

SCHIZOPHRENIA AND AUTISM/ASPERGER'S SYNDROME: OVERLAP AND DIFFERENCE

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Abstract

There are many overlapping features of Autism/Asperger's syndrome and schizophrenia. There are also differences in terms of age of onset, progression and treatment. Misdiagnosis causes major frustration for patient and psychiatrist.

Key words: differential diagnosis, autism/Asperger's syndrome and schizophrenia.

Declaration of interest: Michael Fitzgerald has acted as a consultant or as a speaker for the following companies: Eli Lilly, Flynn, Janssen-Cilag, Novartis, and Shire

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Schizophrenia and Autism/Asperger's syndrome are commonly confused in adult psychiatry. This has very significant implications for the patient. In my clinical practice it is not uncommon for me to see middle aged patients with a lifetime diagnosis of Schizophrenia and treatment with neuroleptics who should have been diagnosed with Asperger's Syndrome. Unfortunately they may have many of the side effects of neuroleptics at this point. It is not rare in my experience for intelligent patients to come forward with a diagnosis of Schizophrenia and to ask if they may have Asperger's Syndrome. The first aim of this paper is to reduce the frequency of this misdiagnosis in the future and the second aim is to examine the overlap and differentiation of Autism and Schizophrenia. Of course it is possible for both conditions to occur in the same person.

DSM-IV-TR (APA 2000) criteria for schizophrenia include two of the following (1) delusions; (2) hallucinations; (3) disorganised speech; (4) grossly disorganised or catatonic behaviour; (5) negative symptoms. It also requires social and occupational dysfunction, and continuous signs of disturbance needs to persist at least six months. Autism/Asperger's syndrome (APA 2000) is characterised by poor eye contact, problems reading faces, problems in social relationships, problems sharing and turn taking, narrow interests, preservation of sameness, repetitive activities, and an onset before three years of age (Fitzgerald 1999;

Lyons and Fitzgerald 2005; Fitzgerald 2008, Asperger 1938, 1944).

The relationship between Autism/Asperger's Syndrome and Schizophrenia is the subject of considerable recent research (Craddock and Owen 2005, Craddock and Owen 2010, Crespi and Badcock 2008, Konstantareas and Hewitt 2001, Volkmar and Cohen 1991, Taiminen 1994).

Positive Symptoms in Schizophrenia

Delusions in Schizophrenia and Autism/Asperger's Syndrome

Delusions can occur in schizophrenia and Autism/Asperger's syndrome and indeed in the general population. Lewis et al. (2009) point out that in relation to delusions "the variability in the type and character of delusions presented by patients has confronted the notion that delusions arise de novo, immutable, and impervious to reason or experience. To deal with this incompatibility between the observation and theory, the awkward ideal of "delusion-like-ideas" has been introduced". This is quite relevant to Asperger's syndrome. Delusional-like experience also occur in the general population. Lewis et al. (2009) point out that "what does seem to distinguish delusions in schizophrenia is analogous to what distinguishes

SUBMITTED FEBRUARY 2012, ACCEPTED JULY 2012

schizophrenia itself; the severity of the impact of the symptoms on the patient's life and the pattern of deficits, instead of any unique or pathognomonic sign". They point out that "delusions are common in many psychiatric syndromes, but are held with more strongly, preoccupying more time, and are more pervasive in their influence on patient cognition than is found in other psychiatric illnesses". Bizarre delusions are probably more common in schizophrenia. In terms of delusions "these judgements are held in greater confidence than the delusions of control groups despite being poorly supported". Delusions, usually of the paranoid type can also occur in Autism/Asperger's syndrome but they are of the less severe type (Abell and Hare 2005). Of course one can have a "double-hit" that is schizophrenia and Autism/Asperger's syndrome in the same person.

A typical 'double-hit' would be Autism in early life with the addition of Schizophrenia later in adolescence or adulthood. Of course family history of Autism and Schizophrenia are not rare. To get a dual diagnosis it is necessary for the patient to meet the criteria for Autism and Schizophrenia independently. The concept of a 'pure' diagnostic category is rare clinically. Nevertheless we do see patients meeting the early classical descriptions of Autism or Schizophrenia. Contemporary diagnostics are affected by early diagnosis and treatment.

