Journal of Autism and Developmental Disorders (© 2005)
DOI 10.1007/s10803-005-0026-5

The Adult Asperger Assessment (AAA): A Diagnostic Method

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At the present time there are a large number of adults who have *suspected* Asperger syndrome (AS). In this paper we describe a new instrument, the Adult Asperger Assessment (AAA), developed in our clinic for adults with AS. The need for a new instrument relevant to the diagnosis of AS in adulthood arises because existing instruments are designed for use with children. Properties of the AAA include (1) being electronic, data-based, and computer-scorable; (2) linking with two screening instruments [the Autism Spectrum Quotient (AQ) and the Empathy Quotient (EQ)]; and (3) employing a more stringent set of diagnostic criteria than DSM-IV, in order to avoid false positives. The AAA is described, and its use with a series of $n = 42$ clinic-patients is reported. Thirty-seven of these (88%) met DSM-IV criteria, but only 34 of these (80%) met AAA criteria. The AAA is therefore more conservative than DSM-IV.

KEY WORDS: Asperger Syndrome (AS); Adult Asperger Assessment (AAA); Autism Spectrum Quotient (AQ); Empathy Quotient (EQ).

Asperger syndrome (AS) is a sub-group on the autistic spectrum (Baron-Cohen, 1995; Frith, 1991; Wing, 1981, 1988) and is diagnosed on the basis of DSM-IV criteria (APA, 1994). The DSM-IV criteria for autism and AS both require patients to demonstrate the same number of impairments in social interaction and to demonstrate obsessions or repetitive behaviour. However, for autism, but not for AS, qualitative impairments in communication must be evident. In addition, for AS, there must be no significant general delay in language (defined by the use of single words at the age of 2 years and communicative phrases at the age of 3 years) or in cognitive development. For autism, this restriction is not stated, so that an autism diagnosis can be made in an individual of any IQ or language level. A final difference between the DSM-IV criteria for autism and AS is that the AS diagnosis specifies that the disturbances must cause clinically significant impairment in social, occupational or other important areas of functioning. (Bizarrely, this criterion is not specified for autism.) These similarities and differences between the DSM-IV criteria for autism and AS are summarised in Table I.

These diagnostic criteria for AS are unsatisfactory, at two levels (Howlin, 2000). First, no communication abnormalities are included as symptoms, despite the difficulties in the domain of pragmatics (Baron-Cohen, O'Riordan, Jones, Stone, & Plaisted, 1999). Secondly, the number of required criteria are so few that there is a risk of over-diagnosis. In this paper we describe a new diagnostic instrument, the Adult Asperger Assessment (AAA), designed to assess adults for AS and high functioning autism (HFA). The AAA uses more stringent diagnostic criteria than DSM IV.

A new instrument for assessing AS in adults is needed because at present nothing exists for this purpose. This is because it is only recently that clinicians have really become aware of AS. The condition was first described more than 60 years ago by Hans Asperger (Asperger, 1944), but the attention of the English-speaking scientific and medical world

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Table I. Similarities and Differences between the DSM-IV Diagnostic Criteria for Autism and Asperger Syndrome (AS)

Criterion	Autism[a]	AS
1. Qualitative impairment in social interaction	At least 2 out of 4 listed symptoms	AS for autism
2. Restricted repetitive and stereotyped patterns of behaviour, interests and activities	At least 1 out of 4 listed symptoms	AS for autism
3. Qualitative impairments in communication	At least 1 out of 4 listed symptoms	Not specified
4. Delay/abnormal functioning, with onset prior to 3 years, in social interaction, language as used in social communication, or symbolic/imaginative play	At least 1 out of 4 listed symptoms	Not specified
5. General language development	Not specified—so can be at any level	No clinically significant delay
6. Cognitive development	Not specified—so can be at any level	No clinically significant delay
7. Disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning	Not specified	Required

[a]A total of 6 or more symptoms are required from criteria 1 to 3.

was only drawn to AS by the publication of articles by Lorna Wing (Wing, 1981, 1988). Apart from a small number of research studies in the 1980s (Tantam, 1988a, 1988b, 1988c; Tantam, Monaghan, Nicholson, & Stirling, 1989), this condition still went mostly undiagnosed. The publication of the first book on the subject in English in the early 1990s changed this situation significantly (Frith, 1991). Today, there are hundreds of books on AS, and a wealth of research debating its relationship to autism and characterizing its cognitive profile, epidemiology, and biology (Baron-Cohen, 2000; Baron-Cohen, Jolliffe, Mortimore, & Robertson, 1997; Ghaziuddin, Tsai, & Ghaziuddin, 1992; Klin, Volkmar, Sparrow, Cicchetti, & Rourke, 1995; Szatamari, Bartolucci, Bremmer, Bond, & Rich, 1989; Szatmari, Archer, Fisman, Streiner, & Wilson, 1995; Szatmari, Bartolucci, & Bremner, 1989; Szatmari, Tuff, Finlayson, & Bartolucci, 1990). Family pedigrees of AS implicate heritability (Gillberg, 1991). There are also numerous first person and practical accounts (Attwood, 1997; Sainsbury, 2000; Willey, 1999).

