Appendix E

Protocols

1. (a) What are the signs and symptoms that should prompt a health care or other professional in any context to think of ASD?

1. (b) When should a child or young person be referred for diagnostic assessment?

2. In children with suspected ASD (based on signs and symptoms) what information assists in the decision to refer for a formal ASD diagnostic assessment?

(a) Are there screening instruments that are effective in assessing the need for a specialist ASD assessment?

(b) What information about the child and family increases the likelihood of a diagnosis of ASD and would assist in the decision to refer for a formal ASD diagnostic assessment?

part 1: risk factors

part 2: Conditions with an increased prevalence of ASD

(c) Information from other sources as contextual information: information about how the child functions in different environments such as school and home; social care reports (i.e. 'Looked After' children); other agencies

3. What should be the components of the diagnostic assessment? When should they be undertaken, in which sub-groups, and in what order?

(a) Assessment tools specific to ASD: e.g. Autism Diagnostic Interview-Revised (ADI-R), Developmental, Dimensional and Diagnostic interview (3di), Diagnostic Interview for Social and Communication Disorders (DISCO), Autism Diagnostic Observation Schedule (ADOS), Gilliam Autism Rating Scale

(b) Other assessment tools that help the interpretation of the specific ASD tools (in 3a): an assessment of intellectual ability; an assessment of receptive and expressive language etc

(c) Biomedical investigations for diagnosis of ASD e.g. EEG, brain scan, genetic tests, counselling; investigations for associated medical conditions

4. (a) What are the most important differential diagnoses of ASD?

4. (b) What features observed during diagnosis reliably differentiate other conditions from ASD?

5. How should information be integrated to arrive at a diagnosis:

(a) Is the diagnostic assessment more accurate and reliable when performed by a multidisciplinary team or a single practitioner?

(b) What is the stability of an ASD diagnosis over time?

(c) What is the agreement of an ASD diagnosis across different diagnostic tools?

6. How should the findings of the diagnostic assessment be communicated to children and young people, and their families/ carers?

Question 1

	Details	Additional comments
Review question number	Question 1	
Review question	(a) What are the signs and symptoms that should prompt a health care or other professional in any context to think of ASD, (b) When should a child or young person be referred for diagnostic assessment?	
Objectives	To identify the signs and symptoms of ASD that can assist social, educational or health (community, primary or secondary) professionals in the decision to refer a child for a diagnostic assessment	
Language	English	
Study design	Control observation studies Study size >10 individuals	
Status	Published papers	
Population	Cases: children or young people with DSM or ICD diagnosed ASD. Control: typically developing children and young people	Subgroups : age ethnicity and first language verbal/non verbal hearing ability intellectual ability visual ability gender 'looked after' children
Index test (signs & symptoms)	Sign or symptom of ASD	Based on DSM-IV/ICD-10/SIGN
Outcomes	Sensitivity and specificity of symptoms and signs to detect ASD	Evidence will be presented in age subgroups 0-5yrs

		6-11 yrs 12-19 yrs
Search strategies	See Appendix F	…
Other criteria for inclusion/ exclusion of studies	None.	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009 using QUADAS checklist for diagnostic studies and GRADE adaptation for diagnostic studies Evidence tables and statements will be used to summarise the evidence	…
Equalities	Separate search for children with an intellectual disability/learning disabilities Population subgroups identified: age; ethnicity and first language; verbal/non verbal; hearing ability; intellectual ability; visual ability; gender; 'looked after' children	

Question 2(a)

	Details	Additional comments
Review question number	2(a)	
Review question	In children with suspected ASD (based on signs and symptoms) what information assists in the decision to refer for a formal ASD diagnostic assessment? • Are there screening instruments that are effective in assessing the need for a specialist ASD assessment?	
Objectives	To establish what screening instruments are valuable in assessing the need for a specialist ASD assessment?	
Language	English	
Study design	Controlled observational study	
Status	Published studies	
Population	Children or adolescents identified as being at risk for ASD by either: Having a sign or symptoms suggestive of an ASD and/or Have failed a surveillance tool such as M-CHAT and/or Are a high risk population (eg with Fragile X, have a sibling with an ASD)	
Intervention	Instruments that can be used to .assess the risk of ASD	
Comparator	Diagnosis of ASD made according to DSM or ICD criteria.	
Outcomes	Sensitivity and specificity, to predict a later diagnosis of ASD.	
Other criteria for inclusion/ exclusion of studies	Insufficient data to calculate sensitivity or specificity	

Search strategies	See Appendix F	
Review strategies	Studies will be assessed for quality using the QUADAS tool and GRADE criteria as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 2b – part 1

	Details	Additional comments
Review question number	2(b) – part 1	
Review question	In children with suspected ASD (based on signs and symptoms) what information assists in the decision to refer for a formal ASD diagnostic assessment? • What information about the child and family increases the likelihood of a diagnosis of ASD and would assist in the decision to refer for a formal ASD diagnostic assessment? o Risk factors	
Objectives	To establish what information are valuable in assessing the need for a specialist ASD assessment.	
Language	English	
Study design	Controlled observational study (eg nested-case control study)	
Status	Published studies	
Population	Children or young people diagnosed with ASD	
Intervention	Parental or familial factors Peri-natal or neonatal factors Pregnancy related factors Environmental factors	
Comparator	Matched or population controls without ASD	
Outcomes	Odds ratios (OR) or relative risks (RR) after adjustment for possible confounding variables	
Other criteria for inclusion/ exclusion of	NA	

studies		
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for quality using the QUADAS tool and GRADE criteria as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 2(b) – part 2

	Details	Additional comments
Review question number	2(b) – part 2	
Review question	In children with suspected ASD (based on signs and symptoms) what information assists in the decision to refer for a formal ASD diagnostic assessment? • What information about the child and family increases the likelihood of a diagnosis of ASD and would assist in the decision to refer for a formal ASD diagnostic assessment? o Conditions with an increased prevalence of ASD	
Objectives	To establish what information are valuable in assessing the need for a specialist ASD assessment.	
Language	English	
Study design	Controlled observational study eg Cross-sectional study Uncontrolled observational study eg Cohort study	
Status	Published studies	
Population	Children or young people who have one of the following co-existing conditions Intellectual disability Fragile X Tuberous sclerosis Neonatal encephalopathy / Epileptic encephalopathy (including Infantile Spasms) Cerebral palsy Down syndrome Duchenne muscular dystrophy	

	Neurofibromatosis Fetal alcohol syndrome	
Intervention	NA	
Comparator	NA	
Outcomes	Prevalence rates of ASD diagnosed according to DSM-IV or ICD-10	
Other criteria for inclusion/ exclusion of studies	NA	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for quality using the QUADAS tool and GRADE criteria as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 2(c)

	Details	Additional comments
Review question number	2(c)	It was expected that no studies would be available for this questions so the GDG decided to use consensus methodology to answer this question
Review question	In children with suspected ASD (based on signs and symptoms) what information assists in the decision to refer for a formal ASD diagnostic assessment? • Information from other sources as contextual information: information about how the child functions in different environments such as school and home; social care reports (i.e. 'Looked After' children); other agencies	
Objectives	To establish what information are valuable in assessing the need for a specialist ASD assessment.	
Language	English	
Study design	NA	
Status	NA	
Population	NA	
Intervention	NA	
Comparator	NA	
Outcomes	NA	
Other criteria for inclusion/ exclusion of studies	NA	
Search strategies	NA	
Review strategies	NA	

Equalities	Consider population subgroups: age; ethnicity and first language; verbal/non verbal; hearing ability; intellectual ability; visual ability; gender; Looked After children	

Question 3(a)

	Details	Additional comments
Review question number	3(a)	
Review question	What should be the components of the diagnostic assessment? When should they be undertaken, in which sub-groups, and in what order? • Assessment tools specific to ASD: e.g. Autism Diagnostic Interview-Revised (ADI-R), Developmental, Dimensional and Diagnostic interview (3di), Diagnostic Interview for Social and Communication Disorders (DISCO), Autism Diagnostic Observation Schedule (ADOS), Gilliam Autism Rating Scale	Assumption: all children and young people suspected of having ASD receive a basic history and hearing test. Assumption: all children and young people receive an age appropriate general history and examination during a formal ASD diagnostic assessment.
Objectives	To determine which diagnostic tools are useful in reaching a DSM-IV or ICD-10 diagnosis of Autism, Asperger's Syndrome or PDD-NOS	
Language	English	
Study design	Diagnostic accuracy studies Cohort studies (if identified) If no cohort studies are identified case-series will be used	
Status	Published studies	
Population	Children who have been identified as risk by either: Having a sign or symptoms suggestive of an ASD and/or Have failed a surveillance tool such as M-CHAT and/or Are a high risk population (eg with Fragile X, have a sibling with an ASD)	
Intervention	Autism Diagnostic Interview-Revised (ADI-R) Developmental, Dimensional and Diagnostic interview (3di)	

	Diagnostic Interview for Social and Communication Disorders (DISCO) Autism Diagnostic Observation Schedule (ADOS) Gilliam Autism Rating Scale (GARS) Combinations of the above	
Comparator	DSM or ICD diagnosis of an ASD	
Outcomes	Sensitivity and specificity of individual or combinations of diagnostic tools	
Other criteria for inclusion/ exclusion of studies	None	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 3(b)

	Details	Additional comments
Review question number	3(b)	
Review question	What should be the components of the diagnostic assessment? When should they be undertaken, in which sub-groups, and in what order? • Other assessment tools that help the interpretation of the specific ASD tools (in 3a): an assessment of intellectual ability; an assessment of receptive and expressive language etc	
Objectives	To assess the utility of supplemental assessments in interpreting the results of the diagnostic tools	
Language	English	
Study design	Diagnostic accuracy studies Cohort studies (if identified) If no cohort studies are identified case-series will be used	
Status	Published studies	
Population	Children who have been identified as having a sign or symptoms suggestive of an ASD and/or Have failed a surveillance tool such as M-CHAT and/or Are a high risk population (eg with Fragile X, sibling with an ASD etc) Subgroups: age ethnicity and first language	

	verbal/non verbal hearing ability visual ability gender social circumstances intellectual ability	
Intervention	WISC	
Comparator	DSM-IV or ICD-10 diagnosis of an ASD	
Outcomes	1. Accuracy 2. Patient / parent satisfaction	
Other criteria for inclusion/ exclusion of studies	Exclude studies that 1.include cases who have already been diagnosed 2. use a diagnosis by 'best estimate' 3. use previous versions of DSM and ICD criteria	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities. Population subgroups identified: age; ethnicity and first language; verbal/non verbal; hearing ability; visual ability; gender; social circumstances; intellectual ability	

Question 3(c)

	Details	Additional comments
Review question number	3(c)	
Review question	What should be the components of the diagnostic assessment? When should they be undertaken, in which sub-groups, and in what order? • Biomedical investigations for diagnosis of ASD e.g. EEG, brain scan, genetic tests, counselling; investigations for associated medical conditions.	
Objectives	To determine the investigations which could be carried out on a child with a DSM-IV or ICD-10 ASD to determine 1. etiology 2. co-existing conditions	
Language	English	
Study design	Prevalence studies including case-series and chart reviews	
Status	Published studies	
Population	Children who have been diagnosed with an ASD according to DSM-IV or ICD-10	
Intervention	Physical examination (Tuberous Sclerosis, Neurofibromatosis congenital anomalies, etc) Scans (MRI, EEG etc) Genetic studies (Fragile X, Karotype etc)	
Comparator	NA	
Outcomes	the number/percentage of abnormal results the number/percentage of children/young people who had a condition (potentially or actually) identified or confirmed by the biomedical	

	investigation	
Other criteria for inclusion/ exclusion of studies	Exclude studies 1. using a diagnosis by 'best estimate' 2. used previous versions of DSM and ICD criteria	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 4(a)

	Details	Additional comments
Review question number	4(a)	
Review question	What are the most important differential diagnoses of ASD?	The initial question is 'What are the most important differential diagnosis of ASD'. The GDG agreed that 'important' meant: 1) the most common differential diagnoses; 2) the most clinically significant differential diagnoses, which were those with a high impact for the child and/or family. However, since there is no standard index to reflect severity of impact, it was not possible to generate an evidence-based list of the most significant and high-impact differential diagnoses. The decision was therefore made only to review evidence for the most common differential diagnoses; expert consensus was then used to add other differential diagnoses to the list that the GDG believed were equally important.
Objectives	To identify the most common diagnoses other than ASD in the population referred for ASD grouped by the GDG into the broad categories	
Language	English	
Study design	Controlled observational study	
Status	Published studies	
Population	Children or adolescents referred for assessment of possible ASD, developmental problems, behaviour problems or a positive result on an ASD screening test.	
Intervention	These include:	

	• Mental and behavioural disorders • Neurodevelopmental conditions • Medical or neurological	
Comparator	Reference test: the final diagnosis of ASD was made according to DSM-IV or ICD-10 criteria.	
Outcomes	Prevalence of the four most common diagnoses other than ASD in the population referred for ASD grouped by the GDG into the broad categories.	
Other criteria for inclusion/ exclusion of studies	Case-control studies. Sample size < 10 In this kind of study, samples have already been diagnosed before the study started.	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 4(b)

	Details	Additional comments
Review question number	4(b)	
Review question	What features observed during diagnosis reliably differentiate other conditions from ASD?	
Objectives	To identify clinical features of differential diagnoses identified in 4(a) i.e. Speech and Language problems, Intellectual disability, Co-ordination disorder / Dyspraxia, Maltreatment, ADHD, OCD, Anxiety disorders, Depression, ODD conduct disorder, Attachment disorder, Retts Syndrome, Epilepsy.	
Language	English	
Study design	Controlled observational study	
Status	Published studies	
Population	Children or young people referred for possible ASD who receive an ASD diagnosis	
Intervention	Differentiating features observed during the diagnostic process such as IQ, language capacity, communication patterns etc.	
Comparator	Children or young people referred for possible ASD who do not receive an ASD diagnosis	
Outcomes	Differentiating features	
Other criteria for inclusion/ exclusion of studies	Case-control studies Studies with all participant have a clinical diagnosis	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009.	

	List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 5(a)

	Details	Additional comments
Review question number	5(a)	
Review question	How should information be integrated to arrive at a diagnosis? • Is the diagnostic assessment more accurate and reliable when performed by a multidisciplinary team or a single practitioner?	
Objectives	As question	
Language	English	
Study design	Randomised controlled trials Controlled observational Uncontrolled observational	
Status	Published studies	
Population	Children or young people under 19 years referred for a diagnostic assessment for ASD, or children or adolescents who had been given an ASD diagnosis where agreement between diagnostic methods was assessed.	
Intervention	Single clinician	
Comparator	Diagnostic team	
Outcomes	The agreement between single clinician and diagnostic team	While we intended to look for accuracy data we only found one study which provided agreement data so we used this
Other criteria for inclusion/ exclusion of studies	NA	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual	

	Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 5(b)

	Details	Additional comments
Review question number	5(b)	
Review question	How should information be integrated to arrive at a diagnosis? • What is the stability of an ASD diagnosis over time?	
Objectives	As question	
Language	English	
Study design	Randomised controlled trials Controlled observational Uncontrolled observational	
Status	Published studies	
Population	Pre-school children diagnosed with autism, other ASD or non-ASD according to DSM-IV or ICD-10	
Intervention	NA	
Comparator	NA	
Outcomes	Proportion of children who kept their original diagnosis at the later assessment.	
Other criteria for inclusion/ exclusion of studies	NA	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the	

	evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 5(c)

	Details	Additional comments
Review question number	5(c)	
Review question	How should information be integrated to arrive at diagnosis? • What is the agreement of an ASD diagnosis across different diagnostic tools?	After reviewing the evidence on the accuracy of diagnostic tools, it was a technical team decision not to examine the agreement between the different diagnostic tools as the accuracy data was limited.
Objectives	As question	
Language	English	
Study design	Randomised controlled trials Controlled observational Uncontrolled observational	
Status	Published studies	
Population	NA	
Intervention	NA	
Comparator	NA	
Outcomes	NA	
Other criteria for inclusion/ exclusion of studies	NA	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the	

	evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 6

	Details	Additional comments
Review question number	6	
Review question	How should the findings of the diagnostic assessment be communicated to children and young people, and their families/ carers?	
Objectives	To determine the important features of communicating a diagnosis of ASD to children/young people and their families/carers	
Language	English	
Study design	Controlled observational study Uncontrolled observational study	
Status	Published papers	
Population	(a) Children and young people diagnosed with ASD. (b) Parents/caregivers of ASD children and young people	
Outcomes	(a) 'Good' practice: ways of communication the diagnosis result that made parents feel satisfied/relieved in clinical practice. (b) 'Poor' practice: ways of communication that caused ASD families' negative emotion in clinical practice, such as agony, bewilderment, disbelieve of diagnosis result or timidity of communication with professionals. (c) Parents' expectation: Parents' expectation of how a diagnosis should be communicated to them.	
Other criteria for inclusion/ exclusion of studies	Studies without useful data Not applicable to clinical question Overview paper	

	Conducted in non-English speaking country	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009 (NICE quality checklist for qualitative studies) Evidence tables and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 7

	Details	Additional comments
Review question number	7	It was expected that no studies would be available for this questions so the GDG decided to use consensus methodology to answer this question
Review question	What actions should follow assessment for children and young people who are not immediately diagnosed with ASD?	
Objectives	As question (safety-netting)	
Language	English	
Study design	NA	
Status	NA	
Population	NA	
Intervention	NA	
Comparator	NA	
Outcomes	NA	
Other criteria for inclusion/ exclusion of studies	NA	
Search strategies	NA	
Review strategies	NA	
Equalities		

Question 8

	Details	Additional comments
Review question number	8	
Review question	Which are the common co-existing conditions that should be considered as part of assessment? • Neurodevelopmental: speech & language problems, intellectual disability, coordination, Learning difficulties in numeracy and literacy • Neuropsychiatric disorders such as ADHD, OCD, anxiety, depression, Tourette's, Tic disorders; • Medical problems such as functional gastrointestinal problems, tuberous sclerosis, neurofibromatosis	
Objectives	To identify conditions that co-exist with a DSM-IV or ICD-10 ASD	
Language	English	
Study design	Uncontrolled observational study	
Status	Published studies	
Population	Children and adolescents with a diagnosis of ASD according to DSM-IV or ICD-10 criteria	
Intervention	Coexisting conditions of ASD • Mental and behavioural disorders • Neurodevelopmental conditions • Medical or neurological conditions	
Comparator	NA	
Outcomes	Prevalence of other medical (including psychiatric) disorders in ASD population.	
Other criteria for inclusion/ exclusion of	Inappropriate study design (case control studies) Review papers without data	

studies	Fewer than 10 participants in the study.	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009. List of excluded studies will be provided following weeding. Evidence table and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 9

	Details	Additional Comments
Review question number	9	
Review question	What information do children and young people and their families/carers need during the process of referral, assessment and diagnosis of ASD?	
Objectives	To examine and determine the information that is most beneficial when provided to young people and their carers during the process of referral, assessment and possible diagnosis of ASD.	
Language	English	
Study design	Controlled observational study Uncontrolled observational study	
Status	Published papers	
Population	(a). Children and young people diagnosed with autism (b). Parents/caregivers of ASD children and young people	
Interventions and Comparisons	Information provided to ASD family.	
Outcomes	(a). 'Good' information: information that could enhance family's correct understanding of ASD, improve family's mental health status and contribute to the children's rehabilitation. (b). 'Poor' information: Information that have negative impact on family's mental health and children's rehabilitation. (c). Parents' expectation: Parents' expectation of what kind of information that should be provided to them.	
Other criteria for inclusion/exclusion of studies	Overview without data Not applicable to clinical question Conducted in non-English speaking country.	
Search strategies	See Appendix F	
Review strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009 (using GRADE for interventional studies). Evidence tables and narrative summary will be used to summarise the evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Question 10

	Details	Additional Comments
Review question number	Question 10	
Review question	What kinds of day-to-day, on-going support (not specific therapeutic interventions/ management of ASD) should be offered to children and young people and their families/carers during the process of referral, assessment and discussion of diagnosis of ASD?	
Objectives	To assess and determine the supports that are most beneficial when provided to children, young people and their carers on a day to day ongoing basis during the process of referral, assessment and discussion of diagnosis of ASD.	
Language	English	
Study Design	Controlled observational study Uncontrolled observational study	
Status	Published papers	
Population	Children, young people and their families/carers who have been referred for assessment and possible diagnosis of suspected ASD	
Interventions and Comparisons	Not applicable	
Outcomes	a). 'Good' support: support that could have positive impact on family's mental health and children's rehabilitation. b). 'Poor' support: support that have negative impact on family's mental health and children's rehabilitation. c). Parents' expectation: Parents' expectation of what kind of support that should be provided to them.	
Other criteria for inclusion/exclusion of studies	Studies not containing relevant information addressing the question. For example, a study will be excluded if it only reports general feelings, difficulties and expectations and does not contain evidence of children's, young people's and/or carer's views of specific types of support during diagnosis .	
Search strategies	See Appendix F	
Review Strategies	Studies will be assessed for study quality as per NICE guidelines manual Jan 2009 for qualitative studies. Evidence tables and narrative summary will be used to summarise the	

	evidence.	
Equalities	Separate search for children with an intellectual disability/learning disabilities	

Appendix F

Search strategies

Ovid MEDLINE(R) 1950 to August Week 1 2009
AUTISM_population_medline_170809

#	Searches	Results
1	AUTISTIC DISORDER/	11908
2	kanner.ti,ab.	103
3	(autistic or autism or asperger$).ti,ab.	12680
4	CHILD DEVELOPMENT DISORDERS, PERVASIVE/ or ASPERGER SYNDROME/	1937
5	pervasive developmental disorder$.ti,ab.	1152
6	asd.ti,ab.	3381
7	pdd.ti,ab.	1428
8	pdd-nos.ti,ab.	123
9	or/1-8	18509
10	limit 9 to yr="1990 -Current"	14512
11	limit 10 to english language	12964
12	limit 11 to humans	12212
13	letter.pt.	663009
14	comment.pt.	392943
15	or/13-14	799848
16	12 not 15	11332

AUTISM_population_cctr_170809
EBM Reviews - Cochrane Central Register of Controlled Trials 3rd Quarter 2009

#	Searches	Results
1	AUTISTIC DISORDER/	305
2	(autistic or autism).hw.	368
3	(autistic or autism or asperger$).ti,ab.	447
4	CHILD DEVELOPMENT DISORDERS, PERVASIVE/ or ASPERGER SYNDROME/	43
5	pervasive developmental disorder$.ti,ab.	39

6	(asd or pdd or pdd-nos).ti,ab.	144
7	or/1-6	590
8	limit 7 to yr="1990 -Current"	479
9	(letter or comment).pt.	5057
10	8 not 9	473

AUTISM_population_cds_dare_170809
DARE, CDSR

#	Searches	Results
1	AUTISTIC DISORDER.kw.	29
2	AUTISTIC SPECTRUM DISORDER.kw.	11
3	(autistic or autism or asperger$).tw,tx.	83
4	(pervasive$ adj2 development adj2 disorder$).tw,tx.	20
5	(asd or pdd).tw,tx.	31
6	pdd-nos.tw,tx.	6
7	or/1-6	98
8	limit 7 to last 19 years	98

AUTISM_population_embase_170809
EMBASE 1980 to 2009 Week 33

#	Searches	Results
1	exp AUTISM/	14940
2	kanner.ti,ab.	72
3	(autistic or autism or asperger$).ti,ab.	11449
4	(pervasive$ adj2 development adj2 disorder$).ti,ab.	21
5	(asd or pdd).ti,ab.	4334
6	pdd-nos.ti,ab.	124
7	or/1-6	18806
8	limit 7 to yr="1990 -Current"	16813
9	limit 8 to english language	15184

AUTISM_population_cinahl_170809_2
Cinahl 1982-

Search ID#	Search Terms	Search Options	Actions
S9	S8	- Publication Type: Book, Book Chapter, Case Study, Clinical Trial, Conference, Journal Article, Nursing Diagnoses, Practice Guidelines, Protocol, Research, Review, Systematic Review - Boolean/Phrase	View Results (5724) View Details InterfaceSearch ScreenDatabase
S8	S7	- Language: English **Search modes** - Boolean/Phrase	View Results (5739) View Details Interface
S7	S1 or S2 or S3 or S4 or S5	- Published Date from: 199001-200908 **Search modes** - Boolean/Phrase	View Results (5764) View Details Interface
S6	S1 or S2 or S3 or S4 or S5	- Boolean/Phrase	View Results (5806) View Details Interface
S5	TI (asd or pdd or pdd-nos) or AB	- Boolean/Phrase	View Results (881)

	(asd or pdd or pdd-nos)		View Details Interface
S4	TI (pervasive developmental disorder*) or AB (pervasive developmental disorder*)	- Boolean/Phrase	View Results (343) View Details Interface
S3	TI autistic or AB autistic or TI autism or AB autism or TI asperger* or AB asperger*	- Boolean/Phrase	View Results (4321) View Details Interface
S2	TI (kanner) or AB (kanner)	- Boolean/Phrase	View Results (9) View Details Interface
S1	MH AUTISTIC DISORDER+	- Boolean/Phrase	View Results (4764) View Details

PsycINFO 1967 to August Week 2 2009
AUTISM_population_psycinfo_170809

#	Searches	Results
1	AUTISM/ or PERVASIVE DEVELOPMENTAL DISORDERS/ or ASPERGERS SYNDROME/ or AUTISTIC THINKING/	15568
2	kanner.ti,ab.	164
3	(autistic or autism or asperger$).ti,ab.	18082
4	CHILDHOOD SCHIZOPHRENIA/ or CHILDHOOD PSYCHOSIS/	1442
5	childhood psychos?s.ti,ab.	271
6	pervasive developmental disorder$.ti,ab.	1649
7	asd.ti,ab.	1643

8	pdd.ti,ab.	834
9	pdd-nos.ti,ab.	158
10	or/1-9	20601
11	limit 10 to yr="1990 -Current"	15447
12	limit 11 to (human and english language)	13766
13	journal.pt.	1839225
14	and/12-13	10387

AUTISM_population_hta_170809
EBM Reviews - Health Technology Assessment 3rd Quarter 2009

#	Searches	Results
1	AUTISTIC DISORDER/	23
2	kanner.ti,ab.	0
3	(autistic or autism or asperger$).ti,ab.	23
4	CHILD DEVELOPMENT DISORDERS, PERVASIVE/ or ASPERGER SYNDROME/	2
5	pervasive developmental disorder$.ti,ab.	0
6	asd.ti,ab.	2
7	pdd.ti,ab.	0
8	pdd-nos.ti,ab.	0
9	or/1-8	23
10	limit 9 to yr="1990 -Current"	23
11	limit 10 to english language	15

AUTISM_population_nhseed_170809
EBM Reviews - NHS Economic Evaluation Database 3rd Quarter 2009

#	Searches	Results
1	AUTISTIC DISORDER/	11

2	kanner.ti,ab.	0
3	(autistic or autism or asperger$).ti,ab.	11
4	CHILD DEVELOPMENT DISORDERS, PERVASIVE/ or ASPERGER SYNDROME/	4
5	pervasive developmental disorder$.ti,ab.	3
6	asd.ti,ab.	0
7	pdd.ti,ab.	0
8	pdd-nos.ti,ab.	0
9	or/1-8	14
10	limit 9 to yr="1990 -Current"	14
11	limit 10 to english language	14

AUTISM_population_nhseed_170809
EBM Reviews - NHS Economic Evaluation Database
3rd Quarter 2009

#	Searches	Results
1	AUTISTIC DISORDER/	11
2	kanner.ti,ab.	0
3	(autistic or autism or asperger$).ti,ab.	11
4	CHILD DEVELOPMENT DISORDERS, PERVASIVE/ or ASPERGER SYNDROME/	4
5	pervasive developmental disorder$.ti,ab.	3
6	asd.ti,ab.	0
7	pdd.ti,ab.	0
8	pdd-nos.ti,ab.	0
9	or/1-8	14
10	limit 9 to yr="1990 -Current"	14
11	limit 10 to english language	14

AUTISM_population_BREI_110909

No.	Database	Search term	Results
CP		**[Clipboard]**	**0**
1	British Education Index - 1975 to date	**AUTISM#.W..DE.**	**597**
2	British Education Index - 1975 to date	**ASPERGER-SYNDROME#.DE.**	**0**
3	British Education Index - 1975 to date	**kanner.TI,AB.**	**1**
4	British Education Index - 1975 to date	**(autistic OR autism OR asperger$).TI,AB.**	**531**
5	British Education Index - 1975 to date	**(pervasive ADJ developmental ADJ disorder$).TI,AB.**	**12**
6	British Education Index - 1975 to date	**(asd OR pdd OR pdd-nos OR pddnos OR pdd ADJ nos).TI,AB.**	**15**
7	British Education Index - 1975 to date	**1 OR 2 OR 3 OR 4 OR 5 OR 6**	**638**
8	British Education Index - 1975 to date	**YEAR=2009 OR YEAR=2008 OR YEAR=2007 OR YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR**	**67504**

		YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999	
9	British Education Index - 1975 to date	**7 AND 8**	**471**
10	British Education Index - 1975 to date	**9 AND LG=ENGLISH**	**471**

AUTISM_population_AUEI_110909

No.	Database	Search term	Results
CP		**[Clipboard]**	**0**
1	Australian Education Index - 1979 to date	**AUTISM#.W..DE.**	**270**
2	Australian Education Index - 1979 to date	**ASPERGER-SYNDROME#.DE.**	**66**
3	Australian Education Index - 1979 to date	**kanner.TI,AB.**	**1**
4	Australian Education Index - 1979 to date	**(autistic OR autism OR asperger$).TI,AB.**	**292**
5	Australian Education Index - 1979 to date	**(pervasive ADJ developmental ADJ disorder$).TI,AB.**	**6**
6	Australian	**(asd OR pdd OR**	**38**

	Education Index - 1979 to date	**pdd-nos OR pddnos OR pdd ADJ nos).TI,AB.**	
7	Australian Education Index - 1979 to date	**1 OR 2 OR 3 OR 4 OR 5 OR 6**	**341**
8	Australian Education Index - 1979 to date	**YEAR=2009 OR YEAR=2008 OR YEAR=2007 OR YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999**	**74601**
9	Australian Education Index - 1979 to date	**7 AND 8**	**211**

Appendix G

Excluded studies

1. (a) What are the signs and symptoms that should prompt a health care or other professional in any context to think of ASD?

1. (b) When should a child or young person be referred for diagnostic assessment?

2. In children with suspected ASD (based on signs and symptoms) what information assists in the decision to refer for a formal ASD diagnostic assessment?

(a) Are there screening instruments that are effective in assessing the need for a specialist ASD assessment?

(b) What information about the child and family increases the likelihood of a diagnosis of ASD and would assist in the decision to refer for a formal ASD diagnostic assessment?

part 1: General risk factors

part 2: Risk of ASD in co-existing conditions

(c) Information from other sources as contextual information: information about how the child functions in different environments such as school and home; social care reports (i.e. 'Looked After' children); other agencies

3. What should be the components of the diagnostic assessment? When should they be undertaken, in which sub-groups, and in what order?

(a) Assessment tools specific to ASD: e.g. Autism Diagnostic Interview-Revised (ADI-R), Developmental, Dimensional and Diagnostic interview (3di), Diagnostic Interview for Social and Communication Disorders (DISCO), Autism Diagnostic Observation Schedule (ADOS), Gilliam Autism Rating Scale

(b) Other assessment tools that help the interpretation of the specific ASD tools (in 3a): an assessment of intellectual ability; an assessment of receptive and expressive language etc

(c) Biomedical investigations for diagnosis of ASD e.g. EEG, brain scan, genetic tests, counselling; investigations for associated medical conditions

4. (a) What are the most important differential diagnoses of ASD?

4. (b) What features observed during diagnosis reliably differentiate other conditions from ASD?

5. How should information be integrated to arrive at a diagnosis:

(a) Is the diagnostic assessment more accurate and reliable when performed by a multidisciplinary team or a single practitioner?

(b) What is the stability of an ASD diagnosis over time?

(c) What is the agreement of an ASD diagnosis across different diagnostic tools?

6. How should the findings of the diagnostic assessment be communicated to children and young people, and their families/ carers?

7. What actions should follow assessment for children and young people who are not immediately diagnosed with ASD?

8. Which are the common co-existing conditions that should be considered as part of assessment?

9. What information do children and young people and their families/carers need during the process of referral, assessment and diagnosis of ASD?

10. What kinds of day-to-day, on-going support (not specific therapeutic interventions/ management of ASD) should be offered to children and young people and their families/carers during the process of referral, assessment and discussion of diagnosis of ASD?

Question 1

	REFERENCE	REASON FOR EXCLUSION
1.	Adams C, Green J, Gilchrist A et al. Conversational behaviour of children with Asperger syndrome and conduct disorder. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(5)679-90.	Population: No typically-developing control group
2.	Adrien JL, Perrot A, Sauvage D et al. Early symptoms in autism from family home movies. Evaluation and comparison between 1st and 2nd year of life using I.B.S.E. scale. Acta Paedopsychiatrica 1992; 55:(2)71-5.	Diagnosis: Diagnostic criteria not used
3.	Ahn RR, Miller LJ, Milberger S et al. Prevalence of parents' perceptions of sensory processing disorders among kindergarten children. American Journal of Occupational Therapy 2004; 58:(3)287-93.	Study is about the use of a sensory screening tool I a general population sample
4.	Ahsgren I, Baldwin I, Goetzinger-Falk C et al. Ataxia, autism, and the cerebellum: A clinical study of 32 individuals with congenital ataxia. Developmental Medicine and Child Neurology 2005; 47:(3)-198.	Study included children diagnosed with ataxia or borderline ataxia.
5.	Allen DA, Steinberg M, Dunn M et al. Autistic disorder versus other pervasive developmental disorders in young children: same or different? European Child & Adolescent Psychiatry 2001; 10:(1)67-78.	Population: No typically-developing control group No data for signs and symptoms of interest.
6.	Al-Salehi SM, Al-Hifthy EH, and Ghaziuddin M. Autism in Saudi Arabia: Presentation, clinical correlates and comorbidity. Transcultural Psychiatry 2009; 46:(2)340-7.	Population: No typically-developing control group
7.	Anckarsater H, Nilsson T, Saury JM et al. Autism spectrum disorders in institutionalized subjects. Nordic Journal of Psychiatry 2008; 62:(2)160-7.	Population: No typically developing controls
8.	Anckarsater H, Nilsson T, Stahlberg O et al. Prevalences and configurations of mental disorders among institutionalized adolescents. Developmental neurorehabilitation 2007; 10:(1)57-65.	Population: No typically developing controls
9.	Anderson A, Moore DW, Godfrey R et al. Social skills assessment of children with autism in free-play situations. Autism: The International Journal of Research & Practice 2004; 8:(4)369-85.	Population: No typically developing control group Diagnosis: No diagnostic criteria used
10.	Aguilera JA, Moreno PF, and Rodriguez OI. Prevalence estimates of autism spectrum disorder in the school population of Seville, Spain. British Journal of Developmental Disabilities 2007; 53:(2)97-109.	Study about the prevalence of ASD in the school population of Seville, Spain.
11.	Baghdadli A, Picot MC, Pascal C et al. Relationship between age of recognition of first disturbances and severity in young children with autism. European Child and Adolescent Psychiatry 2003; 12:(3)122-7.	Population: No typically-developing control group
12.	Baird G, Charman T, and Santosh PJ. Clinical considerations in the diagnosis of autism spectrum disorders. Indian Journal of Pediatrics 2001; 68:(5)439-49.	Review paper about various factors to be considered in the screening/diagnosis of autism.
13.	Baird G, Simonoff E, Pickles A et al. Prevalence of disorders of the autism spectrum in a population cohort	No data for signs and symptoms of

	of children in South Thames: the Special Needs and Autism Project (SNAP). Lancet 2006; 368:(9531)210-5.	interest.
14.	Baker HC. A Comparison Study of Autism Spectrum Disorder Referrals 1997 and 1989. Journal of autism and developmental disorders 2002; 32:(2)121-5.	No data on signs and symptoms of interest
15.	Barbaresi WJ, Katusic SK, Colligan RC et al. The incidence of autism in Olmsted County, Minnesota, 1976-1997: results from a population-based study. Archives of Pediatrics & Adolescent Medicine 2005; 159:(1)37-44.	No data for signs and symptoms of interest.
16.	Barbaro J and Dissanayake C. Prospective identification of autism spectrum disorders in infancy and toddlerhood using developmental surveillance: The Social Attention and Communication Study. Journal of Developmental and Behavioral Pediatrics 2010; 31:(5)376-85.	Population: No typically-developing control group
17.	Barnhill G, Hagiwara T, Myles B et al. Parent, Teacher, and Self-Report of Problem and Adaptive Behaviors in Children and Adolescents with Asperger Syndrome. Diagnostique 2000; 25:(2)147-67.	Population: No typically-developing control group
18.	Beadle-Brown J, Murphy G, and Wing L. The Camberwell Cohort 25 Years On: Characteristics and Changes in Skills Over Time. Journal of Applied Research in Intellectual Disabilities 2006; 19:(4)317-29.	No data on signs and symptoms of interest
19.	Beadle B, Murphy G, and DiTerlizzi M. Quality of Life for the Camberwell Cohort. Journal of Applied Research in Intellectual Disabilities 2009; 22:(4)11-390.	No data on signs and symptoms of interest
20.	Beauchesne MA and Kelley BR. Evidence to support parental concerns as an early indicator of autism in children. Pediatric Nursing 2004; 30:(1)57-67.	Review paper about early indicators of autism
21.	Begeer S, Banerjee R, Lunenburg P et al. Brief report: Self-presentation of children with autism spectrum disorders. Journal of autism and developmental disorders 2008; 38:(6)1187-91.	Insufficient data to calculate sensitivity or specificity of signs and symptoms.
22.	Ben-Sasson A, Hen L, Fluss R et al. A meta-analysis of sensory modulation symptoms in individuals with autism spectrum disorders. Journal of autism and developmental disorders 2009; 39:(1)1-11.	Insufficient data to calculate sensitivity or specificity of signs and symptoms. Diagnosis: No diagnostic criteria used
23.	Bernard-Opitz V, Kwook K, and Sapuan S. Epidemiology of autism in Singapore: findings of the first autism survey. International Journal of Rehabilitation Research 2001; 24:(1)1-6.	Population: No typically-developing control group
24.	Bhasin TK, Brocksen S, Avchen RN et al. Prevalence of four developmental disabilities among children aged 8 years -- Metropolitan Atlanta Developmental Disabilities Surveillance Program, 1996 and 2000. MMWR: Morbidity & Mortality Weekly Report 2006; 55:(SS-1)1-9.	Does not provide data on ASD
25.	Bishop DVM and Norbury CF. Exploring the borderlands of autistic disorder and specific language impairment: A study using standardised diagnostic instruments. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(7)917-29.	No diagnostic criteria – results of index test were used to make a diagnosis
26.	Bishop DVM, Maybery M, Wong D et al. Are phonological processing deficits part of the broad autism	No data on signs and symptoms of

	phenotype? American Journal of Medical Genetics - Neuropsychiatric Genetics 2004; 128 B:(1)54-Neuropsychiatric.	interest Diagnosis: inappropriate diagnostic criteria—ADI-R has been used.
27.	Bishop S, Gahagan S, and Lord C. Re-examining the core features of autism: A comparison of autism spectrum disorder and fetal alcohol spectrum disorder. Journal of Child Psychology and Psychiatry and Allied Disciplines 2007; 48:(11)1111-21.	Population: Study included children with ASD or Fetal-alcohol syndrome No typically-developing control group
28.	Bohm HV and Stewart MG. Brief report: On the concordance percentages for autistic spectrum disorder of Twins. Journal of autism and developmental disorders 2009; 39:(5)806-8.	No data on signs and symptoms of interest
29.	Bolte S, Dickhut H, and Poustka F. Patterns of parent-reported problems indicative in autism. Psychopathology 1999; 32:(2)93-7.	Diagnostic criteria: Inappropriate diagnostic criteria used – German form of ADI-R
30.	Boomsma A, Van Lang N, de Jonge M et al. A new symptom model for autism cross-validated in an independent sample. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(8)809-16.	Population. Study only included children diagnosed with ASD No typically-developing control group
31.	Botting N and Conti-Ramsden G. Autism, primary pragmatic difficulties, and specific language impairment: can we distinguish them using psycholinguistic markers? Developmental Medicine & Child Neurology 2003; 45:(8)515-24.	Population: No typically-developing control group Diagnosis: No diagnostic criteria used
32.	Bracha HS, Livingston R, Dykman K et al. An automated electronic method for quantifying spinning (circling) in children with autistic disorder. Journal of Neuropsychiatry and Clinical Neurosciences 1995; 7:(2)213-7.	Unable to calculate sensitivity or specificity of sign and symptoms of interest
33.	Branson D, Vigil DC, and Bingham A. Community childcare providers' role in the early detection of autism spectrum disorders. Early Childhood Education Journal 2008; 35:(6)523-30.	Review paper about the role of community childcare providers in the early detecting of ASD.
34.	Sinzig J, Bruning N, Morsch D et al. Attention profiles in autistic children with and without comorbid hyperactivity and attention problems. Acta Neuropsychiatrica 2008; #20:(4)-215.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest.
35.	Camaioni L, Perucchini P, Muratori F et al. Brief report: a longitudinal examination of the communicative gestures deficit in young children with autism. Journal of Autism & Developmental Disorders 1997; 27:(6)715-25.	Sample less than 10. Population: No typically-developing control group
36.	Capps L, Kehres J, and Sigman M. Conversational abilities among children with autism and children with developmental delays. Autism 1998; 2:(4)325-44.	Population: Study only recruited children diagnosed with ASD or developmental delay. No typically-developing control group
37.	Cederlund M and Gillberg C. One hundred males with Asperger syndrome: A clinical study of background	Population. No typically-developing

	and associated factors. Developmental Medicine and Child Neurology 2004; 46:(10)652-60.	control group
38.	Chakrabarti S, Haubus C, Dugmore S et al. A model of early detection and diagnosis of autism spectrum disorder in young children. Infants & Young Children: An Interdisciplinary Journal of Special Care Practices 2005; 18:(3)200-11.	This study describes a model of early detection and diagnosis of ASD. No data on signs and symptoms of interest
39.	Chakrabarti S. Early identification of autism. Indian Pediatrics 2009; 46:(5)412-4.	Population: No typically-developing control group
40.	Charman T. Why is joint attention a pivotal skill in autism? Philosophical Transactions of the Royal Society of London - Series B: Biological Sciences 2003; 358:(1430)315-24.	Screening instruments of interest not used
41.	Charman T, Swettenham J, Baron-Cohen S et al. An experimental investigation of social-cognitive abilities in infants with autism: Clinical implications. Infant Mental Health Journal 1998; 19:(2)260-75.	Population: Stud included children referred for possible ASD with resultant group of ASD, PDD-NOS and development delay. No typically developing control group
42.	Chawarska K, Klin A, and Volkmar F. Automatic attention cueing through eye movement in 2-year-old children with autism. Child Development 2003; 74:(4)1108-22.	Diagnostic criteria: Inappropriate diagnostic criteria used – clinical judgement + ADOS Insufficient data to work out sensitivity or specificity for signs and symptoms of interest.
43.	Chawarska K, Paul R, Klin A et al. Parental recognition of developmental problems in toddlers with autism spectrum disorders. Journal of autism and developmental disorders 2007; 37:(1)62-72.	Population: No typically-developing control group Diagnostic criteria: Did not use DSM or ICD to diagnose ASD
44.	Chiang CH, Soong WT, Lin TL et al. Nonverbal communication skills in young children with autism. Journal of autism and developmental disorders 2008; 38:(10)1898-906.	Insufficient data to calculate sensitivity and specificity of signs and symptoms of interest
45.	Chiu S, Wegelin JA, Blank J et al. Early acceleration of head circumference in children with fragile X syndrome and autism. Journal of Developmental and Behavioral Pediatrics 2007; 28:(1)31-5.	Population: Not all children with ASD were diagnosed using DSM criteria
46.	Christopher JA, Sears LL, Williams PG et al. Familial, medical and developmental patterns of children with autism and a history of language regression. Journal of Developmental and Physical Disabilities 2004; 16:(2)163-70.	Population: Study included children with ASD No typically-developing control group
47.	Chung SY, Luk SL, and Lee PWH. A follow-up study of infantile autism in Hong Kong. Journal of autism and developmental disorders 1990; 20:(2)221-32.	Diagnosis: Specified diagnostic criteiria not used

48.	Or SM and Dissanayake C. The early development of joint attention in infants with autistic disorder using home video observations and parental interview. Journal of Autism & Developmental Disorders 2008; 38:(5)791-805.	Population: No typically-developing control group
49.	Clifford S, Young R, and Williamson P. Assessing the early characteristics of autistic disorder using video analysis. Journal of autism and developmental disorders 2007; 37:(2)301-13.	Insufficient data to calculate signs and symptoms of interest
50.	Colgan SE, Lanter E, McComish C et al. Analysis of social interaction gestures in infants with autism. Child Neuropsychology 2006; 12:(4-5)307-5.	Population: No typically developing control group
51.	Constantino JN, Gruber CP, Davis S et al. The factor structure of autistic traits. Journal of Child Psychology and Psychiatry and Allied Disciplines 2004; 45:(4)719-26.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest
52.	Constantino JN, Lajonchere C, Lutz M et al. Autistic social impairment in the siblings of children with pervasive developmental disorders. American Journal of Psychiatry 2006; 163:(2)294-6.	Population: No typically-developing control group Diagnosis: inappropriate diagnostic criteria—ADI-R has been used
53.	Conti-Ramsden G, Botting N, Simkin Z et al. Follow-up of children attending infant language units: Outcomes at 11 years of age. International Journal of Language and Communication Disorders 2001; 36:(2)-219.	No data for signs and symptoms of interest.
54.	Coonrod EE and Stone WL. Early concerns of parents of children with autistic and nonautistic disorders. Infants & Young Children: An Interdisciplinary Journal of Special Care Practices 2004; 17:(3)258-68.	Population: No typically-developing control group
55.	Courchesne E, Redcay E, and Kennedy DP. The autistic brain: Birth through adulthood. Current Opinion in Neurology 2004; 17:(4)489-96.	Overview of brain development in the first years of life in autism.
56.	Croen LA, Grether JK, and Selvin S. Descriptive epidemiology of autism in a California population: who is at risk? Journal of Autism & Developmental Disorders 2002; 32:(3)217.	No data on signs and symptoms of interest.
57.	Cuccaro ML, Brinkley J, Abramson RK et al. Autism in African American families: Clinical-phenotypic findings. American Journal of Medical Genetics, Part B: Neuropsychiatric Genetics 2007; 144:(8)1022-6.	Population: No typically-developing control group
58.	Daley TC. From symptom recognition to diagnosis: children with autism in urban India. Social Science & Medicine 2004; 58:(7)1323-35.	Population: No typically-developing control group
59.	Davidovitch M, Patterson B, and Gartside P. Head circumference measurements in children with autism. Journal of Child Neurology 1996; 11:(5)389-93.	Population: No typically-developing control group
60.	Davidovitch M, Glick L, Holtzman G et al. Developmental regression in autism: maternal perception. Journal of Autism & Developmental Disorders 2000; 30:(2)113.	Population: No typically-developing control group
61.	Dawson G, Hill D, Spencer A et al. Affective exchanges between young autistic children and their mothers. Journal of Abnormal Child Psychology 1990; 18:(3)335-45.	Diagnosis – Unclear what diagnostic criteria were used
62.	Dawson G, Meltzoff AN, Osterling J et al. Children with autism fail to orient to naturally occurring social	Insufficient data to calculate signs and

	stimuli. Journal of Autism & Developmental Disorders 1998; 28:(6)479-85.	symptoms of interest
63.	Dawson G, Munson J, Webb SJ et al. Rate of Head Growth Decelerates and Symptoms Worsen in the Second Year of Life in Autism. Biological Psychiatry 2007; 61:(4)458-64.	Population: No typically-developing control group
64.	De Giacomo A and Fombonne E. Parental recognition of developmental abnormalities in autism. European Child & Adolescent Psychiatry 1998; 7:(3)131-6.	Population: No typically-developing control group
65.	De Jong M, Punt M, De Groot E et al. Symptom diagnostics based on clinical records : AA tool for scientific research in child psychiatry? European Child and Adolescent Psychiatry 2009; 18:(5)257-64.	No data for signs and symptoms of interest.
66.	De Negri M, Zanotto E, and Baglietto MG. Behavioural patterns in infantile autism: A contribution to the debate on a unitary syndrome. Developmental Brain Dysfunction 1994; 7:(2-3)110-3.	Population: No typically-developing control group
67.	Degangi GA, Breinbauer C, Doussard Roosevelt J et al. Prediction of childhood problems at three years in children experiencing disorders of regulation during infancy. Infant Mental Health Journal 2000; 21:(3)156-75.	Insufficient data to calculate signs and symptoms of interest
68.	Delinicolas EK and Young RL. Joint attention, language, social relating, and stereotypical behaviours in children with autistic disorder. Autism 2007; 11:(5)425-36.	Population: No typically-developing control group
69.	Desombre H, Malvy J, Roux S et al. Autism and developmental delay: a comparative clinical study in very young children using IBSE scale. European Child & Adolescent Psychiatry 2006; 15:(6)343-51.	Population: No typically-developing control group
70.	Dhossche DM. Autism as early expression of catatonia. Medical Science Monitor 2004; 10:(3)RA31-RA39.	Systematic review about the relation and overlap between autism and catatonia.
71.	Dihoff RE, Hetznecker W, Brosvic GM et al. Ordinal measurement of autistic behavior: A preliminary report. Bulletin of the Psychonomic Society 1993; 31:(4)287-90.	Population: No typically-developing control group
72.	Dissanayake C, Bui QM, Huggins R et al. Growth in stature and head circumference in high-functioning autism and Asperger disorder during the first 3 years of life. Development and Psychopathology 2006; 18:(2)381-93.	Insufficient data to work out sensitivity or specificity.
73.	Dissanayake C, Bui Q, Bulhak P et al. Behavioural and Cognitive Phenotypes in Idiopathic Autism versus Autism Associated with Fragile X Syndrome. Journal of Child Psychology and Psychiatry 2009; 50:(3)290-9.	Population: No typically-developing control group
74.	Dominick KC, Davis NO, Lainhart J et al. Atypical behaviors in children with autism and children with a history of language impairment. Research in Developmental Disabilities 2007; 28:(2)145-62.	Population: No typically-developing control group
75.	Dworzynski K, Ronald A, Hayiou-Thomas M et al. Aetiological relationship between language performance and autistic-like traits in childhood: A twin study. International Journal of Language and Communication Disorders 2007; 42:(3)273-92.	Diagnosis: inappropriate diagnostic criteria has been used--CAST
76.	Dworzynski K, Ronald A, Hayiou-Thomas ME et al. Developmental path between language and autistic-like impairments: a twin study. Infant & Child Development 2008; 17:(2)121-36.	No data on signs or symptoms of interest
77.	Dworzynski K, Happe F, Bolton P et al. Relationship between symptom domains in autism spectrum	Population: No typically-developing

	disorders: a population based twin study. Journal of Autism & Developmental Disorders 2009; 39:(8)1197-210.	control group
78.	Dyck MJ, Piek JP, Hay D et al. Are abilities abnormally interdependent in children with autism? Journal of Clinical Child and Adolescent Psychology 2006; 35:(1)20-33.	Insufficient data to calculate sensitivity and specificity of signs and symptoms
79.	Eaves LC, Ho HH, and Eaves DM. Subtypes of autism by cluster analysis. Journal of autism and developmental disorders 1994; 24:(1)3-22.	Population: No typically-developing control group
80.	Ehlers S, Nyden A, Gillberg C et al. Asperger syndrome, autism and attention disorders: A comparative study of the cognitive profiles of 120 children. Journal of Child Psychology and Psychiatry and Allied Disciplines 1997; 38:(2)-217.	Study only included children with ASD, Asperger syndrome or DAMP No typically developing control group
81.	Eisenmajer R, Prior M, Leekam S et al. Comparison of clinical symptoms in autism and Asperger's disorder. Journal of the American Academy of Child and Adolescent Psychiatry 1996; 35:(11)1523-31.	Population: No typically-developing control group
82.	Eisenmajer R, Prior M, Leekam S et al. Delayed language onset as a predictor of clinical symptoms in pervasive developmental disorders. Journal of autism and developmental disorders 1998; 28:(6)527-33.	Population: No typically-developing control group
83.	Elder LM, Dawson G, Toth K et al. Head circumference as an early predictor of autism symptoms in younger siblings of children with autism spectrum disorder. Journal of autism and developmental disorders 2008; 38:(6)1104-11.	Insufficient data to calculate sensitivity and specificity of signs and symptoms
84.	Esposito G and Venuti P. Analysis of toddlers' gait after six months of independent walking to identify autism: a preliminary study. Perceptual & Motor Skills 2008; 106:(1)259-69.	Insufficient data to calculate sensitivity or specificity of signs and symptoms of interest
85.	Farmer JE and Clark MJ. Identification and evaluation of Missouri's children with autism spectrum disorders: promoting a rapid response. Missouri Medicine 2008; 105:(5)384-9.	Review paper about identification and evaluation of ASD in children
86.	Fine J, Bartolucci G, Szatmari P et al. Cohesive discourse in pervasive developmental disorders. Journal of autism and developmental disorders 1994; 24:(3)315-29.	No data on signs and symptoms of interest. Diagnostic criteria: Inappropriate diagnostic criteria used – DSM-III
87.	Fombonne E, Roge B, Claverie J et al. Microcephaly and Macrocephaly in Autism. Journal of Autism & Developmental Disorders 1999; 29:(2)113-9.	Population: No typically-developing control group
88.	Fombonne E. Epidemiological surveys of autism and other pervasive developmental disorders: an update. Journal of Autism & Developmental Disorders 2003; 33:(4)365.	no data on signs and symptoms of interest.
89.	Frohna JG. Failure to respond to name is indicator of possible autism spectrum disorder. Journal of Pediatrics 2007; 151:(3)327-8	Summary of a primary report of an included study
90.	Gardenier NC, Macdonald R, and Green G. Comparison of direct observational methods for measuring stereotypic behavior in children with autism spectrum disorders. Research in Developmental Disabilities 2004; 25:(2)99-118.	Population: No typically-developing control group

