interpret this as being deliberately pushed or hit.
- An awareness of the difficulty understanding other people can also lead to anticipatory anxiety about being around people, and hence avoidance



25

## EF, Social Cognition and anxiety & depression in ASD (Hollocks et al, 2014)



**NHS**  
Guy's and St Thomas'  
NHS Foundation Trust



26

### Weak central coherence

- Tendency to process information locally rather than globally
- Pay less attention to context
- Pay preferential attention to parts rather than wholes
- Eg Happe and Frith, 1996, 2006

27

### Central coherence and anxiety

- Poor global processing can lead to a piecemeal understanding of social situations/ task instructions
- Possible processing bias towards threatening stimuli. Eg only processing negative comments, not whole context

28

## IU in ASD

- Greater insistence on sameness associated with higher anxiety (Rodgers et al, 2012; Gotham et al, 2013)
- RRBs may help reduce IU/anxiety by creating sameness/reducing unpredictability (leads to positive beliefs about RRB, reduces learning opportunities)
- IU may actually mediate the relationship between ASD and anxiety.

29

## Attentional bias in anxiety and ASD

(Hollocks et al 2016)

- **Negative interpretation bias**
  - ASD/ANX=ASD/no anx > no ASD
- **Attentional bias to threat faces**
  - ASD/ANX> ASD no anx> no ASD
- Some studies have shown no attention bias in ASD
- Negative biases may be related to ASD more generally, not just anxiety

30

## The role of cognitive rigidity

- Not a great deal of research apart from within the neuropsychology literature
  - rigidity may lead to an intolerance of uncertainty?
  - rigidity may inhibit the development of flexible, adaptive strategies to managing stress
  - bidirectional, for example, anxiety may exacerbate rigidity, resulting in an insistence on sameness, as well as rigidity preventing effective management of anxiety (Wood and Gadow)
  
- Does rigidity affect treatment outcome?

31

## The role of alexithymia

- Alexithymia is characterised by difficulties identifying, expressing and feeling emotional states (Nemiah, 1976).
  - Bird and Cook (2013) propose that emotional impairments (such as impaired emotion recognition and reduced empathy) seen in ASD are a result of co-occurring alexithymia
  - The relationship between anxiety symptoms and features of ASD has been shown to be mediated by alexithymia (Stephenson et al, 2016)
  - a lack of reactivity to inner experiences was found to be a predictor of anxiety and worry in adults with ASD (Maisel, 2016).

32

## The role of sensory function



- Hypersensitivity
- Hyposensitivity
  
- A bidirectional relationship
- Atypical habituation processes
- Also intense imagery experiences – an often neglected area of cognition and CBT



33

## Intolerance of ...more than uncertainty?

- Of discomfort?
  - Of internal state
  - Of external stimuli



34

## Emotional regulation

- Emotional response/reactivity requires emotional regulation
- ER defined as efforts to modify or control the intensity of an emotional reaction, usually in the service of an individual goal (Thompson, 1994).
  - Reappraisal, problem-solving
- Emotional dysregulation may present as:
  - 'Meltdowns'
  - Irritability
  - Aggression
  - Self-injury
  - Impulsivity
  - Suppression, rumination
  - And anxiety

35

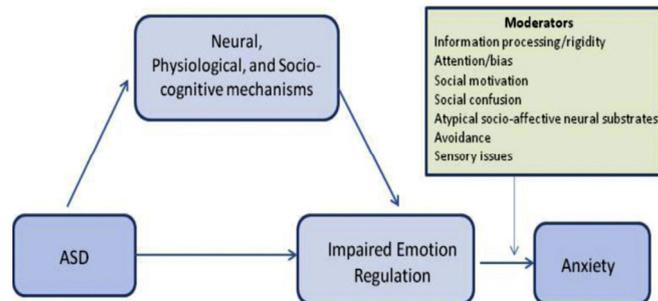
## Emotional regulation

- Individuals with ASD have been shown to use adaptive ER strategies (such as cognitive reappraisal) less frequently, and maladaptive ER strategies (such as avoidance) more frequently in the management of negative emotion (e.g. Samson et al, 2014).
- White et al (2014) detail two proposed pathways to anxiety via impaired ER: a direct pathway, whereby ER difficulties, considered intrinsic to ASD lead directly to anxiety; and an indirect route whereby the pathway is via by neural, physiological and social cognitive factors, with a number of proposed moderators such as rigidity, cognitive bias and social motivation.

36

## White et al, 2014

**NHS**  
Guy's and St Thomas'  
NHS Foundation Trust



**Evelina**  
London  
Children's Hospital

37

## Affective neuroscience

**NHS**  
Guy's and St Thomas'  
NHS Foundation Trust

- Abnormal prefrontal cortex function
- Abnormal connectivity between PFC and amygdala (eg South et al 2012)

**Evelina**  
London  
Children's Hospital

38

## Affective neuroscience



- Reduced heart rate and cortisol response to psychosocial stress in ASD (Hollocks et al 2016)
- Similar to chronic stress/PTSD including early childhood maltreatment



39

## Atypical emotional expression/ reactivity from a young age?

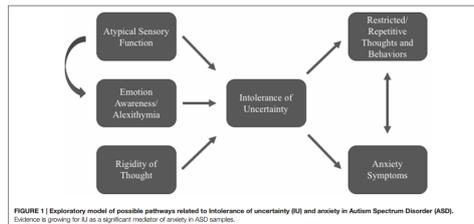


- A series of studies in pre-schoolers with ASD using a variety of methods (physiological arousal, facial expression, eye tracking, parent report) (Macari et al; Kane-Grade et al; Boccanfuso et al; Chawarska et al; INSAR 2018)
- Demonstrated a reduced physiological, attentional and behavioural response to threat stimuli (ie less fear response) than typically developing peers.
- Yet by school age, children with ASD show more anxiety
- Suggesting anxiety in ASD may emerge through a different mechanism



