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The Future of Psychiatry and Neurodevelopmental Disorders: A Paradigm Shift

Michael Fitzgerald

Abstract

A paradigm shift is now taking place in psychiatry with the emphasis on neurodevelopmental disorders with a neurobiologic emphasis and early onset including autism, ADHD, learning disability, schizophrenia and bipolar disorder. This paradigm superseded the attachment paradigm of the second half of the twentieth century with so many misguided theories such as, “blaming the mother”—the so-called refrigerated mother and the schizophrenogenic mother. The new paradigm allows more focused treatment interventions.

Keywords: neurodevelopmental disorders, autism, attachment disorders, neurobiology

1. Introduction

The future of psychiatry is neurodevelopmental. One of the tragedies of the twentieth century, more particularly in child and adolescent psychiatry, is the tradition of blaming families and particularly mothers for psychiatric problems. Tragically, we had “schizophrenogenic mothers” as “causes” of schizophrenia and “refrigerated mothers” as “causes” of autism. Even more recently, tragically, John Bowlby [1], in discussing “causal factors” in relation to autism, mentioned “inappropriate mothering”. This is another mother-blaming idea. The current understanding of these disorders, intellectual disability, ADHD, autism, Asperger’s syndrome, tics, etc., is a neurodevelopmental disorder with schizophrenia and bipolar disorder also being neurodevelopmental, and all have significant neurobiological inputs. Some personality disorders should also be considered as being on the neurodevelopmental spectrum. The neurodevelopmental trajectory will include the addition of more neurodevelopmental disorders, e.g., bipolar, schizophrenia and depression as the person gets older.

2. Adult autism

All diagnoses of autism have to take a developmental history from childhood, which will include persistent deficits in social communication and social interaction from the early developmental period, as well as restricted, repetitive patterns of behaviour causing clinically significant impairment in functioning (American Psychiatric Association [2]). The problem with adult autism diagnosis will include getting a relatively early history from an informant which may be a parent or other,

the problem of camouflaging because of treatment or just life experience which makes it more difficult to diagnose the adult with autism. They may have learned about eye contact, etc. School reports or home videos sometimes help. They will often present with comorbidities, for example, depression, (70%), anxiety (40%), attention deficit disorder or psychosis. Mazefsky and White [3] “caution against excessive reliance on ADOS (Autism Diagnostic Observation Scale), Lord et al. [4] for diagnosis”.

3. Autism and schizophrenia

Schizophrenia and bipolar disorder are now seen as neurodevelopmental disorders with a widening of the neurodevelopmental spectrum.

Evans [5] states that the diagnosis of “schizophrenia, psychosis and autism in children, were largely interchangeable during the 1940s and 1950s” [6]. They were described as separate by Kolvin et al. [7]. This view was not supported [8].

According to Scull [9], Steven Hyman, the former director of NIMH stated that DSM 5 “was totally wrong in the way it’s authors could not have imagined. So in fact, what they produced was an absolute scientific nightmare. Many people who got one diagnosis got five diagnoses, but they did not have five diseases—they have one underlying condition”. Thomas Insel [9], who was also the director of the NIMH stated that DSM 5 showed “a lack of validity ... as long as the research community takes DSM 5 to be a bible, we will never make progress. People think that everything has to match DSM 5 criteria, but what you know ... biology never the book, and he went on to point out that in future the NIMH would be, “re-orientating into research away from DSM 5 categories ... patients with mental illness deserve better”. Indeed, the NIMHS, under their director, Insel, gave up on this and aimed at a transdiagnostic study of psychiatric problems, and further studies should be based on biomarkers, neuroimaging and laboratory tests. This is a good aspiration and research efforts are being made in that direction. Clearly, Hyman and Insel were absolutely correct. He [9] proposed Research Domain Criteria to collect “genomic, cellular, imaging, social and behavioural information”, and he also recommended focusing on the brain and “connectopathies”. Thomas Insel noted that psychiatrists “actually believe, (that their diagnoses) are real, but there’s no reality. They are just constructs”. The first step is to analyse the huge spectrum of empathy and diagnosis.