91.	Garon N, Bryson SE, Zwaigenbaum L et al. Temperament and its relationship to autistic symptoms in a high-risk infant sib cohort. Journal of Abnormal Child Psychology 2009; 37:(1)59-78.	No data for signs and symptoms of interest.
92.	Ghaziuddin M, Tsai LY, and Ghaziuddin N. Brief report: A reappraisal of clumsiness as a diagnostic feature of Asperger syndrome. Journal of autism and developmental disorders 1992; 22:(4)651-6.	Review paper about the use of clumsiness as a diagnostic feature of Asperger syndrome.
93.	Giannotti F, Cortesi F, Cerquiglini A et al. An investigation of sleep characteristics, EEG abnormalities and epilepsy in developmentally regressed and non-regressed children with autism. Journal of autism and developmental disorders 2008; 38:(10)1888-97.	No data for signs and symptoms of interest.
94.	Gillberg C and Cederlund M. Asperger syndrome: familial and pre- and perinatal factors. Journal of Autism & Developmental Disorders 2005; 35:(2)159-66.	Population: No typically-developing control group
95.	Gillberg C, Ehlers S, Schaumann H et al. Autism under age 3 years: A clinical study of 28 cases referred for autistic symptoms in infancy. Journal of Child Psychology and Psychiatry and Allied Disciplines 1990; 31:(6)921-34.	Population: No typically-developing control group Diagnosis: inappropriate diagnostic criteria—DSM-III-R has been used
96.	Goin-Kochel RP, Peters SU, and Treadwell-Deering D. Parental reports on the prevalence of co-occurring intellectual disability among children with autism spectrum disorders. Research in Autism Spectrum Disorders 2008; 2:(3)546-56.	Diagnosis: Study does not specify diagnostic criteria used
97.	Goldsmith HH, Lemery-Chalfant K, Schmidt NL et al. Longitudinal analyses of affect, temperament, and childhood psychopathology. Twin Research and Human Genetics 2007; 10:(1)118-26.	No data on signs and symptoms of ASD
98.	Gomez CR and Baird S. Identifying Early Indicators for Autism in Self-Regulation Difficulties. Focus on Autism and Other Developmental Disabilities 2005; 20:(2)106-16.	Unable to calculate sensitivity or specificity of signs and symptoms of interest
99.	Goodman R and Simonoff E. Reliability of clinical ratings by trainee child psychiatrists: a research note. Journal of Child Psychology and Psychiatry and Allied Disciplines 1991; 32:(3)551-5.	No data for signs and symptoms of interest.
100.	Grigorenko EL, Klin A, Pauls DL et al. A descriptive study of hyperlexia in a clinically referred sample of children with developmental delays. Journal of Autism & Developmental Disorders 2002; 32:(1)3-12.	Insufficient data to calculate sensitivity and specificity of signs and symptoms
101.	Grinter EJ, Van Beek PL, Maybery MT et al. Brief report: visuospatial analysis and self-rated autistic-like traits. Journal of Autism & Developmental Disorders 2009; 39:(4)670-7.	No data on signs and symptoms of interest
102.	Gritti A, Bove D, Di Sarno A et al. Stereotyped movements in a group of autistic children. Functional Neurology 2003; 18:(2)89-94.	Population: No typically-developing control group
103.	Grizenko N, Cvejic H, Vida S et al. Behaviour problems of the mentally retarded. Canadian Journal of Psychiatry 1991; 36:(10)712-7.	Population: No typically-developing control group
104.	Hepburn SL, DiGuiseppi C, Rosenberg S et al. Use of a teacher nomination strategy to screen for autism	No ASD diagnostic assessment used

	spectrum disorders in general education classrooms: a pilot study. Journal of Autism & Developmental Disorders 2008; 38:(2)373-82.	No data for signs and symptoms of interest.
105.	Ho PT, Keller JL, Berg AL et al. Pervasive developmental delay in children presenting as possible hearing loss. Laryngoscope 1999; 109:(1)129-35.	Population: Study included children referred for hearing loss and subsequently diagnosed as ASD. No data on signs and symptoms of interest
106.	Holtmann M, Bolte S, and Poustka F. Autism spectrum disorders: Sex differences in autistic behaviour domains and coexisting psychopathology. Developmental Medicine and Child Neurology 2007; 49:(5)361-6.	Insufficient data to calculate sensitivity and specificity of signs and symptoms of interest.
107.	Holzer L, Mihailescu R, Rodrigues-Degaeff C et al. Community introduction of practice parameters for autistic spectrum disorders: Advancing early recognition. Journal of autism and developmental disorders 2006; 36:(2)249-62.	No outcome data on signs and symptoms
108.	Honey E, Leekam S, Turner M et al. Repetitive behaviour and play in typically developing children and children with autism spectrum disorders. Journal of Autism & Developmental Disorders 2007; 37:(6)1107-15.	Diagnostic criteria: Not stated if DSM or ICD were used to make a diagnosis of ASD
109.	Honey E, McConachie H, Randle V et al. One-year change in repetitive behaviours in young children with communication disorders including autism. Journal of autism and developmental disorders 2008; 38:(8)1439-50.	Population: No typically-developing control group Diagnostic criteria: Did not use DSM or ICD to diagnose ASD
110.	Humphries J. Early detection of handicapping conditions. Autism: recognising the signs in young children. Professional Care of Mother & Child 1998; 8:(5)127-30.	Review paper of signs and symptoms of ASD in young children
111.	Inglese MD and Elder JH. Caring for children with autism spectrum disorder. Part I: prevalence, etiology, and core features. Journal of Pediatric Nursing 2009; 24:(1)41-8.	Review of prevalence, aetiology and core features of ASD.
112.	James PJ and Tager-Flusberg H. An observational study of humor in autism and Down syndrome. Journal of autism and developmental disorders 1994; 24:(5)603-17.	No data on signs and symptoms of interest. Diagnostic criteria: Inappropriate diagnostic criteria used – DSM-III-R
113.	Jones W, Carr K, and Klin A. Absence of preferential looking to the eyes of approaching adults predicts level of social disability in 2-year-old toddlers with autism spectrum disorder. Archives of General Psychiatry 2008; 65:(8)946-54.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest. Diagnosis: No diagnostic criteria used
114.	Joseph RM, Tager-Flusberg H, and Lord C. Cognitive profiles and social-communicative functioning in	Population. Study included children with

	children with autism spectrum disorder. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(6)807-21.	ASD No typically-developing control group
115.	Juneja M, Mukherjee SB, and Sharma S. A descriptive hospital based study of children with autism. Indian Pediatrics 2005; 42:(5)453-8.	Population: Study only recruited children diagnosed with ASD. No typically-developing control group .
116.	Kamp-Becker I, Ghahreman M, Smidt J et al. Dimensional structure of the autism phenotype: Relations between early development and current presentation. Journal of autism and developmental disorders 2009; 39:(4)557-71.	No data on signs and symptoms of interest.
117.	Keen D. The use of non-verbal repair strategies by children with autism. Research in Developmental Disabilities 2005; 26:(3)243-54.	Population: No typically-developing control group
118.	Klin A. Attributing social meaning to ambiguous visual stimuli in higher-functioning Autism and Asperger syndrome: The social attribution task. Journal of Child Psychology and Psychiatry and Allied Disciplines 2000; 41:(7)831-46.	No data for signs and symptoms of interest. Sample included adults. Mean age: 20.5 y.
119.	Knott F, Dunlop AW, and MacKay T. Living with ASD. Autism 2006; 10:(6)609-17.	Population: No typically-developing control group Diagnosis: No diagnostic criteria used
120.	Konno Y. Behavioral and Movement Characteristics of Children With Autism or Attention Deficit Hyperactive Disorder. Japanese Journal of Special Education 2005; 42:(6)467-81.	Population: No typically-developing control group
121.	Koyama T, Tachimori H, Osada H et al. Cognitive and symptom profiles in Asperger's syndrome and high-functioning autism. Psychiatry and Clinical Neurosciences 2007; 61:(1)99-104.	Population: No typically developing control group Diagnostic criteria: inappropriate diagnostic criteria has been used—CARS-Tokyo version.
122.	Kunihira Y, Senju A, Dairoku H et al. "Autistic" Traits in Non-Autistic Japanese Populations: Relationships with Personality Traits and Cognitive Ability. Journal of autism and developmental disorders 2006; 36:(4)14-566.	Population: Study included only adults
123.	Lam KS, Bodfish JW, and Piven J. Evidence for three subtypes of repetitive behavior in autism that differ in familiality and association with other symptoms. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(11)1193-200.	Population: No typically developing control group
124.	Landa RJ, Holman KC, and Garrett-Mayer E. Social and communication development in toddlers with early and later diagnosis of autism spectrum disorders. Archives of General Psychiatry 2007; 64:(7)853-64.	Population: No typically developing control group
125.	Leekam S, Tandos J, McConachie H et al. Repetitive behaviours in typically developing 2-year-olds. Journal of Child Psychology and Psychiatry and Allied Disciplines 2007; 48:(11)1131-8.	No data on sensitivity or specificity of signs and symptoms
126.	Limperopoulos C, Bassan H, Sullivan NR et al. Positive screening for autism in ex-preterm infants:	Study on risk factors for a positive –M-

	prevalence and risk factors. Pediatrics 2008; 121:(4)758-65.	CHAT No data on signs and symptoms of ASD No data on eventual diagnosis
127.	Liss M, Saulnier C, Fein D et al. Sensory and attention abnormalities in autistic spectrum disorders. Autism 2006; 10:(2)155-72.	Population: No typically developing control group
128.	Lord C, Shulman C, and DiLavore P. Regression and word loss in autistic spectrum disorders. Journal of Child Psychology and Psychiatry and Allied Disciplines 2004; 45:(5)936-55.	No diagnostic criteria – results of index test were used to make a 'best estimate' consensus diagnosis
129.	Losche G. Sensorimotor and action development in autistic children from infancy to early childhood. Journal of Child Psychology and Psychiatry and Allied Disciplines 1990; 31:(5)749-61.	Incomplete data for sign and symptoms of interest.
130.	Magnusson M, Rasmussen F, and Sundelin C. Early identification of children with communication disabilities--evaluation of a screening programme in a Swedish county. Acta Paediatrica 1996; 85:(11)1319-26.	Study included subjects with a range of developmental problems not autism
131.	Malhi P and Singhi P. Recognition of autism in young children. Studia Psychologica 2003; 45:(1)75-80.	Population: No typically developing control group
132.	Malvy J, Roux S, Zakian A et al. A brief clinical scale for the early evaluation of imitation disorders in autism. Autism 1999; 3:(4)357-69.	Population: No typically developing control group
133.	Malvy J, Barthelemy C, Damie D et al. Behaviour profiles in a population of infants later diagnosed as having autistic disorder. European Child and Adolescent Psychiatry 2004; 13:(2)115-22.	No data on signs and symptoms of interest
134.	Mandell DS, Novak MM, and Zubritsky CD. Factors associated with age of diagnosis among children with autism spectrum disorders. Pediatrics 2005; 116:(6)1480-6.	Population: No typically developing control group
135.	Mandell DS, Wiggins LD, Carpenter LA et al. Racial/ethnic disparities in the identification of children with autism spectrum disorders. American Journal of Public Health 2009; 99:(3)493-8.	Population: No typically developing control group
136.	Manjiviona J and Prior M. Neuropsychological profiles of children with Asperger syndrome and autism. Autism 1999; 3:(4)327-56.	Population: No typically developing control group
137.	Matsuishi T, Yamashita Y, Ohtani Y et al. Brief report: incidence of and risk factors for autistic disorder in neonatal intensive care unit survivors. Journal of Autism & Developmental Disorders 1999; 29:(2)161-6.	No data on signs and symptoms of interest
138.	Mayes SD and Calhoun SL. Symptoms of Autism in Young Children and Correspondence with the DSM. Infants & Young Children: An Interdisciplinary Journal of Special Care Practices 1999; 12:(2)90.	Population: No typically-developing control group
139.	Mayes SD and Calhoun SL. Non-significance of early speech delay in children with autism and normal intelligence and implications for DSM-IV Asperger's disorder. Autism 2001; 5:(1)81-94.	Population: No typically-developing control group
140.	McConkey R, Truesdale-Kennedy M, and Cassidy A. Mothers' recollections of early features of autism spectrum disorders. Child and Adolescent Mental Health 2009; 14:(1)31-6.	Population: No typically-developing control group

		Diagnosis: no diagnostic criteria
141.	Menezes CG and Perissinoto J. Joint attention ability in children with autistic spectrum disorders. Profono 2008; 20:(4)273-9.	Population:No typically-developing control group
142.	Estes AM, Dawson G, Sterling L et al. Level of intellectual functioning predicts patterns of associated symptoms in school-age children with autism spectrum disorder. American Journal on Mental Retardation 2007; 112:(6)439-49.	Population. No typically-development control group.
143.	Merrick J, Zachor D, and Kandel I. Aging with autism. International Journal on Disability and Human Development 2006; 5:(1)17-21.	Review paper of aging among people with ASD
144.	Militerni R, Bravaccio C, Falco C et al. Repetitive behaviors in autistic disorder. European Child and Adolescent Psychiatry 2002; 11:(5)210-8.	Population: No typically-developing control group
145.	Miniscalco C, Hagberg B, Kadesjo B et al. Narrative skills, cognitive profiles and neuropsychiatric disorders in 7-8-year-old children with late developing language. International Journal of Language and Communication Disorders 2007; 42:(6)665-81.	Insufficient data to calculate sensitivity and specificity of signs and symptoms
146.	Minshawi NF. Behavioral assessment and treatment of self-injurious behavior in autism. Child and Adolescent Psychiatric Clinics of North America 2008; 17:(4)875-86.	Review article
147.	Mitchell S, Brian J, Zwaigenbaum L et al. Early Language and Communication Development of Infants Later Diagnosed with Autism Spectrum Disorder. Journal of Developmental and Behavioral Pediatrics 2006; 27:(Suppl2)S69-S78.	No data on signs and symptoms of interest
148.	Mooney EL, Gray KM, and Tonge BJ. Early features of autism: Repetitive behaviours in young children. European Child and Adolescent Psychiatry 2006; 15:(1)12-8.	Population: No typically-developing control group
149.	Moore V, Titcomb J, Johnson C et al. Developing an autism assessment service II: Analysis of the first 81 cases seen. Child Psychology and Psychiatry Review 1998; 3:(3)121-7.	Population: Study did not include a typically developing control group
150.	Morrier M, Hess K, and Heflin L. Ethnic Disproportionality in Students with Autism Spectrum Disorders. Multicultural Education 2008; 16:(1)8-38.	Study on ethnic disproportionality in ASD children Does not provide data on signs and symptoms.
151.	Mottron L, Mineau S, Martel G et al. Lateral glances toward moving stimuli among young children with autism: Early regulation of locally oriented perception? Development and Psychopathology 2007; 19:(1)23-36.	No diagnostic criteria used
152.	Mraz KD, Green J, Dumont-Mathieu T et al. Correlates of head circumference growth in infants later diagnosed with Autism spectrum disorders. Journal of Child Neurology 2007; 22:(6)700-13.	Insufficient data to calculate sensitivity or specificity.
153.	Phagava H, Muratori F, Einspieler C et al. General movements in infants with autism spectrum disorders. Georgian Medical News 2008;(156)100-5.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest

154.	Myles BS, Simpson RL, and Becker J. An analysis of characteristics of students diagnosed with higher-functioning autistic disorder. Exceptionality 1994; 5:(1)19-30.	Population: No typically-developing control group
155.	Myles BS, Lee HJ, Smith SM et al. A large-scale study of the characteristics of Asperger Syndrome. Education and Training in Developmental Disabilities 2007; 42:(4)448-59.	Population: No typically-developing control group
156.	Nadel S and Poss JE. Early detection of autism spectrum disorders: screening between 12 and 24 months of age. Journal of the American Academy of Nurse Practitioners 2007; 19:(8)408-17.	Review of early detection of ASD for nurses
157.	Nicholas JS, Charles JM, Carpenter LA et al. Prevalence and characteristics of children with autism-spectrum disorders. Annals of Epidemiology 2008; 18:(2)130-6	Population: No typically-developing control group
158.	Niehus R and Lord C. Early medical history of children with autism spectrum disorders. Journal of Developmental and Behavioral Pediatrics 2006; 27:(2 SUPPL. 2)S120-S127.	Diagnosis : Specified diagnostic criteria not used
159.	Noterdaeme M, Mildenberger K, Sitter S et al. Parent information and direct observation in the diagnosis of pervasive and specific developmental disorders. Autism 2002; 6:(2)159-68.	Population: No typically-developing control group
160.	Oslejskova H, Kontrova I, Foralova R et al. The course of diagnosis in autistic patients: The delay between recognition of the first symptoms by parents and correct diagnosis. Neuroendocrinology Letters 2007; 28:(6)895-900.	Population: No typically-developing control group
161.	Osterling JA, Dawson G, and Munson JA. Early recognition of 1-year-old infants with autism spectrum disorder versus mental retardation. Development and Psychopathology 2002; 14:(2)239-51.	Insufficient data to calculate sensitivity and specificity of sign and symptoms of interest
162.	Osterling JA and Dawson G. Early recognition of children with autism: A study of first birthday home videotapes. Journal of Autism and Developmental Disorders 1994; 24:(3) 247-57.	Insufficient data to calculate sensitivity and specificity of sign and symptoms of interest
163.	Ozonoff S, Young GS, Steinfeld MB et al. How early do parent concerns predict later autism diagnosis? Journal of Developmental and Behavioral Pediatrics 2009; 30:(5)367-75	No data for signs & symptoms of interest.
164.	Ozonoff S, Iosif AM, Baguio F et al. A Prospective Study of the Emergence of Early Behavioral Signs of Autism. Journal of the American Academy of Child and Adolescent Psychiatry 2010; 49:(3)256-266e2.	Insufficient data to calculate sensitivity and specificity of sign and symptoms of interest
165.	Parner ET, Schendel DE, and Thorsen P. Autism prevalence trends over time in Denmark: Changes in prevalence and age at diagnosis. Archives of Pediatrics and Adolescent Medicine 2008; 162:(12)1150-6.	Study on the prevalence of ASD in Denmark. No data on signs and symptoms of interest
166.	Paul R, Orlovski SM, Marcinko HC et al. Conversational behaviors in youth with high-functioning ASD and Asperger syndrome. Journal of Autism & Developmental Disorders 2009; 39:(1)115-25.	No data on signs and symptoms of interest.
167.	Pickles A, Simonoff E, Conti R et al. Loss of Language in Early Development of Autism and Specific Language Impairment. Journal of Child Psychology and Psychiatry 2009; 50:(7)10-852	Population: No typically-developing control group

168.	Piven J, Harper J, Palmer P et al. Course of behavioral change in autism: a retrospective study of high-IQ adolescents and adults. Journal of the American Academy of Child and Adolescent Psychiatry 1996; 35:(4)523-9.	Population: No typically-developing control group
169.	Prior M, Leekam S, Ong B et al. Are there subgroups within the autistic spectrum? A cluster analysis of a group of children with autistic spectrum disorders. Journal of Child Psychology and Psychiatry and Allied Disciplines 1998; 39:(6)893-902.	Population. No typically developing control group.
170.	Reading R. Prevalence of disorders of the autism spectrum in a population cohort of children in South Thames: the Special Needs and Autism Project (SNAP). Child: Care, Health & Development 2006; 32:(6)752-3.	Synopsis review of an journal article
171.	Redcay E and Courchesne E. When is the brain enlarged in autism? A meta-analysis of all brain size reports. Biological Psychiatry 2005; 58:(1)1-9.	Review article on brain development in the first years of life in autism
172.	Restall G and Magill-Evans J. Play and preschool children with autism. American Journal of Occupational Therapy 1994; 48:(2)113-20.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest
173.	Rice C. Prevalence of autism spectrum disorders -- Autism and Developmental Disabilities Monitoring Network, 14 sites, United States, 2002. MMWR: Morbidity & Mortality Weekly Report 2007; 56:(SS-1)12-28.	Study on the prevalence of ASD in the US No data for signs and symptoms of interest.
174.	Rice C. Prevalence of autism spectrum disorders -- Autism and Developmental Disabilities Monitoring Network, six sites, United States, 2000. MMWR: Morbidity & Mortality Weekly Report 2007; 56:(SS-1)1-11.	DUPLICATE with reference above.
175.	Rodman JL, Gilbert KA, Grove AB et al. Efficacy of brief quantitative measures of play for screening for autism spectrum disorders. Journal of autism and developmental disorders 2010; 40:(3)325-33.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest
176.	Rogers SJ and Dilalla DL. Age of symptom onset in young children with pervasive developmental disorders. Journal of the American Academy of Child and Adolescent Psychiatry 1990; 29:(6)863-72.	Population. This study only recruited parents and caregivers of children with ASD
177.	Roos EM, McDuffie AS, Weismer SE et al. A comparison of contexts for assessing joint attention in toddlers on the autism spectrum. Autism 2008; 12:(3)275-91.	Population: No typically-developing control group Diagnosis: No diagnostic criteria used
178.	Rosenberg RE, Daniels AM, Law JK et al. Trends in autism spectrum disorder diagnoses: 1994-2007. Journal of Autism & Developmental Disorders 2009; 39:(8)1099-111.	Population: No typically developing control group
179.	Rosenhall U, Nordin V, Sandstrom M et al. Autism and hearing loss. Journal of autism and developmental disorders 1999; 29:(5)349-57.	Insufficient data to calculate sensitivity and specificity Diagnostic criteria: Inappropriate diagnostic criteria used – DSM-III-R

180.	Roux S, Malvy J, Bruneau N et al. Identification of behaviour profiles within a population of autistic children using multivariate statistical methods. European Child and Adolescent Psychiatry 1995; 4:(4)249-58.	Population: No typically-developing control group
181.	Roux S, Adrien JL, Bruneau N et al. Behaviour profiles within a population of 145 children with autism using the behaviour summarized evaluation scale. Autism 1998; 2:(4)345-66.	Population: No typically-developing control group
182.	Samms-Vaughan M and Franklyn-Banton L. The role of early childhood professionals in the early identification of autistic disorder. International Journal of Early Years Education 2008; 16:(1)75-84.	Population: No typically developing control group
183.	Schreck KA, Mulick JA, and Smith AF. Sleep problems as possible predictors of intensified symptoms of autism. Research in Developmental Disabilities 2004; 25:(1)57-66.	Population: No typically developing control group
184.	Seltzer MM, Krauss MW, Shattuck PT et al. The Symptoms of Autism Spectrum Disorders in Adolescence and Adulthood. Journal of autism and developmental disorders 2003; 33:(6)565-81.	Population: No typically developing control group
185.	Shevell MI, Majnemer A, Rosenbaum P et al. Etiologic yield of subspecialists' evaluation of young children with global developmental delay. Journal of Pediatrics 2000; 136:(5)593-8.	No data for signs and symptoms of interest.
186.	Shinnar S, Rapin I, Arnold S et al. Language regression in childhood. Pediatric Neurology 2001; 24:(3)185-91.	Study on the prevalence of ASD in children with language regression No data on sensitivity/specificity of regression
187.	Shumway S and Wetherby AM. Communicative acts of children with autism spectrum disorders in the second year of life. Journal of Speech Language and Hearing Research 2009; 52:(5)1139-56.	No data for signs and symptoms of interest.
188.	Sigafoos J, Roberts-Pennell D, and Graves D. Longitudinal assessment of play and adaptive behavior in young children with developmental disabilities. Research in Developmental Disabilities 1999; 20:(2)147-62.	Population: No typically developing control group
189.	Simonova H. Autism: Behavioral features. Homeostasis in Health and Disease 1996; 37:(3)143-4.	Conference abstract
190.	Sivberg B. International pediatric nursing. Parents' detection of early signs in their children having an autistic spectrum disorder. Journal of Pediatric Nursing 2003; 18:(6)433-9.	Population. Study only included children with ASD
191.	Skaines N, Rodger S, and Bundy A. Playfulness in children with autistic disorder and their typically developing peers. British Journal of Occupational Therapy 2006; 69:(11)505-12.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest
192.	Skovgaard AM, Houmann T, Christiansen E et al. The prevalence of mental health problems in children 1 1/2 of age - The Copenhagen Child Cohort 2000. Journal of Child Psychology and Psychiatry and Allied Disciplines 2007; 48:(1)62-70.	No data for signs and symptoms of interest.
193.	Skovgaard AM, Olsen EM, Christiansen E et al. Predictors (0-10 months) of psychopathology at age 11/2 years - a general population study in The Copenhagen Child Cohort CCC 2000. Journal of Child	No data for signs and symptoms of interest.

	Psychology and Psychiatry and Allied Disciplines 2008; 49:(5)553-62.	
194.	Sperry LA and Symons FJ. Maternal judgments of intentionality in young children with autism: The effects of diagnostic information and stereotyped behavior. Journal of autism and developmental disorders 2003; 33:(3)281-7.	Population: No typically developing control group
195.	Spiker D, Lotspeich LJ, Dimiceli S et al. Behavioral phenotypic variation in autism multiplex families: Evidence for a continuous severity gradient. American Journal of Medical Genetics - Neuropsychiatric Genetics 2002; 114:(2)129-Neuropsychiatric.	Diagnosis: No diagnostic criteria specified No data for signs & symptoms of interest.
196.	Stone WL, Coonrod EE, and Ousley OY. Brief report: screening tool for autism in two-year-olds (stat): development and preliminary data. Journal of Autism & Developmental Disorders 2000; 30:(6)607.	Population: Study had no typically-developing control group
197.	Stone WL, Hoffman EL, Lewis SE et al. Early recognition of autism: Parental reports vs clinical observation. Archives of Pediatrics and Adolescent Medicine 1994; 148:(2)174-9.	Population: No typically developing control group Diagnosis: Inappropriate criteria used (Rutter)
198.	Stone WL and Lemanek KL. Parental report of social behaviors in autistic preschoolers. Journal of autism and developmental disorders 1990; 20:(4)513-22.	Population: No typically developing control group
199.	Sturm H, Fernell E, and Gillberg C. Autism spectrum disorders in children with normal intellectual levels: Associated impairments and subgroups. Developmental Medicine and Child Neurology 2004; 46:(7)444-7.	Population: No typically developing control group
200.	Sullivan M, Finelli J, Marvin A et al. Response to joint attention in toddlers at risk for autism spectrum disorder: a prospective study. Journal of Autism & Developmental Disorders 2007; 37:(1)37-48.	Population: No typically developing control group
201.	Szatmari P, Archer L, Fisman S et al. Asperger's syndrome and autism: Differences in behavior, cognition, and adaptive functioning. Journal of the American Academy of Child and Adolescent Psychiatry 1995; 34:(12)1662-71.	Review on Asperger syndrome
202.	Szatmari P. Asperger's syndrome: Diagnosis, treatment, and outcome. Psychiatric Clinics of North America 1991; 14:(1)81-93.	Review of Asperger syndrome.
203.	Takeda T, Koyama T, and Kurita H. Comparison of developmental/intellectual changes between autistic disorder and pervasive developmental disorder not otherwise specified in preschool years. Psychiatry and Clinical Neurosciences 2007; 61:(6)684-6.	Study only recruited children diagnosed with ASD. No typically-developing control group
204.	Teitelbaum O, Benton T, Shah PK et al. Eshkol-Wachman movement notation in diagnosis: Early detection of Asperger's syndrome. Proceedings of the National Academy of Sciences of the United States of America 2004; 101:(32)11909-14.	Study only recruited children diagnosed with ASD. No typically-developing control group
205.	Tomblin JB, Hafeman LL, and O'Brien M. Autism and autism risk in siblings of children with specific language impairment. International Journal of Language and Communication Disorders 2003; 38:(3)235-50.	No data for signs and symptoms of interest Diagnostic criteria: Did not use DSM or ICD to diagnose ASD
206.	Tonge BJ, Brereton AV, Gray KM et al. Behavioural and emotional disturbance in high-functioning autism	Population: No typically developing

	and Asperger syndrome. Autism 1999; 3:(2)117-30.	control group
207.	Toth K, Munson J, Meltzoff AN et al. Early predictors of communication development in young children with autism spectrum disorder: joint attention, imitation, and toy play. Journal of Autism & Developmental Disorders 2006; 36:(8)993-1005.	Population: No typically developing control group
208.	Tuchman RF, Rapin I, and Shinnar S. Autistic and dysphasic children. I: Clinical characteristics. Pediatrics 1991; 88:(6)1211-8.	Population: No typically developing control group
209.	Twyman KA, Maxim RA, Leet TL et al. Parents' developmental concerns and age variance at diagnosis of children with autism spectrum disorder. Research in Autism Spectrum Disorders 2009; 3:(2)489-95.	Population: Study only recruited children diagnosed with ASD. No typically-developing control group
210.	Unal F and Pehlivanturk B. Comorbid psychiatric disorders in 201 cases of encopresis. Turkish Journal of Pediatrics 2004; 46:(4)350-3.	No data on signs and symptoms of autism
211.	van Daalen E, Swinkels SH, Dietz C et al. Body length and head growth in the first year of life in autism. Pediatric Neurology 2007; 37:(5)324-30.	Insufficient data to allow calculation of sensitivity and specificity of macrocephaly
212.	Venter A, Lord C, and Schopler E. A follow-up study of high-functioning autistic children. Journal of Child Psychology and Psychiatry and Allied Disciplines 1992; 33:(3)489-507.	Study only included caregivers of children diagnosed as ASD.
213.	Volkmar FR and Chawarska K. Autism in infants: An update. World Psychiatry 2008; 7:(1)-21.	Review paper about the first expression of autism in infants
214.	Vostanis P, Smith B, Corbett J et al. Parental concerns of early development in children with autism and related disorders. Autism 1998; 2:(3)229-42.	Population: No typically developing control group
215.	Rice ML, Warren S, and Betz S. Language symptoms of developmental language disorders: an overview of autism, Down syndrome, fragile X, specific language impairment and Williams syndrome. Applied Psycholinguistics 2005; 26:(1)7-27.	Review paper about language symptoms of a series of developmental language disorders including autism.
216.	Warreyn P, Roeyers H, and De G. Early social communicative behaviours of preschoolers with austism spectrum disorder during interaction with their mothers. Autism 2005; 9:(4)342-61.	Population: No typically developing control group
217.	Warreyn P, Roeyers H, Van Wetswinkel U et al. Temporal coordination of joint attention behavior in preschoolers with autism spectrum disorder. Journal of autism and developmental disorders 2007; 37:(3)501-12.	Population: No typically developing control group
218.	Warreyn P, Roeyers H, Peene N et al. Do early socio-communicative abilities predict later perspective taking in autism? A 3-year follow-up study. Journal of Cognitive and Behavioral Psychotherapies 2004; 4:(2)131-48.	Population: No typically developing control group
219.	Watling RL, Deitz J, and White O. Comparison of sensory profile scores of young children with and without autism spectrum disorders. American Journal of Occupational Therapy 2001; 55:(4)416-23.	Insufficient data to calculate sensitivity or specificity for signs and symptoms of interest. Diagnosis: Diagnostic criteria not specified

220. Webb JS, Nalty T, Munson J et al. Rate of head circumference growth as a function of autism diagnosis and history of autistic regression. Journal of Child Neurology 2007; 22:(10)1182-90.	Population: No typically developing control group
221. Wetherby AM, Prizant BM, and Hutchinson TA. Communicative, social/affective, and symbolic profiles of young children with autism and pervasive developmental disorders. American Journal of Speech-Language Pathology 1998; 7:(2)79-91.	Population: No typically developing control group
222. Wetherby AM, Woods J, Allen L et al. Early indicators of autism spectrum disorders in the second year of life. Journal of autism and developmental disorders 2004; 34:(5)473-93.	No data on signs and symptoms of interest.
223. Whiteley P, Rodgers J, and Shattock P. Clinical features associated with autism. Autism 1998; 2:(4)415-22.	Population: No typically developing control group. Diagnosis: no diagnostic criteria
224. Wiggins LD, Robins DL, Bakeman R et al. Brief report: Sensory abnormalities as distinguishing symptoms of autism spectrum disorders in young children. Journal of Autism & Developmental Disorders 2009; 39:(7)1087-91.	Population: No typically developing control group Diagnosis: Inappropriate reference index--ADOS.
225. Williams E, Thomas K, Sidebotham H et al. Prevalence and characteristics of autistic spectrum disorders in the ALSPAC cohort. Developmental Medicine and Child Neurology 2008; 50:(9)672-7.	Study about the prevalence of ASD in a large representative population sample. No data for signs & symptoms of interest.
226. Williams G, Oliver JM, Allard AM et al. Autism and associated medical and familial factors: A case control study. Journal of Developmental and Physical Disabilities 2003; 15:(4)335-49.	Population: No typically developing control group
227. Williams J and Brayne C. Screening for autism spectrum disorders: what is the evidence? Autism: The International Journal of Research & Practice 2006; 10:(1)11-35.	Review paper about screening of ASD.
228. Zwaigenbaum L, Bryson S, Rogers T et al. Behavioral manifestations of autism in the first year of life. International Journal of Developmental Neuroscience 2005; 23:(2-3)143-52.	Incomplete data so unable to calculate sensitivity and specificity of signs and symptoms of interest

Question 2(a)

	REFERENCE	REASON FOR EXCLUSION
1.	Allen DA, Steinberg M, Dunn M et al. Autistic disorder versus other pervasive developmental disorders in young children: same or different? European Child & Adolescent Psychiatry 2001; 10:(1)67-78.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
2.	Allison C, Baron-Cohen S, Wheelwright S et al. The Q-CHAT (quantitative CHecklist for Autism in toddlers): a normally distributed quantitative measure of autistic traits at 18-24 months of age: preliminary report. Journal of Autism & Developmental Disorders 2008; 38:(8)1414-25.	Population: Some children already had an ASD diagnosis
3.	Allison C, Williams J, Scott F et al. The Childhood Asperger Syndrome Test (CAST): Test-retest reliability in a high scoring sample. Autism 2007; 11:(2)173-85.	Diagnosis: No diagnostic criteria used Population: Universal screening, not an 'at risk' group
4.	Angley M, Young R, Ellis D et al. Children and autism: part 1 -- recognition and pharmacological management. Australian Family Physician 2007; 36:(9)741-4.	Overview of ASD
5.	Baird G, Charman T, Baron-Cohen S et al. A screening instrument for autism at 18 months of age: A 6-year follow- up study. Journal of the American Academy of Child and Adolescent Psychiatry 2000; 39:(6)694-702.	Universal screening, not just an 'at risk' cohort
6.	Baird G, Simonoff E, Pickles A et al. Prevalence of disorders of the autism spectrum in a population cohort of children in South Thames: the Special Needs and Autism Project (SNAP). Lancet 2006; 368:(9531)210-5.	Population: Study included children already diagnosed with ASD
7.	Barnhill G, Hagiwara T, Myles B et al. Parent, Teacher, and Self-Report of Problem and Adaptive Behaviors in Children and Adolescents with Asperger Syndrome. Diagnostique 2000; 25:(2)147-67.	Some children already had an ASD diagnosis Screening instruments of interest not examined
8.	Baron-Cohen S, Allen J, and Gillberg C. Can autism be detected at 18 months? The needle, the haystack, and the CHAT. British Journal of Psychiatry 1992; 161:(DEC.)839-43.	Screening instrument of interest not examined
9.	Baron-Cohen S, Wheelwright S, Cox A et al. Early identification of autism by the CHecklist for Autism in Toddlers (CHAT). Journal of the Royal Society of Medicine 2000; 93:(10)521-5	Overview of studies using CHAT
10.	Ben-Sasson A, Hen L, Fluss R et al. A meta-analysis of sensory modulation symptoms in individuals with autism spectrum disorders. Journal of autism and developmental disorders 2009; 39:(1)1-11.	Some children already had an ASD diagnosis Screening instruments of interest not examined
11.	Berument SK, Rutter M, Lord C et al. Autism screening questionnaire: Diagnostic validity. British Journal of Psychiatry 1999; 175:(NOV.)444-51.	Some children already had an ASD diagnosis

12.	Bishop DVM and Norbury CF. Exploring the borderlands of autistic disorder and specific language impairment: A study using standardised diagnostic instruments. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(7)917-29.	No diagnostic criteria – results of index test were used to make a diagnosis
13.	Blackwell PB. Screening young children for autism and other social-communication disorders.[see comment]. Journal of the Kentucky Medical Association 2002; 100:(9)390-4.	Overview of screening instruments
14.	Bolte S, Dickhut H, and Poustka F. Patterns of parent-reported problems indicative in autism. Psychopathology 1999; 32:(2)93-7.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
15.	Boomsma A, Van Lang N, de Jonge M et al. A new symptom model for autism cross-validated in an independent sample. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(8)809-16	Some children already had an ASD diagnosis Screening instruments of interest not examined
16.	Botting N and Conti-Ramsden G. Autism, primary pragmatic difficulties, and specific language impairment: can we distinguish them using psycholinguistic markers? Developmental Medicine & Child Neurology 2003; 45:(8)515-24.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
17.	Brereton AV, Tonge BJ, Mackinnon AJ et al. Screening Young People for Autism with the Developmental Behavior Checklist. Journal of the American Academy of Child and Adolescent Psychiatry 2002; 41:(11)1369-75.	Population: Study included children with ASD and typically-developing children
18.	Briggs-Gowan MJ, Carter AS, Irwin JR et al. The Brief Infant-Toddler Social and Emotional Assessment: screening for social-emotional problems and delays in competence. Journal of Pediatric Psychology 2004; 29:(2)143-55.	Universal screening, Not an a'at risk' group
19.	Brown T, Leo M, and Austin DW. Discriminant validity of the Sensory Profile in Australian children with autism spectrum disorder. Physical & Occupational Therapy in Pediatrics 2008; 28:(3)253-66.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
20.	Bryson SE, Zwaigenbaum L, McDermott C et al. The autism observation scale for infants: Scale development and reliability data. Journal of autism and developmental disorders 2008; 38:(4)731-8.	Insufficient data to calculate sensitivity and specificity of screening instruments of interest
21.	Buschmann A, Jooss B, Rupp A et al. Children with developmental language delay at 24 months of age: Results of a diagnostic work-up. Developmental Medicine and Child Neurology 2008; 50:(3)223-9.	Screening instruments of interest not examined
22.	Calhoun S and Mayes S. Symptoms of Autism in Young Children and Correspondence with the DSM.	Population: Some children already had an

	Infants and Young Children 1999; 12:(2)90-7.	ASD diagnosis Screening instruments of interest not examined
23.	Campbell JM. Diagnostic assessment of asperger's disorder: A review of five third-party rating scales. Journal of autism and developmental disorders 2005; 35:(1)25-35.	Review of screening instruments for ASperger syndrome
24.	Carpenter LA and Macias MM. Screening and diagnosis of autism spectrum disorders (ASD). [20 refs]. Journal - South Carolina Medical Association 2006; 102:(8)271-3.	Overview of ASD screening and diagnosis
25.	Carter AS, Volkmar FR, Sparrow SS et al. The Vineland Adaptive Behavior Scales: Supplementary norms for individuals with autism. Journal of autism and developmental disorders 1998; 28:(4)287-302.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
26.	Cederlund M and Gillberg C. One hundred males with Asperger syndrome: A clinical study of background and associated factors. Developmental Medicine and Child Neurology 2004; 46:(10)652-60.	Not all children were screened Study only included children with Asperger syndrome
27.	Chakrabarti Si and Fombonne E. Pervasive developmental disorders in preschool children. JAMA: the journal of the American Medical Association 2001; 285:(24)3093-9.	Instruments: Screening instruments of interest not examined
28.	Chandler S, Charman T, Baird G et al. Validation of the Social Communication Questionnaire in a population cohort of children with autism spectrum disorders. Journal of the American Academy of Child and Adolescent Psychiatry 2007; 46:(10)1324-32.	Population: Study included children already diagnosed with ASD
29.	Charak DA and Stella JL. Screening and Diagnostic Instruments for Identification of Autism Spectrum Disorders in Children, Adolescents, and Young Adults: A Selective Review. Assessment for Effective Intervention 2001; 27:(1-2)5-17.	Overview of ASD screening instruments
30.	Charman T and Baird G. Practitioner review: Diagnosis of autism spectrum disorder in 2- and 3-year-old children. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(3)289-305.	Overview of ASD diagnosis in young children
31.	Charman T, Baird G, Simonoff E et al. Efficacy of three screening instruments in the identification of autistic-spectrum disorders. British Journal of Psychiatry 2007; #191:(DEC.)554-9.	Population: (unable to say if already diagnosed children are in sample or not) and way of arriving at sample not adequately described
32.	Charman T, Baron-Cohen S, Baird G et al. Commentary: The Modified Checklist for Autism in Toddlers. Journal of autism and developmental disorders 2001; 31:(2)145-51.	Commentary on a screening instrument
33.	Constantino JN, Lajonchere C, Lutz M et al. Autistic social impairment in the siblings of children with pervasive developmental disorders. American Journal of Psychiatry 2006; 163:(2)294-6.	Diagnosis: inappropriate diagnostic criteria—ADI-R has been used
34.	Constantino JN, Lavesser PD, Zhang Y et al. Rapid quantitative assessment of autistic social impairment by classroom teachers. Journal of the American Academy of Child and Adolescent Psychiatry 2007;	Diagnosis: Unclear which diagnostic criteria was used

	46:(12)1668-76.	Unclear if all 'at risk' children received a diagnostic assessment
35.	Conti-Ramsden G, Botting N, Simkin Z et al. Follow-up of children attending infant language units: Outcomes at 11 years of age. International Journal of Language and Communication Disorders 2001; 36:(2)-219.	Diagnostic criteria: No ASD diagnostic assessment carried out
36.	Croen LA, Grether JK, and Selvin S. Descriptive epidemiology of autism in a California population: who is at risk? Journal of Autism & Developmental Disorders 2002; 32:(3)217.	Screening instruments of interest not examined
37.	De Bildt A, Sytema S, Ketelaars C et al. Measuring pervasive developmental disorders in children and adolescents with mental retardation: a comparison of two screening instruments used in a study of the total mentally retarded population from a designated area. Journal of Autism & Developmental Disorders 2003; 33:(6)595-605.	Not all participants who were screening received a diagnostic evaluation: A random sample of screened negative was used.
38.	DeVincent CJ, Gadow KD, Strong G et al. Screening for autism spectrum disorder with the early childhood inventory-4. Journal of Developmental and Behavioral Pediatrics 2008; 29:(1)1-10.	Population: Study included children with ASD
39.	Dietz C, Swinkels S, van D et al. Screening for autistic spectrum disorder in children aged 14-15 months. II: Population screening with the Early Screening of Autistic Traits Questionnaire (ESAT). Design and general findings. Journal of autism and developmental disorders 2006; 36:(6)713-22.	Only children who screened positive received a full diagnostic assessment
40.	Drew A, Baird G, Taylor E et al. The Social Communication Assessment for Toddlers with Autism (SCATA): An instrument to measure the frequency, form and function of communication in toddlers with autism spectrum disorder. Journal of autism and developmental disorders 2007; 37:(4)648-66.	Population: Study included children already diagnosed with ASD
41.	Duby JC and Johnson CP. Universal screening for autism spectrum disorders: A snapshot within the big picture. Pediatric Annals 2009; 38:(1)36-41.	Overview of screening instrumnets
42.	Dumont-Mathieu T and Fein D. Screening for autism in young children: The modified checklist for autism in toddlers (M-CHAT) and other measures. Mental Retardation and Developmental Disabilities Research Reviews 2005; 11:(3)253-62.	Overview of screening instruments
43.	Dworzynski K, Ronald A, Hayiou-Thomas M et al. Aetiological relationship between language performance and autistic-like traits in childhood: A twin study. International Journal of Language and Communication Disorders 2007; 42:(3)273-92.	Diagnosis: inappropriate diagnostic criteria has been used--CAST
44.	Dyck MJ, Piek JP, Hay D et al. Are abilities abnormally interdependent in children with autism? Journal of Clinical Child and Adolescent Psychology 2006; 35:(1)20-33.	Screening instruments of interest not examined
45.	Eaves LC and Ho HH. The very early identification of autism: Outcome to age 4 1/2-5. Journal of autism and developmental disorders 2004; 34:(4)367-78.	Outcome for screening instruments of interest not examined.
46.	Eaves RC and Milner B. The criterion-related validity of the Childhood Autism Rating Scale and the Autism Behavior Checklist. Journal of Abnormal Child Psychology 1993; 21:(5)481-91.	Population: Some children already had an ASD diagnosis Instruments: Screening instruments of

		interest not examined
47.	Eaves RC, Campbell HA, and Chambers D. Criterion-related and construct validity of the Pervasive Developmental Disorders Rating Scale and the Autism Behavior Checklist. Psychology in the Schools 2000; 37:(4)311-21.	Population: Study included children with ASD,MR, Developmental disorders, Williams syndrome or Childhood disintegrative disorder Screening instruments of interest not examined
48.	Eldin AS, Habib D, Noufal A et al. Use of M-CHAT for a multinational screening of young children with autism in the Arab countries. International Review of Psychiatry 2008; 20:(3)281-9.	Universal screening, not an 'at risk' group
49.	Fine J, Bartolucci G, Szatmari P et al. Cohesive discourse in pervasive developmental disorders. Journal of autism and developmental disorders 1994; 24:(3)315-29.	Some children already had an ASD diagnosis Screening instruments of interest not examined
50.	Fine SE, Weissman A, Gerdes M et al. Autism spectrum disorders and symptoms in children with molecularly confirmed 22q11.2 deletion syndrome. Journal of Autism & Developmental Disorders 2005; 35:(4)461-70.	Population: Study included children already diagnosed with ASD Unclear if all children received a full diagnostic assessmnet
51.	Freeman BJ, Del'Homme M, Guthrie D et al. Vineland adaptive behavior scale scores as a function of age and initial IQ in 210 autistic children. Journal of autism and developmental disorders 1999; 29:(5)379-84.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
52.	Gadow KD, Schwartz J, DeVincent C et al. Clinical utility of autism spectrum disorder scoring algorithms for the Child Symptom Inventory-4. Journal of autism and developmental disorders 2008; 38:(3)419-27.	Population: Study included children with an existing ASD diagnosis
53.	Gargus RA and Yatchmink Y. Early identification and assessment of young children with autism. [39 refs]. Medicine and Health, Rhode Island 2005; 88:(5)147-51.	Overview of screening instruments
54.	Garon N, Bryson SE, Zwaigenbaum L et al. Temperament and its relationship to autistic symptoms in a high-risk infant sib cohort. Journal of Abnormal Child Psychology 2009; 37:(1)59-78.	Insufficient data to calculate sensitivity and specificity
55.	Ghuman JK, Freund L, Reiss A et al. Early detection of social interaction problems: development of a social interaction instrument in young children. Journal of Developmental and Behavioral Pediatrics 1998; 19:(6)411-9.	Population: Study included children diagnosed with developmental or psychiatric problems
56.	Gillberg C and Cederlund M. Asperger syndrome: familial and pre- and perinatal factors. Journal of Autism & Developmental Disorders 2005; 35:(2)159-66.	Population : all children already has an Asperger syndrome diagnosis Screening instruments of interest not examined

57.	Glascoe FP and Byrne KE. The accuracy of three developmental screening tests. Journal of Early Intervention 1993; 17:(4)368-79.	Diagnosis: No diagnostic assessment used Universal screening, not an 'at risk' group
58.	Glascoe FP, Macias MM, Wegner LM et al. Can a broadband developmental-behavioral screening test identify children likely to have autism spectrum disorder? Clinical Pediatrics 2007; 46:(9)801-5.	Diagnosis: No diagnostic assessment used
59.	Goin-Kochel RP and Cohen R. Screening cases within a statewide autism registry: A comparison of parental reports using DSM-IV-TR criteria versus the SCQ. Focus on Autism and Other Developmental Disabilities 2008; 23:(3)148-54.	Population: Some children already had an ASD diagnosis
60.	Goldstein G, Minshew NJ, and Siegel DJ. Age differences in academic achievement in high-functioning autistic individuals. Journal of Clinical and Experimental Neuropsychology 1994; 16:(5)671-80.	Some children already had an ASD diagnosis Screening instruments of interest not examined
61.	Granader YE, Bender HA, Zemon V et al. The clinical utility of the Social Responsiveness Scale and Social Communication Questionnaire in tuberous sclerosis complex. Epilepsy and Behavior 2010; 18:(3)262-6	Diagnosis: No diagnostic criteria used
62.	Gray KM and Tonge BJ. Screening for autism in infants and preschool children with developmental delay. Australian and New Zealand Journal of Psychiatry 2005; 39:(5)378-86.	Population: Some children already had an ASD diagnosis
63.	Hall SS, Lightbody AA, Hirt M, Rezvani A, and Reiss AL. Autism in Fragile X Syndrome: A Category Mistake? [Abstract] Journal of the American Academy of Child and Adolescent Psychiatry 9-1-2010; 49(9):921-933.	Diagnosis: No diagnostic criteria used
64.	Hansson SL, Rojvall AS, Rastam M et al. Psychiatric telephone interview with parents for screening of childhood autism - Tics, attention-deficit hyperactivity disorder and other comorbidities (A-TAC): Preliminary reliability and validity. British Journal of Psychiatry 2005; 187:(SEPT.)262-7.	Population: Study included children already diagnosed with ASD
65.	Harris SL, Handleman JS, Gordon R et al. Changes in cognitive and language functioning of preschool children with autism. Journal of autism and developmental disorders 1991; 21:(3)281-90.	Some children already had an ASD diagnosis Screening instruments of interest not examined
66.	Hatton DD, Sideris J, Skinner M et al. Autistic behavior in children with fragile X syndrome: Prevalence, stability, and the impact of FMRP. American Journal of Medical Genetics, Part A 2006; 140:(17)1804-13.	Diagnosis: No ASD diagnostic assessment used Instruments: Screening instruments of interest not examined
67.	Hattori J, Ogino T, Abiru K et al. Are pervasive developmental disorders and attention-deficit/hyperactivity disorder distinct disorders? Brain and Development 2006; 28:(6)371-4.	Population: Some children already had an ASD diagnosis
68.	Hepburn SL, DiGuiseppi C, Rosenberg S et al. Use of a teacher nomination strategy to screen for autism spectrum disorders in general education classrooms: a pilot study. Journal of Autism & Developmental	No ASD diagnostic assessment used Insufficient data to calculate sensitivity

	Disorders 2008; 38:(2)373-82.	and specificity of screening instrument
69.	Ho A, Todd RD, and Constantino JN. Brief report: Autistic traits in twins vs. non-twins-A preliminary study. Journal of autism and developmental disorders 2005; 35:(1)129-33.	Diagnosis: No diagnostic criteria used
70.	Holtmann M, Bolte S, and Poustka F. Autism spectrum disorders: Sex differences in autistic behaviour domains and coexisting psychopathology. Developmental Medicine and Child Neurology 2007; 49:(5)361-6.	Some children already had an ASD diagnosis Screening instruments of interest not examined
71.	Honda H, Shimizu Y, Nitto Y et al. Extraction and Refinement Strategy for Detection of Autism in 18-Month-Olds: A Guarantee of Higher Sensitivity and Specificity in the Process of Mass Screening. Journal of Child Psychology and Psychiatry 2009; 50:(8)10-981.	Universal screening, not an 'at risk' group
72.	Honey E, Leekam S, Turner M et al. Repetitive behaviour and play in typically developing children and children with autism spectrum disorders. Journal of Autism & Developmental Disorders 2007; 37:(6)1107-15.	Some children already had an ASD diagnosis Screening instruments of interest not examined
73.	Howlin P and Karpf J. Using the Social Communication Questionnaire to Identify "Autistic Spectrum" Disorders Associated with Other Genetic Conditions: Findings from a Study of Individuals with Cohen Syndrome. Autism The International Journal of Research and Practice 2004; 8:(2)8-182.	Diagnosis: No diagnostic criteria used
74.	Ingram DH, Mayes SD, Troxell LB et al. Assessing children with autism, mental retardation, and typical development using the Playground Observation Checklist. Autism 2007; 11:(4)311-9.	Screening instruments of interest not examined
75.	Jackson V. Early Childhood Inventory-4 effective tool for screening for autism spectrum disorder. Cns Spectrums 2007; 12:(7)508.	Summary of a study on the ECI-4
76.	Jane MC, Canals J, Ballespi S et al. Parents and teachers reports of DSM-IV psychopathological symptoms in preschool children: Differences between urban-rural Spanish areas. Social Psychiatry and Psychiatric Epidemiology 2006; 41:(5)386-93.	General population screening not 'at risk' screening Screening instruments of interest not examined
77.	Johnson S and Marlow N. Positive screening results on the modified checklist for autism in toddlers: implications for very preterm populations. Journal of Pediatrics 2009; 154:(4)478-80.	Review of results of screening instruments
78.	Joseph RM, Tager-Flusberg H, and Lord C. Cognitive profiles and social-communicative functioning in children with autism spectrum disorder. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(6)807-21.	Population. Study included children with ASD
79.	Kadesjo B, Gillberg C, Hagberg B et al. Autism and Asperger syndrome in seven-year-old children: A total population study. Journal of autism and developmental disorders 1999; 29:(4)327-31.	Universal screening, not 'at risk' group
80.	Koyama T, Inada N, Tsujii H et al. Predicting children with pervasive developmental disorders using the Wechsler Intelligence Scale for Children-Third Edition. Psychiatry and Clinical Neurosciences 2008;	Screening instruments of interest not examined

	62:(4)476-8.	
81.	Koyama T, Tachimori H, Osada H et al. Cognitive and symptom profiles in Asperger's syndrome and high-functioning autism. Psychiatry and Clinical Neurosciences 2007; 61:(1)99-104.	Population: Study included children already diagnosed with Asperger's syndrome.
82.	Koyama T, Inokuchi E, Inada N et al. Utility of the Japanese version of the checklist for autism in toddlers for predicting pervasive developmental disorders at age 2. Psychiatry and Clinical Neurosciences 2010; 64:(3)330-2.	Screening instrument of interest not examined
83.	Kuban KCK, O'Shea TM, Allred EN et al. Positive Screening on the Modified Checklist for Autism in Toddlers (M-CHAT) in Extremely Low Gestational Age Newborns. Journal of Pediatrics 2009; 154:(4)535-540e1.	No reference index has been used to verify the diagnosis result of screening instrument.
84.	Lee H, Marvin AR, Watson T et al. Accuracy of phenotyping of autistic children based on internet implemented parent report. American Journal of Medical Genetics, Part B: Neuropsychiatric Genetics 2010; 153:(6)1119-26	Diagnosis: Unclear if diagnostic criteria used
85.	Lee LC, David AB, Rusyniak J et al. Performance of the Social Communication Questionnaire in children receiving preschool special education services. Research in Autism Spectrum Disorders 2008; 1:(2)126-38.	Diagnosis: Unclear if diagnostic criteria used
86.	Liddle EB, Batty MJ, and Goodman R. The social aptitudes scale: An initial validation. Social Psychiatry and Psychiatric Epidemiology 2009; 44:(6)508-13.	General population screening not an 'at risk' group Screening instruments of interest not examined
87.	Limperopoulos C, Bassan H, Sullivan NR et al. Positive screening for autism in ex-preterm infants: prevalence and risk factors. Pediatrics 2008; 121:(4)758-65.	Study does not provide data on eventual diagnosis
88.	Loh A, Soman T, Brian J et al. Stereotyped motor behaviors associated with autism in high-risk infants: a pilot videotape analysis of a sibling sample. Journal of Autism & Developmental Disorders 2007; 37:(1)25-36.	Instrument: Screening instruments of interest not examined
89.	Luyster R, Qiu S, Lopez K et al. Predicting outcomes of children referred for autism using the MacArthur-Bates Communicative Development Inventory. Journal of Speech, Language, and Hearing Research 2007; 50:(3)667-81.	Screening instruments of interest not examined
90.	Magnusson M, Sundelin C, and Westerlund M. Identification of health problems at 18 months of age--a task for physicians or child health nurses? Child: Care, Health and Development 2006; 32:(1)47-54.	Diagnosis: No diagnostic assessment used Instruments: Screening instruments of interest not examined
91.	Malvy J, Barthelemy C, Damie D et al. Behaviour profiles in a population of infants later diagnosed as having autistic disorder. European Child and Adolescent Psychiatry 2004; 13:(2)115-22.	Screening instruments of interest not examined
92.	Malvy J, Roux S, Zakian A et al. A brief clinical scale for the early evaluation of imitation disorders in	Population: Some children already had an

	autism. Autism 1999; 3:(4)357-69.	ASD diagnosis Screening instruments of interest not examined
93.	Marteleto MR and Pedromonico MR. Validity of Autism Behavior Checklist (ABC): preliminary study. Revista Brasileira de Psiquiatria 2005; 27:(4)295-301.	Some children already had an ASD diagnosis Screening instruments of interest not examined
94.	Martinez-Pedraza F and Carter AS. Autism Spectrum Disorders in Young Children. Child and Adolescent Psychiatric Clinics of North America 2009; 18:(3)645-63.	Overview of ASD in young children from screening to interventions
95.	Matson JL, Boisjoli J, Rojahn J et al. A factor analysis of challenging behaviors assessed with the Baby and Infant Screen for Children with aUtism Traits (BISCUIT-Part 3). Research in Autism Spectrum Disorders 2009; 3:(3)714-22.	Population: all children had already been diagnose with ASD
96.	Matson JL, Fodstad JC, Mahan S et al. Cut-offs, norms and patterns of problem behaviours in children with developmental disabilities on the Baby and Infant Screen for Children with aUtIsm Traits (BISCUIT-Part 3). Developmental neurorehabilitation 2010; 13:(1)3-9	Insufficient data to calculate sensitivity and specificity of screening instruments of interest
97.	Matson JL, Wilkins J, Sevin JA et al. Reliability and item content of the Baby and Infant Screen for Children with aUtIsm Traits (BISCUIT): Parts 1-3. Research in Autism Spectrum Disorders 2009; 3:(2)336-44.	Diagnosis: Unclear if diagnostic criteria used
98.	Matson JL, Wilkins J, Sharp B et al. Sensitivity and specificity of the Baby and Infant Screen for Children with Autism Traits (BISCUIT): Validity and cutoff scores for autism and PDD-NOS in toddlers. Research in Autism Spectrum Disorders 2010; Vol.3:(4)924-30.	Population: Unclear if children had already been diagnose with ASD or not
99.	Matson JL, Mahan S, Sipes M et al. Effects of symptoms of comorbid psychopathology on challenging behaviors among atypically developing infants and toddlers as assessed with the Baby and Infant Screen for Children with Autism Traits (BISCUIT). Journal of Mental Health Research in Intellectual Disabilities 2010; 3:(3)164-76	Insufficient data to calculate sensitivity and specificity of screening instruments of interest
100.	Mattila ML, Kielinen M, Jussila K et al. An epidemiological and diagnostic study of Asperger syndrome according to four sets of diagnostic criteria. Journal of the American Academy of Child and Adolescent Psychiatry 2007; 46:(5)636-46.	Populationm: General population screening
101.	Mawle E and Griffiths P. Screening for autism in pre-school children in primary care: systematic review of English Language tools. International Journal of Nursing Studies 2006; 43:(5)623-36.	Systematic review of screening instruments
102.	Mayes SD and Calhoun SL. Non-significance of early speech delay in children with autism and normal intelligence and implications for DSM-IV Asperger's disorder. Autism 2001; 5:(1)81-94.	Population: Some children already had an ASD diagnosis Instruments: Screening instruments of interest not examined