Hallucinations in Schizophrenia and Asperger's Syndrome

Hallucinations occur in a number of psychiatric conditions including the general population and psychiatric disorders. Lewis et al. (2009) notes that "first rank symptoms have been found to vary from a minority of patients to very high rates in both schizophrenia and in other psychiatric disorders, depending on the population being studied". Nevertheless Schneider's (1959) "first rank symptoms of schizophrenia" which include (1) audible thoughts; (2) voices commenting on patient's actions; (3) thought withdrawal; (4) thought insertion; (5) thought broadcasting; (6) made impulses of drives; (7) made volitional acts; (8) delusional perception. This profile in my clinical experience does separate schizophrenia from Autism/Asperger's syndrome. Lewis et al. (2009) point out that "many patients will describe auditory hallucinations that arise both inside and outside their heads, or will develop insight into the nature of their hallucinations only after decades of full belief in their external reality. In considering patients, these distinctions seem to have little significance in deciding diagnosis or considering appropriate treatment plans". One way the confusion between Autism/Asperger's syndrome and schizophrenia can occur is when the psychiatrist ask the patients if they hear voices and they reply yes but mean the audible voices in the next room (Attwood 1998, Lawson 1998).

Negative Symptoms in Schizophrenia and Asperger's Syndrome

Lewis et al. (2009) states that "negative symptoms

can precede the onset of illness (schizophrenia)". These symptoms include affective flattening, alogia, avolition, anhedonia, and poor attention. Poor attention is common in schizophrenia and Autism/Asperger's syndrome. The greatest overlap occurs between negative symptoms in schizophrenia and Autism/Asperger's syndrome.

Affect in Schizophrenia and Autism/Asperger's Syndrome

Flattened affect is common in schizophrenia and Autism/Asperger's syndrome. Lewis et al. (2009) point out that "avolition is similar to apathy, and these may be considered closely related, with avolition identifying a deficit in the ability to act, and apathy a loss of concern for an idea or task". This is very common in Autism/Asperger's syndrome and schizophrenia. Lewis et al. (2009) point out that in schizophrenia "the blunting of expression includes deficits in production, facial expression, gestures, and prosody, and understanding these social signals is similarly impaired". This is also typical of Autism/Asperger's syndrome. The DSM-IV-TR glossary points out that affective flattening is "the person's face appearing immobile and unresponsive, with poor eye contact and reduced body language". This is typical of Asperger's syndrome. Thaker (2009) points out that in schizophrenia one observes "a lack of facial expression even while describing the experience of an emotion, lack of tonal inflections of the patient's voice, and reduced expression of feelings through gestures and body language" which is also observed in Autism/Asperger's syndrome.

Social Relationships in Schizophrenia and Autism/Asperger's Syndrome

Social withdrawal, lack of interest or motivation to socialise and problems with close personal relationships are common in persons with schizophrenia and Autism/Asperger's Syndrome. Thaker (2009) also points out that in schizophrenia "social anhedonia results in social isolation and withdrawal... lack of intimate relationships, the latter being further complicated by the lack of sexual interest. Patients are generally unmarried". These are very common phenomena in Autism/Asperger's Syndrome as well. Thaker (2009) points out that "anhedonia is most tightly linked with sociality". This is often true as well for Autism/Asperger's Syndrome. Keefe and Easley (2009) point out that "social cognition is related to social impairments in schizophrenia". They conclude that "path analysis has been used to suggest that the relationship between neurocognitive impairment and social deficits is almost entirely mediated by impairments in social cognition". The same is true of Autism/Asperger's Syndrome. Two questions (Andreasen 1984) in relation to persecutory delusions are "have you had trouble getting along with people?" and "have you felt that people are against you?". These are very commonly answered positively in schizophrenia and Autism/Asperger's Syndrome. Andreasen (1984) points out that "the patient may behave in an aggres-

sive, agitated manner, often quite unpredictable. He may start arguments inappropriately. He may write letters of a threatening or angry nature to government officials". These features are seen in schizophrenia and Autism/Asperger's Syndrome.

Theory of Mind Problems in Schizophrenia and Autism /Asperger's Syndrome

Theory of mind deficits means that patients with schizophrenia and Autism/Asperger's Syndrome have problems reading other people's minds; empathizing with other people and recognising other people's emotions and intentions. These lead to problems in interpersonal communications, misunderstandings, and misinterpretations of other people's behaviours and disrupted emotional interchanges.