Rutter [10] states that “the concept of autism as a variety of schizophrenia is very probably wrong”. The real answer is that they overlap and are not watertight categories. Rutter [11] stated that “infantile autism is not anything to do with schizophrenia, is not primarily a disorder of social relationship”. This is incorrect because they do overlap and autism is primarily a disorder of social relationships. Sullivan et al. [8] point out that “ASD, schizophrenia and bipolar disorder share common aetiological factors”. This would be supported by Abel [12] who points out that “it has been suggested that, (as for common genetic variants), many of the candidate genes identified may not be coding for schizophrenia per se, but for a broader construct such as psychosis, or neurocognitive deficits which occur in schizophrenia and other conditions”. Rapaport et al. [13] states that many individually rare genetic abnormalities affect common pathways containing hundreds of genes that affect neuronal development and regulation. Carroll et al. [14] point out that some of the specific genetic loci implicated encode proteins, such as neurexins and neuroligins, which function in synaptic development and plasticity and therefore represent a common biological pathway for disorders. Fatemi [15] points out the pathological involvement of Reelin gene or its protein product in autism and schizophrenia.

Reelin is a glycoprotein that helps guide brain development in an orderly fashion [15]. Fatemi [15] notes that Reelin deficits may cause abnormal corticogenesis and alter synaptic plasticity. In addition, Burbach et al. [16] note that contactin associated protein affects receptor/signalling units and are thought to mediate neuronal cell interactions, neuron migration and dendritic orientation. Contactin is a member of the neurexin family, and there are deletions and disruptions in neurexin 1 in autism and schizophrenia.

Rutter [17] points out that “adult schizophrenia is rare in both parents and brothers and sisters of autistic children”. This is incorrect. Stone et al. [18] pointed out that there’s evidence that parental diagnosis of schizophrenia was associated with elevated rates of autism offspring. Rapaport et al. [13] points out that familial schizophrenia like psychosis is a risk factor for “narrowly defined autism”.

Both autism and schizophrenia can show formal thought disorder with poverty of content, illogical and loose associations. Solomon et al. [19] pointed out that when patients with first episode psychosis were compared to patients with ASD, they showed problems with semantics, syntax and coherence, although these deficits are more severe in ASD. They also noted that social interactional deficits are part of both conditions. Both have theory of mind deficits and problems with eye to eye gaze. In addition, they both have problems reading emotions from faces. Chris Frith [20] points out that “social withdrawal, stereotyped behaviour, and lack of communication are all typical features of childhood autism and chronic ‘negative’ schizophrenia”. He emphasised mentalisation deficits in schizophrenia, which also occur in autism. In fact, they both show a disturbed sense of self. In comparison with schizophrenia, persons with autism show greater problems in reading faces, greater poverty of speech, as well as content and more perseveration of language, including echolalia and pronominal reversal, and more problems with set shifting and preservation of sameness. In comparison with autism, persons with schizophrenia show greater illogicality of thought, show more positive symptoms of psychosis, have mostly later onset (different from autism), run a more elapsing remitting course, show less stereotyped and repetitive behaviour, show less resistance to change, show less challenging behaviour as on an in-patient ward and show more jumping to conclusions.

Craddock and Owen [21] discuss a gradient of neurodevelopmental psychopathology from mental retardation to autism to schizophrenia to schizoaffective disorder to bipolar disorder. Nevertheless, the developmental process underlying these similar end points in autism and schizophrenia may be very different. Sporn et al. [22] suggest that “autistic behaviour may be a non-specific response to a variety of early developmental insults, and thus pre-morbid PDD (Pervasive Developmental Disorder) features in early onset schizophrenia may be an exaggeration of neurodevelopmental abnormalities seen in adult schizophrenia” and that “autism may reflect a separate additive risk factor for schizophrenia with very early onset”. Certainly, psychotic risk factors are very similar to autistic symptoms, as is the case with schizotaxia, schizotypal personality disorder and schizoid personality disorder.