103.	McGrew S, Malow BA, Henderson L et al. Developmental and Behavioral Questionnaire for Autism Spectrum Disorders. Pediatric Neurology 2007; 37:(2)108-16.	Some children already had an ASD diagnosis
104.	Miranda-Linne FM and Melin L. A comparison of speaking and mute individuals with autism and autistic-like conditions on the autism behavior checklist. Journal of autism and developmental disorders 1997; 27:(3)245-64	Population: Study included children already diagnosed with ASD
105.	Mitchell S, Brian J, Zwaigenbaum L et al. Early Language and Communication Development of Infants Later Diagnosed with Autism Spectrum Disorder. Journal of Developmental and Behavioral Pediatrics 2006; 27:(Suppl2)S69-S78.	No data on screening instruments of interest
106.	Montgomery J, Duncan C, and Francis G. Test Review: Siegel, B. (2004). "Pervasive Developmental Disorder Screening Test--II (PDDST-II)." San Antonio, TX: Harcourt. Journal of Psychoeducational Assessment 2007; 25:(3)8-306.	Review of a screening instrument
107.	Myles BS, Lee HJ, Smith SM et al. A large-scale study of the characteristics of Asperger Syndrome. Education and Training in Developmental Disabilities 2007; 42:(4)448-59.	Population: Study only recruited children diagnosed with ASD.
108.	Myles BS, Simpson RL, and Becker J. An analysis of characteristics of students diagnosed with higher-functioning autistic disorder. Exceptionality 1994; 5:(1)19-30.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
109.	Norris M and Lecavalier L. Screening accuracy of level 2 autism spectrum disorder rating scales: A review of selected instruments. Autism 2010; 14:(4)263-84.	Overview of screening instruments
110.	Oosterling IJ, Swinkels SH, Van D et al. Comparative analysis of three screening instruments for autism spectrum disorder in toddlers at high risk. Journal of autism and developmental disorders 2009; 39:(6)897-909.	Diagnosis: No diagnostic criteria used
111.	Oosterling IJ, Wensing M, Swinkels SH et al. Advancing early detection of autism spectrum disorder by applying an integrated two-stage screening approach. Journal of Child Psychology and Psychiatry 2010; 51:(3)250-8	Diagnosis: No diagnostic criteria used
112.	Pandey J, Verbalis A, Robins DL et al. Screening for autism in older and younger toddlers with the Modified Checklist for Autism in Toddlers. Autism 2008; 12:(5)513-35.	Not all children screened received a full diagnostic assessment
113.	Paul R, Orlovski SM, Marcinko HC et al. Conversational behaviors in youth with high-functioning ASD and Asperger syndrome. Journal of Autism & Developmental Disorders 2009; 39:(1)115-25.	Screening instrument of interest not examined Some of the children already diagnosed with ASD
114.	Perera H, Wijewardena K, and Aluthwelage R. Screening of 18-24-month-old children for autism in a semi-urban community in Sri Lanka. Journal of Tropical Pediatrics 2009; 55:(6)402-5.	Screening instrument of interest not examined
115.	Perry A, Condillac RA, Freeman NL et al. Multi-site study of the Childhood Autism Rating Scale (CARS) in	Insufficient data to calculate sensitivity

	five clinical groups of young children. Journal of autism and developmental disorders 2005; 35:(5)625-34.	and specificity of screening instruments of interest
116.	Persson B, Nordstrom B, Petersson K et al. International pediatric nursing. Screening for infants with developmental deficits and/or autism: a Swedish pilot study. Journal of Pediatric Nursing 2006; 21:(4)313-24.	Universal screening, not an 'at risk' group
117.	Phelps LA and Grabowski JA. Autism: A communique for the school psychologist. School Psychology International 1991; 12:(4)299-314.	Overview of ASD
118.	Pine E, Luby J, Abbacchi A et al. Quantitative assessment of autistic symptomatology in preschoolers. Autism 2006; 10:(4)344-52.	Population: Some children already had an ASD diagnosis
119.	Pinto-Martin JA, Souders MC, Giarelli E et al. The role of nurses in screening for autistic spectrum disorder in pediatric primary care. Journal of Pediatric Nursing 2005; 20:(3)163.	Overview of screening instruments
120.	Pinto-Martin JA, Young LM, Mandell DS et al. Screening strategies for autism spectrum disorders in pediatric primary care. Journal of Developmental and Behavioral Pediatrics 2008; 29:(5)345-50.	Diagnosis: No diagnostic criteria used
121.	Posserud B, Lundervold AJ, Steijnen MC et al. Factor analysis of the Autism Spectrum Screening Questionnaire. Autism 2008; 12:(1)99-112.	Universal screening, not an at risk group
122.	Posserud MB, Lundervold AJ, and Gillberg C. Validation of the autism spectrum screening questionnaire in a total population sample. Journal of autism and developmental disorders 2009; 39:(1)126-34.	Universal screening, not an at risk group
123.	Posserud M, Lundervold AJ, Lie SA et al. The prevalence of autism spectrum disorders: impact of diagnostic instrument and non-response bias. Social Psychiatry and Psychiatric Epidemiology 2010; 45:(3)319-27.	Diagnosis: Unclear of final diagnosis of included children Population: Not all screen negative children given diagnostic assessment
124.	Preece PM and Mott J. Multidisciplinary assessment at a child development centre: do we conform to recommended standards? Child: Care, Health & Development 2006; 32:(5)559-63.	Study on standards for multidisciplinary assessment at a child development centre
125.	Rellini E, Tortolani D, Trillo S et al. Childhood Autism Rating Scale (CARS) and Autism Behavior Checklist (ABC) correspondence and conflicts with DSM-IV criteria in diagnosis of autism. Journal of autism and developmental disorders 2004; 34:(6)703-8.	Population: Study included children already diagnosed with ASD
126.	Restall G and Magill-Evans J. Play and preschool children with autism. American Journal of Occupational Therapy 1994; 48:(2)113-20.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
127.	Robins DL, Fein D, Barton ML et al. The Modified Checklist for Autism in Toddlers: an initial study investigating the early detection of autism and pervasive developmental disorders. Journal of Autism & Developmental Disorders 2001; 31:(2)131-44.	Unable to separate data for universal screening from the 'at risk' group Diagnosis: Unclear if diagnostic criteria
128.	Robins DL. Screening for autism spectrum disorders in primary care settings. Autism 2008; 12:(5)537-56.	Universal screening, not an 'at risk' group

129.	Saemundsen E, Magnusson P, Sma¡ri J et al. Autism Diagnostic Interview-Revised and the Childhood Autism Rating Scale: convergence and discrepancy in diagnosing autism. Journal of Autism & Developmental Disorders 2003; 33:(3)319-28.	Diagnosis: No diagnostic criteria used Instruments: Screening instruments of interest not examined
130.	Scambler D, Rogers SJ, and Wehner EA. Can the Checklist for Autism in Toddlers differentiate young children with autism from those with developmental delays? Journal of the American Academy of Child and Adolescent Psychiatry 2001; 40:(12)1457-63.	Population: Study included children with ASD or another developmental disorder
131.	Schnur J. Asperger syndrome in children. Journal of the American Academy of Nurse Practitioners 2005; 17:(8)302-8.	Overview of screening instruments for Asperger syndrome
132.	Schreck KA, Mulick JA, and Smith AF. Sleep problems as possible predictors of intensified symptoms of autism. Research in Developmental Disabilities 2004; 25:(1)57-66.	Overview of identification and diagnosing of children with Asperger syndrome
133.	Scott FJ, Baron-Cohen S, Bolton P et al. The CAST (Childhood Asperger Syndrome Test): preliminary development of a UK screen for mainstream primary-school-age children. Autism: The International Journal of Research & Practice 2002; 6:(1)9-31.	Universal screening, not an 'at risk' group Diagnosis: No diagnostic criteria used
134.	Sikora DM, Hall TA, Hartley SL et al. Does parent report of behavior differ across ADOS-G classifications: Analysis of scores from the CBCL and GARS. Journal of autism and developmental disorders 2008; 38:(3)440-8.	Diagnosis: Diagnostic criteria not used
135.	Skaines N, Rodger S, and Bundy A. Playfulness in children with autistic disorder and their typically developing peers. British Journal of Occupational Therapy 2006; 69:(11)505-12.	Population: Some children already had an ASD diagnosis
136.	Skovgaard AM, Houmann T, Christiansen E et al. The prevalence of mental health problems in children 1 1/2 of age - The Copenhagen Child Cohort 2000. Journal of Child Psychology and Psychiatry and Allied Disciplines 2007; 48:(1)62-70.	Insufficient data to calculate sensitivity and specificity of screening instruments of interest
137.	Skuse DH, Mandy W, Steer C et al. Social communication competence and functional adaptation in a general population of children: Preliminary evidence for sex-by-verbal IQ differential risk. Journal of the American Academy of Child and Adolescent Psychiatry 2009; 48:(2)128-37.	Population: Unclear on diagnostic criteria used Universal screening, not an 'at risk' group
138.	Sponheim E. Changing criteria of autistic disorders: A comparison of the ICD-10 research criteria and DSM-IV with DSM-III-R, CARS, and ABC. Journal of autism and developmental disorders 1996; 26:(5)513-25.	Insufficient data to calculate sensitivity and specificity of screening instruments of interest
139.	Steinhausen HC and Metzke CW. Differentiating the behavioural profile in autism and mental retardation and testing of a screener. European Child and Adolescent Psychiatry 2004; 13:(4)214-20.	Population: Some children already had an ASD diagnosis
140.	Stella J, Mundy P, and Tuchman R. Social and nonsocial factors in the childhood autism rating scale. Journal of Autism & Developmental Disorders 1999; 29:(4)307.	Study did not examine a screening instrument of interest
141.	Stone WL, Coonrod EE, and Ousley OY. Brief report: screening tool for autism in two-year-olds (stat): development and preliminary data. Journal of Autism & Developmental Disorders 2000; 30:(6)607.	Study did not examine a screening instrument of interest
142.	Stone WL, Coonrod EE, Pozdol SL et al. The Parent Interview for Autism-Clinical Version (PIA-CV): A	Population: Some children already had an

	measure of behavioral change for young children with autism. Autism 2003; 7:(1)9-30.	ASD diagnosis Instrument: Screening instruments of interest not examined
143.	Stone WL, Coonrod EE, Turner LM et al. Psychometric properties of the STAT for early autism screening. Journal of autism and developmental disorders 2004; 34:(6)691-701.	Population: Study included children with ASD , developmental delay or language impairment
144.	Stone WL, McMahon CR, and Henderson LM. Use of the Screening Tool for Autism in Two-Year-Olds (STAT) for children under 24 months: an exploratory study. Autism: The International Journal of Research & Practice 2008; 12:(5)557-73.	Study did not examine a screening instrument of interest
145.	Swinkels SH, Dietz C, van DE et al. Screening for autistic spectrum in children aged 14 to 15 months. I: the development of the Early Screening of Autistic Traits Questionnaire (ESAT). Journal of autism and developmental disorders 2006; 36:(6)723-32.	Population: Study included children with ASD
146.	Tomblin JB, Hafeman LL, and O'Brien M. Autism and autism risk in siblings of children with specific language impairment. International Journal of Language and Communication Disorders 2003; 38:(3)235-50.	Screening instrument of interest not examined Diagnostic criteria: Did not use DSM or ICD to diagnose ASD
147.	VanDenHeuvel A, Fitzgerald M, Greiner BA et al. Screening for autistic spectrum disorder at the 18-month developmental assessment: A population-based study. Irish Medical Journal 2007; 100:(8).	Universal screening, not an 'at risk' group Diagnosis: Diagnostic criteria not specified
148.	Ventola P, Kleinman J, Pandey J et al. Differentiating between autism spectrum disorders and other developmental disabilities in children who failed a screening instrument for ASD. Journal of autism and developmental disorders 2007; 37:(3)425-36.	Not all children who screened positive had an ASD diagnostic assessment
149.	Vrancic D, Nanclares V, Soares D et al. Sensitivity and Specificity of the Autism Diagnostic Inventory-Telephone Screening in Spanish. Journal of autism and developmental disorders 2002; 32:(4)313-20.	Population: Included children with ASD
150.	Wallis KE and Pinto-Martin J. The challenge of screening for autism spectrum disorder in a culturally diverse society. Acta Paediatrica, International Journal of Paediatrics 2008; 97:(5)539-40.	Commentary on ASD in different cultural settings
151.	Wallis KE and Smith SM. School health developmental screening in pediatric primary care: the role of nurses. [27 refs]. Journal for Specialists in Pediatric Nursing: JSPN 2008; 13:(2)130-4.	Overview of ASD screening and diagnosis
152.	Warreyn P, Roeyers H, Peene N et al. Do early socio-communicative abilities predict later perspective taking in autism? A 3-year follow-up study. Journal of Cognitive and Behavioral Psychotherapies 2004; 4:(2)131-48.	Population: Study included children with ASD
153.	Watling RL, Deitz J, and White O. Comparison of sensory profile scores of young children with and without autism spectrum disorders. American Journal of Occupational Therapy 2001; 55:(4)416-23.	Population: Some children already had an ASD diagnosis Diagnosis: Diagnostic criteria not specified Screening instruments of interest not

		examined
154.	Watson LR, Baranek GT, Crais ER et al. The first year inventory: retrospective parent responses to a questionnaire designed to identify one-year-olds at risk for autism. Journal of Autism & Developmental Disorders 2007; 37:(1)49-61.	Population: Study included children with ASD Screening instruments of interest not examined
155.	Werner E, Dawson G, Munson J et al. Variation in early developmental course in autism and its relation with behavioral outcome at 3-4 years of age. Journal of autism and developmental disorders 2005; 35:(3)337-50.	Population: Study included children with ASD Screening instruments of interest not examined
156.	Wetherby AM, Brosnan-Maddox S, Peace V et al. Validation of the Infant-Toddler Checklist as a broadband screener for autism spectrum disorders from 9 to 24 months of age. Autism 2008; 12:(5)487-511.	Diagnosis: No diagnostic criteria used
157.	Wetherby AM, Prizant BM, and Hutchinson TA. Communicative, social/affective, and symbolic profiles of young children with autism and pervasive developmental disorders. American Journal of Speech-Language Pathology 1998; 7:(2)79-91.	Population: Some children already had an ASD diagnosis Screening instruments of interest not examined
158.	Wetherby AM, Woods J, Allen L et al. Early indicators of autism spectrum disorders in the second year of life. Journal of autism and developmental disorders 2004; 34:(5)473-93.	Not all children screened received a diagnostic assessment Population screening used
159.	Whiteley P, Rodgers J, and Shattock P. Clinical features associated with autism. Autism 1998; 2:(4)415-22.	Population: Some children already had an ASD diagnosis Diagnosis: no diagnostic criteria Screening instruments of interest not examined
160.	Wiggins LD and Robins DL. Brief report: Excluding the ADI-R behavioral domain improves diagnostic agreement in toddlers. Journal of autism and developmental disorders 2008; 38:(5)972-6.	Incomplete data so unable to calculate sensitivity and specificity of screening instruments of interest: M-CHAT
161.	Wiggins LD, Bakeman R, Adamson LB et al. The utility of the Social Communication Questionnaire in screening for autism in children referred for early intervention. Focus on Autism and Other Developmental Disabilities 2007; 22:(1)33-8.	Population: Some children already had an ASD diagnosis Diagnosis: Diagnostic criteria not specified
162.	Wiggins LD, Robins DL, Bakeman R et al. Brief report: Sensory abnormalities as distinguishing symptoms of autism spectrum disorders in young children. Journal of Autism & Developmental Disorders 2009; 39:(7)1087-91.	Screening instruments of interest not examined
163.	Williams J, Scott F, Stott C et al. The CAST (Childhood Asperger Syndrome Test): test accuracy. Autism	Diagnosis: No diagnostic criteria used

	2005; 9:(1)45-68.	Population: Universal screening, not an 'at risk' group
164.	Williams JG, Allison C, Scott FJ et al. The Childhood Autism Spectrum Test (CAST): Sex differences. Journal of autism and developmental disorders 2008; 38:(9)1731-9.	Universal screening, not an 'at risk' group Diagnosis: No diagnostic criteria used
165.	Witwer AN and Lecavalier L. Autism screening tools: An evaluation of the Social Communication Questionnaire and the Developmental Behaviour Checklist-Autism Screening Algorithm. Journal of intellectual and developmental disability 2007; 32:(3)179-87.	Population: Study included children with ASD or another intellectual disability
166.	Yirmiya N, Sigman M, and Freeman BJ. Comparison between diagnostic instruments for identifying high-functioning children with autism. Journal of autism and developmental disorders 1994; 24:(3)281-91.	Population: Study included children with ASD Diagnosis: inappropriate diagnostic criteria—DSM-III has been used
167.	Zwaigenbaum L, Bryson S, Rogers T et al. Behavioral manifestations of autism in the first year of life. International Journal of Developmental Neuroscience 2005; 23:(2-3)143-52.	Incomplete data so unable to calculate sensitivity and specificity of screening instruments of interest

Question 2(b) – part 1

	REFERENCE	REASON FOR EXCLUSION
1.	Atladottir HO, Thorsen P, Schendel DE et al. Association of hospitalization for infection in childhood with diagnosis of autism spectrum disorders: a Danish cohort study. Archives of Pediatrics and Adolescent Medicine 2010; 164:(5)470-7.	Population: Comparison was between cases of hospitalizations for infection and controls
2.	Atladottir HO, Pedersen MG, Thorsen P et al. Association of family history of autoimmune diseases and autism spectrum disorders. Pediatrics 2009; 124:(2)687-94.	Population: Comparison was between cases of parental autoimmune diseases and controls
3.	Badawi N, Dixon G, Felix JF et al. Autism following a history of newborn encephalopathy: more than a coincidence? Developmental Medicine & Child Neurology 2006; 48:(2)85-9.	No adjustment for confounding variables
4.	Brimacombe M, Ming X, and Lamendola M. Prenatal and birth complications in autism. Maternal and Child Health Journal 2007; 11:(1)73-9.	No adjustment for confounding variables
5.	Burd L, Severud R, Kerbeshian J et al. Prenatal and perinatal risk factors for autism. Journal of Perinatal Medicine 1999; 27:(6)441-50.	No adjustment for confounding variables
6.	Eliasen M, Tolstrup JS, Andersen AMN et al. Prenatal alcohol exposure and autistic spectrum disorders-a population-based prospective study of 80 552 children and their mothers. International Journal of Epidemiology 2010; 39:(4)1074-81	Population: Comparison was between cases of prenatal alcohol exposure and controls
7.	Gardener H, Spiegelman D, and Buka SL. Prenatal risk factors for autism: Comprehensive meta-analysis. British Journal of Psychiatry 2009; #195:(1)7-14.	Meta-analysis of prenatal risk factors
8.	King MD, Fountain C, Dakhlallah D et al. Estimated autism risk and older reproductive age. American Journal of Public Health 2009; 99:(9)1673-9.	Background paper, no usable data
9.	Klug MG, Burd L, Kerbeshian J et al. A comparison of the effects of parental risk markers on pre- and perinatal variables in multiple patient cohorts with fetal alcohol syndrome, autism, Tourette syndrome, and sudden infant death syndrome: An enviromic analysis. Neurotoxicology and Teratology 2003; 25:(6)707-17.	No adjustment for confounding variables
10.	Kolevzon A, Gross R, and Reichenberg A. Prenatal and perinatal risk factors for autism: a review and integration of findings. Archives of Pediatrics and Adolescent Medicine 2007; 161:(4)326-33.	Overview of prenatal and perinatal risk factors for ASD
11.	Li J, Vestergaard M, Obel C et al. A nationwide study on the risk of autism after prenatal stress exposure to maternal bereavement. Pediatrics 2009; 123:(4)1102-7.	Population: Comparison was between cases of maternal bereavement and controls
12.	Maimburg RD, Bech BH, Vaeth M et al. Neonatal Jaundice, Autism, and Other Disorders of Psychological Development. Pediatrics 2010;eds.	Population: Comparison was between cases of jaundice and controls

13.	Mason-Brothers A, Ritvo ER, Pingree C et al. The UCLA-University of Utah epidemiologic survey of autism: Prenatal, perinatal, and postnatal factors. Pediatrics 1990; 86:(4)514-9.	No adjustment for confounding variables
14.	Matsuishi T, Yamashita Y, Ohtani Y et al. Brief report: incidence of and risk factors for autistic disorder in neonatal intensive care unit survivors. Journal of Autism & Developmental Disorders 1999; 29:(2)161-6.	No adjustment for confounding variables
15.	Molloy CA, Morrow AL, Meinzen-Derr J et al. Familial autoimmune thyroid disease as a risk factor for regression in children with autism spectrum disorder: A CPEA study. Journal of autism and developmental disorders 2006; 36:(3)317-24.	Study was on risk factors for regression in ASD
16.	Muhle R, Trentacoste SV, and Rapin I. The genetics of autism. Pediatrics 2004; 113:(5)e472-e486.	Overview genetics and ASD
17.	Newschaffer CJ, Fallin D, and Lee NL. Heritable and nonheritable risk factors for autism spectrum disorders. Epidemiologic Reviews 2002; 24:(2)137-53.	Overview of risk factors for ASD
18.	Sasanfar R, Haddad S, Tolouei A et al. Paternal age increases the risk for autism in an Iranian population sample. Molecular Autism 2010; 1:(1).	Population: Unclear how cases were collected and control sample not matched for age
19.	Schendel DE, Autry A, Wines R et al. The co-occurrence of autism and birth defects: prevalence and risk in a population-based cohort. Developmental Medicine and Child Neurology 2009; 51:(10)779-86	Population: Study was concerned only with birth defects as risk factors for autism against other ASDs
20.	Stein D, Weizman A, Ring A et al. Obstetric complications in individuals diagnosed with autism and in healthy controls. Comprehensive Psychiatry 2006; 47:(1)69-75.	No adjustment for confounding variables
21.	Sugie Y, Sugie H, Fukuda T et al. Neonatal factors in infants with autistic disorder and typically developing infants. Autism: The International Journal of Research & Practice 2005; 9:(5)487-94.	No adjustment for confounding variables
22.	Van Meter KC, Christiansen LE, Delwiche LD et al. Geographic Distribution of Autism in California: A Retrospective Birth Cohort Analysis. Autism Research 2010; 3:(1)19-29.	Background paper, no usable data

Question 2(b) – part 2

	REFERENCE	REASON FOR EXCLUSION
1.	Asano E, Chugani DC, Muzik O et al. Autism in tuberous sclerosis complex is related to both cortical and subcortical dysfunction. Neurology 2001; 57:(7)1269-77.	Diagnosis: No diagnostic criteria used for ASD
2.	Baieli S, Pavone L, Meli C et al. Autism and phenylketonuria. Journal of autism and developmental disorders 2003; 33:(2)-204.	Diagnosis: Diagnostic criteria not used
3.	Bailey DB, Jr., Raspa M, Olmsted M et al. Co-occurring conditions associated with FMR1 gene variations: findings from a national parent survey. American Journal of Medical Genetics 2008; Part A. 146A:(16)2060-9.	Diagnosis: No diagnostic criteria used for ASD
4.	Bailey DBJ, Mesibov GB, Hatton DD et al. Autistic behavior in young boys with fragile X syndrome. Journal of autism and developmental disorders 1998; 28:(6)499-508.	Diagnosis: Specified diagnostic criteria not used
5.	Baker P, Piven J, and Sato Y. Autism and tuberous sclerosis complex: prevalence and clinical features. Journal of Autism & Developmental Disorders 1998; 28:(4)279-85.	Population: Not all subjects assessed for ASD
6.	Bejerot S, Nylander L, and Lindstrom E. Autistic traits in obsessive-compulsive disorder. Nordic Journal of Psychiatry 2001; 55:(3)169-76.	Population: Study included children with autistic features, not with a diagnosis of ASD
7.	Bejerot S. An autistic dimension: A proposed subtype of obsessive-compulsive disorder. Autism 2007; 11:(2)101-10.	No prevalence data
8.	Benassi G, Guarino M, Cammarata S et al. An epidemiological study on severe mental retardation among schoolchildren in Bologna, Italy. Developmental Medicine and Child Neurology 1990; 32:(10)895-901.	Diagnosis: Diagnostic criteria not used for ASD
9.	Bhaumik S, Tyrer FC, McGrother C et al. Psychiatric service use and psychiatric disorders in adults with intellectual disability. Journal of Intellectual Disability Research 2008; 52:(11)986-95.	Population: Study only included adults
10.	Bower C, Leonard H, and Petterson B. Intellectual disability in Western Australia. Journal of Paediatrics and Child Health 2000; 36:(3)213-5	Overview of intellectual disability
11.	Cans C. Pervasive developmental disorders in individuals with cerebral palsy. Developmental Medicine and Child Neurology 2009; 51:(4)254-5.	Commentary
12.	Capone G, Goyal P, Ares W et al. Neurobehavioral disorders in children, adolescents, and young adults with Down syndrome. American Journal of Medical Genetics, Part C: Seminars in Medical Genetics 2006; 142:(3)158-72.	Overview of neurobehavioral disorders in Down syndrome
13.	Carter JC, Capone GT, Gray RM et al. Autistic-spectrum disorders in Down syndrome: further delineation and distinction from other behavioral abnormalities. American Journal of Medical Genetics 2007; Part B, Neuropsychiatric Genetics:(1)87-94.	Population: 100% sample were children with dual diagnosis (Down syndrome and ASD)

14.	Cianchetti C, Sannio-Fancello G, Fratta AL et al. Neuropsychological, psychiatric, and physical manifestations in 149 members from 18 fragile X families. American Journal of Medical Genetics 1991; 40:(2)234-43.	Population: Study included adults
15.	Clark T, Feehan C, Tinline C et al. Autistic symptoms in children with attention deficit-hyperactivity disorder. European Child and Adolescent Psychiatry 1999; 8:(1)50-5.	Diagnosis: Diagnostic criteria not used
16.	Clifford S, Dissanayake C, Bui QM et al. Autism spectrum phenotype in males and females with fragile X full mutation and premutation. Journal of autism and developmental disorders 2007; 37:(4)738-47.	Diagnosis: Diagnostic criteria not used
17.	Cohen IL. Behavioral profiles of autistic and nonautistic fragile X males. Developmental Brain Dysfunction 1995; 8:(4-6)252-6.	Diagnosis: Specified diagnostic criteria not used
18.	Collacott RA, Cooper SA, and McGrother C. Differential rates of psychiatric disorders in adults with Down's syndrome compared with other mentally handicapped adults. British Journal of Psychiatry 1992; 161:(NOV.)671-4.	Population: Study included adults
19.	Cryan E, Byrne M, O'Donovan A et al. A case-control study of obstetric complications and later autistic disorder. Journal of Autism & Developmental Disorders 1996; 26:(4)453-60.	Diagnosis: Specified diagnostic criteria not used
20.	De Vries, Hunt A, and Bolton PF. The psychopathologies of children and adolescents with tuberous sclerosis complex (TSC): A postal survey of UK families. European Child and Adolescent Psychiatry 2007; 16:(1)16-24.	Diagnosis: Unclear if diagnostic criteria were used
21.	Deb S and Prasad KBG. The prevalence of autistic disorder among children with a learning disability. British Journal of Psychiatry 1994; 165:(SEP.)395-9.	Diagnosis: Specified diagnostic criteria not used
22.	Dekker MC and Koot HM. DSM-IV disorders in children with borderline to moderate intellectual disability. I: Prevalence and impact. Journal of the American Academy of Child and Adolescent Psychiatry 2003; 42:(8)915-22.	Diagnosis: No diagnostic criteria used for ASD
23.	Dimitropoulos A and Schultz RT. Autistic-like symptomatology in Prader-Willi syndrome: A review of recent findings. Current Psychiatry Reports 2007; 9:(2)159-64.	Overview of autistic symptoms in Prader-Willi syndrome
24.	Dissanayake C, Bui Q, Bulhak P et al. Behavioural and Cognitive Phenotypes in Idiopathic Autism versus Autism Associated with Fragile X Syndrome. Journal of Child Psychology and Psychiatry 2009; 50:(3)290-9.	Diagnosis: Specified diagnostic criteria not used
25.	Dykens EM. Psychiatric and behavioral disorders in persons with down syndrome. Mental Retardation and Developmental Disabilities Research Reviews 2007; 13:(3)272-8.	Overview of Down syndrome
26.	Garcia-Nonell C, Ratera ER, Harris S et al. Secondary medical diagnosis in fragile X syndrome with and without autism spectrum disorder. American Journal of Medical Genetics, Part A 2008; 146:(15)-1916	Population: Study only included males with Fragile X
27.	Ghaziuddin M. Autism in mental retardation. Current Opinion in Psychiatry 2000; 13:(5)481-4.	Review paper
28.	Gillberg IC, Gillberg C, and Ahlsen G. Autistic behaviour and attention deficits in tuberous sclerosis: a population-based study. Developmental Medicine and Child Neurology 1994; 36:(1)50-6.	Diagnosis: Specified diagnostic criteria not used

29.	Granader YE, Bender HA, Zemon V et al. The clinical utility of the Social Responsiveness Scale and Social Communication Questionnaire in tuberous sclerosis complex. Epilepsy and Behavior 2010; 18:(3)262-6	Diagnosis: No diagnostic criteria used
30.	Grizenko N, Cvejic H, Vida S et al. Behaviour problems of the mentally retarded. Canadian Journal of Psychiatry 1991; 36:(10)712-7	Diagnosis: Specified diagnostic criteria not used
31.	Hagerman RJ, Ono MY, and Hagerman PJ. Recent advances in fragile X: A model for autism and neurodegeneration. Current Opinion in Psychiatry 2005; 18:(5)490-6.	Overview of ASD in mental retardation
32.	Hall SS, Lightbody AA, and Reiss AL. Compulsive, self-injurious, and autistic behavior in children and adolescents with fragile X syndrome. American Journal on Mental Retardation 2008; 113:(1)44-72.	Diagnosis: No diagnostic criteria used
33.	Hare DJ, Chapman M, Fraser J et al. The prevalence of autistic spectrum disorders in people using a community learning disabilities service. Journal of Learning Disabilities 2003; 7:(3)267-81.	Diagnosis: Diagnostic criteria not used
34.	Howlin P, Wing L, and Gould J. The recognition of autism in children with Down syndrome - Implications for intervention and some speculations about pathology. Developmental Medicine and Child Neurology 1995; 37:(5)406-14.	No prevalence data
35.	Hunt A and Shepherd C. A prevalence study of autism in tuberous sclerosis. Journal of autism and developmental disorders 1993; 23:(2)323-40.	Diagnosis: Specified diagnostic criteria not used
36.	Ibrahim SH, Voigt RG, Katusic SK et al. Incidence of gastrointestinal symptoms in children with autism: a population-based study. Pediatrics 2009; 124:(2)680-6	Population: Study included adults
37.	Johansson M, Rastam M, Billstedt E et al. Autism spectrum disorders and underlying brain pathology in CHARGE association. Developmental Medicine and Child Neurology 2006; 48:(1)40-50.	No data for risk factor of interest
38.	Kau AS, Tierney E, Bukelis I et al. Social behavior profile in young males with fragile X syndrome: characteristics and specificity. American Journal of Medical Genetics 2004; Part A. 126A:(1)9-17.	Diagnosis: No diagnostic criteria used
39.	Lowenthal R, Paula CS, Schwartzman JS et al. Prevalence of pervasive developmental disorder in Down's syndrome. Journal of autism and developmental disorders 2007; 37:(7)1394-5.	Correspondence
40.	Kaufmann WE, Cortell R, Kau ASM et al. Autism spectrum disorder in fragile X syndrome: Communication, social interaction, and specific behaviors. American Journal of Medical Genetics 2004; 129 A:(3)225-34	Population: Study only included males with Fragile X
41.	Matsuo M, Maeda T, Sasaki K et al. Frequent association of autism spectrum disorder in patients with childhood onset epilepsy. Brain and Development 2010; 32:(9)759-63	Epilepsy was outside the scope of this question
42.	Moss J and Howlin P. Autism spectrum disorders in genetic syndromes: implications for diagnosis, intervention and understanding the wider autism spectrum disorder population. Journal of Intellectual Disability Research 2009; 53:(10)852-73	Review of ASD rates in genetic disorders
43.	Mukherjee RAS. Prevalence of clinically diagnosed mental ill-health in adults with intellectual disabilities is around 40%. Evidence-Based Mental Health 2007; 10:(3)94.	Synopsis of another study
44.	Muzykewicz DA, Newberry P, Danforth N et al. Psychiatric comorbid conditions in a clinic population of	Population: Study included adults

	241 patients with tuberous sclerosis complex. Epilepsy and Behavior 2007; 11:(4)506-13.	
45.	Nordin V and Gillberg C. Autism spectrum disorders in children with physical or mental disability or both. I: Clinical and epidemiological aspects. Developmental Medicine and Child Neurology 1996; 38:(4)297-313.	Diagnosis: Specified diagnostic criteria not used
46.	Pine DS, Guyer AE, Goldwin M et al. Autism spectrum disorder scale scores in pediatric mood and anxiety disorders. Journal of the American Academy of Child and Adolescent Psychiatry 2008; 47:(6)652-61.	Study examined autistic features in mood and anxiety disorders
47.	Rasmussen P, Borjesson O, Wentz E et al. Autistic disorders in Down syndrome: Background factors and clinical correlates. Developmental Medicine and Child Neurology 2001; 43:(11)750-4.	Diagnosis: Specified diagnostic criteria not used
48.	Smalley SL. Autism and tuberous sclerosis. Journal of autism and developmental disorders 1998; 28:(5)407-14.	Overview of ASD and Tuberous sclerosis
49.	Smith IM, Nichols SL, Issekutz K et al. Behavioral profiles and symptoms of autism in CHARGE syndrome: Preliminary Canadian epidemiological data. American Journal of Medical Genetics 2005; 133 A:(3)248-56.	Diagnosis: Diagnostic criteria not used for ASD
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52.	Tierney E, Nwokoro NA, Porter FD et al. Behavior phenotype in the RSH/Smith-Lemli-Opitz syndrome. American Journal of Medical Genetics 2001; 98:(2)-200.	Diagnosis: Inappropriate diagnostic criteria--ADI-R has been sued
53.	Trillingsgaard A and Ostergaard JR. Autism in Angelman syndrome: an exploration of comorbidity. Autism: The International Journal of Research & Practice 2004; 8:(2)163-74.	Diagnosis: Inappropriate diagnostic criteria-- ADI-R has been used No data for risk factor of interest
54.	Verhoeven WMA and Tuinier S. Neuropsychiatric consultation in mentally retarded patients: A clinical report. European Psychiatry 1997; 12:(5)242-8.	Population: Study included adults
55.	Verhoeven WMA, Sijben AES, and Tuinier S. Psychiatric consultation in Intellectual disability; Dimensions, Domains and Vulnerability. European Journal of Psychiatry 2004; 18:(1)31-43.	Population: Study included adults
56.	Williams VC, Lucas J, Babcock MA et al. Neurofibromatosis type 1 revisited. Pediatrics 2009; 123:(1)124-33.	Over view of neurofibromatosis
57.	Wong V and Khong PL. Tuberous sclerosis complex: correlation of magnetic resonance imaging (MRI) findings with comorbidities. Journal of Child Neurology 2006; 21:(2)99-105.	Population: Study included adults
58.	Wong V. Study of the relationship between tuberous sclerosis complex and autistic disorder. Journal of	Population: Study included adults

Child Neurology 2006; 21:(3)-204.

Question 2(c)

No evidence reviewed for this question

Question 3(a)

	REFERENCE	REASON FOR EXCLUSION
1.	Akshoomoff N, Corsello C, and Schmidt H. The role of the Autism Diagnostic Observation Schedule in the assessment of autism spectrum disorders in school and community settings. California School Psychologist 2006; 11 2006, 7-19.:7-19.	Survey of the use of ADOS in schools No data on sensitivity and specificity of diagnostic tools of interest
2.	Aldred C, Green J, and Adams C. A new social communication intervention for children with autism: pilot randomised controlled treatment study suggesting effectiveness. Journal of child psychology and psychiatry, and allied disciplines 2004; 45:(8)1420-30.	Diagnosis: No diagnostic criteria specified
3.	Allen RA, Robins DL, and Decker SL. Autism spectrum disorders: Neurobiology and current assessment practices. Psychology in the Schools 2008; 45:(10)905-17.	Survey of use of ASD assessments in schools
4.	Anderson DK, Lord C, Risi S et al. Patterns of Growth in Verbal Abilities Among Children With Autism Spectrum Disorder. Journal of Consulting and Clinical Psychology 2007; 75:(4)594-604.	Diagnosis: No diagnostic criteria used
5.	Baker HC. A Comparison Study of Autism Spectrum Disorder Referrals 1997 and 1989. Journal of autism and developmental disorders 2002; 32:(2)121-5.	Insufficient data to calculate sensitivity and specificity
6.	Barbaresi WJ, Colligan RC, Weaver AL et al. The incidence of clinically diagnosed versus research-identified autism in Olmsted County, Minnesota, 1976-1997: results from a retrospective, population-based study. Journal of Autism & Developmental Disorders 2009; 39:(3)464-70.	Diagnostic tools of interest not used
7.	Bishop S, Gahagan S, and Lord C. Re-examining the core features of autism: A comparison of autism spectrum disorder and fetal alcohol spectrum disorder. Journal of Child Psychology and Psychiatry and Allied Disciplines 2007; 48:(11)1111-21.	Population: Study included children with ASD or Fetal-Alcohol syndrome
8.	Boggs KM, Gross AM, and Gohm CL. Validity of the Asperger Syndrome Diagnostic Scale. Journal of Developmental and Physical Disabilities 2006; 18:(2)163-82.	Population: Study included children already diagnosed with ASD
9.	Brian J, Bryson SE, Garon N et al. Clinical assessment of autism in high-risk 18-month-olds. Autism 2008; 12:(5)433-56.	Insufficient data to calculate sensitivity and specificity of diagnostic tools of interest
10.	Cicchetti DV, Volkmar F, Klin A et al. Diagnosing autism using ICD-10 criteria: A comparison of neural networks and standard multivariate procedures. Child Neuropsychology 1995; 1:(1)26-37.	Diagnostic tools of interest not used
11.	Cohen IL and Sudhalter V. A neural NETWORK approach to the classification of autism. Journal of Autism & Developmental Disorders 1993; 23:(3)443-66.	Population: Study included children already diagnosed with ASD
12.	Conti-Ramsden G, Botting N, Simkin Z et al. Follow-up of children attending infant language units: Outcomes at 11 years of age. International Journal of Language and Communication Disorders 2001; 36:(2)-219.	Diagnostic criteria:: No ASD diagnostic assessment carried out

13.	de Bildt A, Mulder EJ, Hoekstra PJ et al. Validity of the Children's Social Behavior Questionnaire (CSBQ) in children with intellectual disability: comparing the CSBQ with ADI-R, ADOS, and clinical DSM-IV-TR classification. Journal of autism and developmental disorders 2009; 39:(10)1464-70.	Insufficient data to calculate sensitivity and specificity of diagnostic tools of interest
14.	de Bildt A, Sytema S, van Lang ND et al. Evaluation of the ADOS revised algorithm: the applicability in 558 Dutch children and adolescents. Journal of autism and developmental disorders 2009; 39:(9)1350-8	Insufficient data to calculate sensitivity and specificity of diagnostic tools of interest
15.	Dilalla DL and Rogers SJ. Domains of the Childhood Autism Rating Scale: relevance for diagnosis and treatment. Journal of autism and developmental disorders 1994; 24:(2)115-28.	Population: Study included children already diagnosed with ASD
16.	Dilavore PC, Lord C, and Rutter M. The pre-linguistic autism diagnostic observation schedule. Journal of autism and developmental disorders 1995; 25:(4)355-79.	Population: Study included children already diagnosed with ASD
17.	Downs D, Schmidt B, and Stephens TJ. Auditory behaviors of children and adolescents with pervasive developmental disorders. Seminars in Hearing 2005; 26:(4)226-40.	Population: Study included children already diagnosed with ASD
18.	Ellefsen A, Kampmann H, Billstedt E et al. Autism in the Faroe Islands. An epidemiological study. Journal of autism and developmental disorders 2007; 37:(3)437-44.	Insufficient data to calculate sensitivity and specificity for diagnostic tool of interest
19.	Fombonne E. Diagnostic assessment in a sample of autistic and developmentally impaired adolescents. Journal of autism and developmental disorders 1992; 22:(4)563-81	Diagnosis: Diagnostic criteria used = CFTMEA
20.	Garfin DG, McCallon D, and Cox R. Validity and reliability of the Childhood Autism Rating Scale with autistic adolescents. Journal of autism and developmental disorders 1988; 18:(3)367-78.	Population: Study included children already diagnosed with ASD
21.	Ghaziuddin M, Tsai LY, and Ghaziuddin N. Brief report: A comparison of the diagnostic criteria for Asperger syndrome. Journal of autism and developmental disorders 1992; 22:(4)643-9	Study compared agreement between different diagnostic criteria
22.	Gillberg C, Rastam M, and Wentz E. The Asperger Syndrome (and high-functioning autism) Diagnostic Interview (ASDI): A preliminary study of a new structured clinical interview. Autism 2001; 5:(1)57-66.	Population: Study included children already diagnosed with ASD
23.	Goldberg WA, Osann K, Filipek PA et al. Language and other regression: assessment and timing. Journal of Autism & Developmental Disorders 2003; 33:(6)607-16.	Diagnosis: No diagnostic criteria used
24.	Goldstein S. Review of the Asperger Syndrome Diagnostic Scale. Journal of autism and developmental disorders 2002; 32:(6)611-4	Overview of the Asperger Syndrome Diagnostic Scale
25.	Gotham K, Pickles A, and Lord C. Standardizing ADOS scores for a measure of severity in autism spectrum disorders. Journal of autism and developmental disorders 2009; 39:(5)693-705	Diagnostic: No diagnostic criteria used
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27.	Hall SS, Lightbody AA, Hirt M, Rezvani A, and Reiss AL. Autism in Fragile X Syndrome: A Category Mistake? [Abstract] Journal of the American Academy of Child and Adolescent Psychiatry 9-1-2010; 49(9):921-933.	Diagnosis: No diagnostic criteria used
28.	Howlin P. Autism and diagnostic substitution. Developmental Medicine & Child Neurology 2008; 50:(5)325.	Commentary

29.	Hus V, Pickles A, Cook J et al. Using the Autism Diagnostic Interview-Revised to Increase Phenotypic Homogeneity in Genetic Studies of Autism. Biological Psychiatry 2007; 61:(4)438-48.	Population: Study included children diagnosed with ASD
30.	James PJ and Tager-Flusberg H. An observational study of humor in autism and Down syndrome. Journal of autism and developmental disorders 1994; 24:(5)603-17.	Population: Study included children diagnosed with ASD and normal controls
31.	Kim SH and Lord C. Restricted and repetitive behaviors in toddlers and preschoolers with autism spectrum disorders based on the Autism Diagnostic Observation Schedule (ADOS). Autism Research 2010; 3:(4)162-73.	Insufficient data to calculate sensitivity and specificity of diagnostic tools of interest
32.	Klin A, Lang J, Cicchetti DV et al. Brief report: Interrater reliability of clinical diagnosis and DSM-IV criteria for autistic disorder: results of the DSM-IV autism field trial. Journal of autism and developmental disorders 2000; 30:(2)163-7.	Diagnostic tools of interest not used
33.	Klin A, Pauls D, Schultz R et al. Three diagnostic approaches to asperger syndrome: Implications for research. Journal of autism and developmental disorders 2005; 35:(2)221-34	Index test: Study did not examine diagnostic tool of interest
34.	Klin A, Saulnier CA, Sparrow SS et al. Social and communication abilities and disabilities in higher functioning individuals with autism spectrum disorders: The Vineland and the ADOS. Journal of autism and developmental disorders 2007; 37:(4)748-59.	Diagnosis: No diagnostic criteria used
35.	Kopra K, Von Wendt L, Nieminen-von Wendt T et al. Comparison of diagnostic methods for Asperger syndrome. Journal of Autism & Developmental Disorders 2008; 38:(8)1567-73.	Diagnostic tools of interest not used
36.	Lecavalier L, Aman MG, Scahill L et al. Validity of the autism diagnostic interview-revised. American Journal on Mental Retardation 2006; 111:(3)-215+228.	Population: Study included children already diagnosed with ASD
37.	Lecavalier L. An evaluation of the Gilliam Autism Rating Scale. Journal of autism and developmental disorders 2005; 35:(6)795-805.	Population: Study included children already diagnosed with ASD
38.	Le Couteur A, Haden G, Hammal D et al. Diagnosing Autism Spectrum Disorders in pre-school children using two standardised assessment instruments: The ADI-R and the ADOS. Journal of autism and developmental disorders 2008; 38:(2)362-72.	Population: Study included children already diagnosed with ASD
39.	Leekam S, Libby S, Wing L et al. Comparison of ICD-10 and Gillberg's criteria for Asperger syndrome. Autism 2000; 4:(1)11-28.	Population: Study included children already diagnosed with ASD
40.	Leekam SR, Libby SJ, Wing L et al. The Diagnostic Interview for Social and Communication Disorders: Algorithms for ICD-10 childhood autism and Wing and Gould autistic spectrum disorders. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(3)327-42.	Population: Study included children already diagnosed with ASD
41.	Lord C, Pickles A, McLennan J et al. Diagnosing autism: Analyses of data from the autism diagnostic interview. Journal of autism and developmental disorders 1997; 27:(5)501-17	Population: Study included adults Population: Study included children already diagnosed with ASD

42.	Lord C, Rutter M, and Le CA. Autism Diagnostic Interview-Revised: a revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. Journal of autism and developmental disorders 1994; 24:(5)659-85	Population: Study included children already diagnosed with ASD
43.	Lord C, Risi S, Lambrecht L et al. The autism diagnostic observation schedule-generic: a standard measure of social and communication deficits associated with the spectrum of autism. Journal of Autism & Developmental Disorders 2000; 30:(3)205-23.	Diagnosis: No diagnostic criteria used
44.	Lord C, Storoschuk S, Rutter M et al. Using the ADI--R to diagnose autism in preschool children. Infant Mental Health Journal 1993; 14:(3)234-52.	Population: Study included children already diagnosed with ASD, mental handicap or language impairment
45.	Matson JL, Gonzalez ML, Wilkins J et al. Reliability of the Autism Spectrum Disorder-Diagnostic for Children (ASD-DC). Research in Autism Spectrum Disorders 2008; 2:(3)533-45	Population: Study included children already diagnosed with ASD
46.	Matson JL, Mahan S, Hess JA et al. Convergent validity of the Autism Spectrum Disorder-Diagnostic for Children (ASD-DC) and Childhood Autism Rating Scales (SCARS). Research in Autism Spectrum Disorders 2010; 4:(4)633-8	Population: Study included children already diagnosed with ASD
47.	Matson JL, Hess JA, Mahan S et al. Convergent validity of the Autism Spectrum Disorder-Diagnostic for Children (ASD-DC) and Autism Diagnostic Interview-Revised (ADI-R). Research in Autism Spectrum Disorders 2010; 4:(4)741-5	Population: Study included children already diagnosed with ASD
48.	Matson JL, Gonzalez M, and Wilkins J. Validity study of the Autism Spectrum Disorders-Diagnostic for Children (ASD-DC). Research in Autism Spectrum Disorders 2009; 3:(1)-206	Population: Study included children already diagnosed with ASD
49.	Mattila ML, Kielinen M, Jussila K et al. An epidemiological and diagnostic study of Asperger syndrome according to four sets of diagnostic criteria. Journal of the American Academy of Child and Adolescent Psychiatry 2007; 46:(5)636-46.	Insufficient data to calculate sensitivity and specificity of diagnostic tool of interest
50.	McConachie H, Couteur AL, and Honey E. Can a diagnosis of asperger syndrome be made in very young children with suspected autism spectrum disorder? Journal of autism and developmental disorders 2005; 35:(2)167-76.	Insufficient data to calculate sensitivity and specificity of diagnostic tool of interest
51.	Miller JN and Ozonoff S. The external validity of asperger disorder: Lack of evidence from the domain of neuropsychology. Journal of Abnormal Psychology 2000; 109:(2)227-38.	Diagnostic tools of interest not used
52.	Montgomery J, Newton B, and Smith C. Test Reviews: Gilliam, J. (2006). "GARS-2: Gilliam Autism Rating Scale-Second Edition." Austin, TX: PRO-ED. Journal of Psychoeducational Assessment 2008; 26:(4)7-401.	Review of Gilliam Autism Rating Scale – 2
53.	Nygren G, Hagberg B, Billstedt E et al. The swedish version of the diagnostic interview for social and communication disorders (DISCO-10). psychometric properties. Journal of autism and developmental disorders 2009; 39:(5)730-41	Population: Study included adults
54.	Overton T, Fielding C, and De Alba R. Brief report: Exploratory analysis of the ADOS revised algorithm: Specificity and predictive value with hispanic children referred for autism spectrum disorders. Journal of	Insufficient data to calculate sensitivity and specificity of

	autism and developmental disorders 2008; 38:(6)1166-9.	diagnostic tool of interest
55.	Oosterling I, Roos S, De Bildt A et al. Improved diagnostic validity of the ADOS revised algorithms: A replication study in an independent sample. Journal of autism and developmental disorders 2010; Vol.40:(6)689-703.	Insufficient data to calculate sensitivity and specificity of diagnostic tool of interest
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57.	Perry A, Condillac RA, Freeman NL et al. Multi-site study of the Childhood Autism Rating Scale (CARS) in five clinical groups of young children. Journal of autism and developmental disorders 2005; 35:(5)625-34.	Diagnostic tool: CARS not used in a standard way so results are not replicable
58.	Pilowsky T, Yirmiya N, Shulman C et al. The autism diagnostic interview-revised and the childhood autism rating scale: Differences between diagnostic systems and comparison between genders. Journal of autism and developmental disorders 1998; 28:(2)143-51.	Population: Study included adults Diagnosis: No diagnostic criteria used
59.	Posserud M, Lundervold AJ, Lie SA et al. The prevalence of autism spectrum disorders: impact of diagnostic instrument and non-response bias. Social Psychiatry and Psychiatric Epidemiology 2010; 45:(3)319-27.	Diagnosis: Unclear of final diagnosis of included children Population: Not all screen negative children given diagnostic assessment
60.	Rellini E, Tortolani D, Trillo S et al. Childhood Autism Rating Scale (CARS) and Autism Behavior Checklist (ABC) correspondence and conflicts with DSM-IV criteria in diagnosis of autism. Journal of autism and developmental disorders 2004; 34:(6)703-8	Population: Study included children already diagnosed with autism
61.	Risi S, Lord C, Gotham K et al. Combining information from multiple sources in the diagnosis of autism spectrum disorders. Journal of the American Academy of Child and Adolescent Psychiatry 2006; 45:(9)1094-103	Diagnosis: No diagnostic criteria used
62.	Robertson JM, Tanguay PE, L'Ecuyer S et al. Domains of social communication handicap in autism spectrum disorder. Journal of the American Academy of Child and Adolescent Psychiatry 1999; 38:(6)738-45.	Population: Study excluded children who did not test positive on two diagnostic tools of interest
63.	Saemundsen E, Magnusson P, Sma¡ri J et al. Autism Diagnostic Interview-Revised and the Childhood Autism Rating Scale: convergence and discrepancy in diagnosing autism. Journal of Autism & Developmental Disorders 2003; 33:(3)319-28.	Diagnosis: No reference standard test
64.	Sikora DM, Hartley SL, McCoy R et al. The performance of children with mental health disorders on the ADOS-G: A question of diagnostic utility. Research in Autism Spectrum Disorders 2008; 2:(1)188-97	Population: Study excluded children with developmental disorders
65.	South M, Williams BJ, McMahon WM et al. Utility of the Gilliam Autism Rating Scale in Research and Clinical Populations. Journal of autism and developmental disorders 2002; 32:(6)593-9.	Population: Study included children already diagnosed with ASD
66.	Sponheim E. Changing criteria of autistic disorders: A comparison of the ICD-10 research criteria and DSM-	Insufficient data to calculate

	IV with DSM-III-R, CARS, and ABC. Journal of autism and developmental disorders 1996; 26:(5)513-25.	sensitivity and specificity of diagnostic tools of interest
67.	Starr EM, Berument SK, Tomlins M et al. Brief report: Autism in individuals with down syndrome. Journal of autism and developmental disorders 2005; 35:(5)665-73	Diagnosis: No diagnostic criteria used
68.	Stella J, Mundy P, and Tuchman R. Social and nonsocial factors in the childhood autism rating scale. Journal of Autism & Developmental Disorders 1999; 29:(4)307	Diagnostic tool: CARS not used in a standard way so results are not replicable
69.	Szatmari P, Volkmar F, and Walter S. Evaluation of diagnostic criteria for autism using latent class models. Journal of the American Academy of Child and Adolescent Psychiatry 1995; 34:(2)216-22	Diagnosis: Specified diagnostic criteria not used
70.	Stone WL, Coonrod EE, Pozdol SL et al. The Parent Interview for Autism-Clinical Version (PIA-CV): A measure of behavioral change for young children with autism. Autism 2003; 7:(1)9-30.	Population: Some children already had an ASD diagnosis
71.	Stone WL and Hogan KL. A structured parent interview for identifying young children with autism. Journal of autism and developmental disorders 1993; 23:(4)639-52	Insufficient data to calculate sensitivity and specificity of diagnostic tools of interest
72.	Tanguay PE, Robertson J, and Derrick A. A dimensional classification of autism spectrum disorder by social communication domains. Journal of the American Academy of Child and Adolescent Psychiatry 1998; 37:(3)271-7.	Population: Study excluded children who did not test positive on two diagnostic tool
73.	Tomanik SS, Pearson DA, Loveland KA et al. Improving the reliability of autism diagnoses: Examining the utility of adaptive behavior. Journal of autism and developmental disorders 2007; 37:(5)921-8.	Diagnostic criteria: No diagnostic criteria used
74.	Tomblin JB, Hafeman LL, and O'Brien M. Autism and autism risk in siblings of children with specific language impairment. International Journal of Language and Communication Disorders 2003; 38:(3)235-50.	Diagnostic criteria: No diagnostic criteria used
75.	Tryon PA, Mayes SD, Rhodes RL et al. Can Asperger's disorder be differentiated from autism using DSM-IV criteria? Focus on Autism and Other Developmental Disabilities 2006; 21:(1)2-6.	Diagnostic tools of interest not used
76.	Van Lang N, Boomsma A, Sytema S et al. Structural equation analysis of a hypothesised symptom model in the autism spectrum. Journal of Child Psychology and Psychiatry and Allied Disciplines 2006; 47:(1)37-44.	Insufficient data to calculate sensitivity and specificity of diagnostic tools of interest
77.	Volkmar FR. Brief report: diagnostic issues in autism: results of the DSM-iv field trial. Journal of Autism & Developmental Disorders 1996; 26:(2)155-7	Diagnostic tools of interest not used
78.	Waterhouse L, Morris R, Allen D et al. Diagnosis and classification in autism. Journal of autism and developmental disorders 1996; 26:(1)59-86.	Diagnostic tools of interest not used
79.	Wetherby AM, Woods J, Allen L et al. Early indicators of autism spectrum disorders in the second year of life. Journal of autism and developmental disorders 2004; 34:(5)473-93.	Population: Study included children already diagnosed with ASD
80.	Wiggins LD, Robins DL, Bakeman R et al. Brief report: Sensory abnormalities as distinguishing symptoms of	No diagnostic accuracy data

	autism spectrum disorders in young children. Journal of Autism & Developmental Disorders 2009; 39:(7)1087-91.	
81.	Wing L, Leekam SR, Libby SJ et al. The Diagnostic Interview for Social and Communication Disorders: background, inter-rater reliability and clinical use. Journal of Child Psychology and Psychiatry 2002; 43:(3)307-25	Population: Study included children already diagnosed with ASD
82.	Woodbury S, Klin A, and Volkmar F. Asperger's Syndrome: A Comparison of Clinical Diagnoses and Those Made According to the ICD-10 and DSM-IV. Journal of autism and developmental disorders 2005; 35:(2)6-240.	Diagnostic tools of interest not used
83.	Yirmiya N, Sigman M, and Freeman BJ. Comparison between diagnostic instruments for identifying high-functioning children with autism. Journal of autism and developmental disorders 1994; 24:(3)281-91.	Population: Study included children already diagnosed with ASD
84.	Zwaigenbaum L, Bryson S, Rogers T et al. Behavioral manifestations of autism in the first year of life. International Journal of Developmental Neuroscience 2005; 23:(2-3)143-52.	Incomplete data to calculate sensitivity and specificity of diagnostic tool of interest

Question 3(b)