Due to this relatively recent increase in awareness of AS, professionals are now alert to the possibility of AS in primary school age children. Current estimates of its prevalence are as high as 1 in 200 children (Ehlers & Gillberg, 1993; Scott, Baron-Cohen, Bolton, & Brayne, 2002). But for individuals who were born before 1980, a new diagnostic dilemma has arisen. What instruments should be used to diagnose AS in adults who have reached this point in development without being recognised as having it?

Currently available diagnostic instruments for autism spectrum conditions, such as the ADI-R (Autism Diagnostic Interview) (Le Couteur *et al.*, 1989; Lord, Rutter, & Le Couteur, 1994), the ADOS-G (Autism Diagnostic Observation Schedule) and the CARS (Childhood Autism Rating Scale) (Schopler, Reichler, & Renner, 1986), are not age-appropriate for adults with AS. Moreover, as mentioned above, the DSM-IV criteria for AS are currently a cause for concern, not least because of how few symptoms an individual needs to manifest to warrant a diagnosis. For this reason, we describe new criteria and a new method for diagnosis of AS or HFA in adults.

THE ADULT ASPERGER ASSESSMENT (AAA)

The distinction between AS and HFA is simplified in the AAA so that those patients who meet criteria and who did not have a language delay are diagnosed with AS, whereas patients who meet criteria and did have a language delay are diagnosed with HFA.

The Adult Asperger Assessment (AAA) is shown in Appendix A. It comprises 4 sections each describing a group of symptoms (A–D), and then a final section (E), describing 5 key prerequisites. The AAA incorporates all the symptoms from the DSM-IV diagnosis of Asperger's Disorder as well as additional relevant symptoms. The additional symptoms reflect the more stringent approach to diagnosis taken in the AAA compared with DSM-IV. This conservative design was employed so as to err on the side of under-diagnosis.

Section A of the AAA is 'Qualitative impairment in social interaction'. This includes 4 symptoms from

the DSM-IV AS criteria, and 1 extra symptom. The wording of symptom A3 has been slightly adapted from DSM-IV for the AAA. Section B is ''Restricted, repetitive and stereotyped patterns of behaviour, interests and activities''. This section also has 4 symptoms from the DSM-IV AS criteria, and 1 extra symptom. Section C, ''Qualitative impairments in verbal or non-verbal communication'', and Section D, ''Impairments in imagination'', are not included in the DSM-IV AS diagnosis but form part of the DSM-IV autistic disorder diagnosis. The AAA retains these additional sections for the diagnosis of AS. None of the 5 symptoms in Section C appear in DSM-IV and are worded to be appropriate for diagnosing adults with AS. They refer to the often-noted difficulties with the pragmatic (rather than syntactic or phonological) aspects of language and communications. (Baron-Cohen, 1988; Tager-Flusberg, 1993). In Section D, 1 of the symptoms is from the DSM-IV autistic disorder diagnosis and the other 2 are new. Any symptoms not found in DSM-IV are asterisked on the AAA.

To meet criteria for a DSM-IV diagnosis of AS, patients need to have 2 or more symptoms from Section A (A1–A4 of the AAA) and one or more symptoms from Section B (B1–B4 of the AAA) . They also need to meet the pre-requisites in Sections E of the AAA. In our view, the DSM-IV criteria for AS are too lax, and so the AAA criteria have been designed to be more stringent. Therefore, it follows that anyone who meets the AAA criteria will also meet the DSM-IV criteria. On the AAA, patients must have at least 3 out of 5 of the symptoms in each of Sections A–C, 1 out of 3 symptoms from Section D. This means the patient has to score on at least 10 symptoms (max = 18). They must also meet all 5 pre-requisites in Sections E. Note that this includes showing no current or post evidence of psychosis, which the AAA, like DSM-IV, uses as an exclusion criterion for AS (ICD-10 allows for comorbid AS and schizophrenia).

Before the clinical interview, patients are asked to complete the AQ (Autism Spectrum Quotient: Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001) and the EQ (Empathy Quotient: Baron-Cohen & Wheelwright, 2004) as screening questionnaires. These are described next.