Keefe and Easley (2009) point out that "individuals with schizophrenia perform poorly on measures of theory of mind abilities. The evidence regarding whether impairments in theory of mind skills are independent of general neurocognitive deficit is mixed. Facial affect recognition and social cue perception are two general areas into which studies of social perception and schizophrenia can be broken down. The literature on facial affect recognition suggest that the individual with schizophrenia has deficits in tests of facial affect perception compared with healthy controls... and that perception of negative emotions and fear maybe particularly impaired. Patients with schizophrenia show consistent impairments on 'tests of social cue perception'. They have "in particular... more difficulty discerning other individuals goals and intentions than what they are wearing or saying". This overlaps with Autism. Asperger's Syndrome High Functioning Autism. It is hardly surprising that persons with theory of mind difficulties misinterpret people and engage in paranoid thinking leading to paranoid delusions.

Language, Schizophrenia, and Autism/Asperger's Syndrome

Lewis et al. (2009) point out that "Alogia is a decrease in verbal communication, and is found in up to 25% of people with schizophrenia". This is very common in Autism/Asperger's Syndrome. DSM-IV-TR (2000) has the criteria of "is manifest by brief, laconic, empty replies". Poverty of speech is a feature of schizophrenia and Autism/Asperger's Syndrome. Repetitive conversations are common in both conditions. It is easy to mistake thought disorder in Autism/Asperger's Syndrome for that of schizophrenia. A doctor may ask a question and the patient with Autism/Asperger's Syndrome goes off in their own side track or along their own interest often quite disconnected from the question the doctor asks. The speech of persons with Autism/Asperger's Syndrome is often tangential. According to Lewis et al. (2009) "the associative chain moves obliquely off topic". This is not uncommon in Autism/Asperger's Syndrome. According to the DSM-IV-TR glossary patients "slip off track" and this can occur in both Autism/Asperger's Syndrome and schizophrenia.

Patients with schizophrenia use neologisms and persons with Autism/Asperger's Syndrome also make up new words. Echolalia is very much characteristic of Autism/Asperger's Syndrome but is also seen in schizophrenia.

Andreasen (1984) points out that a pattern of spontaneous speech slip off... onto one which is completely unrelated". This occurs in both schizophrenia and Autism/Asperger's Syndrome. This is tangential thinking and Thaker (2009) describes thought disorder as a communication that is "difficult to follow because the flow of thought drifts from the theme (tangential thinking)". Thaker (2009) also points out that in schizophrenia "patients experience subtle difficulty communicating because of not being able to organise thoughts to precisely express their ideas, relating unnecessary details that detract from the main point, or getting stuck on an idea so that the full story remains untold". This is also absolutely typical of Autism/Asperger's Syndrome. Also Thaker (2009) points out that in schizophrenia there is "an odd use of words, vagueness, over-elaborations, tangential thinking". These can all typically occur in Autism/Asperger's Syndrome.

Self talk is observed in schizophrenia and Autism/Asperger's Syndrome. Circumstantially in talk is observed in schizophrenia and Autism/Asperger's Syndrome (Fitzgerald, 2010).

Aggression, Schizophrenia and Autism/Asperger's Syndrome

Patients with schizophrenia and Autism/Asperger's Syndrome are more likely to be victims of aggression than perpetrators. (Fitzgerald 2010). Lewis et al. (2009) points out that "it also remains true that the evidence available indicates a small percentage of people with schizophrenia will commit a disproportionate amount of violence and even murder". The same is true of Autism/Asperger's Syndrome (Fitzgerald 2010). Paranoid delusions can be a factor in the violence in both schizophrenia and Autism/Asperger's Syndrome.

Andreasen (1984) points out that "occasionally patients may perform violent acts such as injuring or tormenting animals, or attempting to injure or kill human beings". These features are observed in schizophrenia and Autism/Asperger's Syndrome (Fitzgerald 2010). Persons with Autism/Asperger's Syndrome sometimes wave their arms and come to the attention of the police (Fitzgerald 2004). Their behaviour and levels of distress in interpersonal situations can come across as appearing aggressive in both schizophrenia and Autism/Asperger's Syndrome.

What Kind of Disorders are Schizophrenia and Autism/Asperger's Syndrome?