Rutter [23] states that delusions and hallucinations “are quite rare in autistic children, even when they reach adolescence and early adult life”. This has not been my clinical experience, having diagnosed about 5000 children and adults and currently being involved with over 100 persons with autism in in-patient and out-patient settings.

Simple schizophrenia Kolb [24] is simply autism spectrum disorder. In my view, the so-called simple schizophrenia involves a disturbance of emotion, disturbance of interest, disturbance of activity, impoverishment of personality, shallowness of emotions and eccentricities. This would be classical high-functioning autism or what was called Asperger’s syndrome in former classifications ICD 10 [25]. This is currently being updated.

Kanner [26] was correct when he pointed out that “the extreme isolation from people ... infantile autism bears so close a resemblance to schizophrenic withdrawal that the relationship between the two conditions deserves serious consideration”. Of course other times, he described them as very separate. Asperger [27] pointed out that “the schizophrenic patient seems to show progressive loss of contact, the children we diagnose (now called Asperger’s syndrome), lack contact from the start”. The problem here is that some of the patients with autism do follow this pattern, but others have regressive autism, where they develop normally and then regress with loss of language, etc. I’ve seen this occurring up to 3 or 4 years of age.

Rutter [11] states that “the social class of parents of autistic children is most unlike that of the parents of schizophrenics. A high proportion of the parents of autistic children are of above average intelligence and superior socio-economic states”. This is incorrect, as shown by Gillberg and Schumann [28]. In my clinical practice, I constantly see patients from every social class with autism and observe schizophrenia, bipolar disorder, etc. in their family histories.

4. Prevalence

Using narrow criteria of autism ADI-R, etc., Baird et al. [29] found a prevalence of 25 per 10,000, but when the broader autism spectrum criterium was used, a prevalence of 116 per 10,000 was found. This unfortunately means that over three quarters of the persons with autism in the community have what I would call “real” autism or clinical autism (autism spectrum disorder) and were missed by these narrow-based instruments. Currently, the prevalence of autism is 1/59 CDC and 1/37 males [30].

5. Differential diagnosis

See **Table 1** attached.

6. Tics, obsessive compulsive disorder and ASD

Canitano et al. [31] showed that 22% of ASDs presented with tic disorder, but there was a “difficulty in discriminating complex tics and OCD symptoms, and ASD symptoms”. Nevertheless, the overlap between neurodevelopmental disorders is consistent. This equates with clinical experience and clinical reality. Maybe we need a subcategory called ASD plus tics and another category ASD without tics, another category with tics with ADHD and another category tics without ADHD, tics without OCD, etc. Stein [32] notes the overlap between autism, tics and stereotypic movement disorder. There is considerable neurobiological data in relation to OCD spectrum disorder. Stein [32] again emphasises the “possibly overlapping phenomenological and neurobiological features”. Stein [32] points out that “there is increasing evidence that a sub-set of OCD may be genetically related to Tourette’s Disorder, manifests with tics or OCD and involving both the serotonin or dopamine systems and the basal ganglia”. Meir et al. [33] showed that “individuals diagnosed with OCD displayed a nearly four-fold higher risk to be diagnosed with ASD in later life” and that “the high co-morbidity sequential risk and shared familial risks between OCD and ASD’s are suggestive of partially shared etiological mechanism”. It would appear then that some neurosis (OCD) could be neurodevelopmental in origin, at least partly. This again shows the lack of sharp delineation between psychiatric diagnoses.