The AQ comprises 50 questions, made up of 10 questions assessing 5 different areas (see Appendix B): *social skill* (items 1, 11, 13, 15, 22, 36, 44, 45, 47, 48); *attention switching* (items 2, 4, 10, 16, 25, 32, 34, 37, 43, 46); *attention to detail* (items 5, 6, 9, 12, 19, 23, 28, 29, 30, 49); *communication* (items 7, 17, 18, 26, 27, 31, 33, 35, 38, 39); *imagination* (items 3, 8, 14, 20, 21, 24, 40, 41, 42, 50). Individuals score in the range 0–50. In our previous study we compared $n = 58$ adults with Asperger syndrome (AS) or high-functioning autism (HFA); with $n = 174$ randomly selected controls. The adults with AS/HFA had a mean AQ score of 35.8 ($SD = 6.5$), significantly higher than controls ($x = 16.4$, $SD = 6.3$). Eighty percent of the adults with AS/HFA scored 32+, vs. 2% of controls. The AQ strongly predicts an AS diagnosis in a clinic sample (Woodbury-Smith, Robinson, Wheelwright, & Baron-Cohen, 2005)

The EQ comprises 60 questions, 40 assessing empathy and 20 filler (control) items (see Appendix C). Filler items are 2, 3, 5, 7, 9, 13, 16, 17, 20, 23, 24, 30, 31, 33, 40, 45, 47, 51, 53 and 56. It has a maximum score of 80 and a minimum of zero. In our previous study using this instrument we employed the EQ with $n = 53$ adults with AS or high-functioning autism (HFA). Their mean EQ score was 20.4 ($SD = 11.6$), which was significantly lower than $n = 53$ age and sex-matched controls (mean EQ = 42.1, $SD = 10.6$). 80% of the adults with AS/HFA scored equal to or less than 30 out of 80, compared to only 10% of controls.

The AAA template is a Microsoft Excel document. The patient's response to each item on the AQ and EQ is entered and a macro is then run to score the AQ and EQ. The scores from these questionnaires are automatically entered on to the front sheet of the AAA. In addition, items from the AQ and EQ, which the patient has endorsed, provide examples of the symptoms in Sections A–D, so these are automatically entered into the appropriate sections of the AAA. The AAA in Appendix A shows a hypothetical patient (Max Asperger) who has the maximum AQ score (=50) and the minimum EQ score (=0). This AAA therefore includes all possible examples of symptoms from the AQ and EQ. Note that the AQ and EQ do not provide examples for all the symptoms.

During the clinical interview, the clinician then seeks to validate the symptom examples provided by the AQ and EQ by gathering examples from the patient and their relative/informant and checks the other symptoms and prerequisites. In our national clinic, CLASS (Cambridge Lifespan Asperger Syndrome Service), patients are only seen if they can provide an informant who can supply details of their developmental history. Following this interview, the AAA is completed by entering a 1 in the YES or NO box for each symptom and prerequisite as appropriate. There is space for the clinician to include additional examples of symptoms and comments. The number of symptoms and prerequisites

met are automatically totalled on the front sheet of the AAA. The AAA is completed by the clinician entering their diagnosis, if any.

VALIDATION STUDY

Sample

Forty two patients in series attending the Cambridge Lifespan Asperger Syndrome Service (CLASS), a national diagnostic clinic for adults referred with suspected AS, were assessed using the AAA. The mean age of the sample was 34.1 years (SD = 10.6 years) and the sex ratio was 36:6 (or 9:1) (male:female). The occupational levels of the patients were mixed, varying from university researchers to unemployed and unskilled workers. Twelve of them were married or in long-term relationships, 3 were divorced or separated, and 27 were single. Nine (or 21.4%) had a history of violence. Finally 12 (28.6%) were living alone.

Method

The AAA was administered by a team comprising either a consultant clinical psychologist (SBC) or consultant psychiatrist (MWS) and a clinical psychologist (JR) in the team. Two professionals were involved in every assessment. Each patient was accompanied by at least one parent as an informant. In the case of those patients with a partner, the partner was also invited to the assessment to act as an additional informant. Each area in the AAA was probed, in order to collect a range of anecdotal examples of a specific kind, from the patient's life, either from self-report or via the informant(s). Each AAA interview took on average 3 hours, including collecting early developmental history information about the patient, information about the patient's educational history, occupational history, medical history, family factors, and to allow time for feedback on the diagnosis. The team of two clinicians filled in the AAA independently and where there was disagreement, this item was conservatively not scored.

Each patient was therefore assigned a total AAA score, a DSM-IV score, an AQ score, an EQ score, and a AAA diagnosis. The AQ and EQ were sent by post in advance of the clinic visit, and filled in by the patient alone.

RESULTS

Of the 42 patients assessed, 31 (28 male, 3 female) were diagnosed with AS, 3 (all male) were diagnosed with HFA and 8 (5 male, 3 female) did not receive an autism spectrum diagnosis. Of the 8 (all male) who did not receive a AAA diagnosis, 3 met DSM-IV criteria for AS.

The mean AQ and EQ scores for the patients with and without a diagnosis of autism spectrum are shown in Table II. As would be predicted, the diagnosed group score significantly higher on the AQ, and significantly lower on the EQ, than the patients without a diagnosis (t = 3.1, p = .004 and t = −2.5, p = .015 respectively). The AS group's scores on the AQ are well above the usual cut-off of 32, and below the usual cut-off on the EQ of 30. Table II also shows the mean AAA score for each of the two groups, the AS spectrum group scoring well above the minimum cut-off (10/18) whilst the non-AS group scored well below this.