	REFERENCE	REASON FOR EXCLUSION
1.	Adams NC and Jarrold C. Inhibition and the validity of the Stroop task for children with autism. Journal of Autism & Developmental Disorders 2009; 39:(8)1112-21.	No data to answer question of interest
2.	Akshoomoff N. Use of the Mullen Scales of Early Learning for the assessment of young children with Autism Spectrum Disorders. Child Neuropsychology 2006; 12:(4-5)269-5.	No data to answer question of interest
3.	Anderson DK, Lord C, Risi S et al. Patterns of Growth in Verbal Abilities Among Children With Autism Spectrum Disorder. Journal of Consulting and Clinical Psychology 2007; 75:(4)594-604.	No data to answer question of interest
4.	Baranek GT, David FJ, Poe MD et al. Sensory Experiences Questionnaire: Discriminating sensory features in young children with autism, developmental delays, and typical development. Journal of Child Psychology and Psychiatry and Allied Disciplines 2006; 47:(6)591-601.	No data to answer question of interest
5.	Baranek GT, Boyd BA, Poe MD et al. Hyperresponsive sensory patterns in young children with autism, developmental delay, and typical development. American Journal on Mental Retardation 2007; 112:(4)233-45+308.	No data to answer question of interest
6.	Bellini S and Hopf A. The development of the autism social skills profile: A preliminary anaylsis of psychometric properties. Focus on Autism and Other Developmental Disabilities 2007; 22:(2)80-7.	No data to answer question of interest
7.	Ben-Sasson A, Cermak SA, Orsmond GI et al. Sensory clusters of toddlers with autism spectrum disorders: Differences in affective symptoms. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(8)817-25.	No data to answer question of interest
8.	Bishop DVM and Baird G. Parent and teacher report of pragmatic aspects of communication: Use of the Children's Communication Checklist in a clinical setting. Developmental Medicine and Child Neurology 2001; 43:(12)809-18.	No data to answer question of interest
9.	Boggs KM, Gross AM, and Gohm CL. Validity of the Asperger Syndrome Diagnostic Scale. Journal of Developmental and Physical Disabilities 2006; 18:(2)163-82.	No data to answer question of interest
10.	Cadigan K and Missall KN. Measuring expressive language growth in young children with autism spectrum disorders. Topics in Early Childhood Special Education 2007; 27:(2)110-8.	No data to answer question of interest
11.	Charman T, Drew A, Baird C et al. Measuring early language development in preschool children with autism spectrum disorder using the MacArthur Communicative Development Inventory (Infant Form). Journal of Child Language 2003; 30:(1)213-36.	No data to answer question of interest
12.	Chen YH, Rodgers J, and McConachie H. Restricted and repetitive behaviours, sensory processing and cognitive style in children with autism spectrum disorders. Journal of autism and developmental disorders 2009; 39:(4)635-42.	No data to answer question of interest
13.	Chiang CH, Soong WT, Lin TL et al. Nonverbal communication skills in young children with autism.	No data to answer question of

	Journal of autism and developmental disorders 2008; 38:(10)1898-906.	interest
14.	Coleman N, Hare DJ, Farrell P et al. The use of the Social Cognitive Skills Test with children with autistic spectrum disorders. Journal of Intellectual Disabilities 2008; 12:(1)49-57.	No data to answer question of interest
15.	Davies PL, Soon PL, Young M et al. Validity and reliability of the school function assessment in elementary school students with disabilities. Physical and Occupational Therapy in Pediatrics 2004; 24:(3)23-43.	No data to answer question of interest
16.	De Bruin E, Verheij F, and Ferdinand RF. WISC-R subtest but no overall VIQ-PIQ difference in Dutch children with PDD-NOS. Journal of Abnormal Child Psychology 2006; 34:(2)263-71.	No data to answer question of interest
17.	Drew A, Baird G, Taylor E et al. The Social Communication Assessment for Toddlers with Autism (SCATA): An instrument to measure the frequency, form and function of communication in toddlers with autism spectrum disorder. Journal of autism and developmental disorders 2007; 37:(4)648-66.	No data to answer question of interest
18.	Dyck MJ, Piek JP, Hay DA et al. The relationship between symptoms and abilities in autism. Journal of Developmental and Physical Disabilities 2007; 19:(3)251-61.	No data to answer question of interest
19.	Dyehouse MA and Bennett DE. Validity evidence for a computer-based alternate assessment instrument. Assessment for Effective Intervention 2006; 31:(3)11-31.	No data to answer question of interest
20.	Edelson MG, Schubert DT, and Edelson SM. Factors predicting intelligence scores on the TONI in individuals with autism. Focus on Autism and Other Developmental Disabilities 1998; 13:(1)17-26.	No data to answer question of interest
21.	Estes AM, Dawson G, Sterling L et al. Level of intellectual functioning predicts patterns of associated symptoms in school-age children with autism spectrum disorder. American Journal on Mental Retardation 2007; 112:(6)439-49.	No data to answer question of interest
22.	Farmer JE and Clark MJ. Identification and evaluation of Missouri's children with autism spectrum disorders: promoting a rapid response. Missouri Medicine 2008; 105:(5)384-9.	Overview paper about the identification and evaluation of Missouri's children with ASD No data to answer question of interest
23.	Hansen RL, Ozonoff S, Krakowiak P et al. Regression in autism: prevalence and associated factors in the CHARGE study. Ambulatory Pediatrics 2008; 8:(1)25-31.	No data to answer question of interest
24.	Hutchins TL, Prelock PA, and Chace W. Test-retest reliability of a theory of mind task battery for children with Autism Spectrum Disorders. Focus on Autism and Other Developmental Disabilities 2008; 23:(4)195-206	No data to answer question of interest
25.	Joosten AV and Bundy AC. The motivation of stereotypic and repetitive behavior: Examination of construct validity of the motivation assessment scale. Journal of autism and developmental disorders 2008; 38:(7)1341-8.	No data to answer question of interest
26.	Klin A, Saulnier CA, Sparrow SS et al. Social and communication abilities and disabilities in higher	No data to answer question of

	functioning individuals with autism spectrum disorders: The Vineland and the ADOS. Journal of autism and developmental disorders 2007; 37:(4)748-59.	interest
27.	Portoghese C, Buttiglione M, Pavone F et al. The usefulness of the Revised Psychoeducational Profile for the assessment of preschool children with pervasive developmental disorders. Autism 2009; 13:(2)179-91.	No data to answer question of interest
28.	Schlooz WA, Hulstijn W, van den Broek PJ et al. Fragmented visuospatial processing in children with pervasive developmental disorder. Journal of autism and developmental disorders 2006; 36:(8)1025-37.	No data to answer question of interest
29.	Siegel DJ, Minshew NJ, and Goldstein G. Wechsler IQ profiles in diagnosis of high-functioning autism. Journal of autism and developmental disorders 1996; 26:(4)389-406.	No data to answer question of interest
30.	Skovgaard AM, Olsen EM, Christiansen E et al. Predictors (0-10 months) of psychopathology at age 11/2 years - a general population study in The Copenhagen Child Cohort CCC 2000. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(5)553-62.	No data to answer question of interest
31.	Stein MA, Szumowski E, Sandoval R et al. Psychometric properties of the children's atypical development scale. Journal of Abnormal Child Psychology 1994; 22:(2)167-76.	No data to answer question of interest

Question 3(c)

	REFERENCE	REASON FOR EXCLUSION
1.	Special report: aCGH for the genetic evaluation of patients with developmental delay/mental retardation or autism spectrum disorder. Technology Evaluation Center Assessment Program 2009; Executive Summary. 23:(10)1-5	Status report on aCGH evaluation
2.	Akshoomoff N, Lord C, Lincoln AJ et al. Outcome classification of preschool children with autism spectrum disorders using MRI brain measures. Journal of the American Academy of Child and Adolescent Psychiatry 2004; 43:(3)349-57.	Insufficient data to calculate outcomes of interest
3.	Alcorn A, Berney T, Bretherton K et al. Urinary compounds in autism. Journal of Intellectual Disability Research 2004; 48:(Pt 3)274-8	Insuffiecient data to calculate outcomes of interest
4.	Asano E, Chugani DC, Muzik O et al. Autism in tuberous sclerosis complex is related to both cortical and subcortical dysfunction. Neurology 2001; 57:(7)1269-77.	Population: Study included children with tuberous sclerosis and epilepsy.
5.	Ashwin E, Ashwin C, Rhydderch D et al. Eagle-Eyed Visual Acuity: An Experimental Investigation of Enhanced Perception in Autism. Biological Psychiatry 2009; 65:(1)17-21.	Experimental study on visual acuity children with autism with healthy controls
6.	Ashwood P, Kwong C, Hansen R et al. Brief report: plasma leptin levels are elevated in autism: association with early onset phenotype? Journal of Autism & Developmental Disorders 2008; 38:(1)169-75.	Diagnosis: Diagnostic criteria not used
7.	Bradley Schaefer G, Mendelsohn NJ, and Professional Practice and Guidelines Committee. Clinical genetics evaluation in identifying the etiology of autism spectrum disorders. Genetics in Medicine 2008; 10:(4)301-5.	Overview of genetics evaluations in ASD
8.	Brune CW, Kim SJ, Salt J et al. 5-HTTLPR genotype-specific phenotype in children and adolescents with autism. American Journal of Psychiatry 2006; 163:(12)2148-56.	Diagnosis: No diagnostic criteria used
9.	Bruni O, Ferri R, Vittori E et al. Sleep architecture and NREM alterations in children and adolescents with Asperger syndrome. Sleep 2007; 30:(11)1577-85	Experimental study of sleep architecture in Asperger syndrome Insufficient data to calculate outcomes of interest
10.	Cantu ES, Stone JW, Wing AA et al. Cytogenetic survey for autistic fragile X carriers in a mental retardation center. American Journal on Mental Retardation 1990; 94:(4)442-7.	Study only included adult patients with mental retardation and autism/autistic features
11.	Cass H, Gringras P, March J et al. Absence of urinary opioid peptides in children with autism. Archives of Disease in Childhood 2008; 93:(9)745-50	Insufficient data to calculate to outcome of interest
12.	Cass H, Sekaran D, and Baird G. Medical investigation of children with autistic spectrum disorders. Child: Care, Health and Development 2006; 32:(5)521-33.	Overview of medical investigations in ASD

13.	Endo T, Shioiri T, Kitamura H et al. Altered Chemical Metabolites in the Amygdala-Hippocampus Region Contribute to Autistic Symptoms of Autism Spectrum Disorders. Biological Psychiatry 2007; 62:(9)1030-7.	Experimental study on brain abnormalities comparing children with autism with healthy controls
14.	Engbers HM, Berger R, Van Hasselt P et al. Yield of additional metabolic studies in neurodevelopmental disorders. Annals of Neurology 2008; 64:(2)212-7.	Population: Study included children with unexplained developmental disorders
15.	Falk RE and Casas KA. Chromosome 2q37 Deletion: Clinical and molecular aspects. American Journal of Medical Genetics, Part C: Seminars in Medical Genetics 2007; 145:(4)357-71	Overview of chromosome 2q37 deletion
16.	Fernandez BA, Roberts W, Chung B et al. Phenotypic spectrum associated with de novo and inherited deletions and duplications at 16p11.2 in individuals ascertained for diagnosis of autism spectrum disorder. Journal of Medical Genetics 2010; 47:(3)195-203	Sample size < 6
17.	Fong CY, Baird G, and Wraige E. Do children with autism and developmental regression need EEG investigation in the absence of clinical seizures? Archives of Disease in Childhood 2008; 93:(11)998-9	Unsystematic review of role of EEG in autistic children without seizures Insufficient data to calculate to outcome of interest
18.	Galanopoulou AS, Vidaurre J, McVicar K et al. Language and behavioral disturbances associated with epileptiform EEGs. American Journal of Electroneurodiagnostic Technology 2002; 42:(4)181-209.	Overview of disorders associated with epileptiform EEG's Insufficient data to calculate to outcome of interest
19.	Gomes E, Rotta NT, Pedroso FS et al. Auditory hypersensitivity in children and teenagers with autistic spectrum disorder. Arquivos de Neuro-Psiquiatria 2004; 62:(3 B)797-siquiatria.	Insufficient data to calculate to outcome of interest
20.	Grewe TSD, Danhauer JL, Danhauer KJ et al. Clinical use of otoacoustic emissions in children with autism. International Journal of Pediatric Otorhinolaryngology 1994; 30:(2)123-32.	Sample size < 10
21.	Gurling HMD, Bolton PF, Vincent J et al. Molecular and cytogenetic investigations of the fragile X region including the Frax A and Frax E CGG trinucleotide repeat sequences in families multiplex for autism and related phenotypes. Human Heredity 1997; 47:(5)254-62	Insufficient data to calculate to outcome of interest
22.	Hertz-Picciotto I, Croen LA, Hansen R et al. The CHARGE study: An epidemiologic investigation of genetic and environmental factors contributing to autism. Environmental Health Perspectives 2006; 114:(7)1119-25	Diagnosis: Specified diagnostic criteria not used
23.	Heuer L, Ashwood P, Schauer J et al. Reduced levels of immunoglobulin in children with autism correlates with behavioral symptoms. Autism research : Official Journal of the International Society for Autism Research 2008; 1:(5)275-83	Insufficient data to calculate to outcome of interest
24.	Hrdlicka M, Dudova I, Beranova I et al. Subtypes of autism by cluster analysis based on structural MRI data. European Child and Adolescent Psychiatry 2005; 14:(3)138-44	Insufficient data to calculate to outcome of interest
25.	Kaufmann WE, Cooper KL, Mostofsky SH et al. Specificity of cerebellar vermian abnormalities in autism:	Insufficient data to calculate to outcome of

	A quantitative magnetic resonance imaging study. Journal of Child Neurology 2003; 18:(7)463-70.	interest
26.	Kawasaki Y, Yokota K, Shinomiya M et al. Brief report: Electroencephalographic paroxysmal activities in the frontal area emerged in middle childhood and during adolescence in a follow- up study of autism. Journal of autism and developmental disorders 1997; 27:(5)605-20.	Diagnosis: Specified diagnostic criteria not used
27.	Kulisek R, Hrncir Z, Hrdlicka M et al. Nonlinear analysis of the sleep EEG in children with pervasive developmental disorder. Neuroendocrinology Letters 2008; 29:(4)512-7	Insufficient data to calculate outcomes of interest
28.	McInnes LA, Gonzalez PJ, Manghi ER et al. A genetic study of autism in Costa Rica: Multiple variables affecting IQ scores observed in a preliminary sample of autistic cases. BMC Psychiatry 2005; 5,;#2005. Article Number	Insufficient data to calculate to outcome of interest
29.	Majnemer A and Shevell MI. Diagnostic yield of the neurologic assessment of the developmentally delayed child. Journal of Pediatrics 1995; 127:(2)-199.	Population: Study excluded children with autism
30.	Miles JH and Hillman RE. Value of a clinical morphology examination in autism. American Journal of Medical Genetics 2000; 91:(4)245-53	Insufficient data to calculate to outcome of interest
31.	Nurmi EL, Dowd M, Tadevosyan-Leyfer O et al. Exploratory subsetting of autism families based on savant skills improves evidence of genetic linkage to 15q11-q13. Journal of the American Academy of Child and Adolescent Psychiatry 2003; 42:(7)856-63.	Diagnosis: Diagnostic criteria used not specified
32.	Pinto D, Pagnamenta AT, Klei L et al. Functional impact of global rare copy number variation in autism spectrum disorders. Nature 2010; advance online publication	Insufficient data to calculate to outcome of interest
33.	Rapin I. Appropriate investigations for clinical care versus research in children with autism. Brain and Development 1999; 21:(3)152-6	Overview of biomedical investigations in clinical or research settings
34.	Reading R. Clinical genetic testing for patients with autism spectrum disorders. Child Care, Health and Development 2010; 36:(4)599	Synopsis of an included study
35.	Rosen-Sheidley B, Wolpert C, and Folstein S. Genetic counseling for autism spectrum disorders. Exceptional Parent 2004; 34:(3)63-7	Overview of genetic counselling inn ASD
36.	Rosenhall U, Nordin V, Brantberg K et al. Autism and auditory brain stem responses. Ear and Hearing 2003; 24:(3)-214	Insufficient data to calculate to outcome of interest
37.	Sebat J, Lakshmi B, Malhotra D et al. Strong association of de novo copy number mutations with autism. Science 2007; 316:(5823)445-9	Insufficient data to calculate to outcome of interest
38.	Shevell M, Ashwal S, Donley D et al. Practice parameter: Evaluation of the child with global developmental delay: Report of the quality standards subcommittee of the American Academy of Neurology and The Practice Committee of the Child Neurology Society. Neurology 2003; 60:(3)367-80.	Practice parameter on the evaluation of children with global developmental delay
39.	Sparks BF, Friedman SD, Shaw DW et al. Brain structural abnormalities in young children with autism spectrum disorder. Neurology 2002; 59:(2)184-92.	Insufficient data to calculate to outcome of interest

40.	Stanfield AC, McIntosh AM, Spencer MD et al. Towards a neuroanatomy of autism: A systematic review and meta-analysis of structural magnetic resonance imaging studies. European Psychiatry 2008; 23:(4)289-99.	Review of MRI studies which included studies without diagnostic criteria and adult only studies
41.	Stoicanescu D and Cevei M. Multiple minor congenital anomalies in autism. Archives of the Balkan Medical Union 2007; 42:(1)44-6.	Diagnosis: Diagnostic criteria used Not reported
42.	Stroganova TA, Nygren G, Tsetlin MM et al. Abnormal EEG lateralization in boys with autism. Clinical Neurophysiology 2007; 118:(8)1842-54.	Insufficient data to calculate outcomes of interest
43.	Sung YJ, Dawson G, Munson J et al. Genetic investigation of quantitative traits related to autism: use of multivariate polygenic models with ascertainment adjustment. American Journal of Human Genetics 2005; 76:(1)68-81.	Diagnosis: Diagnostic criteria no used for entire sample
44.	Tranebjaerg L and Kure P. Prevalence of fra(X) and other specific diagnoses in autistic individuals in a Danish county. American Journal of Medical Genetics 1991; 38:(2-3)212-3.	Abstract of conference paper Not all subjects received test for Fragile X
45.	Weber AM, Egelhoff JC, McKellop JM et al. Autism and the cerebellum: evidence from tuberous sclerosis. Journal of Autism & Developmental Disorders 2000; 30:(6)511-7.	Inclusion criteria – included children with tuberous sclerosis with or without autism
46.	Weiss LA, Shen Y, Korn JM et al. Association between microdeletion and microduplication at 16p11.2 and autism. New England Journal of Medicine 2008; 358:(7)667-75	Insufficient data to calculate to outcome of interest
47.	Wong VC and Lam ST. Fragile X positivity in Chinese children with autistic spectrum disorder. Pediatric Neurology 1992; 8:(4)272-4.	Insufficient data to calculate to outcome of interest
48.	Yap IKS, Angley M, Veselkov KA et al. Urinary Metabolic Phenotyping Differentiates Children with Autism from Their Unaffected Siblings and Age-Matched Controls. Journal of Proteome Research 2010; 9:(6)2996-3004.	Insufficient data to calculate to outcome of interest
49.	Zwaigenbaum L. Review: strong evidence recommends genetic and metabolic testing in subgroups of children with autism. Evidence-Based Mental Health 2001; 4:(1)25.	Overview of a practice parameter

Question 4(a)

	REFERENCE	REASON FOR EXCLUSION
1.	Althaus M, Minderaa RB, and Dienske H. The assessment of individual differences between young children with a pervasive developmental disorder by means of behaviour scales which are derived from direct observation. Journal of Child Psychology and Psychiatry and Allied Disciplines 1994; 35:(2)333-49.	Population: Study included children already diagnosed with ASD
2.	Asarnow JR. Childhood-onset schizophrenia. Journal of Child Psychology and Psychiatry 1994; 35:(8)1345-71.	Overview of childhood schizophrenia
3.	Asarnow RF and Asarnow JR. Childhood-onset schizophrenia: Editors' introduction. Schizophrenia bulletin 1994; 20:(4)591-7.	Overview of childhood schizophrenia
4.	Assumpcao J, Kuczynski E, and Assumpsao FB. Autism associated to the Silver-Russel syndrome. Archivos de Neurociencias 2000; 5:(1)32-4.	Sample size < 10
5.	Baron-Cohen S and Robertson MM. Children with either autism, Gilles de la Tourette Syndrome or both: mapping cognition to specific syndromes. Neurocase (Psychology Press) 1995; 1:(2)101-6.	Sample size < 10 Diagnosis: Diagnostic criteria not used
6.	Bishop DV. Autism and specific language impairment: categorical distinction or continuum? Novartis Foundation Symposium 2003; 251:213-26.	Overview of similarities between ASD and language impairment
7.	Campos JG and de G. Landau-Kleffner syndrome. Journal of Pediatric Neurology 2007; 5:(2)93-9.	Overview of landau-Kleffner syndrome
8.	Castillo H, Patterson B, Hickey F et al. Difference in age at regression in children with autism with and without Down syndrome. Journal of Developmental and Behavioral Pediatrics 2008; 29:(2)89-93.	Population: Study included children already diagnosed with ASD or Down Syndrome
9.	Coleman M. Clinical review: Medical differential diagnosis and treatment of the autistic syndrome. European Child and Adolescent Psychiatry 1993; 2:(3)161-8.	Overview of differential diagnosis
10.	Dawes P and Bishop D. Auditory processing disorder in relation to developmental disorders of language, communication and attention: a review and critique. International Journal of Language & Communication Disorders 2009; 44:(4)440-65.	Overview about auditory processing disorder in relation to developmental disorders
11.	De Bildt A, Serra M, Luteijn E et al. Social skills in children with intellectual disabilities with and without autism. Journal of Intellectual Disability Research 2005; 49:(5)317-28.	Diagnosis: No diagnostic criteria specified

12.	Eaves RC and Williams TOJ. The reliability and construct validity of ratings for the autism behavior checklist. Psychology in the Schools 2006; 43:(2)129-42.	Population: Study included children already diagnosed with ASD
13.	Eaves RC, Woods-Groves S, Williams TOJ et al. Reliability and Validity of the Pervasive Developmental Disorders Rating Scale and the Gilliam Autism Rating Scale. Education and Training in Developmental Disabilities 2006; 41:(3)300-9.	Population: Study included children already diagnosed with ASD
14.	Fazzi E, Rossi M, Signorini S et al. Leber's congenital amaurosis: Is there an autistic component? Developmental Medicine and Child Neurology 2007; 49:(7)503-7.	Population: Study included children already diagnosed with Leber's congenital amaurosis
15.	Fitzgerald M. Differential diagnosis of adolescent and adult pervasive developmental disorders/autism spectrum disorders (PDD/ASD): A not uncommon diagnostic dilemma. Irish Journal of Psychological Medicine 1999; 16:(4)145-8.	Overview of differential diagnosis of ASD
16.	Frazier JA, Biederman J, Bellordre CA et al. Should the diagnosis of attention-deficit/hyperactivity disorder be considered in children with pervasive developmental disorder? Journal of attention disorders 2001; 4:(4)203-11.	Population: Study included children already diagnosed with ASD
17.	Gal E, Dyck MJ, and Passmore A. The relationship between stereotyped movements and self-injurious behavior in children with developmental or sensory disabilities. Research in Developmental Disabilities 2009; 30:(2)342-52.	Children had already been diagnosed with ASD, intellectual disability or vision impairment
18.	Howlin P and Karpf J. Using the Social Communication Questionnaire to Identify "Autistic Spectrum" Disorders Associated with Other Genetic Conditions: Findings from a Study of Individuals with Cohen Syndrome. Autism The International Journal of Research and Practice 2004; 8:(2)8-182.	Population: Study included children already diagnosed with Cohen syndrome
19.	Jones GS. Autistic spectrum disorder: Diagnostic difficulties. Prostaglandins Leukotrienes and Essential Fatty Acids 2000; 63:(1-2)33-2.	Overview of diagnostic difficulties of ASD
20.	Klein-Tasman BP, Mervis CB, Lord C et al. Socio-communicative deficits in young children with Williams syndrome: Performance on the autism diagnostic observation schedule. Child Neuropsychology 2007; 13:(5)444-67.	Population: Study included children already diagnosed with Williams syndrome
21.	Konstantareas MM and Hewitt T. Autistic disorder and schizophrenia: diagnostic overlaps. Journal of Autism & Developmental Disorders 2001; 31:(1)19-28.	Population: Study included children already diagnosed with ASD or schizophrenia
22.	Limprasert P, Ruangdaraganon N, Vasiknanonte P et al. A clinical checklist for fragile X syndrome: screening of Thai boys with developmental delay of unknown cause. Journal of the Medical Association of Thailand 2000; 83:(10)1260-6.	Population: Study included children with development delay
23.	Matson JL, Nebel-Schwalm M, and Matson ML. A review of methodological issues in the differential diagnosis of autism spectrum disorders in children. Research in Autism Spectrum Disorders 2007;	Overview of differential diagnosis

	1:(1)38-54.	
24.	Matson JL. Current status of differential diagnosis for children with autism spectrum disorders. Research in Developmental Disabilities 2007; 28:(2)109-18.	Overview of differential diagnosis for ASD
25.	Mayes SD and Calhoun SL. Similarities and differences in Wechsler intelligence scale for children - Third edition (WISC-III) profiles: Support for subtest analysis in clinical referrals. Clinical Neuropsychologist 2004; 18:(4)559-72.	Population were referred for learning, attention, and/or behaviour problem, not for possible ASD
26.	Michelotti J, Charman T, Slonims V et al. Follow-up of children with language delay and features of autism from preschool years to middle childhood. Developmental Medicine and Child Neurology 2002; 44:(12)812-9.	Population: Study included children already diagnosed with developmental language delay
27.	Mukaddes NM. Clinical characteristics and treatment responses in cases diagnosed as reactive attachment disorder. Child Psychiatry and Human Development 2000; 30:(4)273-87.	Population: Study included children already diagnosed with reactive attachment disorder
28.	Newson E, Le Marechal K, and David C. Pathological demand avoidance syndrome: a necessary distinction within the pervasive developmental disorders. Archives of Disease in Childhood 2003; 88:(7)595-600.	Population: Study included children already diagnosed with pathological demand avoidance syndrome
29.	Overton T, Fielding C, and de Alba RG. Differential diagnosis of hispanic children referred for autism spectrum disorders: complex issues. Journal of Autism & Developmental Disorders 2007; 37:(10)1996-2007.	Diagnosis: No diagnostic criteria specified
30.	Ozonoff S, South M, and Miller JN. DSM-IV-defined Asperger syndrome: Cognitive, behavioral and early history differentiation from high-functioning autism. Autism 2000; 4:(1)29-46.	Population: Study included children already diagnosed with ASD
31.	Roeyers H, Keymeulen H, and Buysse A. Differentiating attention-deficit/hyperactivity disorder from pervasive developmental disorder not otherwise specified. Journal of Learning Disabilities 1998; 31:(6)565-71.	Population: Study included children already diagnosed with ASD or ADHD
32.	Safran SP. Asperger Syndrome: The emerging challenge to special education. Exceptional Children 2001; 67:(2)151-60.	Overview of Asperger syndrome
33.	Scheirs JG and Timmers EA. Differentiating among children with PDD-NOS, ADHD, and those with a combined diagnosis on the basis of WISC-III profiles. Journal of autism and developmental disorders 2009; 39:(4)549-56.	About PDD not ASD
34.	Sciutto MJ and Cantwell C. Factors Influencing the Differential Diagnosis of Asperger's Disorder and High-Functioning Autism. Journal of Developmental and Physical Disabilities 2005; 17:(4)345-59.	Case-vignette study
35.	Shin YJ, Lee KS, Min SK et al. A Korean syndrome of attachment disturbance mimicking symptoms of	Population: Study included

	pervasive developmental disorder. Infant Mental Health Journal 1999; 20:(1)60-76.	children with an ASD diagnosis given incorrectly
36.	Takaoka K and Takata T. Catatonia in childhood and adolescence. Psychiatry and Clinical Neurosciences 2003; 57:(2)129-37.	Overview of catatonia in children / young people
37.	Vig S and Jedrysek E. Autistic features in young children with significant cognitive impairment: autism or mental retardation? Journal of Autism & Developmental Disorders 1999; 29:(3)235-48.	Overview of differential diagnosis between ASD and mental retardation

Question 4(b)

	REFERENCE	REASON FOR EXCLUSION
1.	Adachi T, Koeda T, Hirabayashi S et al. The metaphor and sarcasm scenario test: A new instrument to help differentiate high functioning pervasive developmental disorder from attention deficit/hyperactivity disorder. Brain and Development 2004; 26:(5)301-6.	Population: Study included children already diagnosed with ASD or schizophrenia
2.	Bennett T, Szatmari P, Bryson S et al. Differentiating autism and asperger syndrome on the basis of language delay or impairment. Journal of autism and developmental disorders 2008; 38:(4)616-25.	Population: Study included children already diagnosed with AS/HFA
3.	Brasic JR, Barnett JY, Will MV et al. Dyskinesias differentiate autistic disorder from catatonia. Cns Spectrums 2000; 5:(12)-22.	Population: Study included children already diagnosed with ASD Sample size < 10
4.	Dyck MJ, Ferguson K, and Shochet IM. Do autism spectrum disorders differ from each other and from non-spectrum disorders on emotion recognition tests? European Child and Adolescent Psychiatry 2001; 10:(2)105-16.	Population: Study included children already diagnosed with ASD , Asperger Syndrome, ADHD, mental retardation or anxiety
5.	Ermer J and Dunn W. The Sensory Profile: a discriminant analysis of children with and without disabilities. American Journal of Occupational Therapy 1998; 52:(4)283-90.	Population: Study included children already diagnosed with ASD or ADHD
6.	Fazzi E, Rossi M, Signorini S et al. Leber's congenital amaurosis: Is there an autistic component? Developmental Medicine and Child Neurology 2007; 49:(7)503-7.	Population: Study included children already diagnosed with ASD
7.	Geurts HM and Embrechts M. Language profiles in ASD, SLI, and ADHD. Journal of autism and developmental disorders 2008; 38:(10)-1943.	Population: Study included children already diagnosed with ASD, ADHD or language disorder
8.	Herba C, de Bruin, A. M et al. Face and Emotion Recognition in MCDD versus PDD-NOS. Journal of autism and developmental disorders 2008; 38:(4)13-718.	Population: Study included children already diagnosed with ASD or Multiple Complex Developmental Disorder
9.	Jensen VK, Larrieu JA, and Mack KK. Differential diagnosis between attention-deficit/hyperactivity disorder and pervasive developmental disorder -- not otherwise specified. Clinical Pediatrics 1997; 36:(10)555-61.	Population: Study included children already diagnosed with ASD or ADHD
10.	Joosten AV and Bundy AC. The motivation of stereotypic and repetitive behavior: Examination of construct validity of the motivation assessment scale. Journal of autism and developmental disorders 2008; 38:(7)1341-8.	Population: Study included children already diagnosed with ASD or intellectual disorder
11.	Kurita H, Osada H, and Miyake Y. External validity of childhood disintegrative disorder in comparison with autistic disorder. Journal of autism and developmental disorders 2004; 34:(3)355-62.	Population: Study included children already diagnosed with Childhood Disintegrative Disorder or ASD

12.	Loucas T, Charman T, Pickles A et al. Autistic symptomatology and language ability in autism spectrum disorder and specific language impairment. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(11)1184-92.	Population: Study included children already diagnosed with ASD
13.	Luteijn EF, Serra M, Jackson S et al. How unspecified are disorders of children with a pervasive developmental disorder not otherwise specified? A study of social problems in children with PDD-NOS and ADHD. European Child and Adolescent Psychiatry 2000; 9:(3)168-79.	Population: Study included children already diagnosed with ASD or ADHD
14.	Mahoney WJ, Szatmari P, MacLean JE et al. Reliability and accuracy of differentiating pervasive developmental disorder subtypes. Journal of the American Academy of Child and Adolescent Psychiatry 1998; 37:(3)278-85.	Population: Study included children already diagnosed with PDD or autistic disorder or autism
15.	Malhi P and Singhi P. Patterns of development in young children with autism. Indian Journal of Pediatrics 2005; 72:(7)553-6.	Population: Study included children already diagnosed with ASD or Developmental Delay
16.	Matese M, Matson JL, and Sevin J. Comparison of psychotic and autistic children using behavioral observation. Journal of autism and developmental disorders 1994; 24:(1)83-94.	Population: Study included children already diagnosed with ASD or psychosis
17.	Mayes L, Volkmar F, Hooks M et al. Differentiating pervasive developmental disorder not otherwise specified from autism and language disorders. Journal of autism and developmental disorders 1993; 23:(1)79-90.	Population: Study included children already diagnosed with ASD or language disorder
18.	Mildenberger K, Sitter S, Noterdaeme M et al. The use of the ADI-R as a diagnostic tool in the differential diagnosis of children with infantile autism and children with a receptive language disorder. European Child and Adolescent Psychiatry 2001; 10:(4)248-55.	Population: Study included children already diagnosed with ASD
19.	Militerni R, Bravaccio C, and D'Antuono PS. Childhood disintegrative disorder: Review of cases and pathogenetic consideration. Developmental Brain Dysfunction 1997; 10:(2)67-74.	Population: Study included children already diagnosed with ASD or Childhood Disintegrative Disorder
20.	Morgan L, Wetherby AM, and Barber A. Repetitive and stereotyped movements in children with autism spectrum disorders late in the second year of life. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(8)826-37.	Population: Study included children already diagnosed with ASD
21.	Murdock LC, Cost HC, and Tieso C. Measurement of social communication skills of children with autism spectrum disorders during interactions with typical peers. Focus on Autism and Other Developmental Disabilities 2007; 22:(3)160-72.	Population: Study included children already diagnosed with ASD
22.	Myhr G. Autism and other pervasive developmental disorders: Exploring the dimensional view. Canadian Journal of Psychiatry 1998; 43:(6)589-95.	Population: Study included children already diagnosed with ASD or schizophrenia
23.	Noterdaeme M, Sitter S, Mildenberger K et al. Diagnostic assessment of communicative and interactive behaviours in children with autism and receptive language disorder. European Child and Adolescent	Population: Study included children already diagnosed with ASD or language

	Psychiatry 2000; 9:(4)295-300.	disorder
24.	OBrien J, Tsermentseli S, Cummins O et al. Discriminating children with autism from children with learning difficulties with an adaptation of the Short Sensory Profile. Early Child Development and Care 2009; 179:(4)383-94.	Population: Study included children already diagnosed with ASD or learning difficulties
25.	Osterling JA, Dawson G, and Munson JA. Early recognition of 1-year-old infants with autism spectrum disorder versus mental retardation. Development and Psychopathology 2002; 14:(2)239-51.	Population: Study included children already diagnosed with ASD or mental retardation
26.	Ozonoff S, South M, and Miller JN. DSM-IV-defined Asperger syndrome: Cognitive, behavioral and early history differentiation from high-functioning autism. Autism 2000; 4:(1)29-46.	Population: Study included children already diagnosed with ASD
27.	Portoghese C, Buttiglione M, Pavone F et al. The usefulness of the Revised Psychoeducational Profile for the assessment of preschool children with pervasive developmental disorders. Autism 2009; 13:(2)179-91.	Population: Study included children already diagnosed with ASD
28.	Van Der Gaag R, Buttelaar J, Van den Ban E et al. A controlled multivariate chart review of multiple complex developmental disorder. Journal of the American Academy of Child and Adolescent Psychiatry 1995; 34:(8)1096-106.	Population: Study included children already diagnosed with ASD

Question 5(a)

	REFERENCE	REASON FOR EXCLUSION
1.	Cheseldine S, Manders D, and McGowan C. The role of consultation clinics in services for children and young people with learning disabilities and/or autism. Child and Adolescent Mental Health 2005; 10:(3)140-2.	Study on service configuration and provision
2.	Cicchetti DV, Volkmar F, Klin A et al. Diagnosing autism using ICD-10 criteria: A comparison of neural networks and standard multivariate procedures. Child Neuropsychology 1995; 1:(1)26-37.	Agreement between different diagnostic criteria
3.	Klin A, Lang J, Cicchetti DV et al. Brief report: Interrater reliability of clinical diagnosis and DSM-IV criteria for autistic disorder: results of the DSM-IV autism field trial. Journal of autism and developmental disorders 2000; 30:(2)163-7.	Agreement between clinical judgement and diagnostic criteria
4.	Kopra K, Von Wendt L, Nieminen-von Wendt T et al. Comparison of diagnostic methods for Asperger syndrome. Journal of Autism & Developmental Disorders 2008; 38:(8)1567-73.	Agreement between different diagnostic criteria
5.	Mayes SD, Calhoun SL, and Crites DL. Does DSM-IV Asperger's disorder exist? Journal of Abnormal Child Psychology 2001; 29:(3)263-71.	Agreement between clinical diagnosis and diagnostic criteria
6.	McClure I, MacKay T, Mamdani H et al. A comparison of a specialist autism spectrum disorder assessment team with local assessment teams. Autism 2010; 14:(6)1-15	Study comparing a local assessment team with a specialist assessment team
7.	Perry A, Veleno P, and Factor D. Inter-rater agreement between direct care staff and psychologists for the diagnosis of autism according to DSM-III, DSM-III-R, and DSM-IV. Journal on Developmental Disabilities 1998; 6:(1)32-43.	Agreement between two single clinicians
8.	Williams ME, Atkins M, and Soles T. Assessment of autism in community settings: Discrepancies in classification. Journal of autism and developmental disorders 2009; 39:(4)660-9	Agreement between ASD assessments in different settings
9.	Woodbury S, Klin A, and Volkmar F. Asperger's Syndrome: A Comparison of Clinical Diagnoses and Those Made According to the ICD-10 and DSM-IV. Journal of autism and developmental disorders 2005; 35:(2)6-240.	Agreement between clinical judgement and diagnostic criteria

Question 5(b)

	REFERENCE	REASON FOR EXCLUSION
1.	Baghdadli A, Picot MC, Michelon C et al. What happens to children with PDD when they grow up? Prospective follow-up of 219 children from preschool age to mid-childhood. Acta Psychiatrica Scandinavica 2007; 115:(5)403-12.	Population: Study included school-age children Study did not examine stability of diagnostic criteria
2.	Ballaban-Gil K, Rapin I, Tuchman R et al. Longitudinal examination of the behavioral, language, and social changes in a population of adolescents and young adults with autistic disorder. Pediatric Neurology 1996; 15:(3)217-23.	Insufficient data on stability of diagnostic criteria
3.	Bennett T, Szatmari P, Bryson S et al. Differentiating autism and asperger syndrome on the basis of language delay or impairment. Journal of autism and developmental disorders 2008; 38:(4)616-25.	Insufficient data to calculate stability of diagnostic criteria
4.	Billstedt E, Gillberg IC, and Gillberg C. Autism after adolescence: population-based 13- to 22-year follow-up study of 120 individuals with autism diagnosed in childhood. Journal of autism and developmental disorders 2005; 35:(3)351-60.	Diagnosis: Study did not examine the stability of DSM-IV or ICD-10
5.	Brian J, Bryson SE, Garon N et al. Clinical assessment of autism in high-risk 18-month-olds. Autism 2008; 12:(5)433-56.	Insufficient data to calculate stability of diagnostic criteria
6.	Cantwell DP and Baker L. Stability and natural history of DSM-III childhood diagnoses. Annual Progress in Child Psychiatry and Child Development 9999; 1990, 311-332.:-332.	Diagnosis: Specified diagnostic criteria not used
7.	Cederlund M, Hagberg B, Billstedt E et al. Asperger syndrome and autism: A comparative longitudinal follow-up study more than 5 years after original diagnosis. Journal of autism and developmental disorders 2008; 38:(1)72-85.	Population: Study did not included pre-school children
8.	Church CC and Coplan J. The high-functioning autistic experience: birth to preteen years. Journal of Pediatric Healthcare 1995; 9:(1)22-9.	Diagnosis: Specified diagnostic criteria not used
9.	Coplan J and Jawad AF. Modeling clinical outcome of children with autistic spectrum disorders. Pediatrics 2005; 116:(1)117-22.	Study about use of initial developmental parameters (IQ) to predict outcome
10.	Demb HB, Papola P, Rosenberg R et al. Atypical children followed-up in adolescence. Clinical Child Psychology and Psychiatry 1998; 3:(2)289-303.	case series <10
11.	Fecteau S, Mottron L, Berthiaume C et al. Developmental changes of autistic symptoms. Autism: The International Journal of Research & Practice 2003; 7:(3)255-68.	Study did not examine stability of diagnostic criteria
12.	Gillberg C, Ehlers S, Schaumann H et al. Autism under age 3 years: A clinical study of 28 cases referred for autistic symptoms in infancy. Journal of Child Psychology and Psychiatry and Allied Disciplines 1990; 31:(6)921-34.	Diagnosis: inappropriate diagnostic criteria—DSM-III-R has been used
13.	Goodman R and Simonoff E. Reliability of clinical ratings by trainee child psychiatrists: a research note.	Reliability of diagnosis between clinicians

	Journal of Child Psychology and Psychiatry and Allied Disciplines 1991; 32:(3)551-5.	
14.	Helt M, Kelley E, Kinsbourne M et al. Can children with autism recover? If so, how? Neuropsychology Review 2008; 18:(4)339-66	Overview
15.	Hill A, Bolte S, Petrova G et al. Stability and interpersonal agreement of the interview-based diagnosis of autism. Psychopathology 2001; 34:(4)187-91.	Study did not examine stability of diagnostic criteria
16.	Itzchak EB and Zachor DA. Change in autism classification with early intervention: Predictors and outcomes. Research in Autism Spectrum Disorders 2010; Vol.3:(4)967-76	Study did not examine stability of diagnostic criteria
17.	Jaklewicz H. The dynamics of infantile autism. Longitudinal studies. Archives of Psychiatry and Psychotherapy 2003; 5:(2)15-24.	Diagnosis: Specified diagnostic criteria not used
18.	Jonsdottir SL, Saemundsen E, Asmundsdottir G et al. Follow-up of children diagnosed with pervasive developmental disorders: stability and change during the preschool years. Journal of Autism & Developmental Disorders 2007; 37:(7)1361-74.	Study only included children who received an ICD-10 diagnosis of ASD at both time-points
19.	Lord C and Luyster R. Early diagnosis of children with autism spectrum disorders. Clinical Neuroscience Research 2006; 6:(3-4)189-4.	review of 2 papers by same author
20.	Luyster R, Qiu S, Lopez K et al. Predicting outcomes of children referred for autism using the MacArthur-Bates Communicative Development Inventory. Journal of Speech, Language, and Hearing Research 2007; 50:(3)667-81.	Insufficient data to calculate stability of diagnostic criteria
21.	Mayes S and Calhoun S. Influence of IQ and Age in Childhood Autism: Lack of Support for DSM-IV Asperger's Disorder. Journal of Developmental and Physical Disabilities 2004; 16:(3)257-72.	Insufficient data to calculate stability of diagnostic criteria
22.	McConachie H, Couteur AL, and Honey E. Can a diagnosis of asperger syndrome be made in very young children with suspected autism spectrum disorder? Journal of autism and developmental disorders 2005; 35:(2)167-76.	Insufficient data to work out stability
23.	McGovern CW and Sigman M. Continuity and change from early childhood to adolescence in autism. Journal of Child Psychology and Psychiatry and Allied Disciplines 2005; 46:(4)401-8.	Diagnosis: Not all children diagnosed using diagnostic criteria
24.	Moss J, Magiati I, Charman T et al. Stability of the autism diagnostic interview - Revised from pre-school to elementary school age in children with autism spectrum disorders. Journal of autism and developmental disorders 2008; 38:(6)1081-9	Study did not examine stability of diagnostic criteria
25.	Murphy GH, Beadle-Brown J, Wing L et al. Chronicity of challenging behaviours in people with severe intellectual disabilities and/or autism: A total population sample. Journal of autism and developmental disorders 2005; 35:(4)405-18.	Population: Study included children with intellectual disability
26.	Paul R, Chawarska K, Cicchetti D et al. Language outcomes of toddlers with autism spectrum disorders: a two year follow-up. Autism research : Official Journal of the International Society for Autism Research 2008; 1:(2)97-107	Study did not examine stability of diagnostic criteria
27.	Risi S, Lord C, Gotham K et al. Combining information from multiple sources in the diagnosis of autism	Diagnosis: No diagnostic criteria used

	spectrum disorders. Journal of the American Academy of Child and Adolescent Psychiatry 2006; 45:(9)1094-103	
28.	Scambler DJ, Hepburn SL, and Rogers SJ. A two-year follow-up on risk status identified by the checklist for autism in toddlers. Journal of Developmental and Behavioral Pediatrics 2006; 27:(2 SUPPL. 2)S104-S110	Study did not examine stability of diagnostic criteria
29.	Seltzer MM, Krauss MW, Shattuck PT et al. The Symptoms of Autism Spectrum Disorders in Adolescence and Adulthood. Journal of autism and developmental disorders 2003; 33:(6)565-81	Study did not examine stability of diagnostic criteria
30.	Sigman M and McGovern CW. Improvement in cognitive and language skills from preschool to adolescence in autism. Journal of autism and developmental disorders 2005; 35:(1)15-23.	Study did not examine stability of diagnostic criteria
31.	Sigman M and Ruskin E. Continuity and change in the social competence of children with autism, Down syndrome, and developmental delays. Monographs of the Society for Research in Child Development 1999; 64:(1)v.	Diagnosis: No diagnostic criteria used
32.	Starr E, Szatmari P, Bryson S et al. Stability and change among high-functioning children with pervasive developmental disorders: a 2-year outcome study. Journal of Autism & Developmental Disorders 2003; 33:(1)15-22.	Study did not examine stability of diagnostic criteria
33.	Stone WL, Lee EB, Ashford L et al. Can autism be diagnosed accurately in children under 3 years? Journal of Child Psychology and Psychiatry and Allied Disciplines 1999; 40:(2)219-26	Study did not examine stability of diagnostic criteria
34.	Yang P, Jong YJ, Hsu HY et al. Preschool children with autism spectrum disorders in Taiwan: Follow-up of cognitive assessment to early school age. Brain and Development 2003; 25:(8)549-54.	Study did not examine stability of diagnostic criteria
35.	Yirmiya N, Sigman M, and Freeman BJ. Comparison between diagnostic instruments for identifying high-functioning children with autism. Journal of autism and developmental disorders 1994; 24:(3)281-91.	Diagnosis: inappropriate diagnostic criteria—DSM-III has been used
36.	Zwaigenbaum L, Bryson S, Rogers T et al. Behavioral manifestations of autism in the first year of life. International Journal of Developmental Neuroscience 2005; 23:(2-3)143-52.	Incomplete data to work out stability

Question 5(c)

No evidence was reviewed for this question.

Question 6

	REFERENCE	REASON FOR EXCLUSION
1.	Bartolo PA. Communicating a diagnosis of developmental disability to parents: Multiprofessional negotiation frameworks. Child: Care, Health and Development 2002; 28:(1)65-71.	Population: Not specific to ASD
2.	Bloch JR and Gardner M. Accessing a diagnosis for a child with an autism spectrum disorder: the burden is on the caregiver. American Journal for Nurse Practitioners 2007; 11:(8)10-7	Sample size < 10
3.	Brogan CA and Knussen C. The disclosure of a diagnosis of an autistic spectrum disorder: Determinants of satisfaction in a sample of Scottish parents. Autism 2003; 7:(1)31-46.	Study does not provide any qualitative data
4.	Browne ME. Communicating with the child who has autistic spectrum disorder: a practical introduction. Paediatric Nursing 2006; 18:(1)14-7.	Study does not provide any qualitative data
5.	Campbell M. I am special: introducing children and young people to their autistic spectrum disorder. British Journal of Learning Disabilities 2001; 29:(2)77.	Book reviews
6.	Cloppert P and Williams S. Evaluating an enigma: What people with autism spectrum disorders and their parents would like audiologists to know. Seminars in Hearing 2005; 26:(4)253-8.	Study does not provide any qualitative data
7.	Dosreis S, Weiner C, Johnson L et al. Autism Spectrum Disorder Screening and Management Practices Among General Pediatric Providers. Journal of Developmental and Behavioral Pediatrics 2006; 27:(Suppl2)S88-S94.	Survey on ASD screening and management practice in the US
8.	Goin-Kochel RP, Mackintosh VH, and Myers BJ. How many doctors does it take to make an autism spectrum diagnosis? Autism 2006; 10:(5)439-51.	Study does not provide any qualitative data
9.	Gray LA, Msall ER, and Msall ME. Communicating about autism: decreasing fears and stresses through parent-professional partnerships. Infants & Young Children: An Interdisciplinary Journal of Special Care Practices 2008; 21:(4)256-71	Overview of autism for parents
10.	Howlin P and Asgharian A. The diagnosis of autism and Asperger syndrome: findings from a survey of 770 families.[see comment]. Developmental Medicine and Child Neurology 1999; 41:(12)834-9.	Study does not provide any qualitative data
11.	Huws JC and Jones RSP. Diagnosis, disclosure, and having autism: An interpretative phenomenological analysis of the perceptions of young people with autism. Journal of intellectual and developmental disability 2008; 33:(2)99-107	Sample size < 10
12.	Ivey JK. What Do Parents Expect? A Study of Likelihood and Importance Issues for Children with Autism Spectrum Disorders. Focus on Autism and Other Developmental Disabilities 2004; 19:(1)27-33	Study does not provide any qualitative data
13.	Keenan M, Dillenburger K, Doherty A et al. The experiences of parents during diagnosis and forward planning for children with autism spectrum disorder. Journal of Applied Research in Intellectual Disabilities 2010; 23:(4)390-7	Unclear if quotes are from individuals or themes from focus groups
14.	Leach A and Collins M. Is my child autistic? Helping parents understand a difficult diagnosis. JAAPA:	Overview on autism for parents

	Journal of the American Academy of Physician Assistants 2009; 22:(1)40-4.	
15.	Mandell DS, Ittenbach RF, Levy SE et al. Disparities in diagnoses received prior to a diagnosis of autism spectrum disorder. Journal of autism and developmental disorders 2007; 37:(9)1795-802	Study does not provide any qualitative data
16.	Smith B, Chung MC, and Vostanis P. The path to care in autism: is it better now? Journal of Autism & Developmental Disorders 1994; 24:(5)551-63.	Study does not provide any qualitative data
17.	Wakschlag LS and Leventhal BL. Consultation with young autistic children and their families. Journal of the American Academy of Child and Adolescent Psychiatry 1996; 35:(7)963-5.	Overview of ASD diagnostic consultation
18.	Whitelaw C, Flett P, and Amor DJ. Recurrence risk in autism spectrum disorder: A study of parental knowledge. Journal of Paediatrics and Child Health 2007; 43:(11)752-4.	Study does not provide any qualitative data
19.	Wiggins LD, Baio J, and Rice C. Examination of the time between first evaluation and first autism spectrum diagnosis in a population-based sample. Journal of Developmental and Behavioral Pediatrics 2006; 27:(2 SUPPL. 2)S79-S87.	Study does not provide any qualitative data

Question 7

No evidence reviewed for this question

Question 8

	REFERENCE	REASON FOR EXCLUSION
1.	Amiet C, Gourfinkel-An I, Bouzamondo A et al. Epilepsy in Autism is Associated with Intellectual Disability and Gender: Evidence from a Meta-Analysis. Biological Psychiatry 2008; 64:(7)577-82.	Review of epilepsy and ASD
2.	Anney RJ, Lasky-Su J, O'Dushlaine C et al. Conduct disorder and ADHD: evaluation of conduct problems as a categorical and quantitative trait in the international multicentre ADHD genetics study. American Journal of Medical Genetics 2008; Part B, Neuropsychiatric Genetics:(8)1369-78.	Population: Study included children with conduct disorder
3.	Arnold P, Monteiro B, and Roper L. Co-occurrence of autism and deafness: diagnostic considerations. Autism 2003; 7:(3)245-53.	Population: Study included children with ASD and co-existing deafness
4.	Asano E, Chugani DC, Muzik O et al. Autism in tuberous sclerosis complex is related to both cortical and subcortical dysfunction. Neurology 2001; 57:(7)1269-77.	Population: Study included children with Tuberous sclerosis and epilepsy
5.	Baieli S, Pavone L, Meli C et al. Autism and phenylketonuria. Journal of autism and developmental disorders 2003; 33:(2)-204.	Diagnosis: Diagnostic criteria not used
6.	Bailey AJ, Bolton P, Butler L et al. Prevalence of the Fragile X anomaly amongst autistic twins and singletons. Journal of Child Psychology and Psychiatry 1993; 34:(5)673-88.	Diagnosis: Diagnostic criteria not used
7.	Bailey DBJ, Mesibov GB, Hatton DD et al. Autistic behavior in young boys with fragile X syndrome. Journal of autism and developmental disorders 1998; 28:(6)499-508.	Diagnosis: Specified diagnostic criteria not used
8.	Baker K. Conduct disorders in children and adolescents. Paediatrics and Child Health 2009; #19:(2)73-8.	Overview of conduct disorders in children with ASD
9.	Baker P, Piven J, and Sato Y. Autism and tuberous sclerosis complex: prevalence and clinical features. Journal of Autism & Developmental Disorders 1998; 28:(4)279-85.	Prevalence of ASD in Tuberous sclerosis patients
10.	Bandim JM, Ventura LO, Miller MT et al. Autism and Mobius sequence: An exploratory study of children in northeastern Brazil. Arquivos de Neuro-Psiquiatria 2003; 61:(2 A)181-siquiatria.	Overview of ASD in Mobius sequence
11.	Baranek GT, Boyd BA, Poe MD et al. Hyperresponsive sensory patterns in young children with autism, developmental delay, and typical development. American Journal on Mental Retardation 2007; 112:(4)233-45+308.	Diagnosis: No diagnostic criteria used
12.	Baron-Cohen S, Mortimore C, Moriarty J et al. The prevalence of Gilles de la Tourette's Syndrome in children and adolescents with autism. Journal of Child Psychology and Psychiatry and Allied Disciplines 1999; 40:(2)213-8.	DUPLICATE with reference below.
13.	Baron-Cohen S, Scahill VL, Izaguirre J et al. The prevalence of Gilles de la Tourette syndrome in children and adolescents with autism: A large scale study. Psychological Medicine 1999; 29:(5)1151-9.	Diagnosis: Diagnostic criteria not used

14.	Barton M and Volkmar F. How commonly are known medical conditions associated with autism? Journal of autism and developmental disorders 1998; 28:(4)273-8.	Diagnosis: Specified diagnostic criteria not used for entire sample
15.	Bejerot S, Nylander L, and Lindstrom E. Autistic traits in obsessive-compulsive disorder. Nordic Journal of Psychiatry 2001; 55:(3)169-76.	Population: Study included children without ASD
16.	Bejerot S. An autistic dimension: A proposed subtype of obsessive-compulsive disorder. Autism 2007; 11:(2)101-10.	Population: Studies included children with OCD
17.	Bellini S. Social Skill Deficits and Anxiety in High-Functioning Adolescents with Autism Spectrum Disorders. Focus on Autism and Other Developmental Disabilities 2004; 19:(2)78-86.	Diagnosis: Diagnostic criteria used Not reported
18.	Ben-Sasson A, Cermak SA, Orsmond GI et al. Extreme sensory modulation behaviors in toddlers with autism spectrum disorders. American Journal of Occupational Therapy 2007; 61:(5)584-92.	Diagnosis: Diagnostic criteria not used
19.	Ben-Sasson A, Cermak SA, Orsmond GI et al. Sensory clusters of toddlers with autism spectrum disorders: Differences in affective symptoms. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008; 49:(8)817-25.	Diagnosis: Diagnostic criteria not used
20.	Benson PR and Karlof KL. Anger, stress proliferation, and depressed mood among parents of children with ASD: A longitudinal replication. Journal of autism and developmental disorders 2009; 39:(2)350-62.	Diagnosis: Diagnostic criteria not used
21.	Berney TP, Ireland M, and Burn J. Behavioural phenotype of Cornelia de Lange syndrome. Archives of Disease in Childhood 1999; 81:(4)333-6.	Population: Studies included children with Cornelia de Lange syndrome
22.	Besag FM. Behavioral aspects of pediatric epilepsy syndromes. Epilepsy and Behavior 2004; 5 Suppl 1:S3-13.	Overview of pediatric epilepsy syndromes
23.	Blood GW, Ridenour J, Qualls CD et al. Co-occurring disorders in children who stutter. Journal of Communication Disorders 2003; 36:(6)427-48.	Population: Study did not include children with ASD
24.	Bolton PF and Griffiths PD. Association of tuberous sclerosis of temporal lobes with autism and atypical autism. Lancet 1997; 349:(9049)392-5.	Population: Studies included children with Tuberous sclerosis
25.	Bolton PF, Pickles A, Murphy M et al. Autism, affective and other psychiatric disorders: Patterns of familial aggregation. Psychological Medicine 1998; 28:(2)385-95.	Population: Study was of psychopathology amongst families of children with ASD
26.	Bonde E. Comorbidity and subgroups in childhood autism. European Child and Adolescent Psychiatry 2000; 9:(1)7-10.	Diagnosis: Specified diagnostic criteria not always used
27.	Bradley E and Bolton P. Episodic psychiatric disorders in teenagers with learning disabilities with and without autism. British Journal of Psychiatry 2006; 189:(OCT.)361-6.	Diagnosis: Diagnostic criteria not used
28.	Bradley EA, Summers JA, Wood HL et al. Comparing rates of psychiatric and behavior disorders in adolescents and young adults with severe intellectual disability with and without autism. Journal of autism and developmental disorders 2004; 34:(2)151-61.	Diagnosis: Specified diagnostic criteria not used