Asperger syndrome (DSM-IV) diagnostic criteria	Impairment in use of eye-to-eye gaze, facial expression, body postures	Failure to develop peer relationships to developmental level	Lack of spontaneous seeking to share enjoyment	Lack of social and emotional reciprocity	pre-occupation with one or more stereotyped pattern of interest	Inflexible adherence to specific non-functional routines or rituals	Stereotyped and repetitive motor mannerisms	Persistent pre-occupation with parts of objects	Clinically significant impairment in social or occupational functioning	No clinically significant delay in language development	No clinically significant delay in cognitive development or self-help skills
Schizoid personality in childhood		Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Obsessive compulsive personality disorder			Yes, often	Yes, often	Yes	Yes			Yes	Yes	Yes
Schizotypal disorder		Yes	Yes	Yes	Yes, sometimes				Yes	Yes	Yes
Avoidant personality disorder	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes

Table 1.
Differential diagnosis of neurodevelopmental disorders (Asperger's syndrome).

7. Autism and ADHD

There is a very high comorbidity between autism and ADHD. Child psychiatric disorders have a comorbidity more than expected by chance [34]. Attention and hyperactivity are common in many disorders and, indeed, many more disorders in child psychiatry, and there is clearly poor separation of condition at a clinical level. Measurement issues are common. In relation to comorbidity, there are shared risks factors and one disorder creating an increased risk for another disorder. Neil et al. [35] pointed out that there are correlated liabilities where the risk factors of the two disorders correlate. There are social deficits in both ADHD and autism with overlap from an etiological point of view, but with ADHD the social deficits are more impulsive, and with autism, the social deficits can again be impulsive, but also, they can be due to lack of social know-how and theory of mind deficits. There is no sharp division here.

In a study of ADHD combined type, with one or more siblings, the diagnosis of autism was excluded at the beginning, and siblings with ADHD were compared with siblings without ADHD by Mulligan et al. [36]. They wrote that phenotypic correlation of ADHD and autism symptoms was 0.71 and that 32% of this correlation was due to shared familial characteristics but with a higher percentage for male ADHD probands. There was a trend for children with high ADHD symptoms to have high autism symptoms, as measured by the Social Communication Questionnaire. ADHD probands with definite language disorder or motor disorder had significantly higher symptoms of autism than those without. This study showed that autism symptoms as part of the ADHD phenotype were partly true. These were familial. Probands with autistic traits tend to have siblings with autistic traits, and probands without autistic traits tend to have affected siblings without autistic traits. Finally, latent class analysis of SCQ symptoms in probands with ADHD combined type showed the following clusters of autism symptoms: 31% with few or no symptoms of autism, 22.5% with repetitive and stereotyped behaviour, 21% with communication domain symptoms, 18.5% communication and reciprocal interaction domains and 7% who had symptoms in all three domains.

The percentage of phenotypic correlation due to shared familial influences (autistic symptoms and ADHD) was 35% for the whole group and 62% for males and 12% for females. In a family with a male child with ADHD and comorbid autistic symptoms, a second child with ADHD is also likely to have comorbid autistic symptoms (not so female), which suggest a different aetiology according to sex. Gillberg's [37] disorder of attention, motor control and perception would be showing similar findings. Fifty percent of children with DAMP had autistic features.

Children with oppositional defiant disorder and conduct disorder have more autistic traits than children without these comorbid disorders and ADHD [38]. Children with ADHD have more subthreshold symptoms of autism. Children with combined ADHD and social communication deficits are at increased risk of motor and language disorders. Overall, this shows the massive heterogeneity that is evident in child psychiatry classifications, and clearly, ADHD is not a homogenous disorder. Forty two percent of children with ADHD had few symptoms of autism. That autism symptoms are part of the ADHD phenotype is partly true. Autistic traits in ADHD are familial. This again supports the lack of a sharp overlap between neurodevelopmental disorders, here, autism and ADHD.

8. Personal classification system

If I was to plan an assessment programme in child psychiatry again from the start, I would assess the following dimensions: social reciprocity, pragmatic

language, oppositionality, working memory, delinquency, attention, impulsivity, activity, capacity to read non-verbal behaviour, preservation of sameness and fixations.

This would be a transdiagnostic approach.