DISCUSSION

The study reported here introduces a method for the diagnosis and assessment of adults with AS. It is easy to use and links with two screening instruments, the AQ (Autism Spectrum Quotient) (Baron-Cohen *et al.*, 2001) and the EQ (Baron-Cohen & Wheelwright, 2004) thus making maximum use of information that can be collected prior to the clinic visit. Results confirm that the AAA diagnosis is more conservative than the DSM-IV diagnosis. Results also replicate earlier findings that adults with a clinical diagnosis of AS score above 32 on the AQ, and below 30 on the EQ. It is recommended that clinicians may wish to adopt the AAA in order to maintain a stricter definition of AS.

There is some debate over whether "impairments in imagination" should be diagnostic criteria for AS,

Table II. Mean AQ and EQ Scores (and SD's) of Patients with and without Final Autism Spectrum Diagnosis

Sample (n = 42)		AQ score	EQ score	AAA score
AS/HFA diagnosed patients (n = 34)	Mean	34.6	21.2	14.7
	SD	7.3	10.6	1.8
No AS/HFA diagnosis patients (n = 8)	Mean	25.0	32.0	4.9
	SD	10.3	12.2	2.5

since cases of individuals with AS who are gifted at drawing, film-making, and poetry are well-documented (e.g. Myers et al., 2005). It should be noted that in the AAA, ''impairments in imagination'' carry less weight in that only 1 symptom out of the minimum of 10 is required in this domain. Future studies could examine the value of including this one symptom or not.

We report this instrument at this stage of its development, because of the need for a quantitative, clinical method. However, we recognise that in future it will be useful to compare its performance relative to other approaches, such as an adapted form of the ADI-R (Le Couteur *et al*., 1989). Equally important will be a test of this and other instruments' power to distinguish between AS and the milder manifestations described as the ''broader phenotype'' in family genetic studies of autism (Bailey *et al*., 1995)

Future studies will need to test the sensitivity and specificity of the AAA, as well as the linked screening instruments, by inclusion of psychiatric control groups. It is expected that in the medium term there will be little or no clinical need for the AAA, if most or all of the actual cases of AS are identified when they should be, namely in early childhood. Alternatively, there may be value in adapting the AAA for use in childhood if it is more conservative than alternative methods. But in the interim, whilst undiagnosed cases of AS exist in the adult population, both screening and diagnostic instruments of this kind will be needed. Finally, it is hoped that the extended and more conservative criteria for AS adopted by the AAA will contribute to the debate on what should constitute useful criteria for defining this syndrome.

ACKNOWLEDGEMENTS

We are grateful to the Three Guineas Trust for supporting the CLASS clinic (Cambridge Lifespan Asperger Syndrome Service) and to the Medical Research Council during the development of this work. We also acknowledge the support of Lifespan Healthcare NHS Trust, and its replacement, the Cambridgeshire and Peterborough Mental Health Partnership NHS Trust, for their support of the clinic.

APPENDIX A: ADULT ASPERGER ASSESSMENT (AAA)

PATIENT DETAILS

Name:	Max Asperger
Sex:	Male
Date of birth:	10/15/1970
Appointment:	6/1/2001
Age (in years):	30.6

SCREENING INSTRUMENT SCORES

Autism-Spectrum Quotient (AQ) score: 50

Max = 50, and 80% of AS patients score 32 or more

Reference: Baron-Cohen, S., Wheelwright, S., *et al*. (2001) The Autism-Spectrum Quotient: a new instrument for screening AS and HFA in adults of normal intelligence. *Journal of Autism and Developmental Disorders, 31, 5–17*

Empathy Quotient (EQ) score: 0

Max = 80, and 80% of AS patients score 30 or less

Reference: Baron-Cohen, S. & Wheelwright, S. (2004) The Empathy Quotient (EQ). An investigation of adults with AS or HFA, and normal sex differences. *Journal of Autism and Developmental Disorders, 34, 163–175*

AAA DIAGNOSTIC CRITERIA

In order to receive a diagnosis of AS, patients must have 3 or more symptoms in each of Sections A–C, at least 1 symptom from Section D and meet all 5 prerequisites in Sections E–I.

Section	Domain	No. of symptoms required	No. of symptoms observed
A (max = 5)	Social	3	5
B (max = 5)	Obsessions	3	5
C (max = 5)	Communication	3	5
D (max = 3)	Imagination	1	3
Total (max = 18)		10	18
E–I (max = 5)	Prerequisites	5	5

DIAGNOSIS

Asperger Syndrome

A. Qualitative impairment in social interaction

1. Marked impairment in the use of multiple nonverbal behaviours such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction. **YES** 1 **NO**

2. Failure to develop peer relationships appropriate to developmental level. **YES** 1 **NO**

prefers to do things on own rather than with others (AQ1)
finds self drawn more strongly to things than people (AQ15)
finds it hard to make new friends (AQ22)
does not enjoy social situations (AQ44)
finds friendships and relationships difficult so tends not to bother with them (EQ12)