Stan A., Leeselyong A., Ghose S. (2009) ask the question "Is schizophrenia a developmental disorder?" Autism/Asperger's Syndrome is a developmental disorder. Both can be described as neurodevelopmental disorders (Stan et al. 2009)

Factors Associated with Schizophrenia and Autism/Asperger's Syndrome

Van Os and Allardyce (2009) point out that there are "a large number of published studies demonstrating some relationship between pregnancy and birth complications and the development of schizophrenia". Pregnancy and birth complications are also quite common in persons with Autism/Asperger's Syndrome. They also point out that there is "strong evidence linking advance paternal age to the risk of schizophrenia in offspring". The same is so in Autism/Asperger's Syndrome.

Maternal malnutrition, other antenatal factors, and viruses have been linked to schizophrenia. Certainly epigenetic factors are playing a part in Autism/Asperger's Syndrome and schizophrenia. Both schizophrenia and Autism/Asperger's Syndrome have multifactorial aetiologies with the Autism/Asperger's Syndrome having a much higher genetic underpinning. There are some overlapping genetic factors in schizophrenia and Autism. Asperger's Syndrome (Rausch et al. 2009).

Prodromal Schizophrenia and Autism/Asperger's Syndrome

Thaker (2009) points out that in relation to schizophrenia the "negative symptoms, and cognitive, neurophysiological, and functional impairments precede psychosis onset by several years". The big issue here is of the difficulty during this period of differentiating Autism/Asperger's Syndrome from these prodromal phenomena of schizophrenia. The old concept of simple schizophrenia of course completely overlaps with Autism/Asperger's Syndrome (Fitzgerald 1988). The subtype of schizophrenia that is most likely to be confused with Autism/Asperger's Syndrome is the paranoid type.

Carpenter 2009 used the term risk syndrome for psychosis. David 2011 notes a large US cohort with "35% conversion or transition rate within 2.5 years to full blown psychosis" (Cannon et al. 2008). David 2011 also noted that "transition rates decline over time". David 2011 notes the wish to prevent psychosis but that "the benefit to harm ratio of a given intervention will be tilted towards harm as false positive rate goes up". There is clearly more research to be done in this area before we can avoid the problems of false positive rates. Autism/Asperger's Syndrome should always be part of the differential diagnosis of Schizophrenia.

Because prodromal symptoms of schizophrenia are similar to some of the features of Autism/Asperger's Syndrome for example relationship issues, it is not surprising that the link between these early features in schizophrenia is low. Keefe and Easley (2009) point out about the risk of "unacceptable large numbers of young people will be falsely identified as vulnerable to schizophrenia" with the psychosis risk syndrome. This is a very serious criticism and of course some of these people will have autism or Autism/Asperger's Syndrome which is very commonly missed at present.

Simple Schizophrenia, Latent Schizophrenia and Autism/Asperger's Syndrome

Fitzgerald (1988) points out that simple schizophrenia ICD-10 and latent schizophrenia were used for conditions that would now be called Asperger's Syndrome (Asperger 1944, Wing 1981). Eugen Bleuler (1911) introduced the subtypes of simple and latent schizophrenia. In simple schizophrenia he described the features of social withdrawal and affective flattening. In latent schizophrenia he emphasized the oddness and eccentricity of these patients and stated that they brought to mind 'the suspicion of schizophrenia' (Fitzgerald 1988). These features overlap with Asperger's Syndrome.

Indeed when you look at Eugen Bleuler's four key symptoms of schizophrenia (abnormal associations, autistic behaviour and thinking, abnormal affect, and ambivalence) all these can occur in Autism/Asperger's Syndrome. Bleuler E. (1924).

Relations of Persons with Schizophrenia and Autism/Asperger's Syndrome

Thaker (2009) notes that in relatives of persons with schizophrenia there is evidence of "suspiciousness, social isolation and anhedonia, reduced engagement and interest, restricted experience and expression of emotions, mild perceptual distortions, magical or unusual thinking, ideas of reference, and eccentric and odd behaviour or appearance". This is also so with Autism/Asperger's Syndrome and their relatives.

Lewis et al. (2009) points out that "there is a greater concordance in monozygotic twins for negative symptoms in relatives of patients with negative symptoms". This is also seen in relatives of patients with Autism/Asperger's Syndrome (Silverman et al. 2002).