9. Personality disorder as a developmental disorder

A not insignificant number of personality disorders are developmental disorders. This will require further research. One example is schizoid personality disorder. Another is paranoid personality disorder and, another, borderline personality disorder. Obsessive compulsive personality disorder could be also included in this group. There's quite a good case for narcissistic personality disorder to be included. An older term, anankastic personality disorder [39], could also be included. Many individuals with psychopathy have a developmental disorder, and a group of these have been called criminal autistic psychopathy [40]. There is a clear overlap between psychopathy and autism spectrum disorders. This is despite some research showing that persons with psychopathy have good theory of mind skills, while persons with autism don't. Nevertheless, more recent research has shown that particularly persons with high IQ can have good theory of mind skills while, at the same time, having autism.

10. Cognitive empathy and theory of mind: automatic perspective taking

Blair [41] stated that "cognitive empathy or theory of mind is intact in individuals with psychopathy". These ideas have been very seriously undermined by Drayton et al. [42] in relation to automatic perspective taking. Previous research did not take the complexity of cognitive empathy into account, and this led to serious misunderstandings of cognitive empathy. Drayton et al. [42] point out that "automatic theory of mind processes are engaged when an individual unintentionally represents the perspective of another person," also called "altercentric interference". Drayton et al. [42] suggest that "psychopathic individuals have a diminished propensity to automatically think from another's perspective, which may be the cognitive root of their deficits in social functioning and moral behaviour". Drayton et al. [42] raise, for this author, the possible failure of previous research on theory of mind and psychopathy, failing "to tap into a critical component of normal theory of mind processing; or tendency to take other's perspective automatically". Drayton et al. [42] defined "automatic theory of mind processes" as an individual representing "the thoughts and feelings of another person without intending to do so". They also point out that psychopathic individuals have a previously unobserved cognitive deficit that might explain their patterns of destructive and anti-social behaviour, that is, ... failure "to automatically take the perspective of others, but can deliberately (controlled), take the perspective of others". These findings suggest that psychopathic individuals have the ability to take the perspective of others but lack the propensity to do so. It seems they can pass theory of mind tasks in the research situation but fail to do so in the real world situation. This is one of the endless problems of laboratory research not translating into the "real world," that is, the clinical world. This lack of generalisation can be a serious flaw in academic psychological research. Drayton et al. [42] note that "psychopathic individuals do show deficits in their ability to understand what others are feeling but this capacity to represent other feelings appears to be distinct from capacity to represent what others see and believe". They also point out that "psychopathic individuals appear to represent other's perspective in a relatively

typical manner when doing so. It is goal-conducive and yet is able to ignore other's perspective when it is not conducive". This means that all previous theory of mind research on psychopathy missed the fundamental point of the deficit of automatic perspective of others. Drayton et al. [42] point out that "this combination of relatively intact deliberative Theory of Mind but impaired spontaneous theory of mind may allow psychopathic individuals to use information about others' mental states to achieve their own ends, while at the same avoid the, 'cost,' of automatically representing other's mental states, resulting in callous and chronic criminal behaviour". They have no empathic interest in other minds, except getting their own egocentric desires met.

In relation to psychiatry, there's a sharp difference between findings in university laboratories and the findings in clinical practice. Research groups are very rarefied and very often do not represent what is found in the general population, clinically. An example is autism defined by the Autism Diagnostic Interview or Autism Diagnostic Observational Scale which give you a very narrow definition of autism, very unlike what you find in the general population which is the broader autism phenotype [43].

Asperger originally defined persons with autism as being autistic psychopaths, which Frith [44] described as autistic psychopathy or autistic personality disorder. In actual fact, there is a lot of truth in Asperger's [27] definition of autistic psychopaths. This has been brought back now with the terms criminal autistic psychopathy [40, 45]. Indeed, the following could be seen as synonyms, autistic psychopathy, autistic personality disorder, high-functioning autism and Asperger's syndrome.