29.	Brereton AV, Tonge BJ, and Einfeld SL. Psychopathology in children and adolescents with autism compared to young people with intellectual disability. Journal of autism and developmental disorders 2006; 36:(7)863-70.	Insufficient data to calculate outcome of interest
30.	Brill CB, Gutierrez J, and Mishkin MM. Chiari I malformation: Association with seizures and developmental disabilities. Journal of Child Neurology 1997; 12:(2)101-6.	Population: Participants had developmental problems not ASD
31.	Bruni O, Ferri R, Vittori E et al. Sleep architecture and NREM alterations in children and adolescents with Asperger syndrome. Sleep 2007; 30:(11)1577-85.	Insufficient data to calculate outcome of interest
32.	Butzer B and Konstantareas MM. Depression, temperament and their relationship to other characteristics in children with Asperger's disorder. Journal on Developmental Disabilities 2003; 10:(1)67-72.	Insufficient data to calculate outcomes of interest
33.	Castillo M. Autism and ADHD: Common disorders, elusive explanations. Academic Radiology 2005; 12:(5)533-4	Commentary
34.	Chan AS, Cheung J, Leung WWM et al. Verbal Expression and Comprehension Deficits in Young Children With Autism. Focus on Autism and Other Developmental Disabilities 2005; 20:(2)117-24.	Diagnosis: Diagnostic criteria not used
35.	Celani G. Comorbidity between autistic syndrome and biological pathologies: Which implications for the understanding of the etiology? Journal of Developmental and Physical Disabilities 2003; 15:(2)141-54.	Overview of ASD and biological pathologies
36.	Chen CY, Chen KH, Liu CY et al. Increased Risks of Congenital, Neurologic, and Endocrine Disorders Associated with Autism in Preschool Children: Cognitive Ability Differences. Journal of Pediatrics 2009; 154:(3)345-350e1.	Diagnosis: Specified diagnostic criteria not used
37.	Clark T, Feehan C, Tinline C et al. Autistic symptoms in children with attention deficit-hyperactivity disorder. European Child and Adolescent Psychiatry 1999; 8:(1)50-5.	Population: Study included children with ADHD
38.	Cocchi R and Lamma A. Internal stress and bruxism: An investigation on children and young adults with or without Down's Syndrome, with autism or other pervasive developmental disorders. Italian Journal of Intellective Impairment 1999; 12:(1-2)13-6.	Population: Children with co-existing problems were excluded
39.	Cohen IL. Behavioral profiles of autistic and nonautistic fragile X males. Developmental Brain Dysfunction 1995; 8:(4-6)252-6.	Diagnosis: Specified diagnostic criteria not used
40.	Coleman M. Clinical presentations of patients with autism and hypocalcinuria. Developmental Brain Dysfunction 1994; 7:(2-3)63.	Overview of ASD and hypocalcinuria
41.	Comings DE and Comings BG. Clinical and genetic relationships between autism-pervasive developmental disorder and Tourette syndrome: A study of 19 cases. American Journal of Medical Genetics 1991; 39:(2)180-91.	Diagnosis: Specified diagnostic criteria not used
42.	Curtin C, Bandini LG, Perrin EC et al. Prevalence of overweight in children and adolescents with attention deficit hyperactivity disorder and autism spectrum disorders: A chart review. BMC Pediatrics 2005; 5,;#2005. Article Number.	Diagnosis: Diagnosis criteria not used
43.	Dickie VA, Baranek GT, Schultz B et al. Parent reports of sensory experiences of preschool children with	Diagnosis: Diagnosis criteria not

	and without autism: a qualitative study. American Journal of Occupational Therapy 2009; 63:(2)172-81.	used
44.	Dimitropoulos A and Schultz RT. Autistic-like symptomatology in Prader-Willi syndrome: A review of recent findings. Current Psychiatry Reports 2007; 9:(2)159-64.	Population: Studies included children with Prader-Willi syndrome
45.	Dykens EM and Clarke DJ. Correlates of maladaptive behavior in individuals with 5p- (cri du chat) syndrome. Developmental Medicine and Child Neurology 1997; 39:(11)752-6.	Population: Study included children with 5p- (cri du chat) syndrome
46.	Dziuk MA, Larson JCG, Apostu A et al. Dyspraxia in autism: Association with motor, social, and communicative deficits. Developmental Medicine and Child Neurology 2007; 49:(10)734-9.	Insufficient data to calculate outcome of interest
47.	Falk RE and Casas KA. Chromosome 2q37 Deletion: Clinical and molecular aspects. American Journal of Medical Genetics, Part C: Seminars in Medical Genetics 2007; 145:(4)357-71.	Population: Study included children with chromosome 2q37 deletion
48.	Farrugia S and Hudson J. Anxiety in adolescents with Asperger syndrome: Negative thoughts, behavioral problems, and life interference. Focus on Autism and Other Developmental Disabilities 2006; 21:(1)25-35.	Diagnosis: Diagnostic criteria used Not reported
49.	Fiumara A, Pavone L, Siliciano L et al. Autism in Rett syndrome. Brain Dysfunction 1990; 3:(5-6)245-6.	Population: Less than 10 participants
50.	Gadow KD, DeVincent CJ, and Pomeroy J. ADHD symptom subtypes in children with pervasive developmental disorder. Journal of autism and developmental disorders 2006; 36:(2)271-83	Insuifficient data to calculate outcomes of interest
51.	Gadow KD, DeVincent C, and Schneider J. Predictors of psychiatric symptoms in children with an autism spectrum disorder. Journal of autism and developmental disorders 2008; 38:(9)1710-20.	Insufficient data to calculate outcomes of interest
52.	Gadow KD, DeVincent CJ, and Schneider J. Comparative study of children with ADHD only, autism spectrum disorder + ADHD, and chronic multiple tic disorder + ADHD. Journal of attention disorders 2009; 12:(5)474-85.	Insufficient data to calculate outcomes of interest for children with ASD
53.	Ghaziuddin M, Tsai L, and Ghaziuddin N. Comorbidity of autistic disorder in children and adolescents. European Child and Adolescent Psychiatry 1992; 1:(4)209-13.	Diagnosis: Specified diagnostic criteria not used
54.	Ghaziuddin M, Tsai LY, and Alessi N. ADHD and PDD. Journal of the American Academy of Child and Adolescent Psychiatry 1992; 31:(3)567.	Correspondence
55.	Ghaziuddin M, Weidmer-Mikhail E, and Ghaziuddin N. Comorbidity of Asperger syndrome: a preliminary report. Journal of Intellectual Disability Research 1998; 42:(4)279.	Diagnosis: Specified diagnostic criteria not used
56.	Ghaziuddin M. Asperger syndrome: Associated psychiatric and medical conditions. Focus on Autism and Other Developmental Disabilities 2002; 17:(3)138-44.	Overview of Asperger syndrome and co-existing medical problems
57.	Gillberg C and Billstedt E. Autism and Asperger syndrome: Coexistence with other clinical disorders. Acta Psychiatrica Scandinavica 2000; 102:(5)321-30.	Overview of ASD and co-existing medical disorders
58.	Gillberg C and Coleman M. Autism and medical disorders: A review of the literature. Developmental	Overview of ASD and co-existing

	Medicine and Child Neurology 1996; 38:(3)-202.	medical disorders
59.	Gillott A, Furniss F, and Walter A. Anxiety in high-functioning children with autism. Autism 2001; 5:(3)277-86.	Insufficient data to calculate outcomes of interest
60.	Goin-Kochel RP, Peters SU, and Treadwell-Deering D. Parental reports on the prevalence of co-occurring intellectual disability among children with autism spectrum disorders. Research in Autism Spectrum Disorders 2008; 2:(3)546-56.	Diagnosis: Study does not specify diagnostic criteria used
61.	Goodwin M, Groden J, Velicer W et al. Validating the Stress Survey Schedule for Persons with Autism and Other Developmental Disabilities. Focus on Autism and Other Developmental Disabilities 2007; 22:(3)7-189.	Insufficient data to calculate outcomes of interest
62.	Green D, Baird G, Barnett AL et al. The severity and nature of motor impairment in Asperger's syndrome: A comparison with Specific Developmental Disorder of Motor Function. Journal of Child Psychology and Psychiatry and Allied Disciplines 2002; 43:(5)655-68.	Diagnosis: Diagnostic criteria not used
63.	Grizenko N, Cvejic H, Vida S et al. Behaviour problems of the mentally retarded. Canadian Journal of Psychiatry 1991; 36:(10)712-7	Diagnosis: Specified diagnostic criteria not used
64.	Groden J, Diller A, Bausman M et al. The development of a stress survey schedule for persons with autism and other developmental disabilities. Journal of Autism & Developmental Disorders 2001; 31:(2)207.	Diagnosis: Diagnostic criteria not used
65.	Gurney JG, McPheeters ML, and Davis MM. Parental report of health conditions and health care use among children with and without autism: National survey of children's health. Archives of Pediatrics and Adolescent Medicine 2006; 160:(8)825-30.	Diagnosis: Diagnostic criteria not used
66.	Gutkovich ZA, Carlson GA, Carlson HE et al. Asperger's disorder and co-morbid bipolar disorder: Diagnostic and treatment challenges. Journal of child and adolescent psychopharmacology 2007; 17:(2)247-55.	Single case study
67.	Guttmann-Steinmetz S, Gadow KD, and DeVincent CJ. Oppositional defiant and conduct disorder behaviors in boys with autism spectrum disorder with and without attention-deficit hyperactivity disorder versus several comparison samples. Journal of Autism & Developmental Disorders 2009; 39:(7)976-85	Diagnosis: Diagnostic criteria not used
68.	Hall SS, Lightbody AA, and Reiss AL. Compulsive, self-injurious, and autistic behavior in children and adolescents with fragile X syndrome. American Journal on Mental Retardation 2008; 113:(1)44-72.	Overview of ASD in Fragile X
69.	Hallett V, Ronald A, and Happe F. Investigating the association between autistic-like and internalizing traits in a community-based twin sample. Journal of the American Academy of Child and Adolescent Psychiatry 2009; 48:(6)618-27.	Population: Children with ASD were excluded
70.	Herring S, Gray K, Taffe J et al. Behaviour and emotional problems in toddlers with pervasive developmental disorders and developmental delay: associations with parental mental health and family functioning. Journal of Intellectual Disability Research 2006; 50:(Pt 12)874-82	Insufficient data to calculate outcome of interest
71.	Hoffman CD, Sweeney DP, Lopez-Wagner MC et al. Children with autism: Sleep problems and mothers'	Insufficient data to calculate

	stress. Focus on Autism and Other Developmental Disabilities 2008; 23:(3)155-65	outcome of interest
72.	Holtmann M, Bolte S, and Poustka F. Attention deficit hyperactivity disorder symptoms in pervasive developmental disorders: Association with autistic behavior domains and coexisting psychopathology. Psychopathology 2007; 40:(3)172-7.	No prevalence data
73.	Horvath K, Papadimitriou JC, Rabsztyn A et al. Gastrointestinal abnormalities in children with autistic disorder. Journal of Pediatrics 1999; 135:(5)559-63.	Diagnosis: Specified diagnostic criteria not used
74.	Howlin P, Wing L, and Gould J. The recognition of autism in children with Down syndrome - Implications for intervention and some speculations about pathology. Developmental Medicine and Child Neurology 1995; 37:(5)406-14.	Population: Children had Down syndrome
75.	Hrdlicka M, Komarek V, Faladova L et al. EEG abnormalities are not associated with symptom severity in childhood autism. Studia Psychologica 2004; 46:(3)229-34.	Sample includes non-ASD patients
76.	Hunt A and Shepherd C. A prevalence study of autism in tuberous sclerosis. Journal of autism and developmental disorders 1993; 23:(2)323-40.	Diagnosis: Specified diagnostic criteria not used
77.	Hutton J, Goode S, Murphy M et al. New-onset psychiatric disorders in individuals with autism. Autism: The International Journal of Research & Practice 2008; 12:(4)373-90.	Diagnosis: Diagnostic criteria used not specified
78.	Johansson M, Rastam M, Billstedt E et al. Autism spectrum disorders and underlying brain pathology in CHARGE association. Developmental Medicine and Child Neurology 2006; 48:(1)40-50.	Population: Study included children with CHARGE syndrome
79.	Jones CR, Happe F, Golden H et al. Reading and arithmetic in adolescents with autism spectrum disorders: peaks and dips in attainment. Neuropsychology 2009; 23:(6)718-28	Insufficient data to calculate outcome of interest
80.	Kanne SM, Abbacchi AM, and Constantino JN. Multi-informant ratings of psychiatric symptom severity in children with autism spectrum disorders: The importance of environmental context. Journal of autism and developmental disorders 2009; 39:(6)856-64.	Diagnosis: Diagnostic criteria not used
81.	Kaplan M, Rimland B, and Edelson SM. Strabismus in autism spectrum disorder. Focus on Autism and Other Developmental Disabilities 1999; 14:(2)101-5.	Diagnosis: Diagnostic criteria used Not reported
82.	Kates WR, Antshel KM, Fremont WP et al. Comparing phenotypes in patients with idiopathic autism to patients with velocardiofacial syndrome (22q11 DS) with and without autism. American Journal of Medical Genetics, Part A 2007; 143:(22)2642-50.	Population: Studies included children with Velocardiofacial syndrome
83.	Kaufmann WE, Cortell R, Kau ASM et al. Autism spectrum disorder in fragile X syndrome: Communication, social interaction, and specific behaviors. American Journal of Medical Genetics 2004; 129 A:(3)225-34.	Overview of ASD in Fragile X
84.	Keen D and Ward S. Autistic spectrum disorder: a child population profile. Autism: The International Journal of Research & Practice 2004; 8:(1)39-48.	Diagnosis: Diagnostic criteria not used
85.	Kirby RS. Co-occurrence of developmental disabilities with birth defects. Mental Retardation and Developmental Disabilities Research Reviews 2002; 8:(3)182-7.	Overview of association between birth defects and developmental disabilities

86.	Krakowiak P, Goodlin-Jones B, Hertz-Picciotto I et al. Sleep problems in children with autism spectrum disorders, developmental delays, and typical development: A population-based study. Journal of Sleep Research 2008; 17:(2)-206.	Diagnosis: No diagnostic criteria specified
87.	Kuddo T and Nelson KB. How common are gastrointestinal disorders in children with autism? Current Opinion in Pediatrics 2003; 15:(3)339-43.	Overview of gastrointestinal problems in ASD
88.	Kulisek R, Hrncir Z, Hrdlicka M et al. Nonlinear analysis of the sleep EEG in children with pervasive developmental disorder. Neuroendocrinology Letters 2008; 29:(4)512-7.	Insufficient data to calculate outcomes of interest
89.	Kurita H, Osada H, Shimizu K et al. Bipolar Disorders in Mentally Retarded Persons With Pervasive Developmental Disorders. Journal of Developmental and Physical Disabilities 2004; 16:(4)377-89.	Diagnosis: Diagnostic criteria not used
90.	Kuusikko S, Pollock-Wurman R, Jussila K et al. Social anxiety in highfunctioning children and adolescents with autism and Asperger syndrome. Journal of autism and developmental disorders 2008; 38:(9)1697-709.	Insufficient data to calculate outcomes of interest
91.	Lainhart JE and Folstein SE. Affective disorders in people with autism: A review of published cases. Journal of autism and developmental disorders 1994; 24:(5)587-601.	Diagnosis: Specified diagnostic criteria not used
92.	Lauritsen MB, Mors O, Mortensen PB et al. Medical disorders among inpatients with autism in Denmark according to ICD-8: a nationwide register-based study. Journal of autism and developmental disorders 2002; 32:(2)115-9.	Diagnosis: Specified diagnostic criteria not used
93.	Liu X, Hubbard JA, Fabes RA et al. Sleep disturbances and correlates of children with autism spectrum disorders. Child Psychiatry and Human Development 2006; 37:(2)179-91.	Diagnosis: Diagnostic criteria not used
94.	Love JR, Carr JE, and LeBlanc LA. Functional assessment of problem behavior in children with autism spectrum disorders: A summary of 32 outpatient cases. Journal of autism and developmental disorders 2009; 39:(2)363-72.	Diagnosis: Diagnostic criteria not used
95.	MacNeil BM, Lopes VA, and Minnes PM. Anxiety in children and adolescents with Autism Spectrum Disorders. Research in Autism Spectrum Disorders 2009; 3:(1)1-21.	Overview of anxiety in children with ASD
96.	Malvy J, Barthelemy C, Damie D et al. Behaviour profiles in a population of infants later diagnosed as having autistic disorder. European Child and Adolescent Psychiatry 2004; 13:(2)115-22.	No prevalence data
97.	Mandell DS. Psychiatric hospitalization among children with autism spectrum disorders. Journal of autism and developmental disorders 2008; 38:(6)1059-65.	Diagnosis: Diagnostic criteria not used
98.	Manzi B, Loizzo AL, Giana G et al. Autism and metabolic diseases. Journal of Child Neurology 2008; 23:(3)307-14.	Overview of ASD and metabolic disorders
99.	Matson JL and Nebel-Schwalm MS. Comorbid psychopathology with autism spectrum disorder in children: An overview. Research in Developmental Disabilities 2007; 28:(4)341-52.	Overview of coexisting psychopathology in ASD
100	McCarthy J. Children with autism spectrum disorders and intellectual disability. Current Opinion in Psychiatry 2007; #20:(5)472-6.	Overview of ASD and intellectual disability

101	McDonnell MA, Hamrin V, Moffett J et al. Timely diagnosis of comorbid pervasive developmental disorder and bipolar disorder. Minerva Pediatrica 2008; 60:(1)115-27.	Overview of Bipolar disorder and ASD
102	Ming X, Brimacombe M, and Wagner GC. Prevalence of motor impairment in autism spectrum disorders. Brain and Development 2007; 29:(9)565-70.	Diagnosis: Diagnostic criteria not used
103	Molloy CA and Manning-Court. Prevalence of chronic gastrointestinal symptoms in children with autism and autistic spectrum disorders. Autism 2003; 7:(2)165-71.	Diagnosis: Diagnostic criteria not used
104	Montes G and Halterman JS. Bullying among children with autism and the influence of comorbidity with ADHD: a population-based study. Ambulatory Pediatrics 2007; 7:(3)253-7.	Diagnosis: Diagnostic criteria not used
105	Morgan CN, Roy M, and Chance P. Psychiatric comorbidity and medication use in autism: A community survey. Psychiatric Bulletin 2003; 27:(10)378-81.	Population: Study only included adults
106	Mouridsen SE, Andersen LB, Sorensen SA et al. Neurofibromatosis in infantile autism and other types of childhood psychoses. Acta Paedopsychiatrica 1992; 55:(1)15-8.	Diagnosis: Specified diagnostic criteria not used
107	Mouridsen SE, Rich B, Isager T et al. Psychiatric disorders in individuals diagnosed with infantile autism as children: a case control study. Journal of Psychiatric Practice 2008; 14:(1)5-12.	Diagnosis: Specified diagnostic criteria were not used
108	Munesue T, Ono Y, Mutoh K et al. High prevalence of bipolar disorder comorbidity in adolescents and young adults with high-functioning autism spectrum disorder: A preliminary study of 44 outpatients. Journal of Affective Disorders 2008; 111:(2-3)170-3.	Population: Study predominately included adults
109	Muris P, Steerneman P, Merckelbach H et al. Comorbid anxiety symptoms in children with pervasive developmental disorders. Journal of Anxiety Disorders 1998; 12:(4)387-93.	Diagnosis: Specified diagnostic criteria not used
110	Nikolov RN, Bearss KE, Lettinga J et al. Gastrointestinal symptoms in a sample of children with pervasive developmental disorders. Journal of autism and developmental disorders 2009; 39:(3)405-13.	Diagnosis: Diagnostic criteria not used
111	Oliver C, Arron K, Sloneem J et al. Behavioural phenotype of Cornelia de Lange syndrome: Case-control study. British Journal of Psychiatry 2008; #193:(6)466-70.	Population: Study included children with Cornelia de Lange syndrome
112	Palucka AM, Nyhus N, and Lunsky Y. Aggression as a symptom of mood destabilization in pervasive developmental disorders. Journal on Developmental Disabilities 2003; 10:(1)101-5.	Sample size < 10 (for ASD)
113	Parmeggiani A, Posar A, Antolini C et al. Epilepsy in patients with pervasive developmental disorder not otherwise specified. Journal of Child Neurology 2007; 22:(10)1198-203.	Age: 3 years to 29 years 2 month.
114	Rastam M. Eating disturbances in autism spectrum disorders with focus on adolescent and adult years. Clinical Neuropsychiatry 2008; 5:(1)31-42.	Overview of ASD and eating disorders
115	Reaven JA. Children with High-Functioning Autism Spectrum Disorders and Co-occurring Anxiety Symptoms: Implications for Assessment and Treatment. Journal for Specialists in Pediatric Nursing 2009; 14:(3)192-9.	Single case study
116	Reiersen AM and Todd RD. Co-occurrence of ADHD and autism spectrum disorders: Phenomenology and	Overview of ASD and ADHD

	treatment. Expert Review of Neurotherapeutics 2008; 8:(4)657-69.	
117	Reinhold JA, Molloy CA, and Manning-Court. Electroencephalogram abnormalities in children with autism spectrum disorders. Journal of Neuroscience Nursing 2005; 37:(3)136-8.	Review of the use of EEG'S in children with ASD
118	Rosenhall U, Nordin V, Sandstrom M et al. Autism and hearing loss. Journal of autism and developmental disorders 1999; 29:(5)349-57.	Diagnostic criteria: Inappropriate diagnostic criteria used – DSM-III-R
119	Rossi PG, Parmeggiani A, Bach V et al. EEG features and epilepsy in patients with autism. Brain and Development 1995; 17:(3)169-74.	Diagnosis: Specified diagnostic criteria not used.
120	Rutter M, Bailey A, Bolton P et al. Autism and known medical conditions: Myth and substance. Journal of Child Psychology and Psychiatry and Allied Disciplines 1994; 35:(2)311-22.	Overview of medical disorders and autism
121	Sandhu B, Steer C, Golding J et al. The early stool patterns of young children with autistic spectrum disorder. Archives of Disease in Childhood 2009; 94:(7)497-500.	Diagnosis: Diagnostic criteria not used
122	Schreck KA and Mulick JA. Parental report of sleep problems in children with autism. Journal of autism and developmental disorders 2000; 30:(2)127-35.	Diagnosis: Diagnostic criteria not used
123	Shtayermman O. Peer victimization in adolescents and young adults diagnosed with Asperger's Syndrome: a link to depressive symptomatology, anxiety symptomatology and suicidal ideation. Issues in Comprehensive Pediatric Nursing 2007; 30:(3)87-107.	Diagnosis: Diagnostic criteria used Not reported
124	Shtayermman O. Suicidal ideation and comorbid disorders in adolescents and young adults diagnosed with Asperger's syndrome: a population at risk. Journal of Human Behavior in the Social Environment 2008; 18:(3)301-28.	Diagnosis: Diagnostic criteria used Not reported
125	Smalley SL, Tanguay PE, Smith M et al. Autism and tuberous sclerosis. Journal of autism and developmental disorders 1992; 22:(3)339-55.	Diagnosis: Diagnostic criteria not used
126	Smalley SL. Autism and tuberous sclerosis. Journal of autism and developmental disorders 1998; 28:(5)407-14.	Overview of ASD and Tuberous sclerosis
127	Steffenburg S, Steffenburg U, and Gillberg C. Autism spectrum disorders in children with active epilepsy and learning disability: Comorbidity, pre- and perinatal background, and seizure characteristics. Developmental Medicine and Child Neurology 2003; 45:(11)724-30.	Population: Study included children with co-existing epilepsy and learning disability
128.	Sukhodolsky DG, Scahill L, Gadow KD et al. Parent-rated anxiety symptoms in children with pervasive developmental disorders: Frequency and association with core autism symptoms and cognitive functioning. Journal of Abnormal Child Psychology 2008; 36:(1)117-28	Population: The inclusion criteria included 'high levels of tantrums, aggression, self-injurious behaviors'
129.	Tierney E, Nwokoro NA, Porter FD et al. Behavior phenotype in the RSH/Smith-Lemli-Opitz syndrome. American Journal of Medical Genetics 2001; 98:(2)-200.	Population: Study included children with RSH/Smith-Lemli-Opitz syndrome

130.	Tonge BJ, Brereton AV, Gray KM et al. Behavioural and emotional disturbance in high-functioning autism and Asperger syndrome. Autism 1999; 3:(2)117-30.	No prevalence data
131.	Tranebjaerg L and Kure P. Prevalence of fra(X) and other specific diagnoses in autistic individuals in a Danish county. American Journal of Medical Genetics 1991; 38:(2-3)212-3.	Abstract of conference paper Diagnosis: inappropriate diagnostic criteria--DSM-III has been used
132.	Trillingsgaard A and Ostergaard JR. Autism in Angelman syndrome: an exploration of comorbidity. Autism: The International Journal of Research & Practice 2004; 8:(2)163-74.	Population: Studies included children with Angelman syndrome
133.	Tsai LY. Brief report: Comorbid psychiatric disorders of autistic disorder. Journal of autism and developmental disorders 1996; 26:(2)159-64.	Overview of psychiatric disorders and ASD
134.	Tuchman RF, Rapin I, and Shinnar S. Autistic and dysphasic children. II: Epilepsy. Pediatrics 1991; 88:(6)1219-25.	Diagnosis: Specified diagnostic criteria not used
135.	Valicenti-McDermott M, McVicar K, Rapin I et al. Frequency of gastrointestinal symptoms in children with autistic spectrum disorders and association with family history of autoimmune disease. Journal of Developmental and Behavioral Pediatrics 2006; 27:(2 SUPPL. 2)S128-S136	Study superseded by a later study which included same subjects a but had a larger sample size
136.	Varley CK and Furukawa MJ. Psychopathology in young children with developmental disabilities. Children's Health Care 1990; 19:(2)86-92.	Population: Study included children with developmental disabilities
137.	Veltman MWM, Craig EE, and Bolton PF. Autism spectrum disorders in Prader-Willi and Angelman syndromes: A systematic review. Psychiatric Genetics 2005; 15:(4)243-54.	Population: Studies included children with Prader-Willi and Angelman syndromes
138.	Vickerstaff S, Heriot S, Wong M et al. Intellectual ability, self-perceived social competence, and depressive symptomatology in children with high-functioning autistic spectrum disorders. Journal of autism and developmental disorders 2007; 37:(9)1647-64.	Diagnosis: Diagnostic criteria not used
139.	Volkmar FR and Nelson DS. Seizure disorders in autism. Journal of the American Academy of Child and Adolescent Psychiatry 1990; 29:(1)127-9.	Diagnosis: Specified diagnostic criteria not used
140.	Wakefield AJ, Ashwood P, Limb K et al. The significance of ileo-colonic lymphoid nodular hyperplasia in children with autistic spectrum disorder. European Journal of Gastroenterology and Hepatology 2005; 17:(8)827-36.	Population: Study only included children with ASD and gastrointestinal problems
141.	Weber AM, Egelhoff JC, McKellop JM et al. Autism and the cerebellum: evidence from tuberous sclerosis. Journal of Autism & Developmental Disorders 2000; 30:(6)511-7.	Diagnosis: Diagnostic criteria not used
142.	Werry JS. Child and adolescent (early onset) schizophrenia: A review in light of DSM-III-R. Journal of autism and developmental disorders 1992; 22:(4)601-24.	Population: Participant had early onset schizophrenia
143.	White SW and Roberson-Nay R. Anxiety, social deficits, and loneliness in youth with autism spectrum	Diagnosis: Diagnostic criteria not

	disorders. Journal of Autism & Developmental Disorders 2009; 39:(7)1006-13.	used
144.	White SW, Oswald D, Ollendick T et al. Anxiety in children and adolescents with autism spectrum disorders. Clinical Psychology Review 2009; 29:(3)216-29.	Overview of ASD and anxiety
145.	Wier ML, Yoshida CK, Odouli R et al. Congenital anomalies associated with autism spectrum disorders. Developmental Medicine and Child Neurology 2006; 48:(6)500-7.	Diagnosis: Specified diagnostic criteria not used
146.	Wilson S, Djukic A, Shinnar S et al. Clinical characteristics of language regression in children. Developmental Medicine and Child Neurology 2003; 45:(8)508-14	Population: Study included children with language regression
147.	Wiznitzer M. Autism and tuberous sclerosis. Journal of Child Neurology 2004; #19:(9)675-9.	Overview of relationship between ASD and Tuberous sclerosis complex
148.	Wong V. Epilepsy in children with autistic spectrum disorder. Journal of Child Neurology 1993; 8:(4)316-22.	Diagnosis: Specified diagnostic criteria not used
149.	Wong V. Study of the relationship between tuberous sclerosis complex and autistic disorder. Journal of Child Neurology 2006; 21:(3)-204.	Population: Study included children with Tuberous sclerosis
150.	Zafeiriou DI, Ververi A, and Vargiami E. Childhood autism and associated comorbidities. Brain and Development 2007; 29:(5)257-72.	Overview of ASD and co-existing conditions
151.	Zaroff CM, Devinsky O, Miles D et al. Cognitive and behavioral correlates of tuberous sclerosis complex. Journal of Child Neurology 2004; 19:(11)847-52.	Population: Studies included children with Tuberous sclerosis

Question 9

	REFERENCE	REASON FOR EXCLUSION
1.	Akkok F. An overview of parent training and counselling with the parents of children with mental disabilities and autism in Turkey. International Journal for the Advancement of Counselling 1994; 17:(2)129-38.	Study does not provide any qualitative data
2.	Beatson JE and Prelock PA. The Vermont Rural Autism Project: Sharing experiences, shifting attitudes. Focus on Autism and Other Developmental Disabilities 2002; 17:(1)48-54.	Study does not provide any qualitative data on information for the family
3.	Benson PR and Karlof KL. Child, parent, and family predictors of latter adjustment in siblings of children with autism. Research in Autism Spectrum Disorders 2008; 2:(4)583-600.	Study on family experiences after receiving a diagnosis
4.	Brachlow AE, Ness KK, McPheeters ML et al. Comparison of indicators for a primary care medical home between children with autism or asthma and other special health care needs: National Survey of Children's Health. Archives of Pediatrics and Adolescent Medicine 2007; 161:(4)399-405.	Study does not provide any qualitative data
5.	Charman T. Ask the Editor. Journal of autism and developmental disorders 2005; 35:(4)539-40.	Commentary
6.	Clarke J and van Amerom G. Asperger's syndrome: differences between parents' understanding and those diagnosed. Social Work in Health Care 2008; 46:(3)85-106.	Study on experiences after receiving a diagnosis
7.	Coonrod EE and Stone WL. Early concerns of parents of children with autistic and nonautistic disorders. Infants & Young Children: An Interdisciplinary Journal of Special Care Practices 2004; 17:(3)258-68.	Study does not provide any qualitative data
8.	Coplan J. Counseling parents regarding prognosis in autistic spectrum disorder. Pediatrics 2000; 105:(5)E65.	Study does not provide any qualitative data
9.	Curtis J. Patient education. Autism. Australian Family Physician 1993; 22:(7)1239.	Overview of autism for patients
10.	Dixon L. Intervention and support for parents and carers of children and young people on the autism spectrum: a resource for trainers. Child & Adolescent Mental Health 2008; 13:(4)210.	Book review
11.	Dymond SK, Gilson CL, and Myran SP. Services for children with autism spectrum disorders: what needs to change? Journal of Disability Policy Studies 2007; 18:(3)133-47.	Study does not provide any qualitative data on information for the family
12.	Earnshaw A. Autism: A family affair? Journal of Child Psychotherapy 1994; 20:(1)85-101.	Study does not provide any qualitative data on diagnostic process
13.	Elder JH. Beliefs held by parents of autistic children. Journal of Child & Adolescent Psychiatric Nursing 1994; 7:(1)9-16.	Study does not provide any qualitative data
14.	Fraser WI. The autistic spectrum: a guide for parents and professionals. Journal of Intellectual Disability Research 1996; 40:(6)569-70.	Book review
15.	Gray DE. Coping over time: the parents of children with autism. Journal of Intellectual Disability Research 2006; 50:(Part 12)970-6.	Study does not provide any qualitative data on the diagnostic process
16.	Gray DE. 'Everybody just freezes. Everybody is just embarrassed': felt and enacted stigma among parents of	Study does not provide any qualitative

	children with high functioning autism. Sociology of health & illness 2002; 24:(6)734-49.	data on the diagnostic process
17.	Greenberg JS, Seltzer MM, Hong J et al. Bidirectional effects of expressed emotion and behavior problems and symptoms in adolescents and adults with autism. American Journal on Mental Retardation 2006; 111:(4)229-49.	Study does not provide any qualitative data on the diagnostic process
18.	Kerrell H. Service evaluation of an autism diagnostic clinic for children. Nursing Standard 2001; 15:(38)33-7.	Study does not provide any qualitative data on information for the family
19.	Mackintosh VH, Myers BJ, and Goin-Kochel RP. Sources of information and support used by parents of children with autism spectrum disorders. Journal on Developmental Disabilities 2006; 12:(1)41-52.	Study does not provide any qualitative data
20.	McCabe H. Autism and Family in the People's Republic of China: Learning from Parents' Perspectives. Research and Practice for Persons with Severe Disabilities RPSD 2008; 33:(1-2)11-47.	Study does not provide any qualitative data on the diagnostic process
21.	Minnes P and Steiner K. Parent views on enhancing the quality of health care for their children with fragile X syndrome, autism or Down syndrome. Child: Care, Health & Development 2009; 35:(2)250-6	Sample size < 10 with ASD
22.	Notbohm E. 10 things your student with autism wishes you knew. Children's Voice 2005; 14:(3)34.	Study does not provide any qualitative data
23.	Osborne LA, McHugh L, Saunders J et al. A possible contra-indication for early diagnosis of Autistic Spectrum Conditions: Impact on parenting stress. Research in Autism Spectrum Disorders 2008; 2:(4)707-15.	Study does not provide any qualitative data
24.	Rhoades RA, Scarpa A, and Salley B. The importance of physician knowledge of autism spectrum disorder: Results of a parent survey. BMC Pediatrics 2007; 7,;#2007. Article Number.	Study does not provide any qualitative data
25.	Sabo RM and Lorenzen JM. Webhealth topics. Consumer health Web sites for parents of children with autism. Journal of Consumer Health on the Internet 2008; 12:(1)37-49.	Overview on information available on the web
26.	Shtayermman O. An exploratory study of the stigma associated with a diagnosis of Asberger's syndrome: the mental health impact on the adolescents and young adults diagnosed with a disability with a social nature. Journal of Human Behavior in the Social Environment 2009; 19:(3)298-313.	Study does not provide any qualitative data
27.	Siklos S and Kerns KA. Assessing the diagnostic experiences of a small sample of parents of children with autism spectrum disorders. Research in Developmental Disabilities 2007; 28:(1)9-22.	Study does not provide any qualitative data
28.	Sivberg B. Coping strategies and parental attitudes, a comparison of parents with children with autistic spectrum disorders and parents with non-autistic children. International Journal of Circumpolar Health 2002; 61 Suppl 2:36-50.	Study does not provide any qualitative data
29.	Smith A. Asperger's syndrome: a guide for parents and professionals. British Journal of Learning Disabilities 2002; 30:(3)137-8.	Book review
30.	Smith B, Chung MC, and Vostanis P. The path to care in autism: is it better now? Journal of Autism & Developmental Disorders 1994; 24:(5)551-63.	Study does not provide any qualitative data
31.	Smith LE, Seltzer MM, Tager-Flusberg H et al. A comparative analysis of well-being and coping among	Study does not provide any qualitative

	mothers of toddlers and mothers of adolescents with ASD. Journal of autism and developmental disorders 2008; 38:(5)876-89.	data
32.	Stuart M and McGrew JH. Caregiver burden after receiving a diagnosis of an autism spectrum disorder. Research in Autism Spectrum Disorders 2009; 3:(1)86-97.	Study does not provide any qualitative data
33.	Tunali B and Power TG. Coping by redefinition: cognitive appraisals in mothers of children with autism and children without autism. Journal of Autism & Developmental Disorders 2002; 32:(1)25-34.	Study does not provide any qualitative data
34.	Twoy R, Connolly PM, and Novak JM. Coping strategies used by parents of children with autism. Journal of the American Academy of Nurse Practitioners 2007; 19:(5)251-60.	Study does not provide any qualitative data
35.	Verte S, Roeyers H, and Buysse A. Behavioural problems, social competence and self-concept in siblings of children with autism. Child: Care, Health and Development 2003; 29:(3)-205.	Study does not provide any qualitative data
36.	Visual Supports for People with Autism: A Guide for Parents and Professionals (2007). Canadian Journal of Occupational Therapy 2008; 75:(5)281.	Book review
37.	Zhao X, Leotta A, Kustanovich V et al. A unified genetic theory for sporadic and inherited autism. Proceedings of the National Academy of Sciences of the United States of America 2007; 104:(31)12831-6.	Study does not provide any qualitative data

Question 10

	REFERENCE	REASON FOR EXCLUSION
1.	Akkok F. An overview of parent training and counselling with the parents of children with mental disabilities and autism in Turkey. International Journal for the Advancement of Counselling 1994; 17:(2)129-38.	Study does not provide any qualitative data
2.	Coonrod EE and Stone WL. Early concerns of parents of children with autistic and nonautistic disorders. Infants & Young Children: An Interdisciplinary Journal of Special Care Practices 2004; 17:(3)258-68.	Study does not provide any qualitative data
3.	Dixon L. Intervention and support for parents and carers of children and young people on the autism spectrum: a resource for trainers. Child & Adolescent Mental Health 2008; 13:(4)210.	Book review
4.	Ghuman JK, Freund L, Reiss A et al. Early detection of social interaction problems: development of a social interaction instrument in young children. Journal of Developmental and Behavioral Pediatrics 1998; 19:(6)411-9.	Study does not provide any qualitative data
5.	Gray DE. 'Everybody just freezes. Everybody is just embarrassed': felt and enacted stigma among parents of children with high functioning autism. Sociology of health & illness 2002; 24:(6)734-49.	Study does not provide any qualitative data on diagnostic process
6.	Ho HH, Miller A, and Armstrong RW. Parent-professional agreement on diagnosis and recommendations for children with developmental disorders. Children's Health Care 1994; 23:(2)137-48.	Study does not provide any qualitative data
7.	Montes G and Halterman JS. Child care problems and employment among families with preschool-aged children with autism in the United States. Pediatrics 2008; 122:(1)e202-e208.	Study does not provide any qualitative data
8.	Newsome WS. Parental perceptions during periods of transition: implications for social workers serving families coping with autism. Journal of Family Social Work 2000; 5:(2)17-31.	Study does not provide any qualitative data
9.	Notbohm E. 10 things your student with autism wishes you knew. Children's Voice 2005; 14:(3)34.	Study does not provide any qualitative data
10.	Nurmi EL, Dowd M, Tadevosyan-Leyfer O et al. Exploratory subsetting of autism families based on savant skills improves evidence of genetic linkage to 15q11-q13. Journal of the American Academy of Child and Adolescent Psychiatry 2003; 42:(7)856-63.	Study does not provide any qualitative data
11.	Rhoades RA, Scarpa A, and Salley B. The importance of physician knowledge of autism spectrum disorder: Results of a parent survey. BMC Pediatrics 2007; 7,:#2007. Article Number.	Study does not provide any qualitative data
12.	Sabo RM and Lorenzen JM. Webhealth topics. Consumer health Web sites for parents of children with autism. Journal of Consumer Health on the Internet 2008; 12:(1)37-49.	Overview on information available on the web
13.	Siklos S and Kerns KA. Assessing the diagnostic experiences of a small sample of parents of children with autism spectrum disorders. Research in Developmental Disabilities 2007; 28:(1)9-22.	Study does not provide any qualitative data
14.	Stuart M and McGrew JH. Caregiver burden after receiving a diagnosis of an autism spectrum disorder. Research in Autism Spectrum Disorders 2009; 3:(1)86-97.	Study does not provide any qualitative data

Appendix H

Included studies

1. (a) What are the signs and symptoms that should prompt a health care or other professional in any context to think of ASD?

1. (b) When should a child or young person be referred for diagnostic assessment?

2. In children with suspected ASD (based on signs and symptoms) what information assists in the decision to refer for a formal ASD diagnostic assessment?

(a) Are there screening instruments that are effective in assessing the need for a specialist ASD assessment?

(b) What information about the child and family increases the likelihood of a diagnosis of ASD and would assist in the decision to refer for a formal ASD diagnostic assessment?

part 1: General risk factors

part 2: Risk of ASD in co-existing conditions

(c) Information from other sources as contextual information: information about how the child functions in different environments such as school and home; social care reports (i.e. 'Looked After' children); other agencies

3. What should be the components of the diagnostic assessment? When should they be undertaken, in which sub-groups, and in what order?

(a) Assessment tools specific to ASD: e.g. Autism Diagnostic Interview-Revised (ADI-R), Developmental, Dimensional and Diagnostic interview (3di), Diagnostic Interview for Social and Communication Disorders (DISCO), Autism Diagnostic Observation Schedule (ADOS), Gilliam Autism Rating Scale

(b) Other assessment tools that help the interpretation of the specific ASD tools (in 3a): an assessment of intellectual ability; an assessment of receptive and expressive language etc

(c) Biomedical investigations for diagnosis of ASD e.g. EEG, brain scan, genetic tests, counselling; investigations for associated medical conditions

4. (a) What are the most important differential diagnoses of ASD?

4. (b) What features observed during diagnosis reliably differentiate other conditions from ASD?

5. How should information be integrated to arrive at a diagnosis:

(a) Is the diagnostic assessment more accurate and reliable when performed by a multidisciplinary team or a single practitioner?

(b) What is the stability of an ASD diagnosis over time?

(c) What is the agreement of an ASD diagnosis across different diagnostic tools?

6. How should the findings of the diagnostic assessment be communicated to children and young people, and their families/ carers?

7. What actions should follow assessment for children and young people who are not immediately diagnosed with ASD?

8. Which are the common co-existing conditions that should be considered as part of assessment?

9. What information do children and young people and their families/carers need during the process of referral, assessment and diagnosis of ASD?

10. What kinds of day-to-day, on-going support (not specific therapeutic interventions/ management of ASD) should be offered to children and young people and their families/carers during the process of referral, assessment and discussion of diagnosis of ASD?

Question 1

Study Details	Patients	Diagnostic Tools	Measure of disorders	Results	Comments
Author: Baron-Cohen S Year: 1996 ID: [45] Country: UK Study design: Controlled observational Consecutive recruitment? Not reported Study dates: Not reported Aim of Study: To test the ability of failure to demonstrate protodeclerative pointing, gaze monitoring and pretend play to predict later diagnosis of autism or distinguish	Patient groups: Or a large population cohort administered CHAT age 18 months: Children who failed to demonstrate PDP, GM and PP n=12 Children who failed PDP or PDP and PP but passed GM n=44 (n=22 reported in paper) Normal group who passed all 3 items n=15, 944 (of these n=16 reported in paper) Exclusion criteria: Children with severe developmental delay not included in screened population Demographics: Number: 50 Age: 18 months Ethnicity: unreported Subgroups: Intellectual Disability: Not reported Language: Not reported Gender: Not reported Visual impairment: Not reported Hearing impairment: Not	**Sign or symptom under investigation**: Failure to demonstrate protodeclerative pointing (PDP), gaze monitoring (GM) pretend play (PP) Threshold & Data set CHAT items A5, A7, Bii,Biii,Biv Defined as: parental question "does your child ever PRETEND, e.g. to make a cup of tea using a toy cup and teapot" "does your child ever use his/ her finger to point to indicate interest in something?" Observation: get child's attention then point at a toy, does child look to see what you are pointing at? Give child toy cup and teapot and ask them to pretend to make a cup of tea. Ask child to show you the light, does child point to light? Adequately described? yes Operator no/experience	Failure to perform PDP, GM and PP True positive False positive False negative True negative Sensitivity Specificity Failure to perform PDP or PDP and PP True positive False positive False negative True negative Sensitivity Specificity	 10 0 0 23 10/ 10 100 (100, 100) 23/23 100 (100, 100) 10 7 0 16 10/10 100 (100, 100) 16/23 70 (51, 88)	Funding: MRC project grant Limitations: False negative rate of whole population unknown as only small number received reference standard Value of early diagnosis unknown Blinding: Administrators of reference standard blind to results of index test Timing of tests: Index test 18 months, ref standard following this but age unreported Verification (ref/index test x100) <1% Also reported: NA

between autism and developmental delay Evidence level Low	reported Gestational age: Not reported Source of referral: identified by administration of CHAT to general population	Family health visitor or GP **Comparison tool:** ICD-10 diagnosis of autism Threshold & Data set Diagnosis on assessment of child in clinic or rated from videotape of subjects +/- ADI-R Adequately described? yes Operator no/experience 5 independent judges (authors of paper) Developmental delay: children with ≤ 5 words, according to parental report in ADI or delay on Griffiths scale of infant development of ≥ 4 months			
Author: Charman T Year: 1997 ID: [46] Country: UK	Patient groups: Autism n=10 Developmental delay n=9 (non verbal mental age ≥ 3months below chronological age or vocabulary < 5 words Normal control n=19 Exclusion criteria: Severe developmental delay Demographics:	**Sign or symptom under investigation:** Pretend play Functional play Children filmed over 5mins on a room with toys Empathetic response- shows concern in facial expression (examiner pretended to hurt themselves with a	No pretend play True positive False positive False negative True negative Sensitivity Specificity No Functional Play True positive False positive False negative	 9 7 1 12 9/10 90 (71, 109) 12/19 63 (41, 85) 4 3 6	Funding: Not reported Limitations: Relatively high functioning autistic population only Males only Blinding: Raters of experimental

<u>Study design:</u> Controlled observational Consecutive recruitment? Unclear Study dates: unreported Aim of study? 'attempt early screening of autism' Evidence level Low	Number: 38 Age: 20months Ethnicity: Not reported <u>Subgroups:</u> Intellectual Disability: N (%) Developmental delay comparison group but no overlap with autism group Language: Not reported Gender: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Identified by CHAT screening tool	hammer) Threshold & Data set Play: Scored according to Baron-Cohen definitions Empathetic response: Sigman Adequately described? yes Operator no/experience unreported <u>Comparison tool:</u> Threshold & Data set ICD-10 diagnosis (8 autism, 2 PDD) Adequately described? yes Operator no/experience 2 experienced clinicians made diagnosis, 3rd viewed videotaped sessions of experimental sessions and rated diagnosis	True negative Sensitivity Specificity <u>Shows facial concern</u> True positive False positive False negative True negative Sensitivity Specificity	16 4/10 40 (10, 70) 16/19 84 (68, 101) 10 6 0 13 10/10 100 (100, 100) 13/19 68 (48, 89)	sessions blinded to diagnosis of children Timing of tests: Experimental session 20 months, ICD-10 20months confirmed on follow up at 42 months with ADI-R and ICD-10 Verification (ref/index test x100) 100% Also reported: Ordering play and sensorimotor play Structured play task to produce functional play and sensorimotor play Imitation task NB This study used some of the sample from Baron-Cohen study above
<u>Author:</u> Dawson G <u>Year:</u> 2004	<u>Patient groups:</u> Children with DSM-IV-TR ASD, developmental delay or typically developing children	**<u>Sign and symptom</u>** Attention to distress Joint attention Social Orientation <u>Threshold & Data set</u>	<u>No attention to distress</u> True positive False positive False negative True negative Sensitivity	 15 0 57 39 15/72 21 (11, 30)	Funding: National Institute of Child Health and Human Development Limitations:

ID:[41] Country: USA Study design: Controlled observational Consecutive recruitment? No Study dates: Not reported Evidence level Low	Exclusion criteria: Neurological disorder of known etiology (ASD group only) Significant sensory or motor impairment, Major physical abnormalities, History of serious head injury and/or neurological disease Demographics: Number: ASD: 72 DD: 31 TD: 39 Age: ASD: 43.5 ± 4.3 months DD: 44.8 ± 5.3 months TD: 27.1 ± 8.9 months Ethnicity: White:101 Black: 5 Latino/Hispanic: 3 American Indian: 1 Asian/PI: 5 Biracial: 30 Subgroups: Intellectual Disability: Mullen composite IQ ASD: 57.6 ± 20	Defined as: in the distress condition, if the children will look at the examiner or not. Adequately described? No. Operator no/experience Not reported. **Comparison tool:** DSM-IV diagnosis of autism. Threshold & Data set Diagnoses were based on the ADI-R, ADOS-G, and clinical judgment. Adequately described? Yes Operator no/experience Not reported.	Specificity	39/39 100 (100, 100)	1. Sample only includes children who have autism, developmental delay or normal control. 2. Inadequate description of how the index test has been conducted. Blinding: Not reported. Timing of tests: Reference index were taken before index test. Verification (ref/index test x100) 100% Also reported: N/A

	DD: 60.7 ± 15.8 TD: 105.3 ± 7.7 Language: Not reported Gender: Male / Female ASD: 60 / 12 DD: 18 / 16 TD: 30 / 9 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Parent advocacy groups, Public schools, Washington State Dept of Developmental Disabilities, Clinics, Hospitals, University of Washington Infant and Child Subject Pool				
Author: Ingram DH Year: 2007 ID: [42] Country: USA	Patient groups: 20 special education students with autism and no mental retardation 24 special education students with mental retardation (no autism) 37 typical students without psychological or educational problems Exclusion criteria:	Sign or symptom under investigation: Component items of playground behavioural checklist: 1.Social play 2.Not socially isolated from peers 3.Respects boundaries and personal space 4.Does not exhibit socially inappropriate behaviour	No Social play True positive False positive False negative True negative Sensitivity Specificity Social isolation True positive False positive False negative	 18 0 2 37 18/20 90 (77, 103) 37/37 100 (100, 100) 16 0 4	Funding: unreported Limitations: Retrospective Small study size Blinding: unreported Timing of tests:

Study design: Controlled observational Consecutive recruitment? Special education students consecutive referrals for school evaluation, typical children matched for grade and sex Study dates: unreported Aim of study? To determine if children with autism, mental retardation, and typical development differ in their playground behaviour during recess" Evidence level Low	Nil reported Demographics: Number: 81 Age: autism 5-11 years MR 5-11 mean 9 years Typical mean age 9 years Ethnicity: Subgroups: Intellectual Disability: Autism IQ 70-123 mean 88 MR IQ 34-68 mean 51 Language: Not reported Gender: - Male 53 - Female 28 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: - School special education 44 consecutive referrals, typical children matched by teachers as controls	5.Follows rules of game 6.Responds to winning/ losing 7.Initiates communication with peers 8.Sustains a conversation with peers 9.Does not exhibit gross motor in-coordination 10.Uses playground equipment functionally Threshold & Data set 1.Child actively seeks out other children and becomes involved in play with 1 or more 2. does not remove themselves from other children or engage in solitary play most of the time 3. Doesn't invade personal space e.g. touching others inappropriately or walking through structured games 4. socially inappropriate behaviours e.g. touching genitals, picking nose, mouthing objects, flapping hands, walking on toes, rocking/ spinning 5. follows rules of structured game e.g. turn taking/ keeping score 6. joy or disappointment on	True negative Sensitivity Specificity Not respecting boundaries True positive False positive False negative True negative Sensitivity Specificity Socially inappropriate behaviour True positive False positive False negative True negative Sensitivity Specificity No Ability to follow rules of a game True positive False positive False negative True negative Sensitivity Specificity No response to winning/ losing True positive False positive False negative True negative Sensitivity Specificity	37 16/20 80 (62, 98) 37/37 100 (100, 100) 10 0 1- 37 10/20 50 (28, 72) 37/37 100 (100, 100) 8 0 12 37 8/20 40 (19, 61) 37/37 100 (100, 100) 20 22 0 15 20/20 100 (100, 100) 15/37 41 (25, 46) 20 20 0 17 20/20 100 (100, 100) 17/37 46 (30, 62)	Playground observation 5-11 years, age at diagnosis of autism unreported Verification (ref/index test x100) 100% Also reported: NA

		winning or losing and awareness e.g. anger, congratulations, high five, cheer 7. approaches child and speaks, shows or requests something from child 8. initiates conversation and sustains by responding to what peer has said 9. no difficulty with gait/ motor skills e.g. running, climbing, throwing, catching 10. e.g. swinging on swing, sliding down slide Adequately described? yes Operator no/experience Observed by 2 members of schools assessment team unobtrusively <u>Comparison tool:</u> Diagnosis of autism according to DSM-IV criteria Threshold & Data set DSM-IV criteria Adequately described? yes	<u>No Initiation of contact with peers</u> True positive False positive False negative True negative Sensitivity Specificity <u>Inability to sustain conversation</u> True positive False positive False negative True negative Sensitivity Specificity <u>Gross motor incoordination</u> True positive False positive False negative True negative Sensitivity Specificity <u>Functional use of equipment</u> True positive False positive False negative True negative Sensitivity Specificity	 16 0 4 37 16/20 80 (62, 98) 37/37 100 (100, 100) 20 0 0 37 20/20 100 (100, 100) 37/37 100 (100, 100) 13 0 7 37 13/20 65 (44, 86) 37/37 100 (100, 100) 10 12 10 25 10/20 50 (28, 72) 25/37 68 (52, 83)	

		Operator no/experience Certified school psychologist with independent confirmatory diagnosis by licensed psychologist, child psychiatrist or developmental paediatrician with expertise in autism			
Author: Nadig A Year: 2010 ID: [44] Country: U.S.A Study design: Controlled observational Consecutive recruitment? Not reported Study dates: Not reported. Aim of Study: To assess the sensitivity and specificity of decreased	Patient groups: Infants who had an older sibling with ASD, whose diagnosis was confirmed by meeting at least the ASD cut-off on both ADOS and SCQ. (n=55) Control group: Infants who had an older sibling with typical development whose lack of diagnosis was confirmed by an intake screening questionnaire and scores lower than the ASD range on the SCQ. (n=43) Exclusion criteria: Not reported. Demographics (at risk group): Number: 55 Age: <36 m Ethnicity: unreported Subgroups:	**Sign or symptom under investigation**: Failure to response to name Threshold & Data set Responses were coded from video by a coder who was unaware of group membership. Responses were defined as a clear head turn and eye contact with the examiner. A response score was calculated for each valid press, with responses on the first name call given a 1, responses on the second call given a 2, responses on the third call given a 3, and no response after 3 calls given a 4. Adequately described? yes Operator no/experience Not reported. **Comparison tool:**	Failure to response to name True positive False positive False negative True negative Sensitivity Specificity	 5 7 5 54 10/ 10 50 (19, 81) 54/61 89 (81, 97)	Funding: Grant MH068398 from the National institutes of Health (Dr Ozonoff). Limitations: Not all children have been followed up 24 month, so data is only available for 72.4% of all children. Blinding: Responses were coded from video by a coder who was unaware of group membership. Timing of tests: Index test 18 months, ref standard following this but age unreported Verification (ref/index test x100) 71/98 (72.4%)

response to name at age 12 months as a screen for ASD and other developmental delays. Evidence level Low	Intellectual Disability: Not reported Language: Not reported Gender: male: 34/55 (62%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported Demographics (control group): Number: 43 Age: <36 m Ethnicity: unreported Subgroups: Intellectual Disability: Not reported Language: Not reported Gender: Male: 23/43 (54%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	DSM-IV. Threshold & Data set ADOS: ≥ 7 points Adequately described? yes Operator no/experience Not reported.			Also reported: NA
Author: Ozonoff S Year:	Patient groups: Autism/ASD scored above the ASD cut-off on ADOS and met best estimate	Sign and symptom Atypical object use (2 SD above TD)	Atypical Object use True positive False positive False negative	 7 11 2	Funding: National Institute of Mental Health

2008 ID:[40] Country: USA Study design: Controlled observational Consecutive Recruitment No Study dates: Not reported Evidence level Low	according to DSM-IV Other developmental delays Control group: did not meet and criteria for case groups Exclusion criteria: Not reported Demographics: Number: Autism/ASD: 9 DD: 10 TD: 47 Age: Autism/ASD: 12.0 ± 0.5 months DD: 12.2 ± 0.3 months TD: 12.1 ± 0.4 months Ethnicity: Not reported Subgroups: Intellectual Disability: Not reported Language: Not reported Gender: Male Autism/ASD: 100% DD: 70% TD: 53.2% Visual impairment: Not reported	Threshold & Data set Object exploration task: four object given to the infant for 30 seconds each (a round metal lid, a round plastic ring, a rattle and a plastic baby bottle). Behavior was recorded on DVD and coded by blind raters, using Noldus Observer software. Eight uses were coded as frequency or duration. Typical, age-appropriate exploration of the object were shaking, banging, mouthing throwing while atypical exploration included spinning, rolling, rotating and unusual visual exploration. Adequately described? Yes Operator no/experience Yes Comparison tool: Threshold & Data set DSM-IV Adequately described? No Operator no/experience	True negative Sensitivity Specificity	36 7/9 78 (51, 105) 36/47 77 (64, 88)	Limitations: Blinding: Blind raters of object exploration task Timing of tests: Unclear Verification (ref/index test x100) Unclear Also reported: N/A

	Hearing impairment: Not reported Gestational age: Not reported Source of referral: Families who had a previous child with ASD	No			
Author: South M Year: 2005 ID:[39] Country: USA Study design: Controlled observational Consecutive recruitment? Unreported Study dates: unreported Evidence level Low	Patient groups: 21 High functioning autism 19 Asperger's syndrome 21 typically developing Exclusion criteria: 4 potential participants excluded because did not meet diagnostic criteria-3ASD below ADOS-G cut-off for ASD, one control with odd social presentation 3 excluded because verbal IQ <70 4 excluded because outlying IQ scores (3 low 1 high) Demographics: Number: 61 Age: HFA 8-20 years mean 14.10 (SD 3.47) AS 8-19 mean 14.28 (3.02) TD 7-19 mean 13.34 (3.28) Ethnicity: Not reported	Sign and symptom Repetitive behaviours Interview items: Repetitive talk about 1 topic Difficulty trying new activity Abnormally obsessional interest Watch same video continuously Insistence on certain routines/ rituals Lining things up in rows/ patterns Spinning/ banging/ twiddling Pacing/ stereotyped walking Compulsion (contamination, order) Hand& finger mannerisms Vocal/ motor tics Sucking objects e.g. shirts, pencils Rocking/spinning Self-injurious behaviour Threshold & Data set Threshold present/ absent Turner 1997 Adequately described?	Repetitive talk about 1 topic True positive False positive False negative True negative Sensitivity Specificity Difficulty trying new activity True positive False positive False negative True negative Sensitivity Specificity Abnormally obsessional interest True positive False positive False negative True negative Sensitivity Specificity Watches same video continuously True positive False positive False negative True negative	 33 3 7 18 33/40 83 (71, 94) 18/21 86 (71, 101) 31 1 9 20 31/40 78 (65. 90) 20/21 95 (86, 104) 28 0 12 21 28/40 70 (56, 84) 21/21 100 (100, 100) 26 3 14 18	Funding: NIMH National Research Service Award and partly by NIMH F.I.R.S.T award and NICHD program grant Limitations: Small sample size Blinding: Index test blinded to diagnosis Timing of tests: Behaviour questionnaire at mean age, age at diagnosis unreported Verification (ref/index test x100) 100% Also reported:

	Subgroups: Intellectual Disability: excluded IQ <70 Language: Not reported Gender: Male 45 -Female 16 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: ASD recruited from Child and Adolescent Specialty clinics at the University of Utah Health Sciences center and from a pre-existing database of research participants Controls recruited from existing participant database and by word of mouth in the community	No Operator no/experience 2 raters experienced in diagnosing autism performed parent report interview Comparison tool: DSM-IV-TR criteria, based in information from detailed parent interview, Autism Diagnostic Interview-Revised, ADOS-G Threshold & Data set High functioning autism for 6 of 12 symptoms in DSM-IV-TR guidelines, inc impairment in 2 areas of social interaction and at least one of communication and repetitive behaviour. Also onset of abnormal functioning in social interaction, language or repetitive play by age 3 and full scale, verbal, performance IQ scores above 70. Diagnosis of Asperger only considered when autism ruled out, at least 2 DSM-IV-TR defined social symptoms, one repetitive behaviour symptom and normal onset	Sensitivity Specificity <u>Insistence on certain routines/ rituals</u> True positive False positive False negative True negative Sensitivity Specificity <u>Lining things up in rows/patterns</u> True positive False positive False negative True negative Sensitivity Specificity <u>Spinning/ banging/ twiddling</u> True positive False positive False negative True negative Sensitivity Specificity <u>Pacing/ stereotyped walking</u> True positive False positive False negative True negative Sensitivity Specificity	26/40 65 (50, 80) 18/21 86 (71, 107) 21 1 19 20 21/40 53 (37, 68) 20/21 95 (86, 104) 20 2 20 19 20/40 50 (36, 56) 19/21 90 (78, 103) 19 1 21 20 19/40 48 (32, 63) 20/21 95 (86, 104) 24 0 16 21 24/40 60 (45, 75) 21/21 100 (100, 100)	

		of single word and phrase use Adequately described? yes Operator no/experience Not reported	<u>Compulsion(contamination/ order)</u> True positive False positive False negative True negative Sensitivity Specificity <u>Hand and finger mannerisms</u> True positive False positive False negative True negative Sensitivity Specificity <u>Vocal/motor tics</u> True positive False positive False negative True negative Sensitivity Specificity <u>Sucking objects e.g. shirts, pencils</u> True positive False positive False negative True negative Sensitivity Specificity <u>Rocking/spinning</u> True positive False positive False negative	 20 3 20 18 20/40 50 (35, 65) 18/21 86 (71, 101) 19 1 21 20 19/40 48 (32, 63) 20/21 95 (86, 104) 18 1 22 20 18/40 45 (30, 60) 20/21 95 (86, 104) 19 4 21 17 19/40 48 (32, 63) 17/21 81 (64, 98) 18 0 22	

			True negative	21
			Sensitivity	18/40 45 (30, 60)
			Specificity	21/21 100 (100, 100)
			Self-injurious behaviour	
			True positive	17
			False positive	1
			False negative	23
			True negative	20
			Sensitivity	17/40 43 (27, 58)
			Specificity	20/21 95 (86, 104)
Author: Stone W Year: 1989 ID: [38] Country: U.S.A Study design: Controlled observational Consecutive recruitment? No. Study dates: Not reported. Evidence level Low	Patient groups: 91 preschool children in five diagnostic groups: 22 autistic, 15 mentally retarded, 15 hearing-impaired, 19 language-impaired and 20 non-handicapped children. Children were recruited from public school prekindergarten special education classes, private preschools, and programs at a large, university-affiliated, research and training facility. Exclusion criteria: Demographics: Number: 22 ASD and 20 TD Age: ASD: 4.6 ± 0.9 years TD: 4.3 ± 1.0 years	**Sign and symptom** No manipulative play No relational play No functional play No symbolic play Threshold & Data set Level of toy play was coded using Sigman and Ungerer's four categories of increasing sophistication: 1. Manipulative (ie. Simple actions with a single toy) 2. Relational (ie, non-functional combinations of two or more toys). 3. Functional (ie, use of toys in a manner consistent with their conventional functions) 4. symbolic (ie, substitution play and pretend play) Adequately described? Yes	No manipulative play True positive False positive False negative True negative Sensitivity Specificity No relational play True positive False positive False negative True negative Sensitivity Specificity No functional play True positive False positive False negative True negative Sensitivity Specificity	 2 0 20 20 2/22 9 9-3, 21) 20/20 100 (100, 100) 9 5 13 15 9/22 41 (20, 61) 15/22 63 (43, 82) 5 0 17 20 5/22 23 (5, 40) 20/20 100 (100, 100)	Funding: Florida diagnostic and learning resources system through a state general revenue appropriation for evaluation services in exceptional student education. Limitations: Small sample size. Selected sample. Blinding: The trained raters are blind to the subjects' reference index result. Timing of tests: Reference index were undertaken before index test.