3. No interest in pleasing others; no interest in communicating his/her experience to others, including:- lack of spontaneous seeking to share enjoyment, interests or achievements with other people; lack of showing, bringing or pointing out objects of interest. **YES** 1 **NO**

4. Lack of social or emotional reciprocity (e.g. not knowing how to comfort someone; and/or lack of empathy). **YES** 1 **NO**

is not concerned if late when meeting a friend (EQ11)
finds it hard to see why some things upset people so much (EQ21)
does not spot when someone in a group is feeling awkward or uncomfortable (EQ26)
is not upset by seeing people cry (EQ32)
makes decisions without being influenced by people's feelings (EQ39)
friends don't talk to them about problems as not considered understanding (EQ43)
can't sense when intruding (EQ44)
often described as insensitive, but can't see why (EQ48)
if sees stranger in a group, thinks it's up to them to join in (EQ49)
stays emotionally detached when watching films (EQ50)
difficulty with tuning in to how others feel (EQ52)
does not get emotionally involved with friends' problems (EQ59)

5. Difficulties in understanding social situations and other people's thoughts and feelings. **YES** 1 **NO**

can't keep track of conversations in social group (AQ10)
finds social situations difficult (AQ11)
finds it difficult to work out characters' intentions when reading a story (AQ20)
finds it difficult to read between the lines when talking with others (AQ27)
often the last to understand the point of a joke (AQ35)
finds it difficult to work out what someone is thinking/feeling from facial expression (AQ36)
finds it difficult to work out people's intentions (AQ45)
finds it hard to know what to do in social situations (EQ8)
can't pick up if someone says one thing but means another (EQ19)
finds it difficult to put self in someone else's shoes (EQ22)
not good at predicting how someone will feel (EQ25)
finds social situations confusing (EQ35)
difficulty with detecting whether someone is masking their true emotion (EQ55)
consciously works out the rules of social situations (EQ57)
not good at predicting what someone else will do (EQ58)

The Adult Asperger Assessment

B. Restricted repetitive and stereotyped patterns of behaviour, interests, and activities **YES** **NO**

1. Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus. | 1 | |

gets so strongly absorbed in one thing that loses sight of other things (AQ4)
tends to have very strong interests which gets upset about if can't pursue (AQ16)
collects information about categories of things e.g. types of car (AQ41)

2. Apparently inflexible adherence to specific, nonfunctional routines or rituals. **YES** **NO**

| 1 | |

prefers to do things the same way over and over again (AQ2)
gets upset if daily routine is disturbed (AQ25)

3. Stereotyped and repetitive motor mannerisms (e.g. hand or finger flapping or twisting, or complex whole-body movements). **YES** **NO**

| 1 | |

4. Persistent preoccupation with parts of objects/systems. **YES** **NO**

| 1 | |

often notices small sounds that others do not (AQ5)
usually notices car number plates or similar strings of information (AQ6)
fascinated by dates (AQ9)
tends to notice details that others do not (AQ12)
fascinated by numbers (AQ19)
notices patterns in things all the time (AQ23)
usually concentrates on the small details rather than the whole picture (AQ28)
usually notices small changes in a situation or a person's appearance (AQ30)

5. Tendency to think of issues as being black and white (e.g. in politics or morality), rather than considering multiple perspectives in a flexible way **YES** **NO**

| 1 | |

often told gone too far in driving point home in discussion (EQ10)
can't appreciate another's viewpoint if disagrees with it (EQ60)

C. Qualitative impairments in verbal or non-verbal communication **YES** **NO**

1. Tendency to turn any conversation back on to self or own topic of interest. | 1 | |

often told keeps going on and on about the same thing (AQ39)
in conversation, focuses more on own thoughts rather than listener's (EQ15)
tends to concentrate on talking about own experiences (EQ37)

2. Marked impairment in the ability to initiate or sustain a conversation with others. Cannot see the point of superficial social contact, niceties, or passing time with others, unless there is a clear discussion point/debate or activity. **YES** **NO**

| 1 | |

does not enjoy social chit-chat (AQ17)
frequently finds doesn't know how to keep a conversation going (AQ26)
when talking on the phone, is not sure when it is their turn to speak (AQ33)
is not good at social chit-chat (AQ38)
can't tell if someone else wants to enter a conversation (EQ1)
can't work out what other person might want to talk about (EQ54)

3. Pedantic style of speaking, or inclusion of too much detail.

YES	NO
1	

4. Inability to recognise when the listener is interested or bored. Even if the person has been told not to talk about their particular obsessive topic for too long, this difficulty may be evident if other topics arise.