The kind of criminality seen in autism (criminal autistic psychopathy) would include arson, stalking, sex offences and strange repetitive crimes. According to the Centers for Disease Control [30], developmental disorders are characterised by problems with language, mobility, self-help and independent living. There is a myth that ASD and personality disorder and psychopathy are completely different. There is also a myth that autism and Asperger's syndrome have little or no relationship with criminality and serious murder. Patricia Howlin [46] stated "little, if any significant association between autism and criminal offending". This is clearly not supported by my reading of the literature [40]. Sipponma [47] pointed out that 27% of adult offenders in her study met criteria for autism spectrum disorder. These could be called criminal autistic psychopathy. Ashead and Sarkar [48] described correctly personality disorders as "developmental in nature", and they noted that personality regulates social relationships, arousal impulsivity and emotions, as well as self-directedness and self-soothing as well as verbal and non-verbal communication problems. What is of interest is that all of these areas are abnormal in ASD and personality disorder.

Ashead and Sarkar [48] note the following clusters of personality disorders: odd, eccentric behaviour; anti-social, borderline and narcissistic personality disorders; fearful and anxious behaviour; and avoidant, dependent and obsessive compulsive.

All these clusters, clearly at a descriptive level, overlap with ASD. Ashead and Sarkar [48] describe the following features of personality disorder:

- Emotional indifference
- Anger, suspicion and fearfulness
- Fears of others attacking and threatening them
- Brief psychotic episodes

- Odd beliefs
- Magical thinking
- Preoccupation and ruminations
- Identity confusion
- Empathy problems
- Major problems in in-patient units
- Failure to conform to social norms
- Social relationship problems
- Social reciprocity problems
- Impulsivity
- Irrationality
- Disregard for safety of self and others
- Reduced reaction to upset in other people
- Preoccupation with one or more stereotyped patterns of behaviour
- Problems with emotional processing
- Emotional detection problems
- Reduced observing self
- Reduced self-awareness and capacity to decentre the self
- Egocentricity
- Low affiliation and harm avoidance

All of these features also occur in autism spectrum disorders. Of course, in a way, this is not surprising since the boundaries between most psychiatric disorders are fluid and we do not have an accurate, categorical diagnosis at this point in time, assuming we ever will.

It's interesting that Wolfe [49], in her group of schizoid disorder overlapping with Asperger's syndrome, found "fraudulent behaviour and pathological lying"; in that, 5 out of 13 had "falsely reported their parents of being cruel to them" and "had used aliases".

There is a myth that persons with high-functioning autism cannot lie. This is utterly false, as from a clinical perspective, many parents complain to me about their children with high-functioning autism being what they call "inveterate liars". Of course, the great majority of persons with autism are the opposite and are incredibly honest, open, moral, etc. These features of autism spectrum disorder occur in the general population, as do features of personality disorder. It's only

when you get to a certain threshold that you would get a diagnosis of autism or personality disorder. In truth, we need a new classification system in psychiatry again. The problem is that most of our current disorders overlap and are therefore not independent. We need to go back from a classificatory point of view, to a pre-Kraepelin period and, in a way, that is, what the NIMH is stating with their transdiagnostic research.

There are a number of phrases associated with personality disorder, which could also be associated with autism spectrum disorder:

- i. Schizoid personality, “you can knock, but nobody’s home” [50].
- ii. Schizotypal personality, “I’m eccentric, different, strange” [50].
- iii. Paranoid personality, “you can’t trust anybody” [50].
- iv. Borderline personality, “I will be very angry, if you try to leave me” [50].
- v. The sadistic personality, “I will savour your suffering” [50]. This particularly refers to criminal autistic psychopathy and serial killers.
- vi. Narcissistic personality, “my command is your wish” [50].

11. Conclusion

The future of psychiatry will be neurodevelopmental. Psychiatrists will focus on these conditions. Mild psychiatric conditions will be dealt with by psychiatric counsellors and psychologists, using psychotherapeutic interventions. This will allow psychiatrists to become neuropsychiatrists which they are all already moving towards. The “blaming” culture of attributing these disorders to mothers’ inadequacies will then be at an end. The neurodevelopmental spectrum is far wider and far more important than suggested by DSM 5 [2, 3].

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