	Ethnicity: Not reported Subgroups: Intellectual Disability: ASD: 1Q = 54.1 ± 16.1 TD: 1Q = 100 ± 16.6 Language: Not reported Gender: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	 Operator no/experience Yes **Comparison tool:** DSM-III diagnostic criteria of autism. Threshold & Data set CARS score between 30 and 60. Adequately described? Yes. Operator no/experience Not reported.	No symbolic play True positive False positive False negative True negative Sensitivity Specificity	 20 9 2 11 20/22 91 (79, 103) 11/20 55 (33, 77)	 Verification (ref/index test x100) 100% Also reported: N/A
Author: Werner E Year: 2000 ID: [43] Country: U.S.A Study design: Case control Retrospective Consecutive recruitment? Study dates:	Patient groups: 11 children who participated in the Osterling and Dawson (1994) study of first birthday party home videotapes and 4 additional new participants. Children in the ASD sample were diagnosed as having Autistic disorder (n=8) or PDD-NOS (n=7). The comparison group was comprised of the typically developing children originally recruited for Osterling and Dawson's (1994) home video study of first birthdays who had	**Sign and symptom** Orienting to name Threshold & Data set Based on percentage of times children oriented to their name being called. Cut-off value is unreported. Adequately described? No Operator no/experience Paediatrician. Comparison tool: DSM-III-R of autistic disorder or PDD-NOS. Threshold & Data set	Lack of orienting to name True positive False positive False negative True negative Sensitivity Specificity	 11 2 4 13 11/15 73 (51, 96) 13/15 87 (69, 104)	Funding: National institute of child health and human development and the National institute on deafness and communication disorders (PO1HD34565) and the University of Washington's royalty research fund. Limitations: Selected sample. Retrospective study based on home videotapes. Blinding:

Not reported Evidence level Low	footage available for the targeted earlier age range, as well as 4 additional new participants who were recruited through the university's infant research pool. <u>Exclusion criteria:</u> Not reported. <u>Demographics:</u> Number: 30 Age: 12 months Ethnicity: Not reported <u>Subgroups:</u> Intellectual Disability: Autism group: FSIQ<70: 8/15 Control group: Not reported. Language: Not reported Gender: Not reported. Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported.	Not reported. <u>Adequately described?</u> No. <u>Operator no/experience</u> Not reported.			Not reported. Timing of tests: Reference test was undertaken before index test. Verification (ref/index test x100) 100% Also reported: NA

Question 2(a)

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
Author: Allen CW Year: 2006 ID: [65] Country: Australia AIM: 1. Estimate the sensitivity, specificity and positive and negative likelihood ratios of the SCQ in identifying ASD from other developmental disorders. 2. Compare the sensitivity and specificity of the SCQ with the predictions of the referrer to see if it added value.	Patient groups: All referrals to CDU aged 2-6 years over a 9 month period. 100 children identified. CDU is a state wide s0pecialist tertiary referral clinic at The Children's Hospital at Westmead. Exclusion criteria: Parents who didn't respond. Demographics: Number: 81 Age: 26-84 months. Ethnicity: Not reported. Subgroups: Language: Not reported. Gender: -Male 66 (81.48%) -Female 15 (18.52) Intellectual disability: Not reported Visual impairment: Not reported. Hearing impairment: Not reported.	Surveillance tool under investigation: ●SCQ: a screening tool for children at high risk of developmental problems Threshold & Data set SCQ has 40 questions. Cut off: 11, >15 Adequately described? Yes. Operator no/experience Parents without experience. Comparison/Diagnostic Criteria tool: ●DSM-IV: CARS, Bayley's scales of infant development II, history/examination, observation, reviews of reports from other professionals who interact with the child and physical examination. Threshold and Data set Combination of about assessments against DSM-IV criteria. Adequately described? Yes. Operator no/experience	SCQ ≥ 12 True positive False positive False negative True negative Sensitivity Specificity SCQ ≥ 15 True positive False positive False negative True negative Sensitivity Specificity	 26 12 2 16 26/28 93 (83, 102) 16/28 57 (39, 75) 17 10 11 18 17/28 61 (43, 79) 18/28 64 (47, 82)	Funding: Not reported. Limitations: 1. The total sample size is large enough; however, for each age group the sample size is small. Blinding: Yes. Parents were asked to complete the SCQ prior to their child's appointment. The investigator scoring the SCQ was blinded to the outcome of the multidisciplinary assessment. Timing of tests: Not reported. Verification (ref/index test x100) 100% Also reported: 1. Comparison of referrer and SCQ in prediction of ASD. 2. *Mean SCQ* score and developmental level in

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
Study design: Uncontrolled observational Consecutive recruitment? Yes. Study dates: Not reported Evidence level Very low	Gestational age: Not reported. Source of referral: Predominantly by paediatricians, psychiatrists and preschool special education services.	Not reported – presumed MDT			children with ASD Mild DD (n=6) *14* (SD 3.7) Mild/Mod DD (n=7) *19* (SD 5.6) Mod DD (n=10) *19* (SD 7.4) Unknown (n=4) *16* (SD 5.4) 3.Non-ASD diagnoses -language disorder n=20 -mild/mod DD n=21 -language disorder and DD n=7 -other n=5 Of the 81 responses only 56 were for children referred for ASD so only these are used in the results . We are unable to calculate sensitivity and Specificity for age groups and children with ID
Author: Corsello A Year: 2007 ID: [72] Country: U.S.A AIM: Investigate how	Patient groups: 590 children between 2 and 16 years who were consecutive referrals to two university-based clinics specializing in children with possible ASDs and/or were participants in research within the autism centres. Eventual diagnosis- ASD: n=438. Non-ASD: n=151 Exclusion criteria:	Surveillance tool under investigation 1: ●SCQ[1] Threshold & Data set 40 item questionnaire. Cut-off >=15 or 12 Adequately described? Yes Operator no/experience Parents with no experience. Comparison/Diagnostic Criteria tool:	SCQ ≥ 15 True positive False positive False negative True negative Sensitivity Specificity SCQ ≥ 15 – IQ ≤70 True positive False positive False negative True negative Sensitivity	 311 44 127 107 311/438 71 (67, 75) 107/151 71 (64, 78) 165 16 40 36 165/205 80(75, 86)	Funding: National institute of Mental health. Grants: R01 MH 066496 and R01 MH46865 to Dr Lord. Limitations: 1) Unsure is all sample were referrals. (“some participants had been part of a control group in a research project”) Blinding: Yes – parents completed the

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
well the SCQ function as a clinical screening instrument in a larger, younger American sample of children with ASD or non-spectrum disorders. <u>Study design:</u> Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported Evidence level Very low	Children with missing items that would have changed their SCQ classification. <u>Demographics:</u> **Total sample** Number=590 Age: 2-16 years Ethnicity: 495 Caucasian, 43 African-Americans, 48 other ethnicities and 4 with missing data. **Autism (AD):** Number=282 Age: μ=84.34 **PDD-NOS (PD):** Number=157 Age: μ=96.09 **Non-spectrum (NS):** Number=151 Age:μ=93.09 Ethnicity: -Caucasian: 495(83.90%) -African Americans: 43(7.29%) -Other: 48(8.14%) -Missing: 4(0.68%) <u>Subgroups:</u> Language: Not reported Gender: -Male: 462(78.31%) Intellectual disability: **Nonverbal IQ:** AD: Mean=68.92	●DSM-IV : IQ, ADI-R and ADOS score, and unstructured telephone teacher interviews Threshold and Data set Consensus diagnosis by two examiners over 1-3 hour sessions and had access to all assessment results. Adequately described? Yes Operator no/experience Experienced (e.g., a child psychiatrist, clinical psychologist)	Specificity <u>SCQ ≥ 15 – Preschool</u> True positive False positive False negative True negative Sensitivity Specificity <u>SCQ ≥ 15 – Primary school</u> True positive False positive False negative True negative Sensitivity Specificity	36/52 69 (57, 82) 107 11 50 32 107/157 68 (61, 75) 32/43 74 (61, 87) 99 18 52 46 99/151 66 (58, 73) 46/64 72 (61, 83)	SCQ prior to diagnostic assessment and clinicians were unaware of the SCQ scores when performing diagnostic assessment. <u>Timing of tests:</u> SCQ completed prior to the diagnosis. <u>Verification (ref/index test x100)</u> 100%. <u>Also reported:</u> 1) The accuracy of SCQ, ADOS, ADI-R in identifying autism, not only ASD. 2) Non-spectrum disorders: - communication disorder n=36 - ADHD n=30 - mental retardation n=26 - Down syndrome n=18 - Fetal alcohol syndrome n=18 - mood/anxiety disorder n=12 - other dev/psych disorder n=11 3) Differences in IQ, age, gender and maternal education between groups.

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
	PD**:** Mean=91.26 NS: Mean=78.44 **Verbal IQ:** AD**:** Mean=52.02 PD: Mean=90.01 NS: Mean=78.51 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Eaves LC Year: 2006 ID: [67] Country: Canada AIM: 1. How well the questionnaires, when given to families of children already identified at risk, agree with clinical diagnosis. 2. Whether a screening measure can	Patient groups: Referrals for assessment of suspected autism. 178 children (36 girls) 2-3 year olds and 4-6 year olds. English as second language families Exclusion criteria: Not reported Demographics: Whole Group Number: 178 Age: mean age at diagnosis 51.2 months (range 39-75) Ethnicity: European/Canadian 65%, Asian 24% 2-3 year olds (MCHAT) Number: 84 Age: mean age at – M-CHAT: 37.2 months 9SD 6.4, range 17-48)	Surveillance tool under investigation: M-CHAT ●M-CHAT1 Threshold & Data set - 6 key items identified with discriminant function cut off score ≥ 2 Adequately described? - yes Operator no/experience - parental questionnaire ●M-CHAT2 Threshold & Data set - 19 'autistic' items out of the full 23, cut off score ≥ 3 Adequately described? - yes Operator no/experience - parental questionnaire ●SCQ	SCQ ≥ 15 True positive False positive False negative True negative Sensitivity Specificity M-CHAT 1 True positive False positive False negative True negative Sensitivity Specificity M-CHAT 2 True positive False positive False negative True negative Sensitivity Specificity	 26 27 9 32 26/35 74 (60, 89) 32/57 54 (42, 67) 40 17 12 13 40/52 77 (65, 88) 13/30 43 (26, 61) 48 22 4 8 48/52 92 (85, 96) 8/30 27 (11, 42)	Funding: Not stated Limitations: Information bias – where incomplete data was supplied values were recalculated (based on number of autism positive responses divided by total number answered) Information bias – Canadian participants may have been more aware of the answers required to get a diagnosis and the correlation between intervention and diagnosis, where as ESL may have interpreted the questionnaires and the assessment process differently due to unfamiliarity with English language and autism.

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
direct children to correct clinic. 3. How useful the questionnaires are in parents for whom English is their second language (ESL). <u>Study design:</u> Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level Very low	Diagnosis: 40.3 months (SD 6.9, range 22-53) Ethnicity: Not reported <u>4-6 year olds (SCQ)</u> Number: 94 Age: mean age at – SCQ: 51.2 months (range 39-75) Diagnosis: 60.7 months (SD 8.6, range 47-78) Ethnicity: Not reported <u>Subgroups:</u> Language: 32% of families were ESL. 12 participants were non verbal. Gender: 36 girls (20.2%) Intellectual disability (ID): VIQ: μ = 55.8, 29% > 70 PIQ: μ = 72.6, 51% > 70 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: 100% from community paediatricians or family practitioners.	Threshold & Data set - Cut off score 15 - concern about using same cut-off score for verbal and non verbal children, as 7 less questions for non verbal children. Adequately described? - yes Operator no/experience - parental questionnaire <u>Comparison/Diagnostic Criteria tool:</u> ●DSM-IV : multidisciplinary team assessment, CARS, developmental history, parent interview, cognitive/language tests, play observation, school reports. Threshold and Data set Multidisciplinary team assessment Adequately described? Yes Operator no/experience Experience – multidisciplinary team.			<u>Blinding:</u> Not reported if diagnostic assessors were blind to the results of the screening tests <u>Timing of tests:</u> - Screening tests performed prior to diagnostic assessment, and not included in diagnostic assessment <u>Verification (ref/index test x100)</u> 100% <u>Also reported:</u> ASD diagnosis: 89 (50%, 57 autism, 32 PDD-NOS) - 2-3 year olds 54 (64%) - 4-6 year olds: 35 (37%) Non ASD diagnosis: 89 (50%) - 77% had >1 disorder - ID 79 (90%) - language disorder 60 (68%) - ADHD 17 (19%) - dyspraxia 22 (25%) - learning disability 31 (35%) - another medical condition/syndrome 23 (26%) If SCQ score is decreased to 12, only 9% would have been missed but 70% of true

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
					negatives would have been assessed. Discriminant items: interest in other children, point for intention, bring objects to show, imitating, responding to name, following a point EFL – English as first language ESL – English as second language
Author: Eaves LC Year: 2005 ID: [68] Country: Canada AIM: Examine the validity of SCQ in a young sample. Study design: Uncontrolled observational Consecutive recruitment? No.	Patient groups: Referrals for diagnosis and assessment of a range of developmental problems, including autism, at Sunny Hill Health Centre for children. Exclusion criteria: - Less than 3 years old. - Very developmentally delayed (level not defined) Demographics: Number: 151 Age: μ=61.5 (SD=9.2, range=35-82) Ethnicity: Not reported. Subgroups: Language: -English: 105 (70.5%) -Bilingual: 30 (20.2%) -Other: 16 (10.6%)	Surveillance tool under investigation: ●SCQ. Threshold & Data set 40 questions, scored 0-39 for verbal children, and 0-33 for non verbal children. Cut off ≥11. Adequately described? Yes. Operator no/experience Parents without experience. Comparison/Diagnostic Criteria tool: ●DSM-IV : CARS, Developmental/ medical history, child observations of social interaction and play, developmental/cognitive testing, parents' interview, reports from preschool or day-care.	SCQ ≥ 15 True positive False positive False negative True negative Sensitivity Specificity	 39 45 10 57 39/49 80 (68, 91) 57/102 56 (46, 66)	Funding: Not reported. Limitations: 1.Information bias due to patient referred from autism clinic (increased knowledge of autism symptoms and possibly aware than ASD diagnosis is tied to services) Blinding: No questionnaires completed post assessment, so all parents blind to diagnosis. Blinding of clinicians to questionnaire result Not reported. Timing of tests: Most parents completed questionnaire before diagnostic assessment, but some during the assessment. None completed it after

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
Study dates: Not reported. Evidence level: Very low	Gender: -Male: 119 (78.8%) -Female: 32 (21.2%) Intellectual disability: -Yes: 45 (33.6%) -No: 106 (70.2%) Visual impairment: Not reported. Hearing impairment: Not reported. Gestational age: Not reported. Source of referral: -Autism clinic: 106 (70.2%) -Preschool clinic: 45 (29.8%)	Threshold and Data set Expert consensus. Adequately described? Yes. Operator no/experience Experienced, with ADOS training.			assessment. Verification (ref/index test x100) 100% Also reported: The sensitivity, specificity of SCQ for different referral, language ability. No significant difference between verbal and nonverbal children in SCQ scores.
Author: Ehlers S Year: 1999 ID: [69] Country: Sweden AIM: To evaluate the ASSQ as a screening instrument and aid for the identification of those behaviourally	Patient groups: Consecutive referrals to neuropsychiatric clinic over 8 months. 110 children with various kinds of behavioural disorders Exclusion criteria: - moderately and severely retarded children were excluded (as ASSQ not designed to capture characteristics of these children) - mild retardation included. Demographics: Number: 110 Age: 6-17 year olds Ethnicity: Not reported Subgroups: Language: Not reported	Surveillance tool under investigation: ● ASSQ Threshold & Data set Completed twice, once at time 1 during visit to clinic, and once 2 weeks later (via mail) Adequately described? Yes Operator no/experience Parent (n=110) questionnaire, thus no experience. If agreed the students teacher (n=107) was also completed ASSQ Comparison/Diagnostic Criteria tool: ● DSM-IV: 2 hours with	ASSQ ≥ 29 (parent) True positive False positive False negative True negative Sensitivity Specificity ASSQ ≥ 22 (teacher) True positive False positive False negative True negative Sensitivity Specificity	 13 9 8 79 13/21 62(41, 83) 79/88 90 (83, 96) 15 8 6 80 15/21 71 (52, 91) 80/88 91 (85, 97)	Funding: Grants from Wilheim and Martina Lundren Foundation, and the RBU Foundation, the Sven Jerring Foundation and the Clas Groschinsky memorial Foundation and the Swedish medical Research council. Limitations: 1. Population only includes patients with behavioural problems and does not specify what problems. 2. Does not define moderate / severe mental retardation. 3. Decreased response rate for time 2 questionnaire (via

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
disturbed children at risk of having ASD. Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: 8 months Evidence level Very low	Gender: 87 (79%) boys Intellectual disability: 13 (12%) had mild mental retardation (IQ 50-70) in addition to diagnosis Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	psychiatrist, 2 hours with psychologist, extensive history. Threshold and Data set Consensus diagnosis Adequately described? Yes Operator no/experience Psychiatrist / Case conference			mail) Blinding: Not reported Timing of tests: ASSQ completed during time 1, prior to diagnostic evaluation Verification (ref/index test x100) 100% Also reported: Teachers tended to score 2 points higher than parents.
Author: Goodman R Year: 1995 ID:[71] Country: UK AIM: To examine if ABC could detect co-morbid PPDs n blind children	Patient groups: Congenitally blind children attending a developmental clinic for blind or partially sighted children and who were free of other serious neurological or sensory deficits Exclusion criteria: Children with multiple handicaps Demographics: Number: 17 Age: mean 6.7 (range 4 – 11) Ethnicity: Not reported Subgroups: Language: Not reported	Surveillance tool under investigation: ● ABC Threshold & Data set Not reported Adequately described? Not reported Operator no/experience Parent or teacher Comparison/Diagnostic Criteria tool: ● DSM-III-R: Not reported Threshold and Data set Yes Adequately described? Yes	ASSQ ≥ 67 - Teacher True positive False positive False negative True negative Sensitivity Specificity	Autism 2 1 1 11 2/3 67 (13, 120) 11/12 92 (76, 107)	Funding: None reported Limitations: None Blinding: Not reported Timing of tests: Not reported Verification (ref/index test x100) 100%

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Gender: male 11/17 Intellectual disability: 2 had learning difficulties Visual impairment: 100% Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Operator no/experience Not reported			
Author: Gray KM Year: 2008 ID: [66] Country: Australia AIM: To evaluate the screening properties of the DBC-ES in a community sample of very young children with suspected developmental	Patient groups: Referrals of children aged 18-48 months with or suspected of developmental delay for evaluation for autism. N = 207 Exclusion criteria: Nil reported Demographics: Total sample Number: 207 Age: 20.5 – 51.3 months (mean 38.3mo SD 7.00) Ethnicity: Not reported Gender: 83.1% male PDD Diagnosis Number: 142 - 110 autistic disorder	Surveillance tool under investigation: ● DBC-ES: aims to differentiate children with DD+autism from DD-autism. Threshold & Data set DBC-ES is 17 items from DBC-P. Each item rated on 0-2 scale. Cut-off: ≥11 Adequately described? Yes Operator no/experience DBC-ES completed by parent (no experience) Comparison/Diagnostic Criteria tool: ●DSM-IV: information derived from ADI, ADOS, PEP-R/WPPSI-III, RDLS, VABS, DBC-P.	DBC-ES ≥ 11 True positive False positive False negative True negative Sensitivity Specificity	 118 34 24 31 118/142 83 (77, 89) 31/65 48 (36, 60)	Funding: National Health and Medical Research Council grant (government grant) Limitations: Referral sources were asked to refer all children with developmental delay, but they were aware the study was regarding autism. This may have influenced the decision to refer and thus biased results (less true negatives) Dates and duration of study Not reported. Blinding: Yes – parents and clinicians blind to screening results

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
delay <u>Study design:</u> Uncontrolled observational Consecutive recruitment? yes Study dates: Not reported. <u>Evidence level:</u> Very low	- 23 PDD-NOS Age: 22.2 – 50.6 months (mean 37.8mo SD 6.8) Ethnicity: not stated Gender: 86.6% male <u>No PDD Diagnosis</u> Number: 65 - 43 developmentally delayed - 61 had a language delay of more than 6 months Age: 20.5-51.3 months (mean 39.4 mo SD 7.4) Ethnicity: Not reported Gender: 75.9% <u>Subgroups:</u> Language: Not reported Intellectual disability: 99 (69%) of the PDD children were below age equivalent 21 months, 15 (32%) of the non-PDD group were at this level Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Early childhood agencies and paediatricians, small number of self referrals.	Threshold and Data set Consensus diagnoses between 2 physicians. Adequately described? Yes Operator no/experience Physicians - experienced			during questionnaire completion and assessment, respectively. <u>Timing of tests:</u> Parent/carer completed test prior to diagnostic assessment, <u>Verification (ref/index test x100)</u> 100% <u>Also reported:</u> Reported 5 highest loading items (from other factor analysis study): - prefers to do things on his/her own - aloof, in his/her own world - wanders aimlessly - avoids eye contact, would not look you straight in the eye - gets obsessed with an idea or activity Results from Comprehension and Expressive scale of Reynell. Correlation between DBC-ES score and age, developmental age, ADI-R social, verbal communication, non-verbal

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
					communication and restricted and repetitive domains. Domains n which false negatives and false positives scored lower/higher in. Sample was independent from that used to develop the tool. PDD = defined as autism and PDD-NOS in this study * - calculated by NCC-WCH
Author: Nordin V Year: 1996 ID: [70] Country: Sweden AIM: To examine some problems regarding screening and diagnosis using the ABC Study design:	Patient groups: Children of pre-school age (2 – 6 years) with known mental and/or motor disability (N = 51) combined with a total population of children in schools for mentally retarded (N = 70) in a defined geographical area Exclusion criteria: Not reported Demographics: Number: 121 Age: 2-17 year olds Ethnicity: Not reported Subgroups: Language: Not reported Gender: Not reported Intellectual disability: Not	Surveillance tool under investigation: ● ABC Threshold & Data set Not reported Adequately described? Not reported Operator no/experience School or pre-school teacher (1 by speech therapist) Comparison/Diagnostic Criteria tool: ● DSM-III-R: Not reported Threshold and Data set Yes Adequately described? Yes Operator no/experience Not reported	ABC ≥ 67 True positive False positive False negative True negative Sensitivity Specificity ABC ≥ 67 True positive False positive False negative True negative Sensitivity Specificity	Autism 3 3 5 88 3/8 37 (4, 71) 88/91 97 (93, 100) ASD 5 1 12 81 5/17 29 (8, 51) 81/82 99 (96, 101)	Funding: None reported Limitations: None Blinding: Not reported Timing of tests: Not reported Verification (ref/index test x100) 100%

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Snow A Year: 2008 ID: [73] Country: USA AIM: 1) To assess and compare the sensitivity and specificity of M-CHAT and SCQ 2) assess the agreement of both tools and	Patient groups: Consecutive referrals for possible PDDs at a specialty clinic in a large Midwestern hospital. N=82 Exclusion criteria: Nil stated. Demographics: Whole group Number: 82 Age: mean age 42.7 months (SD 14.1, range 18-70) Ethnicity: 87% Caucasian, 6% African American, 7% other (eg; Hispanic, Asian-American) PDD[1] group Number: 54 Age: mean age 39.2 months (SD 12.3)	Surveillance tool under investigation: ●MCHAT For children between 18 and 48 months (n=56). Threshold & Data set - any 3 of all 23 items - ≥2 of 6 critical items Adequately described? Yes Operator no/experience Parent/carer questionnaire ●SCQ For children between 30 and 70 months (n=65) Threshold & Data set 40 items, verbal children score 0-39, non verbal children scored 0-33. Cut off >15 for PDDs.	M-CHAT 1 True positive False positive False negative True negative Sensitivity Specificity M-CHAT 2 True positive False positive False negative True negative Sensitivity Specificity SCQ ≥ 15 True positive False positive False negative True negative	 30 8 13 5 30/ 43 70 (56, 83) 5/13 38 (12, 65) 38 8 5 5 38/43 88 (79, 98) 5/13 38 (12, 65) 28 12 12 13	Funding: Not stated. Limitations: Groups were not matched for cognitive or adaptive functioning. Only assessing younger children who are referred for assessment may create sampling bias, these children may have more severe symptoms as presenting earlier. Blinding: Parents and clinicians were blind to the child's scores on the M-CHAT and SCQ.

[1] PDD = includes autism and PDD-NOS

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
their reliability 3) determine which M-CHAT and SCQ items best differentiate PDDs from DDs 4) explore the impact of subject characteristics on scores of both instruments <u>Study design:</u> Uncontrolled observational <u>Consecutive recruitment?</u> Yes <u>Study dates:</u> Not reported <u>Evidence level:</u> Very low	Ethnicity: 42 (82%) Caucasian <u>Non-PDD group</u> Number: 28 Age: mean age 49.5 months (SD 15.1) Ethnicity: 20 (87%) Caucasian Diagnoses: Receptive/expressive language disorder (n-13), global developmental delay (n=3), developmental language delay (n=3), apraxia (n=2)m oppositional defiant disorder (m=2), communication disorder NOS (n=1), selective mutism (n=1), disruptive behaviour disorder NOS (n=1), reactive attachment disorder (n=1), cerebral palsy/metabolic disorder (n=1) <u>Subgroups:</u> Language: Not reported Gender: Whole group – 63 males (77%). PDD group – 44 males (70%). Non PDD group – 19 males (68%). Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported	Adequately described? Yes Operator no/experience Parent/carer questionnaire Informants: PDD group – 41 mothers, 12 fathers and one guardian. μ age 33.3 years (SD 5.4). 34 (63%) graduated from college. Non-PDD group – 26 mothers, 1 father and 1 adoptive parent. μ age 31.5 years. 19 (68%) graduated from college. <u>Comparison/Diagnostic Criteria tool:</u> ●DSM-IV : VABS, GARS, WPPSI, LIPS-r, ADOS, PDD-BI. Threshold and Data set Consensus diagnosis by multidisciplinary team. Adequately described? Yes Operator no/experience Multidisciplinary team; developmental paediatrician, speech and language pathologist, psychologist. Results of diagnostic	Sensitivity Specificity	28/40 70 (56, 84) 13/23 52 (32, 72)	<u>Timing of tests:</u> Index test done prior to reference test. <u>Verification (ref/index test x100)</u> 100% <u>Also reported:</u> Comparison of groups (PDD vs non-PDD): non PDD group older than PDD. No difference between groups in regard to cognitive function, adaptive behaviour score and ethnicity. Demographic form collected information about child and informant. Childs age gender, ethnicity, previous medical, genetic or psychiatric diagnosis and psychotropic medicine use. Informant age, relationship to the child, educational level and age of first concern about the child development. Overlapping Sample Children in 30-48 month age range correctly classified MCHAT critical items - 21/29 (72%) PDD - 5/10 (50%) non PDD

Study Details	Patients	Tools	Measure of Disorders	Results	Comments
	Source of referral: Not reported	assessment were retrieved from patient charts following completion of assessment process.			- efficiency 0.67 (CI 0.51-0.81) MCHAT any 3 items - 24/29 (83%) PDD - 5/10 (50% non PDD - efficiency 0.74 (CI 0.59-0.86) SCQ - 21/29 (72%) PDD - 3/10 (30%) non PDD - efficiency 0.62 (CI 0.45-0.77) Internal consistency of MCHAT and SCQ. Relationship between total scores and subject characteristics.

Question 2(b) – part 1

Study Details	Patient characteristics	Factors	Results:	Comments
Author: Bhasin T Year: 2007 ID: [83] Country: USA Study design: Controlled observational Consecutive recruitment No Study dates Not reported Evidence level: Low	Cohort population: Children born in Metropolitan Atlanta between 1986 and 1993 Case: Children with autism aged between 3 and 10 who displayed behaviours associated with autism Diagnostic criteria of ASD: DSM-IV Control: Control children without developmental disabilities or birth defects were randomly selected from birth certificate data and frequency matched with cases by year of birth Exclusion criteria Missing information on at least 1 factor (16 cases and 17 controls were excluded) Statistic method: Unconditional logistic regression analysis DEMOGRAPHICS Cases: Number: 601 Age: 3-10 y	Gender Male Maternal age (years) <20 20 – 29 30 – 34 ≥35 Mothers race White Black Median family income level Low Middle High	Adjusted result (Cases = 601, Control = 600): Adj Odds Ratio (95% CI) 3.9 (2.9, 5.0) 0.4 (0.2, 0.6) Reference 1.2 (0.9, 1.6) 1.7 (1.1, 2.5) Reference 2.3 (1.7, 3.3) 0.5 (0.3, 0.6) Reference 1.6 (1.2, 2.3)	Funding: Not reported Limitations: None

Study Details	Patient characteristics	Factors	Results:	Comments
	Ethnicity: Not reported Gender: Male 475/601 (79%) Gestational age: Not reported. IQ: Mental retardation: 352/601 (58.6%) Non-MR: 249/601 (41.4%) Controls: Number: 600 Age: 3-10 y Ethnicity: Not reported Gender: Male 305/600 (50.8%) Gestational age: Not reported IQ: Non-MR: 600/600 (100.0%)			
Author: Croen L Year: 2005 ID: [85] Country: USA Study design: Controlled observational Consecutive recruitment Not reported Study dates Not reported	Cohort population: Babies born in a northern California Kaiser Permanente facility between Jan 1995 and Dec 1998 and who remained KP members for 2 or more years (N = 73,291) Case: Cases of autism or ASD Diagnosis criteria of ASD: ICD-9 Control: 5 controls were randomly selected for each case and were frequency matched according to gender, birth years and hospital of birth. Exclusion criteria	Bilirubin level <15 mg/dl (256 micromol/L) 15 – 19.9 mg/dl (257 – 340 micromol/L) 20 – 24.mg/dl (341 – 426 micromol/L) ≥ 25 mg/dl (427 micromol/L)	Adjusted result (Cases = 338, Control = 1817): Adj Odds Ratio (95% CI) Reference 0.74 (0.48, 1.15) 0.66 (0.27, 1.59) 1.12 (0.11, 11.15)	Funding: Centers for Diseases Control and Prevention Limitations: None Also reported: 244 cases and 1318 had no bilirubin test so these were given values of 15mg/dl

Study Details	Patient characteristics	Factors	Results:	Comments
Evidence level: Low	Twins, triplets, quadruplets, 35 or less weeks gestation age No bilirubin levels available Statistic method: Multivariate logistic regression analysis DEMOGRAPHICS Cases: Number: 338 Age: 4-7 y Ethnicity: Not reported Gender: Male: 284/338 (84%) Gestational age: Mean 39.3 ± 1.3 weeks IQ: Not reported. Controls: Number: 1817 Age: 4-7 y Ethnicity: N (%) Gender: Male: 1490/1817 (82%) Gestational age: Mean 39.4 ± 1.3 weeks IQ: Not reported.			
Author: Croen L Year: 2005 ID: [84]	Cohort population: Babies born in a northern California Kaiser Permanente facility between Jan 1995 and Jun 1999 and who remained KP members for 2 or more years (N = 88,163) Case:	Autoimmune diseases Alopecia Autoimmune thyroid disease Psoriasis	Adjusted result (Cases = 407, Control = 2095): Adj Odds Ratio 95% CI 1.2 (0.8, 1.7) 1.4 (0.6, 3.0) 0.6 (0.3, 1.3) 2.7 (1.3, 5.8)	Funding: National Institute of Environmental Health Sciences, Kaiser Foundation Research Institute, Center for Diseases Control and Prevention

Study Details	Patient characteristics	Factors	Results:	Comments
<u>Country:</u> USA <u>Study design:</u> Controlled observational <u>Consecutive recruitment</u> Not reported <u>Study dates</u> Not reported <u>Evidence level:</u> Low	Cases of autism or ASD <u>Diagnosis criteria of ASD:</u> ICD-9 <u>Control:</u> 5 controls were randomly selected for each case and were frequency matched according to gender, birth years and hospital of birth. <u>Exclusion criteria</u> None <u>Statistic method:</u> Logistic regression analysis <u>DEMOGRAPHICS</u> <u>Cases:</u> Number: 407 Age: 3-7 y Ethnicity: Not reported Gender: Male: 333/407 (81.8%) Gestational age: Not reported IQ: Not reported. <u>Controls:</u> Number: 2095 Age: 3-7 y Ethnicity: N (%) Gender: Male: 1709/2095 (81.8%) Gestational age: Not reported IQ: Not reported.	Type 1 diabetes mellitus Asthma Allergies Allergic rhinitis Anaphylaxis Atopic eczema Conjunctivitis	2.6 (0.8, 7.9) 1.6 (1.2, 2.2) 1.5 (1.2, 1.9) 1.6 (1.2, 2.1) 1.5 (o.7, 3.1) 1.8 (1.0, 3.4) 1.2 (0.6, 2.6)	<u>Limitations:</u> None
<u>Author:</u> Croen L	<u>Cohort population:</u> Babies born in a northern California		Adjusted result (Cases = 4356, Control = 3497870):	<u>Funding:</u> Not reported

Study Details	Patient characteristics	Factors	Results:	Comments
	Kaiser Permanente facility between			
Year:	1989 and 1994 whose mother was a	Gender	Adj Risk Ratio (95% CI)	Limitations:
2002	California resident (N = 3,551,306)	Male	4.3 (3.9, 4.6)	None
ID: [89]	Case:	Birthweight		
	Cases of autism	≥2500g	Reference	
		<2500 g	1.1 (0.9, 1.2)	Also reported:
Country:	Diagnosis criteria of ASD			None
USA	ICD-9 / DSM-III-R or DSM-IV	Maternal age (years)		
		<20	Reference	
Study design:	Control:	20 – 24	1.4 (1.2, 1.6)	
Controlled observational	Remainder of sample	25 – 29	1.8 (1.6, 2.2)	
		30 - 34	2.7 (2.3, 3.1)	
Consecutive recruitment	Exclusion criteria	≥35	3.4 (2.9, 4.0)	
Not reported	Twins, triplets, quadruplets,			
	35 or less weeks gestation age	Mothers race		
Study dates	No bilirubin levels available	White	Reference	
Not reported		Hispanic	1.1 (1.0, 1.3)	
	Statistic method:	Black	1.6 (1.5, 1.8)	
Evidence level:	Multivariable Poisson models	Asian	1.0 (0.9, 1.1)	
Low		Other	1.0 (0.9, 1.2)	
	DEMOGRAPHICS			
	Cases:	Maternal education		
	Number: 4381	< High school	Reference	
	Age: 0-5 y	High School graduate	1.4 (1.3, 1.6)	
	Ethnicity: Not reported	College	1.9 (1.7, 2.1)	
	Gender: Male: 284/338 (84%)	Postgraduate	2.0 (1.7, 2.3)	
	Gestational age: Mean 39.3 ± 1.3 weeks			
	IQ:			
	Mental retardation: 1571/4381 (35.9%)			
	Non-MD: 2810/4381 (64.1%)			
	Controls:			

Study Details	Patient characteristics	Factors	Results:	Comments
	Number: 1817 Age: 0-5 y Ethnicity: N (%) Gender: Male: 1490/1817 (82%) Gestational age: Mean 39.4 ± 1.3 weeks IQ: Not reported.			
Author: Daniels J Year: 208 ID: [81] Country: Sweden Study design: Controlled observational Consecutive recruitment Not reported Study dates Not reported Evidence level: Low	Cohort population: Children born in Sweden between 1977 and 2003 Case: Cases of infantile autism Diagnosis criteria of ASD: ICD Control: 25 randomly selected controls matched for gender, birth year and birth hospital Exclusion criteria Not reported Statistic method: Conditional logistic regression DEMOGRAPHICS Cases: Number: 1227 Age: <10 years Ethnicity: Not reported Gender: Not reported Gestational age: Not reported	Maternal age (years) ≤25 26 – 30 31 – 35 36 – 40 41 - 50 ≥50 Paternal age (years) ≤25 26 – 30 31 – 35 36 – 40 41 - 50 ≥50 Parental Psychiatric diagnosis Either parent Both parents Maternal psychiatric diagnosis Schizophrenia Other non-affective psychoses Affective disorders Neurotic / personality disorders Alcohol or drug addiction/abuse	~~Adjusted result (Cases = 1~~227, Control = 30693): Adj Odds Ratio (95% CI) Reference 0.9 (0.7, 1.0) 0.9 (0.8, 1.1) 1.1 (0.8, 1.4) 1.0 (0.6, 1.6) NA Reference 1.4 (1.1, 1.7) 1.7 (1.3, 2.1) 1.8 (1.4, 2.4 1.9 (1.4, 2.5) 2.7 (1.5, 4.8) 1.7 (1.5, 2.0) 1.0 (1.2, 3.1) 1.9 (0.8, 4.7) 1.1 (0.6, 2.1) 1.2 (0.8, 1.7) 1.7 (1.3, 2.2) 1.1 (0.8, 1.7)	Funding: Centers for Disease Control and Prevention Limitations: None

Study Details	Patient characteristics	Factors	Results:	Comments
	IQ: Not reported. <u>Controls:</u> Number: 30693 Age: <10 years Ethnicity: Not reported Gender: Not reported Gestational age: Not reported IQ: Not reported.	Autism Paternal psychiatric diagnosis Schizophrenia Other non-affective psychoses Affective disorders Neurotic / personality disorders Alcohol or drug addiction/abuse Autism	2.3 (0.3, 20.5) 2.1 (0.9, 4.9) 1.2 (0.6, 2.5) 1.0 (0.6, 1.5) 1.0 (0.6, 1.5) 1.2 (0.8, 1.9) NA	
<u>Author:</u> Dawson S. <u>Year:</u> 2009 <u>ID:</u> [74] <u>Country:</u> Australia <u>Study design:</u> Controlled observational <u>Consecutive recruitment</u> Yes <u>Study dates</u> Not reported. <u>Evidence level:</u> Low	<u>Cohort population:</u> All children born in Western Australia between 1980 and 1995. <u>Case:</u> All children who were diagnosed with an ASD by the end of 1999. <u>Diagnostic criteria of ASD:</u> DSM-IV. <u>Sibling:</u> All known unaffected siblings of cases. <u>Control:</u> A randomly selected population control group of 3 controls per case, frequency-matched by sex to the case group. <u>Exclusion criteria</u> Births occurring in 1996 and 1997 were excluded because of incomplete case ascertainment for those years. This resulted in there	Any birth defect Isolated birth defect Multiple birth defects Syndromic birth defects Nervous system Cardiovascular system Gastrointestinal system Urogenital system Musculoskeletal system Chromosomal system Eye Ear, face, and neck Integument (skin) Other	Adjusted result (Cases = 465, Controls = 1,313) Adj Odds Ratio (95% CI 1.7 (1.1, 2.5) 1.4 (0.9, 2.1) 8.4 (1.7, 40.8) 1.9 (0.8, 4.7) 5.6 (1.5, 20.4) 1.2 (0.4, 3.3) 0.8 (0.2, 3.0) 1.7 (0.9, 3.2) 1.0 (0.5, 2.2) 2.5 (0.7, 8.7) 13.2 (1.3, 130.1) 11.0 (2.2, 54.1) 0.8 (0.2, 4.2) 1.8 (0.6, 5.2)	<u>Funding:</u> Not reported <u>Limitations:</u> None <u>Also reported:</u> In order to address the concern about bias in diagnosing birth defects among children with an ASD, firstly, one of the authors reviewed all birth defects in the study subjects, without knowledge of their case-control status. Where it was thought possible that the birth defects may only have been ascertained if the child was undergoing detailed medical examination for another reason, the analysis was repeated with these

Study Details	Patient characteristics	Factors	Results:	Comments
	being slightly fewer than 3 controls per case. Statistic method: Binary logistic regression using SPSS 12.01 and Stata 9. DEMOGRAPHICS Cases: Number: 465 Age: 4-19 y Ethnicity: Not reported. Gender: Male 391 (84.1%) Gestational age: Not reported. IQ: Not reported. Siblings: Number: 481 Age: Not reported. Ethnicity: Not reported. Gender: Not reported. Gestational age: Not reported. IQ: Not reported. Controls: Number: 1,313 Age: Mean: 12 years Ethnicity: Not reported. Gender: Male: 1,098 (83.6%) Gestational age: Not reported. IQ: Not reported.			subjects excluded. Seconldy, they restricted the analysis to include only birth defects diagnosed in the first year of lie, before a diagnosis of ASD was made.
Author: Durkin M Year:	Cohort population: Children born in California in 1994 Case:	Maternal age (years)	Adjusted result (Cases = 1,251, Control = 253,347): Adj Odds Ratio (95% CI)	Funding: Centers for Disease Control and Prevention University of Wisconsin

Study Details	Patient characteristics	Factors	Results:	Comments
2008	Cases of infantile autism	<20	0.7 (0.5, 1.0)	
		20 - 24	0.9 (0.8, 1.1)	Limitations:
ID: [86]	Diagnosis criteria of ASD:	25 – 29	Reference	None
	DSM-IV	30 – 34	1.1 (0.9, 1.3)	
		>35	1.3 (1.1, 1.6)	
Country:	Control:			
USA	All other children born in 1994 living	Paternal age (years)		
	in 10 defined geographical areas	<20	0.6 (0.4, 1.0)	
Study design:		20 - 24	0.9 (0.7, 1.1)	
Controlled observational	Exclusion criteria	25 – 29	Reference	
	Not reported	30 – 34	2.0 (0.9, 1.2)	
Consecutive recruitment		35 - 39	1.0 (0.9, 1.3)	
Not reported	Statistic method:	>40	1.4 (1.4, 1.8)	
	Unconditional logistic regression			
Study dates	analysis using SAS 9.1.3	Gender		
2002		Male	4.2 (3.7, 4.9)	
	DEMOGRAPHICS			
Evidence level:	Cases:	Birthweight		
Low	Number: 1,251	2 SD below mean for GA	1.1 (0.7, 1.6)	
	Age: 8 y	1 – 2 SD below mean	1.1 (0.9, 1.3)	
	Ethnicity: Not reported	Within SD of mean	Reference	
	Gender: Not reported	1 – 2 SD above mean	1.0 (0.9, 1.3)	
	Gestational age: Not reported	>2 SD above mean	1.3 (0.9, 1.6)	
	IQ:			
	Mental retardation: 388/1251	Gestational age		
	(30.9%)	<28 weeks	2.5 (1.6, 3.9)	
	Non-MD: 540/1251 (43.2%)	28 – 36 weeks	1.4 (1.2, 1.7)	
	Unknown: 323/1251 (25.9%)	37 – 41 weeks	Reference	
		>42 weeks	1.1 (0.8, 1.5)	
	Controls:			
	Number: 253,347			
	Age: 8 y			
	Ethnicity: Not reported			
	Gender: Not reported			
	Gestational age: Not reported			

Study Details	Patient characteristics	Factors	Results:	Comments
	IQ: Not reported.			
Author: Glasson E Year: 2004 ID: [75] Country: Australia Study design: Controlled observational Consecutive recruitment Yes Study dates Not reported. Evidence level: Statistic method: Low	Case: Children born in Western Australia between 1980 and 1995 diagnosed as ASD before 1999. Case siblings: Siblings of case group. Control: The control group was matched for sex but otherwise randomly selected across the same range of birth years as the cases. Diagnostic criteria of ASD: DSM criteria according to the version used in that period. (no detailed information) Exclusion criteria 36 ASD patients who born in 1996 and 1997 were excluded because they were diagnosed at a very young age and thus may have different pattern of symptoms with the majority cases. Statistical methods: Binary logistic regression, using SPSS 10 DEMOGRAPHICS Cases:	Intercept Year of birth Birth order (compared with firstborn) Second born Third born Fourth of later born Maternal age, year <20 20-24 25 - 29 30-34 ≥35 Threatened abortion at < 20 weeks Fetal distress Elective caesarean section	Adjusted result (Cases 465, Controls =1,313): Adj Odds Ratio (95% CI) 0.00 1.12 (1.09, 1.15) 0.79 (0.61, 1.04) 0.47 (0.33, 0.67) 0.46 (0.29, 0.73) 0.51 (0.30, 0.88) 0.61 (0.44, 0.84) Reference 1.41 (1.07, 1.87) 1.54 (1.04, 2.30) 2.09 (1.32, 3.32) 1.52 (1.12, 2.06) 1.83 (1.32, 2.54)	Funding: Not reported. Limitations: None Also reported: Threatened abortion, fetal distress and elective caesarean section were compared with absence of same

Study Details	Patient characteristics	Factors	Results:	Comments
	Number: 465 Age: Range: 5-20 Ethnicity: Not reported. Gender: Male: 391/ 465 (84.1%) Gestational age: Not reported IQ: Not reported. <u>Siblings:</u> Number: 481 Age range: Range 5 – 20 years Ethnicity: Not reported. Gender: Male: 251/481 (52.2%) Gestational age: Not reported. IQ: Not reported. <u>Controls:</u> Number: 1313 Age: range: Range 5-20 years Ethnicity: Not reported. Gender: Male: 1098/1313 (83.6%) Gestational age: Not reported. IQ: Not reported.			
<u>Author:</u> Grether J <u>Year:</u> 2009 <u>ID:</u> [90] <u>Country:</u> USA <u>Study design:</u>	<u>Cohort population:</u> All singletons born in California between Jan 1st 1989 and Dec 31st 2002 to mothers residing in the state (N = 7,550, 026) <u>Cases:</u> Children with autism <u>Controls:</u> Children without autism <u>Diagnostic criteria of ASD:</u>	Maternal age (years) 15 - 19 20 - 24 25 - 29 30 – 34 35 - 39 40 - 44 Paternal age (years) 15 - 19	Adjusted result (Case = 20,701, Controls = 6,506,555) Adj Odds Ratio (95% CI) 0.65 (0.59, 0.70) 0.86 (0.82, 0.90) Reference 1.14 (1.10 , 1.19) 1.33 (1.27, 1.40) 1.43 (1.32, 1.55) 0.76 (0.67, 0.86)	<u>Funding:</u> California Department of Developmental Services Centers for Disease Control and Prevention <u>Limitations:</u> None <u>Also reported:</u> Non

Study Details	Patient characteristics	Factors	Results:	Comments
Controlled observational Consecutive recruitment NA Study dates Not reported. Evidence level: Low	DSM-III-R / DSM-IV Exclusion criteria Cases/controls with missing data Statistical methods: Conditional logistic regression. Name of statistic software was Not reported. DEMOGRAPHICS Cases: Number: 408 Age: 4-17 y Ethnicity: Not reported. Gender: Male: 321/408 (78.7%) Gestational age: Not reported. IQ: Not reported. Controls: Number: 2,040 Age: 4-17 y Ethnicity: Not reported. Gender: Male: 1,255/2040 (52.2%) Gestational age: Not reported. IQ: Not reported.	20 - 24 25 - 29 30 – 34 35 - 39 40 – 44 45 – 49 50 – 54 55 – 59 60 - 64	0.89 (0.64, 0.94) Reference 1.12 (1.07, 1.17) 1.23 (1.17, 1.30) 1.39 (1.30, 1.47) 1.41 (1.29, 1.54) 1.53 (1.32, 1.77) 1.36 (1.02, 1.77) 2.05 (1.38, 3.05)	
Author: Hultman C Year: 2002 ID: [82]	Cohort population: All Swedish children born between 1974 and 1993. Cases: 408 children discharged with a main diagnosis of infantile autism from any hospital in Sweden before 10 years of age.	Maternal age (years) ≤19 20-34 ≥35 Parity	Adjusted result (Case = 408, Controls = 2,040): Adj Odds Ratio (95% CI) 0.6 (0.3, 1.4) Reference 1.3 (0.9, 1.9)	Funding: Swedish Council for Planning and Co-ordination of Research, Swedish Council for Social Research Limitations: Some – though cases were

Study Details	Patient characteristics	Factors	Results:	Comments
Country: Sweden Study design: Controlled observational Consecutive recruitment Yes Study dates Not reported. Evidence level: Low	 Controls: Each case was matched by gender, birth year, and hospital of birth to 5 controls. Diagnostic criteria of ASD: ICD-9. Exclusion criteria Cases diagnosed before 1987 were excluded because ICD-9 code of autism has not been introduced until 1987. Statistical methods: Conditional logistic regression. Name of statistic software was Not reported. DEMOGRAPHICS Cases: Number: 408 Age: <9 y Ethnicity: Not reported. Gender: Male: 321/408 (78.7%) Gestational age: Not reported. IQ: Not reported. Controls: Number: 2,040 Age: <9 y Ethnicity: Not reported. Gender: Male: 1,255/2040 (52.2%) Gestational age: Not reported.	1 2-3 ≥4 Smoking habits during pregnancy Nondaily daily Hypertensive diseases No Yes Diabetes No Yes Pregnancy bleeding No Yes Mode of delivery Vaginal Caesarean Season of birth January-April May-December Gestational age (weeks) ≤36 37-41 ≥42 Birth weight for gestational age SGA (< - 2 SD)	0.9 (0.6, 1.1) Reference 1.3 (0.8, 2.1) Reference 1.4 (1.1, 1.8) Reference 1.6 (0.9, 2.9) Reference 1.2 (0.3, 5.7) Reference 1.6 (0.8, 3.3) Reference 1.6 (1.1, 2.3) 1.3 (0.96, 1.6) Reference 0.9 (0.5, 1.6) Reference 1.0 (0.6, 1.6) 2.1 (1.1 -3.9)	matched with controls, groups were not compared Also reported: However, stratifying the study group according to time period did not reveal any consistent changes in risk factors by time.