YES	NO
1	

doesn't know if listener is getting bored (AQ31)
can't easily tell if someone is interested or bored with what they are saying (EQ41)

5. Frequent tendency to say things without considering the emotional impact on the listener (faux pas).

YES	NO
1	

often told has been impolite even though they think they have been polite (AQ7)
not a good diplomat (AQ48)
often finds it difficult to judge if something is rude or polite (EQ14)
doesn't think it's their problem if they offend someone (EQ27)
if asked opinion about new haircut, would answer truthfully even if didn't like it (EQ28)
can't always see why someone should have felt offended by a remark (EQ29)
is very blunt without being intentionally rude (EQ34)
sometimes told has gone too far with teasing (EQ46)

D. Impairments in imagination

1. Lack of varied, spontaneous make believe play appropriate to developmental level.

YES	NO
1	

as a child, did not enjoy playing games which involved pretending with other children (AQ40)
finds it difficult to imagine what it would be like to be someone else (AQ42)
finds it difficult now to play games with children that involve pretending (AQ50)

*2. Inability to tell, write or generate spontaneous, unscripted or unplagiarised fiction

YES	NO
1	

finds making up stories difficult (AQ14)

*3. Either lack of interest in fiction (written, or drama) appropriate to developmental level or interest in fiction is restricted to its possible basis in fact (e.g. science fiction, history, technical aspects of film).

YES	NO
1	

doesn't particularly enjoy reading fiction (AQ21)
would rather go to a museum than the theatre (AQ24)

E. Prerequisites

	YES	NO
1. Delays or abnormal functioning in each of A–D occur across development.	1	
2. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.	1	
3. There is no clinically significant general delay in language (e.g. single words used by age 2 years, communicative phrases used by age 3 years).	1	
4. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behaviour (other than in social interaction or skills linked to social awareness e.g. personal hygiene).	1	
5. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia.	1	

APPENDIX B: THE AQ

1.	I prefer to do things with others rather than on my own.	definitely agree	slightly agree	slightly disagree	definitely disagree
2.	I prefer to do things the same way over and over again.	definitely agree	slightly agree	slightly disagree	definitely disagree
3.	If I try to imagine something, I find it very easy to create a picture in my mind.	definitely agree	slightly agree	slightly disagree	definitely disagree
4.	I frequently get so strongly absorbed in one thing that I lose sight of other things.	definitely agree	slightly agree	slightly disagree	definitely disagree
5.	I often notice small sounds when others do not.	definitely agree	slightly agree	slightly disagree	definitely disagree
6.	I usually notice car number plates or similar strings of information.	definitely agree	slightly agree	slightly disagree	definitely disagree
7.	Other people frequently tell me that what I've said is impolite, even though I think it is polite.	definitely agree	slightly agree	slightly disagree	definitely disagree
8.	When I'm reading a story, I can easily imagine what the characters might look like.	definitely agree	slightly agree	slightly disagree	definitely disagree
9.	I am fascinated by dates.	definitely agree	slightly agree	slightly disagree	definitely disagree
10.	In a social group, I can easily keep track of several different people's conversations.	definitely agree	slightly agree	slightly disagree	definitely disagree
11.	I find social situations easy.	definitely agree	slightly agree	slightly disagree	definitely disagree
12.	I tend to notice details that others do not.	definitely agree	slightly agree	slightly disagree	definitely disagree
13.	I would rather go to a library than a party.	definitely agree	slightly agree	slightly disagree	definitely disagree
14.	I find making up stories easy.	definitely agree	slightly agree	slightly disagree	definitely disagree
15.	I find myself drawn more strongly to people than to things.	definitely agree	slightly agree	slightly disagree	definitely disagree
16.	I tend to have very strong interests which I get upset about if I can't pursue.	definitely agree	slightly agree	slightly disagree	definitely disagree
17.	I enjoy social chit-chat.	definitely agree	slightly agree	slightly disagree	definitely disagree
18.	When I talk, it isn't always easy for others to get a word in edgeways.	definitely agree	slightly agree	slightly disagree	definitely disagree
19.	I am fascinated by numbers.	definitely agree	slightly agree	slightly disagree	definitely disagree
20.	When I'm reading a story, I find it difficult to work out the characters' intentions.	definitely agree	slightly agree	slightly disagree	definitely disagree
21.	I don't particularly enjoy reading fiction.	definitely agree	slightly agree	slightly disagree	definitely disagree
22.	I find it hard to make new friends.	definitely agree	slightly agree	slightly disagree	definitely disagree
23.	I notice patterns in things all the time.	definitely agree	slightly agree	slightly disagree	definitely disagree
24.	I would rather go to the theatre than a museum.	definitely agree	slightly agree	slightly disagree	definitely disagree
25.	It does not upset me if my daily routine is disturbed.	definitely agree	slightly agree	slightly disagree	definitely disagree