Other Overlapping Features of Schizophrenia and Autism/Asperger's Syndrome

Andreasen (1984) points out in relation to clothing and appearance that "the patient dresses in an unusual manner... his clothing might be unusual; for example, he may choose to wear some outfit that appears generally inappropriate and unacceptable... He may wear clothing completely inappropriate to the climatic conditions". This is absolutely typical also of Asperger's Syndrome. Lewis et al. (2009) note that in schizophrenia "motor behaviours can include subtle repetitive hand movements or broad, complex, purposeless movements that involve the limbs and trunk". These can also occur in Asperger's Syndrome. In Schizophrenia Lewis et al. (2009) point out that "rocking when sitting down or standing is common... wringing their hands or toying with their clothing, or hair, or small objects around them". This is also not uncommon in autism and schizophrenia. Staring eyes can be a feature of both Autism/Asperger's Syndrome. Migrant populations have high rates of not alone schizophrenia but also Autism/Asperger's Syndrome.

In schizophrenia the patient "experiences unusual

smells" (Andreasen 1984) while in Autism/Asperger's Syndrome patients have extraordinary acute sense of smell and can smell odours that people without Autism/Asperger's Syndrome would miss. These features are features of schizophrenia and Autism/Asperger's Syndrome. Andreasen (1984) points out that "the patient may develop a set of repetitive actions or rituals that they must perform over and over". This is a feature of schizophrenia and Autism/Asperger's Syndrome. Asperger's Syndrome has a similar prevalence of about 1% (Fitzgerald 2004). Jablensky (2000) put Schizophrenia at 0.2/0.5% prevalence.

Differences Between Schizophrenia and Autism. Asperger's Syndrome

Autism and Asperger's Syndrome have an early childhood onset while schizophrenia comes on much later. Patients with Schizophrenia have small brains (Flashman et al. 2000) while persons with Autism/Asperger's Syndrome often have larger brains (Wickelgri 2005).

Of course the difference between schizophrenia and Autism/Asperger's Syndrome is that in schizophrenia if you can get an accurate history there is loss of these phenomena while in Autism/Asperger's Syndrome they are consistently there often from onset of the clinical features. Persons with Autism/Asperger's Syndrome are very rigid on inpatient units. They therefore did not fit in with the routines of inpatient units in the same way that persons with schizophrenia can.

In my clinical experience clear or first rank symptoms of Schizophrenia do differentiate Schizophrenia from Autism.

Conclusion

Crespi and Badcock 2008 have attempted to show that "social cognition is underdeveloped in autistic spectrum conditions and hyperdeveloped in psychotic conditions". From a clinical perspective this neat difference is unconvincing. Rapaport et al 2009 point out that "early onset Schizophrenia has also shown strong core morbidity with pervasive developmental disorders" (Autism/Asperger's Syndrome) but that this does "not imply any one model, and both causal and independent associations are possible". The critical importance of differentiating Schizophrenia and Autism/Asperger's Syndrome is commonly not appreciated when adult patients are considered. This causes frustration to patients and psychiatrists.

One may also ask the question are these conditions the same or on different spectra? Of course the answer is both because of the overlap. This paper has concentrated mostly on the overlap. Nevertheless they can occur largely separately. Where the clinical picture shows no delusions, no hallucinations and classically an onset before three years or earlier suggest Autism/Asperger's Syndrome. The more hallucinations, delusions the more Schizophrenia comes into consideration. Clear first rank symptoms of Schizophrenia puts Schizophrenia on top of the

differential diagnosis. Very significant savant skills (Autistic savant) put Autism/Asperger's Syndrome at the top of the differential diagnosis. Unremarkable early life to age 18 suggest Schizophrenia assuming criteria are met. A history of onset before three years, severe problems with eye contact, poor capacity to read no verbal behaviour, being classified as a child as 'odd' or eccentric, being bullied as a child, having an unusual accent, childhood echolalia, fascination with spinning objects and spinning the body, preservation of sameness, clumsiness and severe sensory issues suggest Autism/Asperger's Syndrome. A very detailed early childhood history is very critical in making the correct diagnosis with this the appropriate treatment. Misdiagnosis leads to frustration for the person themselves, their families and psychiatrists.

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