Study Details	Patient characteristics	Factors	Results:	Comments
	IQ: Not reported.	AGA LGA (> + 2 SD) Apgar score at 5 minutes 0-6 7-10 Congenital malformations Yes No	Reference 1.6 (0.9, 2.8) 3.2 (1.2, 8.2) Reference 1.8 (1.1, 3.1) Reference	
Author: Larsson H Year: 2005 ID: [77] Country: Denmark Study design: Controlled observational Consecutive recruitment Yes Study dates Not reported. Evidence level: Low	Cohort population: Children born in Denmark between 1st January, 1973 and December, 1999. Case: All children discharged from a Danish psychiatric hospital with a diagnosis of infantile or atypical autism before the end of December 1999. Diagnostic criteria of ASD: ICD-8 or ICD-10. Control: Each case was matched by gender, birth year, and age in days to 25 controls. Exclusion criteria None reported Statistical method: Conditional logistic regression using Stata	Fetal presentation Cephalic Breech Other Apgar score at 5 minutes 10 8-9 1-7 Gestational age at birth (weeks) <35 35 - 36 37 - 42 >42 Birth weight (g) Small for gestational age (<10th decile) Appropriate for gestational age Large for gestational age (>90th decile) No. of antenatal visits	Adjusted result (controls = 14,875, cases = 595): Adj Relative Risk (95% CI) Reference 1.63 (1.18, 2.26) 1.92 (0.58, 6.36) Reference 0.84 (0.58, 1.23) 1.89 (1.10, 3.27) 2.45 (1.55, 3.86) 1.06 (0.63, 1.77) Reference 0.97 (0.40, 2.39) 1.28 (0.99, 1.65) Reference 0.90 (0.67, 1.22)	Funding: Danish national research foundation; Center for Disease Control and Prevention, Atlanta, Georgia; March of Dimes Birth Defects Foundation, New York; Stanley Medical Research Institute; National Institute of Mental Health Limitations: None Also reported Some cases and associated controls were excluded from adjusted analysis due to multiple gestations or limited availability of some variables

Study Details	Patient characteristics	Factors	Results:	Comments
		≥9	0.91 (0.70, 1.17)	
	DEMOGRAPHICS	6-8	Reference	
	Cases:	1-5	0.88 (0.52, 1.48)	
	Number: 698	0/Missing	1.02 (0.54, 1.95)	
	Age: Range: 1-24 years, Mean: 7.77 years	No. of previous pregnancies		
	Ethnicity: Not reported.	0	1.06 (0.87, 1.29)	
	Gender: Male: 531/698 (76.1%)	1-2	Reference	
	Gestational age: Not reported.	≥3	0.83 (0.64, 1.08)	
	IQ: Not reported.			
		Maternal age (years)		
	Control:	<20	1.54 (0.87, 2.74)	
	Number: 17,450	20-24	1.03 (0.80, 1.34)	
	Age: Not reported.	25-29	Reference	
	Ethnicity: Not reported.	30-34	1.18 (0.95, 1.48)	
	Gender: Male 13,275/17,450 (76.1%)	35-39	1.07 (0.76, 1.52)	
	Gestational age: Not reported.	>39	1.55 (0.87, 2.74)	
	IQ: Not reported.			
		Paternal age (years)		
		<25	0.61 (0.42, 0.89)	
		25-29	Reference	
		30-34	1.10 (0.88, 1.38)	
		35-39	1.28 (0.96, 1.69)	
		>39	1.36 (0.96, 1.93)	
		Missing		
		Parental psychiatric history		
		No psychiatric history	Reference	
		Schizophrenia-like psychosis	3.44 (1.48, 7.95)	
		Affective disorder	2.91 (1.65, 5.14)	
		Substance abuse	1.42 (0.73, 2.75)	
		Other	2.85 (2.20, 3.69)	
		Maternal education		
		Elementary school	Reference	

Study Details	Patient characteristics	Factors	Results:	Comments
		High school/vocational/high school + 3 years	0.92 (0.75, 1.13)	
		Bachelor's/master's/doctorate degree	0.89 (0.67, 1.19)	
		Missing	1.02 (0.72, 1.44)	
		Parental wealth	Reference	
		Highest	0.83 (0.67, 1.02)	
		High middle	1.09 (0.85, 1.38)	
		Low middle	1.30 (0.97, 1.75)	
		Lowest / Missing	1.04 (0.13, 8.18)	
Author: Lauritsen M Year: 2005 ID: [78] Country: Denmark Study design: Controlled observational Consecutive recruitment Yes Study dates Not reported. Evidence level: Low	Cohort population: All children born in Denmark between 1st January, 1984 and 31st, December, 1998. Study population: 943, 664 children representing the whole cohort population. Diagnostic criteria of ASD: Before 1st, Jan, 1994: ICD-8 From 1st, Jan, 1994: ICD-10. Exclusion criteria Children born before 1988 were excluded because of incomplete registration. Statistical method: Log-linear Poisson regression using SAS GENMOD procedure. DEMOGRAPHICS Cases: Number: 818		Adjusted result (total population = 943,664, Cases = 818): Adj Relative Risk (95% CI) 12-19 1.68 (1.07, 2.63) 20-24 1.19 (0.96, 1.47) 25-29 Reference 30-34 1.08 (0.89, 1.29) 35-39 1.18 (0.92, 1.53) 40≥ 1.17 (0.70, 1.97) Paternal age (years) 12-24 0.81 (0.60, 1.09) 25-29 Reference 30-34 1.08 (0.89, 1.30) 35-39 1.35 (1.07, 1.70) 40-44 1.61 (1.19, 2.18) ≥45 1.21 (0.78, 1.86) Maternal history of psychiatric disorder History 1.97 (1.41, 2.74) No history Reference	Funding: Danish National Research Foundation, Stanley Medical Research Institute, Pulje til Styrkelse af Psykiatrisk Forskning Limitations: None Also reported: In order to gain a large sample size, this study included some children who born between 1988 and 1993, for whom no complete information on admissions with autism were recorded. However, according to a heterogeneity check study

Study Details	Patient characteristics	Factors	Results:	Comments
	Age: <10 y Ethnicity: Not reported. Gender: Not reported Gestational age: Not reported. IQ: Not reported. <u>Control:</u> Number: 942,836 Age: <10 y Ethnicity: Not reported. Gender: Not reported Gestational age: Not reported. IQ: Not reported.	Paternal identity Father unknown Father known Paternal history of psychiatric disorder History No history History of psychiatric disorder in siblings History of autism History of broader autism diagnoses No history in a sibling Degree of urbanisation of place of birth Capital Capital suburb Provincial city Provincial town Rural area Maternal country of birth Denmark Scandinavia and Europe (exc Denmark) Outside Europe Parental countries of births Mother and father not born in the same country Mother and father born in the same country	 1.11 (0.32, 3.79) Reference 0.86 (0.54, 1.37) Reference 22.27 (13.09, 37.90) 13.40 (6.93, 25.92) Reference 2.05 (1.67, 2.51) 1.67 (1.35, 2.06) 0.92 (0.70, 1.20) 1.22 (1.00, 1.47) Reference Reference 1.02 (0.75, 1.39) 1.42 (1.10, 1.83) 1.36 (1.08, 1.71) Reference	conducted by the author, no significant difference was detected between children born before or after 1993.
<u>Author:</u> Maimburg R	<u>Cohort population:</u> The Danish Medical Birth Register of children born between Jan1st 1990		Adjusted result (Cases = 473, Control = 4730):	<u>Funding:</u> Foundation of Ludvig and Sara Elsass,

Study Details	Patient characteristics	Factors	Results:	Comments
Year: 2006 ID: [79] Country: Denmark Study design: Controlled observational Consecutive recruitment Not reported Study dates Not reported Evidence level: Low	and Dec 31st 1999 Case: Cases of infantile autism Diagnosis criteria of ASD: ICD-8 or ICD-10 Control: 10 controls for each case based on gender, year and county of birth Exclusion criteria Not reported Statistic method: Conditional logistic regression analysis using STATA 8 DEMOGRAPHICS Cases: Number: 473 Age: <10 y Ethnicity: Not reported Gender: Not reported Gestational age: Not reported IQ: Not reported. Controls: Number: 4730 Age: <10 y Ethnicity: Not reported Gender: Not reported Gestational age: Not reported IQ: Not reported.	Socio-related data Mother with foreign citizenship Father with foreign citizenship Maternal age (years) <25 25 – 29 30 – 34 >35 Paternal age (years) <25 25 – 29 30 – 34 >35 Smoking at 1st antenatal visit Birthweight <2500 g 2500 – 4500 g >4500 g Gestational age <36 weeks 37 – 42 weeks >42 weeks Birth related data Primipara Stimulation of contractions Birth defect Child transferred to NICU Apgar <8 at 5 minutes Caesarean section (all)	Adj Odds Ratio (95% CI) 1.7 (1.3, 2.4) 1.1 (0.7, 1.7) 1.4 (1.0, 1.9) Reference 1.2 (0.9, 1.6) 1.3 (1.2, 1.7) 0.8 (0.5, 1.4) Reference 1.0 (0.7, 1.3) 1.2 (0.9, 1.7) 0.9 (0.7, 1.4) 3.0 (1.7, 5.1) Reference 1.3 (0.8, 2.1) 1.7 (0.6, 4.4) Reference 0.6 (0.4, 1.1) 0.9 (0.7, 1.1) 0.9 (0.8, 1.2) 1.9 (1.1, 3.5) 1.8 (1.3, 2.7) 1.5 (0.9, 2.6) 1.1 (0.7, 1.7)	The Augustinus Foundation, The Foundation of Aase and Ejner Danielsen, Limitations: None

Study Details	Patient characteristics	Factors	Results:	Comments
		scheduled	1.0 (0.6, 1.6)	
		unscheduled	1.2 (0.7, 1.9)	
		Perinatal factors		
		Chorionic villi sampling	2.6 (0.9 -7.1)	
		Amnioncentris	1.8 (0.9, 3.5)	
		Normal BMI at start of pregnancy	Reference	
		BMI < 18.5	0.8 (0.4, 1.3)	
		BMI > 30.0	0.7 (0.2, 1.7)	
		Use of medicine during pregnancy	1.5 (1.1, 2.1)	
		Anti-epileptic	1.2 (0.4, 4.1)	
		Psychoactive	1.6 (1.0, 2.5)	
		Antihypertensive	1.4 (0.5, 3.8)	
		Cardiovascular	1.0 (0.1, 15.9)	
		Use of tocolytic medicine	3.0 (0.8, 11.5)	
		Use of steroids	2.1 (0.8, 5.7)	
		Maternal fever episodes >37.7^{o}c	0.8 (0.8, 1.5)	
		Maternal infection episodes	1.0 (0.4, 2.7)	
		Rupture of membranes > 12 hours	1.2 (0.7, 1.8)	
		Rupture of membranes > 24 hours	1.0 (0.5, 1.8)	
		Stained amnion fluid	0.9 (0.6, 1.3)	
		Green amnion fluid	0.8 (0.6, 1.3)	
		Acidosis pH <7.20 in cord blood	1.1 (0.7, 2.1)	
		Pathological foetal heart rate in labour	0.8 (0.4, 1.8)	
		Infarct in situ placenta	1.6 (0.9, 3.2)	
Author: Maimburg R Year: 2008 ID: 80 Country:	Cohort population: The Danish Medical Birth Register of children born between Jan1st 1990 and Dec 31st 1999 Case: Children with a diagnosis of autism Diagnostic criteria of ASD: ICD-8 or ICD-10	 Neonatal factors Neurological abnormalities Hypotonic/hyporeflexive/poor tone Hypertonic/hyperreflexive/jittery Other Neurological abnormalities Neonatal seizures	Adjusted result (Cases = 461, Control = 461): Adj Odds Ratio (95% CI) 3.1 (1.1, 8.7) 1.9 (0.2, 7.0) 6.7 (1.5, 29.7) 0.9 (0.1, 12.1) 6.8 (0.8, 54.8)	Funding: Foundation of Ludvig and Sara Elsass, The Augustinus Foundation, The Foundation of Aase and Ejner Danielsen, Centers for Diseases Control and Prevention Limitations:

Study Details	Patient characteristics	Factors	Results:	Comments
Denmark Study design: Controlled observational Consecutive recruitment Not reported Study dates Not reported Evidence level: Low	 Controls A control for each case was randomly selected for the register after individually matching for by sex, year of birth and county of birth: Exclusion criteria Not reported Statistic method: Conditional logistic regression analysis DEMOGRAPHICS Cases: Number: 461 Age: <10 y Ethnicity: Not reported Gender: Male 370/461 (80.3%) Gestational age: Preterm 38/461 (8.2%) IQ: Not reported. Controls: Number: 461 Age: <10 y Ethnicity: Not reported Gender: 373/461 (80.9%) Gestational age: 21/461 (4.6%) IQ: Not reported.	Serum glucose test Hypoglycaemia Blood gas test Apgar 1 minute < 8 Apgar 5 minute < 8 Serum bilirubin test Phototherapy Exchange transfusion	1.2 (0.7, 1.8) 0.4 (0.1, 1.7) 0.7 (0.5, 1.1) 1.1 (0.7, 1.7) 1.1 (0.2, 6.2) 3.7 (1.3, 10.5) 3.3 (1.0, 10.1) 1.3 (0.3, 5.5)	None Also reported: 5 cases without matched controls were excluded
Author: Reichenberg A Year:	Cohort population: All children born in Israel over a six-year period in the 1980's	Paternal age (years)	Adjusted result (Cases = 110, Control = 132,161): Adj Odds Ratio (95% CI)	Funding: Not reported Limitations:

Study Details	Patient characteristics	Factors	Results:	Comments
2006 ID: 88 Country: USA Study design: Controlled observational Consecutive recruitment Yes Study dates Not reported Evidence level: Low	Cases: Children diagnosed with an ASD before 17 years of age Diagnosis criteria of ASD: ICD-10 Control: All children born in same period for whom data on maternal age were available Exclusion criteria Children with incomplete records Statistic method: Logistic regression analysis using SAS DEMOGRAPHICS Cases: Number: 110 Age: 17 y Ethnicity: Not reported Gender: Not reported Gestational age: Not reported IQ: Not reported. Controls: Number: 132,161 Age: 17 y Ethnicity: Not reported Gender: Not reported Gestational age: Not reported IQ: Not reported.	15 – 29 30 – 39 40 – 49 Maternal age (years) 15 – 29 30 – 39 ≥40	Reference 1.62 (0.99, 2.65) 5.75 (2.65, 12.46) Reference 0.87 (0.54, 1.41) 2.68 (0.81, 8.96)	None

Study Details	Patient characteristics	Factors	Results:	Comments
Author: Shelton J Year: 2010 ID: [87] Country: USA Study design: Controlled observational Consecutive recruitment Not reported Study dates Not reported Evidence level: Low	Cohort population: Children born in California between Jan 1st 1990 and Dec 31st 1999 Case: Cases of infantile autism Diagnosis criteria of ASD: Child Development and Evaluation Report (CDER)/ record of autism or ICD Control: All other children born in cohort study period Exclusion criteria Cases diagnosed after age 6. Children with missing information. Statistic method: Logistic regression analysis using SAS 9.1 DEMOGRAPHICS Cases: Number: 12,159 Age: ≤6 y Ethnicity: Not reported Gender: Not reported Gestational age: Not reported IQ: Not reported. Controls: Number: 4,935,776	Maternal age (years) <25 25 – 29 30 – 34 35 – 39 >40 Paternal age (years) <25 25 – 29 30 – 34 35 – 39 >40	Adjusted result (Cases = 12,159, Control = 4,935,776): Adj Odds Ratio (95% CI) 0.86 (0.80, 0.92) Reference 1.12 (1.06, 1.19) 1.31 (1.22, 1.40) 1.51 (1.35, 1.70) 0.76 (0.71, 0.82) Reference 1.10 (1.04, 1.17) 1.24 (1.15, 1.33) 1.36 (1.26, 1.47)	Funding: NIEHS Limitations: None

Study Details	Patient characteristics	Factors	Results:	Comments
	Age: ≤6 y Ethnicity: Not reported Gender: Not reported Gestational age: Not reported IQ: Not reported.			
Author: Williams K Year: 2008 ID: [76] Country: Australia Study design: Controlled observational Consecutive recruitment Yes Study dates Not reported Evidence level: Low	Cohort population: All children born in New South Wales between 1990 – 1999 Case: All children with suspected autism Diagnosis criteria of ASD: At least one clinical criterion for DSM-IV Autistic Disorder Control: All other children born in same period Exclusion criteria Not reported Statistic method: Logistic regression analysis using SAS DEMOGRAPHICS Cases: Number: 182 Age: <5 Ethnicity: Not reported Gender: Male 152/182 (83.5%) Gestational age: Preterm (<37 weeks):24/182 (13.2%) IQ: Not reported.	Gender Male Gestational age Preterm (< 37 weeks) Multiple birth Twin, triplet or quadruplet Maternal Age >35 years Apgar 1 minute ≤ 5 5 minutes ≤ 5 Mother born outside Australia Birthweight < 2500 g Birth order 0 or ≥ 3 previous pregnancies Fetal growth (not inc gender) <1.5 SD	Adjusted result (Cases = 182, Control = 85,628): Adj Odds Ratio(95% CI) 4.8 (3.2, 7.2) 2.3 (1.5, 3.7) 2.0 (1.0, 4.1) 1.8 (1.3, 12.6) 1.7 (1.1, 2.7) 1.5 (0.2, 5.4) 1.5 (1.1, 2.1) 1.5 (0.8, 2.6) 1.1 (0.8, 1.5) 1.2 (0.7, 2.2)	Funding: Apex Foundation for Research into Intellectual Disability, Children's Hospital Fund of the Children's Hospital at Westmead, Financial Markets Foundation for Children Limitations: None

Study Details	Patient characteristics	Factors	Results:	Comments
	Controls: Number: 85,628 Age: <5 Ethnicity: Not reported Gender: Male. 44,116/85,628 (51.5%) Gestational age: Preterm (<37 weeks):5235/85628 (6.1%) IQ: Not reported.	Fetal growth(inc gender)<1.5 SD	1.1 (0.6, 2.1)	
Author: Wier M Year: 2006 ID: [91] Country: USA Study design: Controlled observational Consecutive recruitment Yes Study dates 1995-1999 Evidence level: Low	Cohort population: Live births delivered between January 1995 and June 1999 and a Kaiser Permanente (KP) Northern California birth facility and who remained KP health plan members for at least 2 years after birth. (n=88163) Case: Children for whom an ASD diagnosis was recorded in KP outpatient clinical databases by Nov 2002. (n=420) Diagnostic criteria of ASD: ICD-9 Control: The comparison group (n=2100) were randomly sampled from the remaining KP birth cohort and frequency matched to children with ASD on sex, birth year, and hospital of birth at a 5 to 1 ratio.	At least one congenital anomaly Isolated congenital anomaly Multiple congenital anomalies Syndrome Congenital anomalies by organ system (according to ICD-9) Central nervous system Heart Gastrointestinal Genito-urinary Musculoskeletal	Adjusted result (Cases = 417, Control = 2067): Adj Odds Ratio (95% CI) 1.7 (1.1 – 2.4) 1.5 (1 – 2.3) 2.1 (1 – 4.5) (–) 1.8 (0.5 – 5.7) 1.5 (0.7 – 2.8) 5.1 (1.8 – 14.1) 1.6 (0.8 – 3.2) 1.8 (0.9 – 3.5)	Funding: Centres for disease control and prevention, Cooperative agreement (U10/CCU920392) and the Kaiser foundation research institute. Limitations: 1. Retrospective study 2. Diagnoses of ASD and other disease were not validated by direct clinical assessment.

Study Details	Patient characteristics	Factors	Results:	Comments
	Exclusion criteria Children with missing data. Statistic method: Logistic regression model. DEMOGRAPHICS Cases: Number: 417 Age: 3-7 y Ethnicity: Not reported. Gender: Male 341/417 (81.8%) Gestational age: ≥37 w: 371/417 (89%) 33-36 w: 37/417 (8.9%) ≤32 w: 9/417 (2.2%) IQ: Not reported. Controls: Number: 2067 Age: 3-7 y Ethnicity: Not reported Gender: Male 1681/2067 (81.3%) Gestational age: ≥37 w: 1932/2067 (93.5%) 33-36 w: 112/2067 (5.4%) ≤32 w: 23/2067 (1.1%) IQ: Not reported.			

Question 2(b) – part 2

Study Details	Patient characteristics	Factors	Results:	Comments
Author: Badawi N Year: 2006 ID: 92 Country: Australia Study design: Uncontrolled observational Consecutive recruitment Yes. Study dates June, 1993 and Dec 1996 Evidence level: Very low	Cohort population: All 276 term newborn infants with encephalopathy were enrolled in a population-based study of moderate and severe term newborn encephalopathy in Western Australia. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria Not reported. DEMOGRAPHICS Number: 276 Prevalence: Not reported. Age: >5 y Ethnicity: Caucasian: 239/276 (86.6%) Aboriginal: 18/276 (6.5%) Indian: 2/276 (0.7%) Asian: 15/276 (5.4%) Others: 2/276 (0.7%) Gender: Males: 166/276 (60.1%) IQ: Not reported	history of newborn encephalopathy ASD	n/N (%) 12/276 (4.3%)	Funding: The Australian National Health and Medical Research Council (96/3209; 98/7062; 00/3209). Limitations: Small sample size.
Author: Bolton P Year: 2002 ID: 96	Cohort population: A consecutive series of clinic cases from one original report (n=19) (Bolton and Griffiths, 1997) and cases recruited from new referrals to the clinic or through an ongoing epidemiological study of children with TSC in the eastern UK (n=15). Diagnosis criteria of ASD:	Tuberous sclerosis ASD	n/N (%) 19/53 (35.8%)	Funding: Grants to Patrick Bolton from the Anglia and Oxford NHS Research and Development Fund, and from the UK Tuberous Sclerosis Association. Limitations: No detailed demographic

Study Details	Patient characteristics	Factors	Results:	Comments
Country: U.K Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates Not reported. Evidence level: Very low	ICD-10. Exclusion criteria Cases were excluded if a low mental age precludes confident diagnosis of an ASD. DEMOGRAPHICS Tuberous sclerosis: Number: 60 Prevalence: Not reported. Age: Not reported.(Only age of onset of seizures were reported, the range of which is 0.5-36 months) Ethnicity: Not reported. Gender: Not reported. IQ: Not reported			information of the sample was reported. It is Not reported whether those cases from new referrals to the clinic or through an ongoing epidemiological study of children with TSC were recruited consecutively or not.
Author: Bryson S Year: 2008 ID: [94] Country: Canada Study design: Uncontrolled observational study Consecutive recruitment No. Study dates Not reported Evidence level: Very low	Cohort population: Individuals with intellectual disability aged 14 to 20 years drawn from the population residing in the Niagara region in Ontario. ID was defined as IQ of 75 or below. Diagnosis criteria of ASD: DSM-IV and ICD-10. Exclusion criteria Not reported DEMOGRAPHICS Intellectual disability: Number: 171 Prevalence: 7.18/1000 Age: 14-20 y Ethnicity: Not reported Gender: Male 97/171 (56.5%)	Intellectual disability Autism	n/N (%) 43/154 (27.9%)	Funding: Grant from Health Canada awarded to Dr Bradley and Dr Bryson though the National Health Research and Development Program. Limitations: 1. Inconsecutive recruitment. a. 84 ID patients identified form the population refused to participate in this study, resulted in a 67% (171/255) participation rate. b. For those 171 participants, 11 of them don't have ADI-R data; 6 of them were indeterminate cases; therefore only 154 ID patients left. 2. An observational measure

Study Details	Patient characteristics	Factors	Results:	Comments
	Autism: Number: 43/154 (27.9%) Age: 14-20 y Ethnicity: Not reported Gender: Male. 30/43 (69.7%) IQ: Mental retardation: 100%			standardized specifically for the assessment of autism was not included
Author: Budimirovic D Year: 2006 ID: 48 Country: U.S.A Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates Not reported. Evidence level: Very low	Cohort population: This study included exclusively boys with Fragile X diagnosis. Two cohorts were evaluated: a larger cross-sectional main cohort of 56 subjects and a longitudinal subset of the main cohort that included 30 subjects who were annually assessed for a total of 3 years. The subjects were recruited as part of a study of cognitive and social skills in young males with Fragile X at the Kennedy Krieger Institute at Baltimore, Maryland. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria Children from families who did not speak the Dutch or Frisian language. DEMOGRAPHICS Fragile X: Number: 86 Prevalence: Not reported. Age: 3-8 y Ethnicity: White: 95% Hispanic: 3%	Fragile X ASD	n/N (%) 35/86 (40.7%)	Funding: National institute of Mental Health; Grant number: HD33175, MH67092 Limitations: All Fragile X patients are boys.

Study Details	Patient characteristics	Factors	Results:	Comments
	Black: 2% Gender: Male = 100%. IQ: mean (SD) Main cohort: Fragile X+ASD: 46.9 (15.7) Fragile X only: 63.6 (14.1) Longitudinal cohort: Fragile X+ASD: 45.5 (15.5) Fragile X only: 65.0 (10.5)			
Author: Capone G Year: 2005 ID: [61] Country: U.S.A Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates 1991-2001 Evidence level: Very low	Cohort population: All subjects were recruited through the DS clinic at the Kennedy Krieger Institute between 1991-2001. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria Children whose behaviour was better explained by a primary diagnosis of depression, OCD, ADHD, tic disorder, oppositional-defiant, or disruptive disorder following a detailed history, medical evaluation and review of DSM-IV criteria. Children whose socio-familiar circumstances were significantly chaotic that it presented a source of confusion regarding their primary diagnosis. DEMOGRAPHICS Number: 471 (demographics data are only available for 131 patients of this 471 sample) Prevalence: Not reported.	Down syndrome ASD	n/N (%) 61/471 (13.0%)	Funding: MH067092, K23MH066284 Limitations: 1. The number of DS patients that displaying an 'autistic-like condition' defined as 'repetitive motor behaviours, atypical attention, and unusual sensory responding' is 87. However, 26 of these patients have been excluded because of various reasons (see 'exclusion criteria'), so the prevalence data for ASD might be falsely decreased.

Study Details	Patient characteristics	Factors	Results:	Comments
	Age: Mean: 8.6 SD: 4.4 Range: 2-21 y Ethnicity: Not reported. Gender: Males: 96/471 (72.7%) IQ: (for ASD children only) Mental retardation: 61/61 (100.0%)			
Author: De Bildt A Year: 2005 ID: [57] Country: The Netherlands Study design: Uncontrolled observational Consecutive recruitment No. Study dates Not reported. Evidence level: Very low	Cohort population: All children diagnosed with Mental retardation in a designated area of Friesland, a northern province of the Netherlands. Diagnosis criteria of ASD: DSM-IV-TR. Exclusion criteria Children from families who did not speak the Dutch or Frisian language. DEMOGRAPHICS Number: 1057 Prevalence: Not reported. Age: 4-18 y Ethnicity: Not reported. Gender: Male 666/1057 (63.0%). IQ: Mental retardation: 987/1057 (93.4%) Non-MD: 70/1057 (6.6%)	Intellectual disability ASD	n/N (%) 138/825 (16.7%)	Funding: Not reported. Limitations: Inconsecutive recruitment. a). Of the 1436 children approached, only 90% of them responded. b). Due to privacy regulations, for 379 children and adolescents, no enough information was available. c). Finally only 825 children were screened for PDD. The sample used in this study may not be entirely representative, since it contained relatively many participants form the lover levers of MR, and fewer from the mild

Study Details	Patient characteristics	Factors	Results:	Comments
				level. The diagnosis of ASD should include an individual assessment of the participants, which has not been done in this study.
Author: Ekstrom A Year: 2008 ID: 62 Country: Sweden Study design: Uncontrolled observational Consecutive recruitment No. Study dates 2003 Evidence level: Very low	Cohort population: 57 individuals with a confirmed diagnosis of DM1 (Myotonic dystrophy type 1) with CTG repeat expansions greater than 40. They re all recruited from paediatric rehabilitation centres in the western and southern health care regions of Sweden. Diagnosis criteria of ASD: DSM-IV-TR. Exclusion criteria Patients who refused to participate. DEMOGRAPHICS Myotonic dystrophy type 1: Number: 57 Prevalence: Not reported. Age: 2.5-21.3 y Ethnicity: Not reported. Gender: Male 31/57 (54.4%). IQ: (for ASD children) Mental retardation: 21/21 (100.0%)	Myotonic dystrophy type 1 ASD	n/N (%) 21/57 (36.8%)	Funding: Grants from the Health and Medical Care Executive Board of the region of Vastra Gotaland, the research and development department of the Northern Alvsborg/Bohus County council, the Linnea and Josef carlsson Foundation, the Haggquist Family Foundation and the Western Sweden muscle foundation. Limitations: Only 12 out of 20 diagnosed individuals with autistic disorder fulfilled the ADI-R logarithm for autism. The authors suspected that the parents had a tendency to recognize and report fewer symptoms and problems in the interviews and this might have impacted on the result.
Author: Emerson E Year:	Cohort population: Data collected in the 1999 and 2004 Office for National Statistics surveys of the mental health of British children and	Intellectual Disability ASD	n/N (%) 51/641 (8.0%)	Funding: Foundation for People with Learning disabilities.

Study Details	Patient characteristics	Factors	Results:	Comments
2007 ID: 63;64 Country: U.K Study design: Uncontrolled observational Consecutive recruitment Yes. Study dates 1999-2004 Evidence level: Very low	adolescents, aged from 5 to 16 years old. Diagnosis criteria of ASD: ICD-10. Exclusion criteria Not reported DEMOGRAPHICS Intellectual disability: Number: 641 Prevalence: 641/18415 (3.5%) Age: Range: 5-16 y Mean:10.1 y Ethnicity: 90% White. Gender: Not reported. IQ: Intellectual disability: 100%			Limitations: The identification of ID cases were based on parent and teacher report. However, the prevalence derived in this study (3.5%) is slightly higher than the commonly assumed prevalence (2-3%). It is therefore possible that the operational definition used in this study might have led to the inclusion of a small proportion of children with 'borderline' ID. The use of some certain measure of psychiatric disorder that has not been validated for use with children with ID could be a threat to the internal validity of the results. (It is Not reported that which tools have been used for the diagnosis of ASD)
Author: Farzin F Year: 2006 ID: 49	Cohort population: White male subjects with Fragile X. Most (24) participants were recruited and assessed at the University of California, Davis; the remaining cases (19) were recruited and evaluated at La Trobe University, Victoria, Australia. All known permutation carriers who presented to clinic at both collaborative sites were	Fragile X ASD	n/N (%) 12/27(44.4%)	Funding: National institute of Mental Health; Grant number: HD33175, MH67092 Limitations: All Fragile X patients are boys.

Study Details	Patient characteristics	Factors	Results:	Comments
Country: U.S.A and Australia Study design: Uncontrolled observational Consecutive recruitment No. Study dates Not reported. Evidence level: Very low	invited to participate in the study. Diagnosis criteria of ASD: DSM-IV-TR. Exclusion criteria Not reported. DEMOGRAPHICS Fragile X: Number: 27 Prevalence: Not reported. Age: Range: 4-22 y Mean (SD): 10.3 (5)y Ethnicity: White: 100% Gender: Male 27/27 (100%) IQ: for ASD probands: Mean (SD): 95.00 (23.91)			
Author: Gutierrez G Year: 1998 ID: [58] Country: U.S.A Study design: Uncontrolled observational	Cohort population: TSC individuals ages 4 and older were ascertained as part of a genetic study of TSC through several sources including UCLA and UC Irvine hospitals and clinics, national tuberous sclerosis association newsletters and mailings, as well as local chapter meetings of the NTSA. Diagnosis criteria of ASD: ICD-10 and DSM-IV. Exclusion criteria Not reported.	Tuberous sclerosis PDD	n/N (%) 12/28 (42.9%)	Funding: National Institute of Mental Health grant RO1 MH44742. Limitations: Due to the recruitment method, it is not sure if the sample used in this study could represent the general tuberous sclerosis patients.

Study Details	Patient characteristics	Factors	Results:	Comments
Consecutive recruitment Not reported.. Study dates Not reported. Evidence level: Very low	DEMOGRAPHICS Number: 28 Prevalence: Not reported. Age: Mean: 12.6 month Ethnicity: Not reported. Gender: Males: 11/28 (39.3%) IQ: (for ASD sample) Mental retardation: 10/12 (83.3%)			
Author: Harris S Year: 2008 ID: [47] Country: U.S.A Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates 2001-2005 Evidence level: Very low	Cohort population: 63 Males 2.8 to 19.5 years of age at the M.I.N.D Institute between 2001 and 2005 who were confirmed as Fragile X patients. Diagnosis criteria of ASD: DSM-IV-TR. Exclusion criteria Not reported. DEMOGRAPHICS Fragile X: Number: 63 Prevalence: Not reported. Age: Range: 2.8-19.5 y Mean (SD): 7.9 (4.3) y Ethnicity: Not reported Gender: Males 63/63 (100%) IQ: Range: 25-87 Mean (SD): 56 (13)	Fragile X ASD	n/N (%) 19/63 (30.2%)	Funding: Not reported. Limitations: It is Not reported that if those samples were recruited consecutively or not.
Author: Hendriksen J	Cohort population: Duchenne muscular dystrophy patients	Duchenne muscular dystrophy ASD	n/N (%) 11/351 (3.1%)	Funding: Duchenne parent Project

Study Details	Patient characteristics	Factors	Results:	Comments
Year: 2008 ID: 103 Country: The Netherland/ U.S.A Study design: Uncontrolled observational Consecutive recruitment No. Study dates Not reported Evidence level: Very low	whose parents joined the Dutch and American Duchenne parent project were recruited by letter or email. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria 1. Children whose parents didn't respond. 2. Children with Becker dystrophy (n=29). DEMOGRAPHICS Duchenne Muscular Dystrophy: Number: 351 Prevalence: Not reported. Age: Range: 3-38 y Mean (SD): 11.9 (5.2) y Ethnicity: Not reported. Gender: Male: 351/351 (100.0%) IQ: Not reported.			Netherlands and the Parent Project Muscular dystrophy. Limitations: 1. Low response rate. Dutch parents: 63/112 (56%) American parents: 317/1725 (18%) 2. This sample may not represent the general Duchenne muscular dystrophy patients.
Author: Hepburn S Year: 2008 ID: 98 Country: USA	Cohort population: Twenty 2-3 years old children with Down syndrome, who were recruited from the Front Range/Denver Metropolitan Area parent support organizations for families of children with Down syndrome. Diagnosis criteria of ASD: DSM-IV-TR. Exclusion criteria	Down syndrome ASD	n/N (%) 3/20 (15.0%)	Funding: NICHD U19 HD35468 and the Departments of Psychiatry at the University of Colorado Health Sciences Centre and the department of human Development and Family studies at Colorado State University. Limitations: 1. Small sample size.

Study Details	Patient characteristics	Factors	Results:	Comments
<u>Study design:</u> Uncontrolled observational <u>Consecutive recruitment</u> No. <u>Study dates</u> <u>Evidence level:</u> Very low	Not reported. <u>DEMOGRAPHICS</u> <u>Down syndrome:</u> Number: 20 Prevalence: Not reported. Age: Range: 2-3 y Ethnicity: Not reported. Gender: Males: 14/20 (70.0%) IQ: Not reported.			
<u>Author:</u> Hickey F <u>Year:</u> 2006 <u>ID:</u> [50] <u>Country:</u> U.S.A <u>Study design:</u> Uncontrolled observational <u>Consecutive recruitment</u> Not reported.. <u>Study dates</u> 1981-1995 <u>Evidence level:</u> Very low	<u>Cohort population:</u> Data come from a retrospective chart review by the research coordinator of the Down Syndrome Clinic for all children greater than 18 months of age who were evaluated in the program <u>Diagnosis criteria of ASD:</u> DSM-IV. <u>Exclusion criteria</u> Not reported. <u>DEMOGRAPHICS</u> <u>Down syndrome:</u> Number: 248 Prevalence: Not reported. Age: Not reported. Ethnicity: Not reported. Gender: Not reported. IQ: Including samples with mental retardation.	Down syndrome ASD	n/N (%) 15/248 (6.0%)	<u>Funding:</u> Emily Hayes down syndrome research fund. <u>Limitations:</u> The children referred to a Down Syndrome Clinic may represent <u>a</u> more at-risk or biased population. The clinical review includes evaluations done over a period of 15 years, and in some cases the information available is limited by the type of evaluations done at the time of the initial referral.

Study Details	Patient characteristics	Factors	Results:	Comments
	ASD: Number: 15/248 (6.0%) Age: 3.0-22.8 y Ethnicity: Not reported Gender: Not reported. IQ: Including samples with mental retardation.			
Author: DiGuiseppi C Year: 2010 ID: 101 Country: U.S.A Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates 1st, Jan, 1996 - 31st, Dec, 2003 Evidence level: Very low	Cohort population: Children with a chromosomal analysis documenting Down syndrome were eligible if born between 1st, Jan, 1996 to 31st, Dec, 2003 to a mother who was resident at delivery in 1 of 10 counties in north-central Colorado, currently alive, and residing with a parent or caregiver fluent in English or Spanish. Diagnosis criteria of ASD: DSM-IV TR. Exclusion criteria Not reported. DEMOGRAPHICS Number: 123 Prevalence: Not reported. Age: Mean: 73.4 m Range: 31-142 m Ethnicity: Hispanic: 15/123 (12.2%) Not Hispanic: 108/123 (87.8%) Gender:	Down syndrome ASD Note: *: This is a weighed prevalence since data were missing for 22 children who dropped out of this study.	n/N (%) 8/123* (6.5%)	Funding: National centre on birth defects and developmental disabilities, Centres for disease control and prevention. Limitations: 1. Although this study attempted to recruit a geographically based birth cohort of children with Down syndrome, they were only able to screen 28% of all children due to various reasons. 2. Missing data for 22 children who have been screened but didn't receive the full diagnostic assessment. 3. This prevalence result is likely to be most generalizable to white, non-Hispanic male children with Down syndrome.

Study Details	Patient characteristics	Factors	Results:	Comments
	Male: 80/123 (65.0%) Female: 43/123 (35.0%) IQ: Not reported.			
Author: Jeste S Year: 2008 ID: [51] Country: U.K Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates Not reported. Evidence level: Very low	Cohort population: 20 infants enrolled in a previously published longitudinal study of early cognitive development in tuberous sclerosis complex. These infants had been referred to the Cambridge tuberous sclerosis clinic for infants, based on the section of developmental psychiatry, University of Cambridge, and satisfied diagnostic criteria for tuberous sclerosis complex. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria One infant died following her assessment at 24 months who hasn't been tested by ADOS. DEMOGRAPHICS Tuberous sclerosis: Number: 20 Prevalence: Not reported. Age: <5 y Ethnicity: Not reported. Gender: Not reported. ASD: Number: Age=18 m, ASD: 8/12 (66.7%)	Tuberous sclerosis ASD Age=18 m Age=24 m Age=36 m Age=60 m	n/N (%) 8/12 (66.7%) 7/13 (53.8%) 7/15 (46.7%) 7/14 (50.0%)	Funding: The Tuberous Sclerosis Association (U.K) and Children's hospital Boston House-officer development Award. Limitations: Since the sample come from a clinic-based referral population, these children were more severely affected neurologically and thus may not have represented the tuberous sclerosis complex population as a whole (children have been re-assessed three times during follow-up)

Study Details	Patient characteristics	Factors	Results:	Comments
	Age=24 m, ASD: 7/13 (53.8%) Age=36 m, ASD: 7/15 (46.7%) Age=60 m, ASD: 7/14 (50.0%) Age: <5 y Ethnicity: Not reported Gender: Not reported. IQ: including samples with intellectual disability.			
Author: Kent L Year: 1999 ID: [97] Country: U.K Study design: Uncontrolled observational Consecutive recruitment No. Study dates Not reported. Evidence level: Very low	Cohort population: All children with down syndrome between the age of 2 and 16 years, resident within a geographical area of the West Midlands with a total population within this age group of approximately 70 000 were identified. Three routes of recruitment were sued: all special-school and mainstream-school nurses within the geographical area identified children within their school with DS, as did the three child-development clinics in the area. In addition, the local branch of the DS Association identified all their members within the specified age group within that area. Diagnosis criteria of ASD: ICD-10. Exclusion criteria Children who didn't complete the diagnosis procedure. (25/58 (43.1%))	Down syndrome ASD	n/N (%) 4/58 (6.9%)	Funding: Not reported. Limitations: 1. Small sample size. 2. Due to ethic or other reasons, 25 (43.1%) CP patients didn't finish the measures. 3. The equal sex ratio of ASD presented is unusual.

Study Details	Patient characteristics	Factors	Results:	Comments
	DEMOGRAPHICS Cerebral palsy: Number: 33 (Demographic data is only available for those 33 children completed the measure) Prevalence: Not reported. Age: Range: 2-15 y Mean: 7.2 y Ethnicity: Not reported. Gender: Males: 15/33 (45.5%) IQ: Not reported.			
Author: Kilincaslan A Year: 2008 ID: [59] Country: Turkey Study design: Uncontrolled observational Consecutive recruitment No. Study dates 1982-2000 Evidence level:	Cohort population: Children and adolescents with a diagnosis of cerebral palsy. Between April and July 2006, they were attending the Istanbul medical Faculty Paediatric Neurology department Outpatient Clinic, the Paediatric Physiotherapy and Rehabilitation Clinic, or an association that provides assistance for individuals with CP in Istanbul, Turkey. Those participants were selected from consecutive patients above 48 months of age. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria Patients who had ataxic CP or progressive hereditary, neurological or metabolic disorders as the cause of the clinical	Cerebral palsy PDD	n/N (%) 19/126 (15.1%)	Funding: Not reported. Limitations: The samples used in this study may not represent the general CP population. The participants in this study were recruited from tertiary clinics; and the distribution of the CP types in the study sample differed from the Turkish population, with a higher rate of tetraplegic CP. It is possible that this study include more severe cases with higher rates of tetraplegic CP and learning disability.

Study Details	Patient characteristics	Factors	Results:	Comments
Very low	presentation. DEMOGRAPHICS Cerebral palsy: Number: 126 Prevalence: Not reported. Age: Range: 4-18 y Mean (SD): 8.7 (3.7) y Ethnicity: Not reported. Gender: Males: 75/126 (59.5%) IQ: No mental retardation:66/126 (52.4%) IQ 51-70: 24/126 (19.0%) IQ ≤50: 36/126 (28.6%)			
Author: Nanson J Year: 1992 ID: [93] Country: Canada Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates	Cohort population: 623 individuals who have been diagnosed as fetal alcohol syndrome or other alcohol-related birth defects in the past ten years have been identified from chart review of a data base of the Alvin Buckwold Centre. Diagnosis criteria of ASD: CARS. Exclusion criteria Not reported. DEMOGRAPHICS Duchenne Muscular Dystrophy: Number: 623 Prevalence: Not reported. Age: 7-17 y	Neurofibromatosis type 1 ASD	n/N (%) 6/623 (1.0%)	Funding: Not reported. Limitations: 1. Inappropriate diagnostic criteria of ASD. 2. Chart review 3. Small sample size

Study Details	Patient characteristics	Factors	Results:	Comments
1982-1992 Evidence level: Very low	Ethnicity: North American Indian: 75% Others: 25% Gender: male 4/6 (66.7%) IQ: Not reported.			
Author: Oeseburg B Year: 2010 ID: [60] Country: The Netherlands Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates 2006 - 2007 Evidence level: Very low	Cohort population: Children and adolescents with intellectual disability, aged between 12 and 18 years Diagnosis criteria of ASD: None – parental reported of PDDs Exclusion criteria Non-response DEMOGRAPHICS Number: 1066 Age: Mean (SD) : 15.4 ± 1.6 years Range: 12 – 18 years Ethnicity: Not reported. Gender: Male = 626 (58.3%) IQ: 60-80: 785/1077 (72.9%) 30-59: 253/1066 (23.5%) <30: 39/1077 (3.6%)	Intellectual disability autism ASD	n/N (%) 118/1083 (10.9%) 152/1083 (14.0%)	Funding: Not reported Limitations: None
Author: Park R Year: 2001 ID:	Cohort population: Children and adolescents with TS, aged between 3 and 16 years were recruited. Diagnosis criteria of ASD: ICD-10.	Tuberous sclerosis ASD	n/N (%) 34/43 (79.1%)	Funding: Grants to Dr Patrick Bolton from the Anglia and Oxford NHS Research and Development Scheme. Limitations:

Study Details	Patient characteristics	Factors	Results:	Comments
[52] Country: U.K Study design: Uncontrolled observational Consecutive recruitment Not reported. Study dates Not reported. Evidence level: Very low	Exclusion criteria Five children with definite or probable familiar TS were excluded. DEMOGRAPHICS Tuberous sclerosis: Number: 43 Prevalence: Not reported. Age: Mean (SD) : 110 (49) m Range: 30-192 m Ethnicity: Not reported. Gender: 24/43 (44.0%) IQ: Including children with mental retardation.			Small sample size.
Author: Saemundsen E Year: 2008 ID: [53-55] Country: Iceland Study design: Uncontrolled observational Consecutive recruitment No. Study dates	Cohort population: A cohort of children with unprovoked seizures in the first year of life. The cohort in the present study is compiled from two studies of Icelandic children, based on the overlapping period in both studies, from 1st Jan, 1982-31st Dec, 1998. Cohort 1: children with infantile spasms in the first year of life detected during the period 1981-1998 Cohort 2: children with unprovoked seizures in the first year of lie, other than infantile spasms, detected during the period 1982-2000. The sources of children with infantile spasms and unprovoked seizures were	infantile spasms ASD	n/N (%) 13/95 (13.7%)	Funding: This work was supported in part by the Memorial Fund of Helga Jonsdottir and Sigurlidi kristjansson and the Freemasons Fund of the Icelandic Order of Freemasons. Limitations: Only children with known neurodevelopmental disorders or parental concern regarding developmental skills or behaviour of the child received the SCQ as an initial test of autistic behaviour.

Study Details	Patient characteristics	Factors	Results:	Comments
1st Jan, 1982-31st Dec, 1998. Evidence level: Very low	hospital records from all three in-patient paediatric facilities in Iceland. Diagnosis criteria of ASD: ICD-10. Exclusion criteria Children who had died. Children whose parents refused to participate. DEMOGRAPHICS Infantile spasms: Number: 95 Prevalence: Not reported. Age: Range: 4-20 y Mean (SD): 11.2 (4.7) y Ethnicity: Not reported. Gender: Males: 34/95 (35.8%) ASD: Number: 13/95 (13.7%) Age: Range: 4-20 y Mean (SD): 11.2 (4.7) y Ethnicity: Not reported Gender: Male: 5/13 (38.5%) IQ: included children with mental retardation.			
Author: Scambler D Year:	Cohort population: 17 children with the full-mutation FXS whose diagnoses were confirmed through DNA testing and were between	Fragile X Autism	n/N (%) 4/17 (23.5%)	Funding: National institutes of child health and development grants HD36071 and HD02274, the National Fragile

Study Details	Patient characteristics	Factors	Results:	Comments
2007 ID: 102 Country: U.S.A Study design: Uncontrolled observational study Consecutive recruitment No. Study dates Not reported. Evidence level: Very low	the ages of 24 and 47 months. They were recruited from various national FXS groups and major Fragile X clinics across the USA. Diagnosis criteria of autism: DSM-IV. Exclusion criteria Children whose data were insufficient. DEMOGRAPHICS Fragile X: Number: 17 Prevalence: Not reported. Age: 2-4 y Ethnicity: Not reported Gender: Males 15/17 (88.2%) Autism: Number: 4/17 (23.5%) Age: months Mean (SD): 34 (5) Ethnicity: Not reported Gender: Not reported. IQ:			X foundation, and the UC Davis M.I.N.D. Institute. Limitations: Small sample size.
Author: Seri S Year: 1999 ID: 95 Country: Italy Study design: Uncontrolled observational study Consecutive recruitment Not reported.	Cohort population: 14 prospectively followed individuals fulfilling diagnostic criteria for tuberous sclerosis complex. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria Children whose parents haven't signed the consent form. DEMOGRAPHICS Tuberous sclerosis: Number: 14	Tuberous sclerosis Autism	n/N (%) 7/14 (50.0%)	Funding: Italian association for research in Child Neurology, and by visiting scientist CNR (Consiglio Nazionale delle Ricerche) grant AI 95.00308.04 to Dr. Stefano Seri, while at the Laboratoire de Cartographie des Fonctions Cerebrales, hospital Cantonale Universitaire, Geneve, CH. Limitations: It is Not reported that how those

Study Details	Patient characteristics	Factors	Results:	Comments
Study dates Not reported. Evidence level: Very low	Prevalence: Not reported. Age: Mean : 8.5 y Ethnicity: Not reported. Gender: Not reported. Autism: Number: 7/14 (50.0%) Age: Mean : 8.5 y Ethnicity: Not reported Gender: Not reported. IQ:			tuberous sclerosis patients were recruited.
Author: Williams P Year: 1998 ID: [56] Country: U.S.A Study design: Uncontrolled observational Consecutive recruitment 1984 to 1994 Study dates Not reported Evidence level: Very low	Cohort population: 74 patients who have been diagnosed as Neurofibromatosis type 1 at the developmental units of the Child evaluation centre over the period from 1984 to 1994 were indentified from chart review. Diagnosis criteria of ASD: DSM-III-R. Exclusion criteria Patients whose neurodevelopmental data were unavailable. DEMOGRAPHICS Neurofibromatosis Type 1 Number: 74 Prevalence: Not reported. Age: Range: 4 m to 31 y Mean: 9.5 y Ethnicity: Not reported. Gender: Male: 41/74 (55.4%) IQ: Included children with mental	Neurofibromatosis type 1 ASD	n/N (%) 3/74 (4.1%)	Funding: Not reported. Limitations: Inappropriate diagnostic criteria of ASD. Small sample size

Study Details	Patient characteristics	Factors	Results:	Comments
	retardation.			
Author: Wu J Year: 2005 ID: [99] Country: U.S.A Study design: Uncontrolled observational Consecutive recruitment No. Study dates Not reported Evidence level: Very low	Cohort population: 159 children with Duchenne muscular dystrophy were identified from the review of the Massachusetts Muscular Dystrophy association records. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria Not reported. DEMOGRAPHICS Duchenne Muscular Dystrophy: Number: 158 Prevalence: 1/35,000 Age: <14 y Ethnicity: Not reported. Gender: Male: 158/158 (100.0%) IQ: Not reported.	Duchenne muscular dystrophy ASD	n/N (%) 6/158 (3.8%)	Funding: Not reported. Limitations: None.
Author: Young H Year: 2008 ID: [104] Country: Australia; the U.S.A Study design: Uncontrolled observational study.	Cohort population: Patients with Becker Muscular Dystrophy aged 6 years or older were recruited from 2 sites---The children's hospital at Westmead, Sydney, Australia; and the children's hospital, Boston, Massachusetts. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria	Becker Muscular Dystrophy Autism	n/N (%) 2/24 (8.3%)	Funding: The institute for Neuromuscular research, the children's hospital at Westmead, Sydney, Australia Limitations: Small sample size

Study Details	Patient characteristics	Factors	Results:	Comments
Consecutive recruitment No. Study dates Not reported. Evidence level: Very low	Not reported. DEMOGRAPHICS Becker Muscular Dystrophy: Number: 24 Prevalence: Not reported. Age: Range: 6-43.2 y Mean : 14.2 y Ethnicity: Not reported. Gender: Male: 24/24 (100.0%) Autism: Number: 2/24 (8.3%) Age: Not reported. Ethnicity: Not reported Gender: Not reported. IQ:			
Author: Zingerevich C Year: 2008 ID: 100 Country: U.S.A Study design: Uncontrolled observational Consecutive recruitment Not reported.	Cohort population: 48 children assessed at the M.I.N.D Institute at the University of California at Davis Medical Centre between 2001 and 2007 whose parents signed a consent form approved by our institutional review board to participate in this research. All the children were diagnosed with FXS. Diagnosis criteria of ASD: DSM-IV. Exclusion criteria Children whose parents haven't signed the consent form. DEMOGRAPHICS	Fragile X ASD	n/N (%) 29/48 (60.4%)	Funding: National institute of Child Health and Development, grant HD036071 and HD02274. Limitations: It is Not reported that if those samples were recruited consecutively or not.

Study Details	Patient characteristics	Factors	Results:	Comments
Study dates 2001-2007 Evidence level: Very low	Fragile X: Number: 48 Prevalence: Not reported. Age: Range: 12-76 m Mean (SD): 41.3 (16) m Ethnicity: Caucasian: 32/48 (66.7%) African American: 2/48 (4.2%) East Indian: 4/48 (8.3%) Asian: 2/48 (4.2%) American Indian: 4/48 (8.3%) Hispanic/other: 4/48 (8.3%) Gender: Males 36/48 (75.0%) IQ: Not reported. ASD: Number: 29/48 (60.4%) Age: 12-76 m Ethnicity: Not reported Gender: Not reported. IQ: Not reported.			

Question 2(c) – no evidence reviewed

Question 3(a)

Study Details	Patients	Tools	Outcome	Results			Comments
Author: Corsello C Year: 2007 ID: [72] Country: USA AIM: 'to investigate how the SCQ functions as a screening tool' Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported Evidence level: Very low	Patient groups: 590 children between 2 and 16 years who were consecutive referrals to two university-based clinics specializing in children with possible ASDs and/or were participants in research within the autism centres. Eventual diagnosis- ASD: n=439. Non-ASD: n=151 Exclusion criteria: Children with missing items that would have changed their SCQ classification. Demographics: Total sample Number=590 Age: 2-16 years Ethnicity: 495 Caucasian, 43 African-Americans,	Diagnostic tool under investigation:1 ADI-R Semi-structured interview suitable for parents of children with a mental age > 24 months 111 items over 3 domains, social, communication, stereotyped interests and behaviours Threshold & Data set No Adequately described? Yes Operator no/experience Not reported Diagnostic tool under investigation:2 ADOS Standardized, play-based observation schedule Diagnostic algorithm is based on 4 domains; socialization, communication, play, stereotyped interests	TOOL True positive False positive False negative True negative Sensitivity Specificity - - - - - - - - - - - - - - - - - - TOOL True positive False positive False negative True negative Sensitivity Specificity - - - - - - - - - - - - - - - - - - Differential diagnosis Communication disorder ADHD MR Down syndrome Foetal alcohol syndrome Mood / anxiety disorder Other Psychiatric / development disorders - - - - - - - - - - - - - - - - - -	ADI-R (ASD) 395 69 44 82 395/439 90 (87, 94) 82/151 54 (46, 62) - - - - - - - - - - - - - ADI-R (AUT) 254 129 28 179 254/282 90 (87, 94) 179/308 58 (53, 64) - - - - - - - - - - - - - 36/590 (6.1%) 30/590 (5.1%) 26/590 (4.4%) 18/590 (3.1%) 18/590 (3.1%) 12/590 (2.0%) 11/590 (1.9%) - - - - - - - - - - - - -	ADOS (ASD)* 379 34 44 114 379/423 90 (87, 93) 114/148 77 (80, 84) - - - - - - - - - - - - - ADOS (AUT)* 258 71 16 226 258/274 94 (91, 97) 226/297 76 (71, 81) - - - - - - - - - - - - - - - - - - - - - - - - - -	COMBINED (ASD)* 351 20 72 128 351/423 83 (79, 87) 128/148 86 (81, 92) - - - - - - - - - - - - - COMBINED (AUT)* 233 39 41 258 233/274 85 (81, 89) 258/297 87 (83, 91) - - - - - - - - - - - - - - - - - - - - - - - - - -	Funding: NIMH Limitations: Index test carried out before reference test and results used to aid diagnosis Blinding: No blinding Timing of tests: Index test carried out before diagnostic conference Verification (ref/index test x100) ADI-R – 100% ADOS – 87.6% Indirectness: Some – no patient relevant outcomes

Study Details	Patients	Tools	Outcome	Results	Comments
	48 other ethnicities and 4 with missing data. Autism (AD): Number=282 Age: μ=84.34 PDD-NOS (PD): Number=157 Age: μ=96.09 Non-spectrum (NS): Number=151 Age:μ=93.09 Ethnicity: -Caucasian: 495(83.90%) -African Americans: 43(7.29%) -Other: 48(8.14%) -Missing: 4(0.68%) <u>Subgroups:</u> Language: Not reported Gender: -Male: 462(78.31%) Intellectual disability: Nonverbal IQ: AD: Mean=68.92 PD: Mean=91.26 NS: Mean=78.44 Verbal IQ: AD: Mean=52.02 PD: Mean=90.01	and behaviours Social and communication scores are used for ASD. Threshold & Data set No Adequately described? Yes Operator no/experience Not reported <u>Comparison/Diagnostic Criteria tool:</u> Best estimate based on DSM-IV criteria and using information from all assessments including ADI-R and ADOS as well as up to 3 1-3 hours sessions Threshold and Data set Not reported Adequately described? Not reported Operator no/experience Not reported	Co-existing diagnosis	Not reported	<u>Test carried out on an appropriate Population</u>: Yes <u>Test carried out by an appropriate professional:</u> Yes * based on an imputed prevalence from complete sample.