26.	I frequently find that I don't know how to keep a conversation going.	definitely agree	slightly agree	slightly disagree	definitely disagree
27.	I find it easy to "read between the lines" when someone is talking to me.	definitely agree	slightly agree	slightly disagree	definitely disagree
28.	I usually concentrate more on the whole picture, rather than the small details.	definitely agree	slightly agree	slightly disagree	definitely disagree
29.	I am not very good at remembering phone numbers.	definitely agree	slightly agree	slightly disagree	definitely disagree
30.	I don't usually notice small changes in a situation, or a person's appearance.	definitely agree	slightly agree	slightly disagree	definitely disagree
31.	I know how to tell if someone listening to me is getting bored.	definitely agree	slightly agree	slightly disagree	definitely disagree
32.	I find it easy to do more than one thing at once.	definitely agree	slightly agree	slightly disagree	definitely disagree
33.	When I talk on the phone, I'm not sure when its my turn to speak.	definitely agree	slightly agree	slightly disagree	definitely disagree
34.	I enjoy doing things spontaneously	definitely agree	slightly agree	slightly disagree	definitely disagree
35.	I am often the last to understand the point of a joke.	definitely agree	slightly agree	slightly disagree	definitely disagree
36.	I find it easy to work out what someone is thinking or feeling just by looking at their face.	definitely agree	slightly agree	slightly disagree	definitely disagree
37.	If there is an interruption, I can switch back to what I was doing very quickly	definitely agree	slightly agree	slightly disagree	definitely disagree
38.	I am good at social chit-chat.	definitely agree	slightly agree	slightly disagree	definitely disagree
39.	People often tell me that I keep going on and on about the same thing.	definitely agree	slightly agree	slightly disagree	definitely disagree
40.	When I was young, I used to enjoy playing games involving pretending with other children.	definitely agree	slightly agree	slightly disagree	definitely disagree
41.	I like to collect information about categories of things (e.g. types of car, types of bird, types of train, types of plant, etc.).	definitely agree	slightly agree	slightly disagree	definitely disagree
42.	I find it difficult to imagine what it would be like to be someone else.	definitely agree	slightly agree	slightly disagree	definitely disagree
43.	I like to plan any activities I participate in carefully.	definitely agree	slightly agree	slightly disagree	definitely disagree
44.	I enjoy social occasions.	definitely agree	slightly agree	slightly disagree	definitely disagree
45.	I find it difficult to work out people's intentions.	definitely agree	slightly agree	slightly disagree	definitely disagree
46.	New situations make me anxious.	definitely agree	slightly agree	slightly disagree	definitely disagree
47.	I enjoy meeting new people.	definitely agree	slightly agree	slightly disagree	definitely disagree
48.	I am a good diplomat.	definitely agree	slightly agree	slightly disagree	definitely disagree
49.	I am not very good at remembering people's date of birth.	definitely agree	slightly agree	slightly disagree	definitely disagree
50.	I find it very easy to play games with children that involve pretending.	definitely agree	slightly agree	slightly disagree	definitely disagree

APPENDIX C: THE EQ

1.	I can easily tell if someone else wants to enter a conversation.	strongly agree	slightly agree	slightly disagree	strongly disagree
2.	I prefer animals to humans.	strongly agree	slightly agree	slightly disagree	strongly disagree
3.	I try to keep up with the current trends and fashions.	strongly agree	slightly agree	slightly disagree	strongly disagree
4.	I find it difficult to explain to others things that I understand easily, when they don't understand it first time.	strongly agree	slightly agree	slightly disagree	strongly disagree
5.	I dream most nights.	strongly agree	slightly agree	slightly disagree	strongly disagree
6.	I really enjoy caring for other people.	strongly agree	slightly agree	slightly disagree	strongly disagree
7.	I try to solve my own problems rather than discussing them with others.	strongly agree	slightly agree	slightly disagree	strongly disagree
8.	I find it hard to know what to do in a social situation.	strongly agree	slightly agree	slightly disagree	strongly disagree
9.	I am at my best first thing in the morning.	strongly agree	slightly agree	slightly disagree	strongly disagree
10.	People often tell me that I went too far in driving my point home in a discussion.	strongly agree	slightly agree	slightly disagree	strongly disagree