40

## South and Rodgers (2016)



41

## Anxious Imagery

- Sensory cues (including imagery) elicit rapid responses from emotion areas of brain eg amygdala
- 'Emotional amplifier' – VAMs vs SAMs
- Clinical experience

42

## Findings

- Children with ASD and anxiety reported the highest number of anxious images, followed by children with ASD and low anxiety, TD children with anxiety, and finally TD children with low anxiety
- Children with ASD regardless of anxiety diagnosis had images that were more frequent more vivid, and had more emotional valence



43

## Summary

- Anxiety occurs at greatly increased rates in the ASD population
- It may present typically but also atypically
- Identifying pathways to ASD will help us refine treatments



44

## ASD and depression - prevalence

- Fewer data on prevalence – meta analysis found rates of 1-44% in 19 studies (Wigham et al 2017)
- But data available suggests similar rates to anxiety - eg 44% borderline or clinical (Strang et al, 2012)
- The presentation may be similar to anxiety – some overlaps and some atypical presentations (eg Stewart et al, 2006)
- Perhaps more typical than thought – eg found, contrary to expectation that people with ASD endorsed items about worthlessness and guilt (Gotham et al, 2014)



45

## Prevalence and trajectory of depression

- Higher rates found in adults than younger populations - Depression may follow a developmental trajectory, becoming more prominent in adulthood (Hollocks et al, 2018)
- Trend toward a significant positive relationship between BDI-II scores and chronological age; this could reflect a “real” developmental phenomenon of depressive symptomatology increasing with age (Kessler et al 2003)
- Higher levels of depression symptoms were also associated with more autism symptoms and high levels of depression were associated with higher levels of generalized anxiety. Depression (not anxiety) also predicted social communication impairment (Johnston and Iarocci, 2017)



46

## Differential cognitive style in depression in ASD?

- Depression associated with anger rumination (Patel et al, 2017)
- The more depressive symptoms the adolescents reported, the more the adolescents explained negative events by internal, stable, and global causes.(Barnhill and Smith Myles, 2001)
- 

47

## Suicidality - Do high rates of anxiety and depression lead to high suicide/suicidality thoughts and behaviours in ASD?

- Suicide attempts: 7.2-15%
- Suicidal behaviours: 10.7-50%  
(Segers and Rawana, 2014)
- Typical adolescent population: 7.8% and 15.8% respectively (APA)
- 50% lifetime prevalence of self-harm behaviour
- 11-12% of those who die by suicide in the UK have evidence of autism, most are undiagnosed (Cassidy et al. 2017)
- People with ASD represent 7.3 to 15% of suicidal populations



Guy's and St Thomas'  
NHS Foundation Trust

48

## Risk factors

- Female gender, having autism without intellectual disability, and depression are risk factors (Hirvikoski et al. 2016)
- Camouflaging?
- Peer victimisation, Substance abuse
- Behavioural problems eg aggression, mood dysregulation
- Taking psychotropic medication (Segers and Rowana, 2014)
- Depression, mood dysregulation (explosive temper, irritability, impulsivity)
- Youth with ASD who consider or attempt suicide had poorer inhibition, flexibility, and adaptive skills (Armour et al, 2015)



49

- As in the general population, suicide attempts increase with age.
- ASD possibly more aggressive and lethal methods
- Poor definitions, data gathering ranging from direct questions to items from questionnaires to detailed interviews



50

## Possible functions of suicidal ideation/expression:

- Escape from aversive situations
- Maladaptive communication when emotionally dysregulated



51

## ASD and eating disorders

- Studies on ASD in ED, but not ED in ASD
- AN and ASD share
  - Attention to detail
  - Cognitive rigidity
  - Insistence on sameness
- Starvation can increase features commonly associated with ASD, such as rigidity and poor social cognition
- Acute AN can have pseudo-ASD features
- 40 females with AN: 10% met full criteria for ASD, 40% showed symptoms of ASD (Westwood et al 2017)



52

## ASD and psychosis

- Difficulties establishing 'voices'
- Rarely see full range of symptoms
- Psychosis is rare, but probably higher incidence in ASD than general population eg Sullivan (2013)
- Also higher rates of ASD in children of adults with schizophrenia and bipolar (Sullivan 2012)
- Possible shared neurodevelopmental origin



53

## OCD

- Obsessions: Recurrent and persistent thoughts, urges, or impulses that are experienced, at some time during the disturbance, as intrusive and unwanted, and that **in most individuals cause marked anxiety or distress.**
- Compulsions: Repetitive behaviours of mental acts...are aimed at **preventing or reducing anxiety or distress, or preventing some dreaded event or situation**
- The obsessions or compulsions are time-consuming (e.g., take more than 1 hour per day) or **cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.**



54

## Kerns and Kendall (2014) - distinction

- Typical OCD – when compulsive behaviour is clearly linked to a need to neutralise obsessional content, or prevent distress, or prevent a dreaded event
- Atypical OCD (in ASD) – compulsive or ritualistic behaviours that were associated with negative affect, but not clearly linked to reduce distress/dreaded event
- Repetitive/ritualistic behaviour NOT OCD if self-stimulatory, enjoyable or emotionally neutral for the child



Guy's and St Thomas'  
NHS Foundation Trust