11.	It doesn't bother me too much if I am late meeting a friend.	strongly agree	slightly agree	slightly disagree	strongly disagree
12.	Friendships and relationships are just too difficult, so I tend not to bother with them.	strongly agree	slightly agree	slightly disagree	strongly disagree
13.	I would never break a law, no matter how minor.	strongly agree	slightly agree	slightly disagree	strongly disagree
14.	I often find it difficult to judge if something is rude or polite.	strongly agree	slightly agree	slightly disagree	strongly disagree
15.	In a conversation, I tend to focus on my own thoughts rather than on what my listener might be thinking.	strongly agree	slightly agree	slightly disagree	strongly disagree
16.	I prefer practical jokes to verbal humour.	strongly agree	slightly agree	slightly disagree	strongly disagree
17.	I live life for today rather than the future.	strongly agree	slightly agree	slightly disagree	strongly disagree
18.	When I was a child, I enjoyed cutting up worms to see what would happen.	strongly agree	slightly agree	slightly disagree	strongly disagree
19.	I can pick up quickly if someone says one thing but means another.	strongly agree	slightly agree	slightly disagree	strongly disagree
20.	I tend to have very strong opinions about morality.	strongly agree	slightly agree	slightly disagree	strongly disagree
21.	It is hard for me to see why some things upset people so much.	strongly agree	slightly agree	slightly disagree	strongly disagree
22.	I find it easy to put myself in somebody else's shoes.	strongly agree	slightly agree	slightly disagree	strongly disagree
23.	I think that good manners are the most important thing a parent can teach their child.	strongly agree	slightly agree	slightly disagree	strongly disagree
24.	I like to do things on the spur of the moment.	strongly agree	slightly agree	slightly disagree	strongly disagree
25.	I am good at predicting how someone will feel.	strongly agree	slightly agree	slightly disagree	strongly disagree
26.	I am quick to spot when someone in a group is feeling awkward or uncomfortable.	strongly agree	slightly agree	slightly disagree	strongly disagree
27.	If I say something that someone else is offended by, I think that that's their problem, not mine.	strongly agree	slightly agree	slightly disagree	strongly disagree
28.	If anyone asked me if I liked their haircut, I would reply truthfully, even if I didn't like it.	strongly agree	slightly agree	slightly disagree	strongly disagree
29.	I can't always see why someone should have felt offended by a remark.	strongly agree	slightly agree	slightly disagree	strongly disagree
30.	People often tell me that I am very unpredictable.	strongly agree	slightly agree	slightly disagree	strongly disagree
31.	I enjoy being the centre of attention at any social gathering.	strongly agree	slightly agree	slightly disagree	strongly disagree
32.	Seeing people cry doesn't really upset me.	strongly agree	slightly agree	slightly disagree	strongly disagree
33.	I enjoy having discussions about politics.	strongly agree	slightly agree	slightly disagree	strongly disagree
34.	I am very blunt, which some people take to be rudeness, even though this is unintentional.	strongly agree	slightly agree	slightly disagree	strongly disagree
35.	I don't tend to find social situations confusing.	strongly agree	slightly agree	slightly disagree	strongly disagree
36.	Other people tell me I am good at understanding how they are feeling and what they are thinking.	strongly agree	slightly agree	slightly disagree	strongly disagree
37.	When I talk to people, I tend to talk about their experiences rather than my own.	strongly agree	slightly agree	slightly disagree	strongly disagree
38.	It upsets me to see an animal in pain.	strongly agree	slightly agree	slightly disagree	strongly disagree
39.	I am able to make decisions without being influenced by people's feelings.	strongly agree	slightly agree	slightly disagree	strongly disagree
40.	I can't relax until I have done everything I had planned to do that day.	strongly agree	slightly agree	slightly disagree	strongly disagree
41.	I can easily tell if someone else is interested or bored with what I am saying.	strongly agree	slightly agree	slightly disagree	strongly disagree
42.	I get upset if I see people suffering on news programmes.	strongly agree	slightly agree	slightly disagree	strongly disagree
43.	Friends usually talk to me about their problems as they say that I am very understanding.	strongly agree	slightly agree	slightly disagree	strongly disagree
44.	I can sense if I am intruding, even if the other person doesn't tell me.	strongly agree	slightly agree	slightly disagree	strongly disagree
45.	I often start new hobbies but quickly become bored with them and move on to something else.	strongly agree	slightly agree	slightly disagree	strongly disagree
46.	People sometimes tell me that I have gone too far with teasing.	strongly agree	slightly agree	slightly disagree	strongly disagree

47.	I would be too nervous to go on a big rollercoaster.	strongly agree	slightly a gree	slightly disagree	strongly disagree
48.	Other people often say that I am insensitive, though I don't always see why.	strongly agree	slightly agree	slightly disagree	strongly disagree
49.	If I see a stranger in a group, I think that it is up to them to make an effort to join in.	strongly agree	slightly agree	slightly disagree	strongly disagree
50.	I usually stay emotionally detached when watching a film.	strongly agree	slightly agree	slightly disagree	strongly disagree
51.	I like to be very organised in day to day life and often make lists of the chores I have to do.	strongly agree	slightly agree	slightly disagree	strongly disagree
52.	I can tune into how someone else feels rapidly and intuitively.	strongly agree	slightly agree	slightly disagree	strongly disagree
53.	I don't like to take risks.	strongly agree	slightly agree	slightly disagree	strongly disagree
54.	I can easily work out what another person might want to talk about.	strongly agree	slightly agree	slightly disagree	strongly disagree
55.	I can tell if someone is masking their true emotion.	strongly agree	slightly agree	slightly disagree	strongly disagree
56.	Before making a decision I always weigh up the pros and cons.	strongly agree	slightly agree	slightly disagree	strongly disagree
57.	I don't consciously work out the rules of social situations.	strongly agree	slightly agree	slightly disagree	strongly disagree
58.	I am good at predicting what someone will do.	strongly agree	slightly agree	slightly disagree	strongly disagree
59.	I tend to get emotionally involved with a friend's problems.	strongly agree	slightly agree	slightly disagree	strongly disagree
60.	I can usually appreciate the other person's viewpoint, even if I don't agree with it.	strongly agree	slightly agree	slightly disagree	strongly disagree

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