Study Details	Patients	Tools	Outcome	Results		Comments
	NS: Mean=78.51 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported					
Author: de Bildt A Year: 2004 ID: [105] Country: Netherlands AIM: 'to describe the interrelationship between ADI-R and ADOS-G in children and adolescents with MR' and ' to study the criterion-related validity between a DSM-IV-TR classification and the ADOS-G and ADI-R' in	Patient groups: MR subjects who scored > 10 (PDD category) on the Scale for Pervasive Development Disorder in Mentally Retarded persons (PDD-MRS) Exclusion criteria: Not reported Demographics: Number:184 Age: Mean = 11.2 ± 3.85 years Range = 5 – 20 years Ethnicity: Not reported Subgroups: Language: Not reported	Diagnostic tool under investigation 1: ADI-R Threshold & Data set Not reported Adequately described? No Operator no/experience Trained interviewers Diagnostic tool under investigation 2: ADOS-G Threshold & Data set Not reported Adequately described? No Operator no/experience	TOOL True positive False positive False negative True negative Sensitivity Specificity - - - - - - - - - - - - - - - - - - TOOL True positive False positive False negative True negative Sensitivity Specificity	ADI-R (ASD) 68 19 27 70 68/95 72 (63, 81) 70/89 79 (80, 87) - - - - - - - - - - - - ADI-R (AUT) 37 50 11 86 37/48 77 (65, 89) 86/136 63 (55, 71)	ADOS-G (ASD) 83 47 12 42 83/95 87 (81, 94) 42/89 47 (37, 58) - - - - - - - - - - - - ADOS-G (AUT) 44 48 4 88 44/48 92 (84, 99) 88/136 65 57, 73)	Funding: Korczak Foundation and Netherlands Organization for HEALTH Research and Development Limitations: Serious – Information but not total scores from index tests included in diagnostic assessment Blinding: Yes Timing of tests: Index test carried out before

Study Details	Patients	Tools	Outcome	Results	Comments
MR Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Gender: 59.2% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Trained examiners Comparison/Diagnostic Criteria tool: DSM-IV-TR Threshold and Data set Adequately described? Operator no/experience Clinical psychiatrist / psychologist / resident			diagnostic assessment Verification (ref/index test x100) ADI-R: 100% ADOS-G: 100% Indirectness: Some – no patient relevant outcomes Test carried out on an appropriate Population: Yes Test carried out by an appropriate professional: Yes

Study Details	Patients	Tools	Outcome	Results		Comments
Author: Gray K Year: 2008 ID: [106] Country: Australia AIM: 'to evaluate the diagnostic validity of the ADI-R and the ADOS in a sample of children with and without autism' Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: March 2002 – November 2005 Evidence level: Very low	Patient groups: Children referred to an assessment clinic for children with developmental problems and/or suspected of having autism. Exclusion criteria: None reported Demographics: Number: 209 Age: Mean = 38.5 ± 7.2 months Range = 20 – 55 months Ethnicity: Not reported Subgroups: Language: Not reported Gender: 83% male Intellectual disability: 96% had delayed language (6 months below CA) 82% were developmentally delayed (6 months below CA)	Diagnostic tool under investigation:1 ADI-R Semi-structured interview suitable for parents of children with a mental age > 24 months 111 items over 3 domains, social, communication, stereotyped interests and behaviours Threshold & Data set No Adequately described? Yes Operator no/experience Not reported Diagnostic tool under investigation:2 ADOS Standardized, play-based observation schedule Diagnostic algorithm is based on 4 domains; socialization, communication, play, stereotyped interests and behaviours Social and	TOOL True positive False positive False negative True negative Sensitivity Specificity ---------- TOOL True positive False positive False negative True negative Sensitivity Specificity	ADI-R (ASD) 104 15 39 51 104/143 73 (65, 80) 51/66 77 (67, 87) ---------- ADI-R (AUT) 92 27 28 62 92/120 77 (69, 84) 62/89 70 (66, 79)	ADOS (ASD) 109 4 34 62 109/143 76 (69, 83) 62/66 94 (88, 100) ---------- ADOS (AUT) 102 10 18 79 102/120 85 (79, 91) 7/89 89 (82, 95)	Funding: National Health and Medical Research Council Limitations: Serious Blinding: Assessors were blind to ADI-R or ADOS scores Timing of tests: Clinicians were blind to total scores on ADI-R and ADOS when discussing final diagnosis but information obtained as part of ADI-R and ADOS was used. Verification (ref/index test x100) ADI-R: 100% ADOS: 100% Indirectness:

Study Details	Patients	Tools	Outcome	Results		Comments
	Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Early childhood agencies / Paediatricians	communication scores are used for ASD. Threshold & Data set Modules 1 and 2 used. Adequately described? Yes Operator no/experience Not reported <u>Comparison/Diagnostic Criteria tool:</u> Best estimate based on DSM-IV criteria and using information from all assessment excluding ADI-R and ADOS Threshold and Data set Not reported Adequately described? Not reported Operator no/experience Not reported				Some – no data on patient relevant outcomes <u>Test carried out on an appropriate Population</u>: Yes <u>Test carried out by an appropriate professional:</u> Yes
<u>Author:</u> Harris S <u>Year:</u> 2008	<u>Patient groups:</u> Participants with DNA-confirmed	<u>Diagnostic tool under investigation:1</u> ADI-R Semi-structured	<u>TOOL</u> <u>True positive</u>	ADI-R (ASD) 26	ADOS (ASD) 28	<u>Funding:</u> Not reported

Study Details	Patients	Tools	Outcome	Results		Comments
ID: [47] Country: USA AIM: Hypothesis is that ADI-R will overestimate autism, such that the ADOS and DSM-IV-TR will show a closer correlation with diagnostic classification than ADI-R' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	FMRI mutation Exclusion criteria: None reported Demographics: Number: 63 Age: Mean = 7.9 ± 4.3 years Range = 2.8 – 19.5 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 100% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	interview suitable for parents of children with a mental age > 24 months Threshold & Data set No Adequately described? No Operator no/experience Not reported Diagnostic tool under investigation:2 ADOS Standardized, play-based observation schedule Diagnostic algorithm is based on 4 domains; socialization, communication, play, stereotyped interests and behaviours Threshold & Data set: Not reported Adequately described? No Operator	False positive False negative True negative Sensitivity Specificity - TOOL True positive False positive False negative True negative Sensitivity Specificity	5 11 21 26/37 70 (56, 85) 21/26 81 (56, 96) - - - - - - - - - - - ADI-R (AUT) 19 7 3 34 19/22 86 (72, 101) 34/41 83 (71, 94)	3 9 23 28/37 76 (62, 90) 23/26 88 (76, 101) - - - - - - - - - - - ADOS (AUT) 17 2 5 39 17/22 77 (80, 95) 39/41 95 (89, 102)	Limitations: Serious Blinding: Not reported Timing of tests: Index test carried out before diagnostic conference Verification (ref/index test x100) ADI-R: 100% ADOS-G: 100% Indirectness: Some – no patient relevant outcomes Test carried out on an appropriate Population: Yes Test carried out by an appropriate professional: Yes

Study Details	Patients	Tools	Outcome	Results	Comments
		no/experience: Not reported <u>Comparison/Diagnostic Criteria tool:</u> DSM-IV-TR Comprises 3 domains, social function, communication and repetitive behaviours. Participant must show severe impairment in each domain for a diagnosis of autism. Severe impairment in social function and in either communication or repetitive behavior is a diagnosis for ASD Threshold and Data set Yes Adequately described? Yes Operator no/experience Not reported			
<u>Author:</u> Lord C <u>Year:</u> 1995	<u>Patient groups:</u> Children referred to a multidisciplinary Developmental	<u>Diagnostic tool under investigation:</u> ADI ADI was modified for 2	<u>TOOL</u> <u>True positive</u> <u>False positive</u>	ADI (AUT) at 2 8 7	<u>Funding:</u> Alberta Heritage Fund and PHS

Study Details	Patients	Tools	Outcome	Results	Comments
ID: [107] Country: USA AIM: Unclear Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported Evidence level: Very low	Disorders Clinic for possible autism Exclusion criteria: 4 with Rett syndrome or spastic diplegia with severe MR were excluded Demographics: Number: 30 Age: Mean = Not reported Range = 24 – 35 months Ethnicity: 80% Caucasian 7% Asian 7% West Indian 7% Native Canadian Subgroups: Language: Not reported Gender: 83% male Intellectual disability: Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported	year olds. Threshold & Data set Yes Adequately described? Yes Operator no/experience 2 examiners with high reliability Diagnostic tool under investigation: CARS Threshold & Data set No Adequately described? No Operator no/experience Not reported Comparison/Diagnostic Criteria tool: Clinical judgement of a predicted ICD-10 diagnosis at age 5 years based on observations loosely based on PL-	False negative True negative Sensitivity Specificity ---------- Differential diagnosis Rett syndrome Spastic dIplegia + severe MR ---------- Co-existing diagnosis Infantile spasms Absence spells Grand mal seizures Abnormal EEG Visual problems (requiring glasses) Hearing problems (requiring hearing aid) Cerebral palsy	8 7 8/16 50 (26, 75) 7/14 50 (24, 76) ---------- 3/34 (8.8%) 1/34 (2.9%) ---------- 1 1 1 1 1 2	Limitations: Serious – No blinding and the results of the index tests were know to the diagnostic assessor. Blinding: No Timing of tests: Index test carried out before diagnostic assessment Verification (ref/index test x100) ADI: 100% CARS: 100% Indirectness: Some – no patient relevant outcomes Test carried out on an appropriate Population:

Study Details	Patients	Tools	Outcome	Results		Comments
	Source of referral: Not reported	ADOS Threshold and Data set No Adequately described? No Operator no/experience Yes				Yes Test carried out by an appropriate professional: Yes
Author: Lord C Year: 2006 ID:[108] Country: USA Study design: Uncontrolled Observational Consecutive recruitment? Yes Study dates: Not reported Evidence level:	Patient groups: 192 children referred for evaluation of possible autism before 36 months of age (111 from North Carolina- regional state-funded autism centre, 81 from Chicago-private university hospital) A comparison group of 22 children with developmental delays recruited from sources of referral to North Carolina centre. Exclusion criteria: Moderate to severe sensory impairments. Cerebral palsy or	Diagnostic tool /method DSM-IV Threshold & Data set DSM-IV distinctions between autism and PDD-NOS made on intensity and no of symptoms. 2 psychologists considered the independent clinical diagnosis, the ADI-R and ADOS algorithms, and the cognitive, language and adaptive test scores. They read the ADI-R notes, watched the PL-ADOS/ ADOS videotape and discussed all the findings from that age until they reached a	TOOL True positive False positive False negative True negative Sensitivity Specificity True positive False positive False negative True negative Sensitivity Specificity	ADI-R (ASD) 119 20 11 22 119/130 92 (87, 96) 22/42 52 (37, 67) ADI-R (AUT) 67 27 17 61 67/84 80 (71, 88) 61/88 69 (60, 79)	ADOS (ASD) 126 16 4 26 126/130 97 (94, 100) 26/42 62 (47, 77) ADOS (AUT) 80 31 4 57 80/84 95 (91, 100) 57/88 65 (55, 75)	Funding: Grants from National Institute of Mental Health and National Institute of Child Health and human development Limitations: ADI/ADOS scores incorporated into best estimate diagnosis therefore reference standard not independent Blinding:

Study Details	Patients	Tools	Outcome	Results	Comments
Very low	poorly controlled seizures <u>Demographics:</u> Number: 172 Age at first assessment: NC group 29.2 (SD 4.6 months) Chicago gp 29.2 (5.4 months) Age at second assessment: 9 years Ethnicity: 99 Caucasian, 46 African American <u>Subgroups:</u> Intellectual Disability: Not reported Language: Not reported Gender: Male 138/172 (80.2%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	consensus At age 9 years parallel information used to generate a consensus best estimate diagnosis by an independent psychologist and child psychiatrist blind to earlier diagnoses <u>Adequately described?</u> yes <u>Operator no/experience</u> Not reported			For assessment age 9 years most cases seen by 2 examiners both unfamiliar with child, 1 for ADI-R+VABS and 1 for ADOS and psychometrics. Best estimate diagnosis age 9 were blind to diagnosis age 2 <u>Timing of tests:</u> T1 29.0 ± 5.1 months T2 9.4 ± 1.3 years <u>Verification (percentage undergoing assessment at both time points)</u> T2 155/192 =80.7% <u>Also reported:</u> Training and reliability on ADI and PL-

Study Details	Patients	Tools	Outcome	Results			Comments
							ADOS and ADOS until each pair of examiners reached >90% agreement (k>.70) Reliability for clinical diagnoses at age 2 years measured in 1 in 6 cases with 92% agreement. At age 9 years, reliability >90% for best estimate autism cases, and 83% for PDD-NOS and non-spectrum
Author: Mazefsky C Year: 2006 ID: [109] Country: USA AIM: To examine the discriminative	Patient groups: Children referred from community and advocacy organisations to a specialized clinic Exclusion criteria: Not reported Demographics: Number: 78	Diagnostic tool under investigation:1 ADI-R Semi-structured interview suitable for parents of children with a mental age > 24 months Covers 3 domains, social, communication, stereotyped interests and behaviours	TOOL True positive False positive False negative True negative Sensitivity Specificity - - - - - - - - - - - - - - - - - - TOOL	ADI-R (ASD) 49 3 7 16 49/56 88 (79, 96) 16/19 84 (68, 101) - - - - - - - - - - - ADI-R (AUT)	ADOS-G (ASD) 52 3 4 16 52/56 93 (86, 100) 16/19 84 (68, 101) - - - - - - - - - - - - - ADOS (AUT)	GARS (ASD) 22 No data 34 No data 22/56 39 (27, 52) No data - - - - - - - - - - - GARS (AUT)	Funding: Commonwealth Autism Service Missing data on three subjects Limitations: Some Blinding: Assessments

Study Details	Patients	Tools	Outcome	Results			Comments
diagnostic ability of the ADOS-G, ADI-R and GARS Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Age: Mean = 4 ± 1.5 years Range = 22 months – 8 years Ethnicity: White = 69% Black = 10% Other = 21% Subgroups: Language: Not reported Gender: 72% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Community / Advocacy organisations	Threshold & Data set Abridged form used Adequately described? Yes Operator no/experience Trained clinicians Diagnostic tool under investigation:2 ADOS-G Standardized, play-based observation schedule Diagnostic algorithm is based on 4 domains; socialization, communication, play, stereotyped interests and behaviours Threshold & Data set Three modules were used for this study Adequately described? Yes Operator no/experience Trained clinicians Diagnostic tool under investigation: 3 GARS	True positive False positive False negative True negative Sensitivity Specificity	24 12 8 31 24/32 75 (66, 90) 31/43 72 (59, 86)	31 10 1 33 31/32 97 (91, 103) 33/43 77 (64, 89)	No data available	carried out before full diagnostic assessment Timing of tests: Unclear if assessment were used in diagnostic process Verification (ref/index test x100) ADI-R: 100% ADOS-G: 100% Gars: 100% Indirectness: Some – no data on patient-relevant outcomes Test carried out on an appropriate Population: Yes Test carried out by an appropriate

Study Details	Patients	Tools	Outcome	Results	Comments
		A 42 item parent-report behaviour checklist Score are standardized into an Autism Quotient Threshold & Data set Scores >90 is taken as indicative of Autism Adequately described? Yes Operator no/experience Not reported <u>Comparison/Diagnostic Criteria tool:</u> Clinical judgement on multidisciplinary team assessment Team consisted of a clinical psychologist, psychiatrist, education specialist, speech and language pathologist and an occupational therapist. Assessments lasted 4 hours and included structured assessments, observations and team discussion			<u>professional:</u> Yes

Study Details	Patients	Tools	Outcome	Results		Comments
		Threshold and Data set Not reported Adequately described? Not reported Operator no/experience Not reported				
Author: Papanikolaou K Year: 2009 ID: [110] Country: Greece AIM: 'to investigate agreement between ADIR, ADOS'G and clinical diagnosis based on DSM-IV' Study design: Uncontrolled observational Consecutive recruitment? Not reported	Patient groups: Participants were referrals to an outpatient PDD clinic over a 2 year period Exclusion criteria: None reported Demographics: Number: 77 Age: Mean = 83 ± 44 months Range = 33 months to 22 years Ethnicity: Caucasian : 100% Subgroups: Language: Not reported Gender: 75.3% male Intellectual disability:	Diagnostic tool under investigation:1 ADI-R Semi-structured interview suitable for parents of children with a mental age > 24 months 111 questions (Toddler form has 123 questions) over 3 domains, social, communication, stereotyped interests and behaviours Threshold & Data set In this study if participants were given a PDD-NOS diagnosis if they exceeded the cut-off on 2 domains Adequately described? Yes Operator	TOOL True positive False positive False negative True negative Sensitivity Specificity ---------- TOOL True positive False positive False negative True negative Sensitivity Specificity	ADOS-G (ASD) 55 3 10 9 55/65 85 (76, 93) 9/12 75 (51, 100) ---------- ADOS-G (AUT) 38 8 4 27 38/42 90 (82, 99) 27/35 77 (63, 91)	ADI-R (ASD) Not reported ---------- ADI-R (AUT) 37 11 5 24 37/42 88 (78, 98) 24/35 69 (53, 84)	Funding: Not reported Limitations: None Blinding: Not reported. Index. Reference standard given independent of index tests whose algorithms were calculated afterwards. Timing of tests: Index test carried out before diagnostic conference Verification

Study Details	Patients	Tools	Outcome	Results	Comments
Study dates: Not reported Evidence level: Very low	Non-verbal IQ = 83 ± 23 (range = 40 – 146) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: School, primary care, parents and independent professionals	no/experience Trained psychiatrists Diagnostic tool under investigation:2 ADOS-G Standardized, play-based observation schedule Diagnostic algorithm is based on 4 domains; socialization, communication, play, stereotyped interests and behaviours Social and communication scores are used for ASD. Threshold & Data set Diagnosis is made on the basis of exceeding thresholds in each of two domains , social interaction and communication and exceeding a threshold for a combined social-communication score. Adequately described? Yes Operator no/experience Trained psychiatrists			(ref/index test x100) ADI-R : 100% ADOS-G: 100% Indirectness: Some – no patient relevant outcomes Test carried out on an appropriate Population: Yes Test carried out by an appropriate professional: Yes

Study Details	Patients	Tools	Outcome	Results	Comments
		Comparison/Diagnostic Criteria tool: Clinical judgement based on DSM-IV criteria for ASD and PDD-NOS Threshold and Data set Not reported Adequately described? Not reported Operator no/experience Not reported			
Author: Skuse D Year: 2004 ID: [113] Country: UK AIM: 'to evaluate reliability and validity' Study design: Uncontrolled observational Consecutive	Patient groups: Referrals to child psychiatry clinic, (45% of whom were referred with suspected PDD) Exclusion criteria: None reported Demographics: Number: 60 Age: Mean = 11.4 ± 2.5 years Range = 6.0 – 16.2 years Ethnicity: Not	Diagnostic tool under investigation: 3di Standardized interview with 183 items in demography, family background, development history and motor skills, 266 ASD relevant questions and 291 questions related to current mental states. Full interview lasts 90 minutes but abbreviated autism interview last 45 minutes.	TOOL True positive False positive False negative True negative Sensitivity Specificity Agreement (Kappa) 3di and DSM-IV - - - - - - - - - - - - - - - - Differential diagnosis - - - - - - - - - - - - - - - - Co-existing diagnosis	3di 27 2 0 31 27/27 100 (100, 100) 31/33 94 (86, 102) 0.93 (0.84 - 1.02) - - - - - - - - - - - - - - Unclear - - - - - - - - - - - - - - Unclear	Funding: City Hospital Sunderland Research Trust Limitations: Some – data thresholds for 3di not set Blinding: Raters blind to overall diagnosis Timing of tests: Index test carried out

Study Details	Patients	Tools	Outcome	Results		Comments
recruitment? Yes Study dates: Not reported Evidence level: Very low	reported Subgroups: Language: Not reported Gender: 78% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Threshold & Data set No Adequately described? Yes Operator no/experience Trained clinical psychologists and two senior psychiatrists Comparison/Diagnostic Criteria tool: Clinical judgement based on DSM-IV and ICD-10 criteria for ASD and PDD-NOS Threshold and Data set Not reported Adequately described? Not reported Operator no/experience Not reported				before Diagnostic conference Verification (ref/index test x100) 3di: 100% Indirectness: Some – no data on patient relevant outcomes Test carried out on an appropriate Population: Yes Test carried out by an appropriate professional: Yes
Author: Ventola P Year: 2006 ID: [111]	Patient groups: Children who tested positive on the M-CHAT Exclusion criteria: None reported	Diagnostic tool under investigation:1 ADI-R Semi-structured interview suitable for parents of children with a mental age > 24 months	TOOL True positive False positive False negative True negative Sensitivity	ADI-R (ASD) 19 3 17 6 19/36 53 (36, 69)	ADOS-G (ASD) 35 3 1 6 35/36 97 (92, 103)	Funding: University of Connecticut, National Alliance of Autism Research,

Study Details	Patients	Tools	Outcome	Results		Comments
Country: USA AIM: 'To examine the agreement between ….. and to calculate the sensitivity, specificity, and positive predictive value of each of the three instruments against DSM-IV based clinical judgement for diagnosing ASD in very young children' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Demographics: Number: 45 Age: Mean = 22 months Range = 16 – 30 months Ethnicity: White : 89% Latino: 9% Other: 2% Subgroups: Language: Not reported Gender: 82% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	111 questions (Toddler form has 123 questions) over 3 domains, social, communication, stereotyped interests and behaviours Threshold & Data set No Adequately described? Yes Operator no/experience Trained clinicians Diagnostic tool under investigation:2 ADOS-G Standardized, play-based observation schedule Diagnostic algorithm is based on 4 domains; socialization, communication, play, stereotyped interests and behaviours Social and communication scores are used for ASD. Threshold & Data set Diagnosis made by	Specificity Agreement (Kappa) ADI-R and DSM-IV ADOS and DSM-IV CARS and DSM-IV ADI-R and ADOS-G ADI-R and CARS ADOS-G and CARS - - - - - - - - - - - - - - - - - - TOOL True positive False positive False negative True negative Sensitivity Specificity Agreement (Kappa) ADI-R and DSM-IV ADOS and DSM-IV CARS and DSM-IV ADI-R and ADOS-G ADI-R and CARS ADOS-G and CARS - - - - - - - - - - - - - - - - - - Differential diagnosis - - - - - - - - - - - - - - - - - - Co-existing diagnosis	6/9 67 (36, 97) 0.12 (-0.16 – 0.41) 0.70 (0.41 – 0.98) 0.76 (0.54 – 0.99) -0.07 0.10 0.62 - - - - - - - - - - - - - - ADI-R (AUT) 15 7 12 11 15/27 56 (37, 74) 11/18 61 (39, 84) 0.16 (-0.13 – .45) 0.57 (0.32 – 0.82) 0.66 (0.43 – 0.89) 0.09 0.10 0.58 - - - - - - - - - - - - - - Not reported - - - - - - - - - - - - - - Not reported	6/9 67 (36, 97) - - - - - - - - - - - - - - ADOS (AUT) 24 6 3 12 24/27 89 (77, 101) 12/18 67 (48, 88)	National Institute of Child Health and Human Development Limitations: Some Blinding: Not reported Timing of tests: Not reported Verification (ref/index test x100) ADI-R: 100% ADOS-G: 100% CARS: 100% Indirectness: Some – no data on patient relevant outcomes Test carried out on an appropriate Population: Yes Test carried out

Study Details	Patients	Tools	Outcome	Results	Comments
		exceeding cut-offs in three domains (social, communication and combined) Adequately described? Yes Operator no/experience Trained clinicians <u>Diagnostic tool under investigation: 3</u> CARS Standardized observation instrument which can incorporate parent report. 15 items in 4 domains, socialization, communication, emotional response, sensory sensitivities. Threshold & Data set No Adequately described? Yes Operator no/experience Not reported <u>Comparison/Diagnostic</u>			<u>by an appropriate professional:</u> Yes

Study Details	Patients	Tools	Outcome	Results		Comments
		Criteria tool: Clinical judgement based on DSM-IV criteria for ASD and PDD-NOS Threshold and Data set Not reported Adequately described? Not reported Operator no/experience Not reported				
Author: Wiggins L Year: 2008 ID: [112] Country: USA AIM: 'To examine the relevance of the ADI-R behavioural domain when evaluating toddlers at risk for ASD' Study design:	Patient groups: Toddlers who tested positive for ASD on the M-CHAT Exclusion criteria: None reported Demographics: Number: 142 Age: Mean = 26 months Range = 16 – 37 months Ethnicity: Not reported Subgroups: Language: Not reported	Diagnostic tool under investigation:1 ADI-R Semi-structured interview suitable for parents of children with a mental age > 24 months Covers 3 domains, social, communication, stereotyped interests and behaviours Threshold & Data set No Adequately described? Yes Operator no/experience	TOOL True positive False positive False negative True negative Sensitivity Specificity Agreement (Kappa) ADI-R and DSM-IV ADI-R and ADOS ADI-R and CARS ADOS and DSM-IV ADOS and CARS CARS and DSM-IV ---------- TOOL	ADI-R (ASD) 24 4 49 65 24/73 33 (22, 44) 65/69 94 (89, 100) 0.27 (0.11 - 0.42) 0.20 0.34 0.67 (0.55 - 0.80) 0.46 0.64 (0.51 - 0.76) ---------- ADI-R (AUT)	ADOS (ASD) 70 20 3 49 70/73 96 (91, 100) 49/69 71 (60, 82) ---------- ADOS (AUT)	Funding: University of Connecticut, National Alliance on Autism Research, National Institute of Child Health and Human Development Limitations: Some Unclear if index tests and reference test were blind

Study Details	Patients	Tools	Outcome	Results	Comments
Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Gender: 79% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Trained clinicians Diagnostic tool under investigation:2 ADOS Standardized, play-based observation schedule Diagnostic algorithm is based on 4 domains; socialization, communication, play, stereotyped interests and behaviours Social and communication scores are used for ASD. Threshold & Data set No Adequately described? Yes Operator no/experience Trained clinicians Diagnostic tool under investigation: 3 CARS Standardized observation instrument which can incorporate parent report. 15 items in 4 domains, socialization,	True positive False positive False negative True negative Sensitivity Specificity Agreement (Kappa) ADI-R and DSM-IV - - - - - - - - - - - - - - - - - - Differential diagnosis - - - - - - - - - - - - - - - - - - Co-existing diagnosis	19 9 24 90 19/43 44 (29, 59) 90/99 91 (85, 97) 0.39 (0.21 - 0.57) - - - - - - - - - - - - - - - Not reported - - - - - - - - - - - - - - - Not reported	Data Not reported	Blinding: Not reported Timing of tests: Not reported Verification (ref/index test x100) ADI-R: 100% ADOS: 100% CARS: 100% Indirectness: Some – no data on patient-relevant outcomes Test carried out on an appropriate Population: Yes Test carried out by an appropriate professional: Yes

Study Details	Patients	Tools	Outcome	Results	Comments
		communication, emotional response, sensory sensitivities. Threshold & Data set Scores >30 is taken as indicative of Autism Adequately described? Yes Operator no/experience Not reported <u>Comparison/Diagnostic Criteria tool:</u> Clinical judgement based on DSM-IV criteria for ASD and PDD-NOS Threshold and Data set Not reported Adequately described? Not reported Operator no/experience Not reported			

Question 3(b) – no evidence reviewed

Question 3(c)

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Author: Baird G Year: 2006 ID: [199] Country: UK AIM: Not reported Study design: Uncontrolled observational Consecutive recruitment? No Study dates: Not given Evidence level: Very low	Patient groups: Children (< 4 years) with ICD-10 Autism and with a sleep EEG Exclusion criteria: Seizures Medication use Demographics: Number: 64 Age: Not reported Ethnicity: Not reported Subgroups: Language: Not reported Gender: 87.5% male Intellectual Disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Laboratory Chromosomes Scans: EEG MRI	Laboratory Chromosomes Scans EEG MRI ---------- Co-existing diseases Chromosome 7,46,XYinv[7]	Abnormality 1/64 (1.6%) Abnormality 20/64 (31.3%) 0/8 -------- Not reported 1/64 (1.6%)	Funding: Not reported Limitations: Some –population was selected on basis of having a sleep EEG Other info Regression had no impact on EEG abnormalities
Author: Battaglia A Year: 2006 ID: [188] Country: Italy	Patient groups: Patients with DSM-IV PDD and first degree relatives Exclusion criteria: Rett Syndrome Demographics: Number: 85	History: pregnancy, medical, developmental Examinations: physical	**Abnormal results/clinical suspicions** History: Medical Examinations: Physical*	 1 (1.2%) 8 (9.4%)	Funding: Italian Ministry of Health Limitations: None

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
AIM: 'to present the results of extensive medical investigations of 85 patient with PDD' Study design: Uncontrolled observational Consecutive recruitment? No Study dates: March 2002 - 2005 Evidence level: Very low	Age: Mean = 7.6 years Range = 4.2 – 12.5 years Ethnicity: Subgroups: Language: Not reported Gender: Not reported Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Child psychiatrist Family paediatrician	neurological. audiological Particular attention paid to growth parameters, dysmorphic traits, minor anomalies especially involving face, limbs and skin, abnormal muscle tone or reflexes, involuntary movements, or coordination abnormalities. Laboratory Blood High resolution banding Fragile X, FISH analysis Metabolic Scans MRI EEG	Examinations-Audiological Laboratory: Genetic Scans: MRI Abnormal brain MRI Scans: EEG --------- Co-existing diseases Encephalitis Sotos Syndrome Angelman Syndrome Idic (15) Provisionally unique syndrome Deafness Trisomy 8 mos Fragile X Landau-Kleffner syndrome	Not reported 8/85 (9.4%) 2/85 (2.4%) 1 (1.2%) --------- 1/85 (1.2%) 1/85 (1.2%) 1/85 (1.2%) 1/85 (1.2%) 4/85 (4.7%) 1/85 (1.2%) 1/85 (1.2%) 1/85 (1.2%) 1/85 (1.2%)	*Results of physical examinations confirmed by genetic tests
Author: Boddaert N Year: 2009 ID: [211]	Patient groups: Children / adolescents and DSM-IV diagnosis of autism. Exclusion criteria: IQ < 40 Known infectious, metabolic or genetic	Scans: MRI	Scans MRI --------- Co-existing diseases	Abnormality 33/77 (42.8%) --------- Not reported	Funding: CNP, CAPES, FUNDUNESP Limitations: Some - unclear study recruitment

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Country: France AIM: 'to evaluate the prevalence of brain abnormalities in a large group of children with non-syndromic autistic disorder' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	diseases Chromosomal abnormalities Seizures, Identifiable neurological syndrome or focal neurological signs Significant sensory impairment Major physical abnormalities Demographics: Number: 77 Age: Mean = 7.4 ± 3.6 years Range = 2.3 – 16.6 years Ethnicity: Not reported Subgroups: Language: Not reported Gender:83.1% male Intellectual Disability: 70% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				Other info ID reported as below normal IQ OR DQ using WISC-III or WPPSI-III
Author: Bradley Schaefer G Year 2006 ID: [203] Country: USA AIM: to evaluate the	Patient groups: 'Children diagnosed with an Axis 1 ASD referred for a genetic evaluation Exclusion criteria: Not reported Demographics: Number: 32 Age: Not reported	Tier 1 Dysmorphology Audiogram (sensory screen) Metabolic Rubella titers Tier 2 Karyotype Fragile X	Tier 1 Dysmorphology Audiogram (sensory screen) Metabolic Rubella titers Tier 2 Karyotype Fragile X MRI	Abnormality 2 (6.3%) 1 (3.1%) 0 0 2 (6.3%) 2 (6.3%) 1 (3.1%)	Funding: Not reported Limitations: None Other info None

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
'effectiveness of our diagnostic strategy in patients with ASD and estimated its diagnostic yield' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Ethnicity: Not reported Subgroups: Language: Not reported Gender: Not reported Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	MRI EEG Tier 3 MECP-2 gene testing 22q11 FISH 15 interfase FISH 15 methylation/15q11-13 FISH (Prader-Willi/Angelman) 17p11 FISH (Smith-Magenis) Serum/urine uric acid Subtelomeric FISH panel (if IQ < 50)	EEG Tier 3 MECP-2 gene testing 22q11 FISH 15 interfase FISH 15 methylation/15q11-13 FISH (Prader-Willi/Angelman) 17p11 FISH (Smith-Magenis) Serum/urine uric acid Subtelomeric FISH panel (if IQ < 50) ---------- Co-existing diseases Neurofibromatosis Sotos syndrome Fragile X Tuberous sclerosis Smith-Magenis	0 2 (6.3%) 0 1 (3.1%) 0 1 (3.1%) 1 (3.1%) 0 --------- 1 (3.1%) 1 (3.1%) 2 (6.3%) 1 (3.1%) 1 (3.1%)	
Author: Canitano R Year: 2005 ID: [157] Country: Italy AIM: 'to determine the prevalence of epilepsy and EEG paroxysmal abnormalities in a group of children with epilepsy"	Patient groups: Children with DSM-IV autistic disorders who were referred for assessment, diagnostic workup and interventions Exclusion criteria: None Demographics: Number: 46 Age: Mean = 7.8 ± 2.7 years Ethnicity: Not reported	Examinations Audiometry Laboratory Genetics Chromosomes Blood Urine metabolic Scans: EEG MRI	Laboratory Genetic Chromosomes Metabolic Blood Urine Scans EEG -------- - Co-existing diseases Epilepsy	Abnormality 0/46 0/46 0/46 0/46 0/46 Abnormality 16/46 (34.8%) --------- 6/46 (13.0%)	Funding: Not reported Limitations: No Other info Regression had no impact on EEG abnormalities

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported Evidence level: Very low	Subgroups: Language: Not reported Gender: 73.9% male Intellectual Disability: 100% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Challman T Year: 2003 ID: [204] Country: USA AIM: 'to investigate the results of the medical assessment of a group of patients diagnosed with PDD-NOS as defined by DSM-IV to determine the frequency of identifiable, etiologically relevant disorders, compared to	Patient groups: Children between 0-18 years evaluated at the Mayo Clinic for autism spectrum disorders Exclusion criteria: if patient was evaluated for an unrelated condition, if evaluation was prior to 1994, if patient was mis-diagnosed, and cases of Rett's syndrome Demographics: Number: 182 Age: Mean = Not reported Range = 1.5 – 18.4 Ethnicity: Not reported Subgroups: Language: Not reported	History: pregnancy, Medical, Examinations:* Psychometric Laboratory * Fragile X, chromosomal analysis Metabolic Lead level Thyroid function Genetic Scans:* MRI EEG	History: Medical seizures Laboratory Chromosomal Genetic Scans EEG MRI ---------- Co-existing diseases Tuberous sclerosis Fragile X X-linked MR Congenital cytomegalovirus infection Williams' syndrome	 18 (9.9%) Abnormality 0/28 6/103 (5.8%) 18/77 (23.4%) 17/70 (24.3%) --------- 1 (0.5%) 1 (0.5%) 1 (0.5%) 1 (0.5%) 1 (0.5%)	Funding: Not reported Limitations: None *Tests ordered on clinical suspicion

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
a group of children diagnosed with autism' Study design: Uncontrolled observational Consecutive recruitment? No Study dates: Not reported Evidence level: Very low	Gender: 80% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported		XYY syndrome	1 (0.5%)	
Author: Depienne C Year: 2009 ID: [187] Country: Europe and the U.S.A AIM: 'To assess the frequency of 15q11-q13 rearrangements in a large sample of patients ascertained for ASD.' Study design: Uncontrolled	Patient groups: 522 patients with ASD belonging to 430 families recruited at specialized clinical centres in Europe and the U.S. Exclusion criteria: Not reported. Demographics: Number: 22 Age: Range = 2.5 – 43 y Mean = 11 y SD = 7.5 y Ethnicity: Caucasian (89%)	Genetic tests MLPA (multiplex ligation-dependent probe amplification)	Genetic tests MLPA	Abnormality 4/522 (0.8%)	Funding: Foundation de France, INSERM, Foundation pour la Recherché Medicale, foundation France Telecom, Cure autism now, assistance publicque-hopitaux de Paris, and the Swedish science Council. Limitations: None.

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
observational Consecutive recruitment? Not reported Study dates: Not reported. Evidence level: Very low	Subgroups: Language: Not reported Gender: male 393/522 (75.3%) Intellectual disability: 356/522 (68%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Estecio M Year: 2002 ID: [216] Country: Brazil AIM: 'to identify genetic problems involved in etiology' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported	Patient groups: Children / adolescents and DSM-IV diagnosis of autism. Exclusion criteria: None reported Demographics: Number: 30 Age: Range = 5 – 30 years Ethnicity: Not reported Subgroups: Language: Not reported Gender:60.0% male Intellectual Disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Examinations: Chromosomes	Laboratory Genetic -- -------- Co-existing diseases Fragile X Rett syndrome	Abnormality 3/30 (10%) --------- 2/30 (6.7%) 1/30 (3.3%)	Funding: CNP, CAPES, FUNDUNESP Limitations: Some – Unclear how sample was collected

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Evidence level: Very low					
Author: Ekinci O Year: 2010 ID: [202] Country: Turkey AIM: 'To examine the characteristics of EEG findings and epilepsy in autistic spectrum disorders (ASD) and the associated clinical and familiar risk factors.' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: June, 2007 - April 2008 Evidence level: Very low	Patient groups: Patients between the age of 2 and 18 years who were diagnosed with ASD (DSM-IV). Exclusion criteria: Patients with a diagnosis of schizophrenia, schizophrenic disorder or any other psychotic disorder, Rett syndrome, childhood disintegrative disorder, and severe mental retardation (total IQ<25) were excluded from the study. Demographics: Number: 57 Age: Range = 2 – 18 years Mean = 82±36.2 m Ethnicity: Not reported Subgroups: Language: Not reported Gender: 86% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Scans:* EEG	Scans EEG Psychiatric problem of mother in pregnancy Medical problem of mother in pregnancy History of any systemic disease History of asthma/allergy Family history of psychiatric disorder History of psychotropic drug use during evaluation History of febrile seizure Family history of epilepsy Presence of verbal communication ---------- Co-existing diseases Epilepsy	Abnormality 14/57 (24.6%) 21/57 (36.8%) 20/57 (35.1%) 36/57 (63.2%) 12/57 (21.1%) 36/57 (63.2%) 38/57 (66.7%) 11/57 (19.3%) 12/57 (21.1%) 35/57 (61.4%) -------- 8/57 (14.2%)	Funding: Not reported Limitations: None 1. This study use 1-hour EEG instead of a 24-hour EEG recording in determining epileptiform activity at three different medical sites. 2. Only sleep studies were performed in most patients. 3. High frequency of psychotropic medication use in the study group. Psychotropic medications could be considered to affect EEG findings. 44 children were referred for routine screening, 6 were referred for suspicion of epilepsy and 6 for epilepsy follow-up.

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Author: Gabis L Year: 2005 ID: [197] Country: USA AIM: 'to address 'the utility of routine EEG in the evaluation of children with PDD's' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: 1999 - 2000 Evidence level: Very low	Patient groups: Children with a DSM-IV-TR diagnosis of ASD referred for an EEG Exclusion criteria: None reported Demographics: Number: 56 Age: Range = 1 – 14 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 77% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Scans:* EEG	Scans EEG -------- - Co-existing diseases Epilepsy	Abnormality 17/56 (30.4%) --------- 16/56 (28.6%)	Funding: Not reported Limitations: None 8 children were referred because of autistic regression and 5 (62.5%) had epilepsy whereas 11/48 (22.9%) not referred for autistic regression had epilepsy.
Author: Herman G Year: 2007 ID: [205] Country: USA	Patient groups: All child with DSM-IV ASD referred to a genetics clinic Exclusion criteria: Lack of evidence to support ASD diagnosis Demographics:	History: family pregnancy, Medical, Developmental Examinations:	Total Yield History family Examinations: Physical Macrocephaly	8/71 (11.3%) 19/71 (26.8%)	Funding: Limitations: Serious - tests done on clinical need basis Incomplete follow-up /

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
AIM: Not specified Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Jan 1, 2005 – Mar 7, 2006 Evidence level: Very low	Number: 71 Age: Mean = Not reported Range = 19 months – 15 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 80% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Developmental paediatrician = 49, Child psychiatrist/psychologist = 8 Neurologist = 4 School = 1 Not recorded = 9	physical Testing: Psychological (30 cases) Laboratory Blood High resolution banding Fragile X, FISH analysis Metabolic Scans MRI CT EEG	Testing: Psychological MR (IQ<70) Laboratory abnormalities* Chromosomes Fragile X aCGH subtelomere FISH *PTEN* DNA sequencing Rett gene sequencing Plasma amino acids Urine organic acids Plasma homocysteine, total Lead level Uric acid, urine purines, pyrimidines GAA, plasma, and urine Sterol profile DNA methylation for Angelman syndrome Scans:* MRI CT EEG --- Co-existing diseases ADHD seizures	 12/30 (40.0%) 2/64 (3.1%) 0/64 1/38 (2.6%) 0/4 1/16 (6.3%) 3/6 (50.0%) 0/57 0/50 0/40 0/35 0/34 0/27 0/19 0/11 0/12 0//4 1/9 (11.1%) --- 1/71 (1.4%) 1/71 (1.4%)	reporting of test results *number of participants tested/scanned on clinical suspicion
Author: Hrdlicka M Year: 2004	Patient groups: Children with and ICD-10 diagnosis of PDD confirmed by psychometric testing for autism.	History Developmental Laboratory *	History: Developmental Regression Abnormal development in 1st year	 16/62 (25.8%) 34/62 (54.8%)	Funding: IGA / MSMT Limitations:

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
ID: [196] Country: Czech republic AIM: 'to investigate the potential association of epilepsy and EEG abnormalities with autistic regression and mental retardation' Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: 1998 - 2002 Evidence level: Very low	Exclusion criteria: Children with Rett Syndrome, children with other diagnosable causes of autism, with structural brain lesions, or with severe sensorimotor abnormalities. Demographics: Number: 77 Age: Mean = 9.1 ± 5.3 years Range = 2 – 26 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 79.2 % male Intellectual disability: 79.7% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Advertisements	Stated were carried out but no specifics Scans:* MRI EEG	Laboratory Chromosomal Genetic Scans EEG MRI ---------- Co-existing diseases Epilepsy	 Not reported Not reported Abnormality 35/64 (54.7%) Not reported --------- 17/77 (22.1%)	Epilepsy was **more** common in subject s with regression 9/16 (56%) compared to no regression 8/46 (17%)
Author: Kawasaki Y Year: 2010 ID: [200] Country: Japan	Patient groups: 1624 PDD cases whose diagnoses were determined according to ICD-10. Exclusion criteria: Patients with Rett disorder. Demographics:	Scans: EEG	Scans: EEG	Abnormality 619/1624 (38.1%)	Funding: Not reported. Limitations: None

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
AIM: To examine paroxysmal abnormalities and epilepsy in EEG for individuals with PDD. Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Number: 1624 Age: Mean = 12.2 y Range = 3 – 41 y Ethnicity: Not reported Subgroups: Language: Not reported Gender: Male:1319/1624 (81.2%) Intellectual disability: 884/1624 (54.4) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Kielinen M Year: 2004 ID: [152] Country: Finland AIM: 'to assess the association of autistic disorder with identified medical conditions'	Patient groups: Children with DSM-IV autistic disorder Exclusion criteria: Not reported Demographics: Number: 187 Age: Not reported Ethnicity: Not reported Subgroups: Language: Not reported	Laboratory: Genetic Chromosomal Metabolic Endocrine Blood Scans: MRI CT EEG Examinations	Laboratory: Genetic Chromosomal Metabolic Endocrine Blood Scans: MRI CT EEG Examinations	Abnormality 12/187 (6.4%) 11/187 (5.9%) Not reported Not reported Not reported Abnormality Not reported Not reported Not reported Abnormality	Funding: Finnish Cultural Foundation, The Northern Ostrobothnia Cultural; Foundation, The Alma and KA Snellman Foundation Limitations: Other info

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported Evidence level: Very low	Gender: Not reported Intellectual Disability: 51.3% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Physical Neuropaediatric	Physical Neuropediatric ---------- Co-existing diseases Fragile X XYY syndrome Klinefelter syndrome Down syndrome Chromosome 46, XX dup(8)(p) Chromosome 17 deletion Tuberous sclerosis mitochondriopathia Suspected genetic abnormality NUD Cerebral palsy Epilepsy Hydrocephalus Foetal alcohol syndrome Soto syndrome Neonatal meningitis/encephalitis Blindness Vision impairment Hearing impairment	Not reported Not reported --------- 4/187 (2.1%) 1/187 (0.5%) 1/187 (0.5%) 7/187 (3.7%) 1/187 (0.5%) 1/187 (0.5%) 1/187 (0.5%) 1/187 (0.5%) 6/187 (3.2%) 8/187 (4.3%) 8/187 (4.3%) 34/187 (18.2%) 6/187 (3.2%) 2/187 (1.1%) 1/187 (0.5%) 5/187 (2.7%) 7/187 (3.7%) 43/187 (23.0%) 16/187 (8.6%)	Intellectual disability = IQ < 70
Author: Kim H Year: 2006 ID: [206] Country: USA AIM: 'to identify any	Patient groups: Children > 2 years of age with a DSM-IV diagnosis of autism and complete of ≥ 23 hours of technically adequate, continuous video-EEG monitoring Exclusion criteria: Not reported	Scans:* EEG	Scans EEG ---------- Co-existing diseases Epilepsy	Abnormality 24/32 (75%) --------- 8/32 (25%)	Funding: Not reported Limitations: Serious - selected population 2 subjects were excluded

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
distinctive features of their clinical seizures or EEGs or both' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Demographics: Number: 32 Age: Median = 5 years Range = 2 – 13 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 84% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				because they could not tolerate continuous EEG recording 22 subjects had a history of seizures 10 subjects had a history of regression
Author: Konstantareas M Year: 1999 ID: [217] Country: Canada AIM: 'to examine the records of a carefully and uniformly assessed series of children diagnosed ad' Study design:	Patient groups: Children with a DSM-III/DSM-III-R diagnosis of autism or PDD-NOS Exclusion criteria: Not reported Demographics: Number: 127 Age: Not reported Ethnicity: Not reported Subgroups: Language: Not reported Gender: Not reported	Examinations:* Physical examination Psychometric tests Laboratory * Karotype	Examinations:* Physical examination Psychometric tests Laboratory Karotype --- Co-existing diseases Seizure disorder	Not reported Not reported Abnormality 8/127 (6.3%) --- Unclear	Funding: Ontario Mental Health foundation Limitations: Some – Incomplete follow-up / reporting of test results

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Uncontrolled observational Consecutive recruitment? Yes Study dates: 1983 - 1989 Evidence level: Very low	Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Kosinovsky B Year: 2005 ID: [198] Country: Israel AIM: 'to evaluate the specific yield of the different investigative procedures in infantile autism' Study design: Uncontrolled observational Consecutive recruitment?	Patient groups: Cases whose neurology, psychiatry, psychology, occupational therapy, social worker and speech pathology notes matched DSM-IV infantile autism Exclusion criteria: Not reported Demographics: Number: 132 Age: Mean = 10.4 ± 4.8 years Range = 2 – 20 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 80% male	History: pregnancy, Medical, Developmental Examinations: physical neurological audiological. Laboratory Fragile X Metabolic Scans EEG MRI CT	History: Pregnancy Perinatal pathology Family history autism language delay MR Psychiatric disorder Laboratory Metabolic Genetic Scans EEG MRI CT ---------- Co-existing diseases	 10/132 (7.6%) 8/132 (6.1%) 16/132 (12.2%) 4/132 (3.0%) 3/132 (2.3%) Abnormality 0/53 2/59 (3.4%) Abnormality 0/132 0/34 0/36 ---------	Funding: Not reported Limitations: Some - Incomplete follow-up / reporting of test results 7 children were excluded after physical examination identified Rett syndrome (4), Tuberous sclerosis (1), Down syndrome (1) and Goltz syndrome (1)

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
No Study dates: Not reported Evidence level: Very low	 Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported		Epilepsy Febrile convulsions Fragile X	1/132 (0.7%) 2/132 (1.5%) 2/132 (1.5%)	
Author: Kumar R Year: 2008 ID: [220] Country: USA AIM: Not reported Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Patient groups: Autism Exclusion criteria: Not reported Demographics: Number: Group 1: 180 cases + 372 controls Group 2: 532 cases and 465 controls Age: Not reported Ethnicity: Not reported Subgroups: Language: Not reported Gender: Not reported Intellectual Disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Laboratory Genetic for 16p11.2	Laboratory 16p11.2 Group 1 Group 2 ---------- Co-existing diseases	 Deletion 2/180 (1.1%) 2/532 (0.4%) --------- Not reported	Funding: Not reported Limitations: Some - unclear study recruitment Other info None

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Author: Li S Year: 1993 ID: [218] Country: Taiwan, Republic of China AIM: to assess 'the contribution of chromosomal abnormalities or variants on the pathogenesis of infantile autism' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Patient groups: Children/adolescents with a diagnosis of DSM-III / DSM-III-R autism Exclusion criteria: Not reported Demographics: Number: 104 Age: Range = 6 – 18 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 80.8% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Laboratory * Fragile X, chromosomal analysis	Laboratory Genetic ---------- Co-existing diseases Fragile X Trisomy 21 Y inversion	Abnormality 12/104 (11.5%) --------- 8/104 (7.7%) 2/104 (1.9%) 2/104 (1.9%)	Funding: National Science Council / Department of Health Limitations: Some – Unclear of how subjects were selected
Author: McVicar K	Patient groups: Children with reported language regression	Scans:* EEG	Scans EEG	Abnormality 45/103 (43.7%)	Funding: NIH NINDS,

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Year 2005 ID: [207] Country: USA AIM: Not reported Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: March 1992 – February 2004 Evidence level: Very low	 Exclusion criteria: Rett syndrome, Childhood disintegrative disorder, A know neurodegenerative disorder, Non-static or acquired brain lesions, Acute or chronic encephalitis, Catastrophic epileptic encephalopathies Demographics: Autistic regression only Number: 103 Age: Not reported Ethnicity: Not reported Subgroups: Language: Not reported Gender: 79.6% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported		---------- Co-existing diseases Seizures	--------- 8/103 (7.8%)	Epilepsy Foundation, Cure Autism Now (CAN) Foundation Limitations: Other info Ongoing study
Author: Nicolson G Year: 2007 ID: [214] Country: USA AIM: 'to see if they had evidence of coinfections	Patient groups: Children / adolescents and ICD-10 and DSM-IV diagnosis of autistic disorder. Exclusion criteria: None reported Demographics: Number: 48 Age:	Examinations: Blood tests	Examinations: HHV-6 C. pneumniae Mycoplasma spp Single mycoplasmal infection Multiple mycoplasmal nfection ---------- Co-existing diseases	Abnormality 14/48 (29.2%) 4/48 (8.3%) 28/48 (58.3%) 16/38 (44.3%) 12/48 (25.0%) ---------	Funding: Not reported Limitations: None Other info: There was higher incidence of infections in ASD group than control

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
of Mycoplasma spp., C. pneumonia, and HHV-6 Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Mean = 8.4 ± 2.8 years Range = 3 – 14 years Ethnicity: Not reported Subgroups: Language: Not reported Gender:75.0% male Intellectual Disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported		Attention Deficit Disorder	6/48 (12.5%)	group. The OR ranged from 4.5 to 14.8 and all were significant p < 0.01
Author: Oliveira G Year: 2005 ID: [164] Country: Portugal AIM: Not reported Study design: Uncontrolled observational Consecutive recruitment? No – random selection	Patient groups: Children with DSM-IV autism spectrum disorder Exclusion criteria: Not reported Demographics: Number: 120 Age: Mean = 12 years ± 9.6 months Range = 10.5 years – 13.5 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 74.2% male Intellectual Disability: 83% Visual impairment: Not reported	Laboratory: Genetic Chromosomal Metabolic Endocrine Blood Scans CAT MRI	Laboratory: Genetic Chromosomal Metabolic Endocrine Brain infections Scans CAT MRI --- Co-existing diseases Hyperlactacidemia > 2.5mmol/L Mitochondrial respiratory chain disorder Epilepsy	Abnormality 0/56 8/74 (10.8%) 0/56 0/56 4/74 (5.4%) Not reported Not reported --- 14/69 (20.3%) 1/102 (0.9%) 19/120 (15.8%)	Funding: Fundacao Calouste Gulbenkian / MInisterio de Saude de Portugal Limitations: Some – not all children were tested Other info 4 cases (3.9%) had possible MRC disorder

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
of 20% Study dates: 1990 - 1992 Evidence level: Very low	Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported		Malformation syndrome Septo-optic dysplasia Hypoxic-ischaemic encephalopathy	4/74 (5.4%) 1/120 (0.8%) 1/120 ((0.8%)	
Author: Oslejskova H Year: 2008 ID: [151] Country: Czech Republic AIM: 'to investigate relationship between the studied clinical and diagnostic markers, and their risk in a sub-set of autistic children with a history of regression" Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported	Patient groups: Children with an ICD-10 diagnosis of an autism spectrum disorder Exclusion criteria: None reported Demographics: Number: 205 Age: Range = 5 – 15 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 70.7% male Intellectual Disability: 71.7% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	History: family Examination Audiological Vision Laboratory Genetic Metabolic Scans MRI EEG CT	Family history psychiatric disorder epilepsy genetic abnormality autism Examination Audiological Vision Laboratory Genetic Metabolic Scans MRI EEG CT --- Co-existing diseases Epilepsy Cerebral palsy	Abnormality 47/205 (22.9%) 19/205 (9.3%) 12/205 (5.9%) 4/205 (1.9%) Abnormality 12/205 (5.9%) 54/205 (26.4%) Abnormality 24/205 (11.7%) 5/205 (2.4% Abnormality 74/205 (36.1%) 115/205 (56.1%) 48/205 (23.4%) --- Not reported 46/205 (22.4%) 45/205 (21.9%)	Funding: Not reported Limitations: Some - unclear study recruitment Other info None

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Evidence level: Very low					
Author: Parmeggiani A Year: 2007 ID: [189] Country: Italy AIM: 'to evaluate the occurrence, features and causes of epilepsy in pervasive developmental disorder not otherwise specified in comparison with autistic disorder' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Patient groups: Children with a DSM-IV diagnosis of PDD-NOS or autism Exclusion criteria: None reported Demographics: Number: 154 Age: Mean = 10 years 1 month Range = 3 years – 29 years 2 months Ethnicity: Not reported Subgroups: Language: Not reported Gender:62.3 % male Intellectual Disability: 95.5% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	History: family Examination Neurological Laboratory Genetic Scans MRI/CT EEG	History: family Laboratory Genetic Scans Neurological (MRI/CT) EEG ---------- Co-existing diseases Epilepsy/seizures Cohen syndrome Ito hypomelanosis Tuberous sclerosis Fragile X Brachmann-De-Lange syndrome Rubinstein-Taybi syndrome Usher syndrome Wilson Turner syndrome Alexander disease Asrskog syndrome Cardiofacial syndrome CDI-I syndrome 22-ring chromosomal syndrome Mosiac ch abnormality (46XY, 47XYY) Interstital ch deletion (2q23.3-2q24.2)	Abnormality 108/154 70.1(%) Abnormality 18/154 (11.7%) Abnormality 131/154 (85.1%) 83/154 (53.9%) --------- Not reported 43/154 (27.9%) 1/154 (0.65%) 2/154 (1.3%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%) 1/154 (0.65%)	Funding: Not reported Limitations: Some - unclear study recruitment Other info None

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
			Down syndrome Partial deletion chromosome	1/154 (0.65%) 1/154 (0.65%)	
Author: Parmeggiani A Year: 2010 ID: [191] Country: Italy AIM: To explore the relationship between features of EEG PA (paroxysmal abnormalities) and epilepsy. Study design: Controlled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Patient groups: 345 inpatients affected by ASD according to DSM-IV TR, whom were observed at the Autism Centre of the department of neurological sciences of the University of Bologna. Exclusion criteria: Patients with Rett disorder. Demographics: Number: 345 Age: Mean = 10.5 y Range = 2 – 37 y Ethnicity: Not reported Subgroups: Language: Not reported Gender: Male/female: 4:1 Intellectual disability: 309/345 (90.0%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Scans: Cerebral CT scan/MRI lesions EEG	Scans: Cerebral CT scan/MRI lesions EEG	Abnormality 96/345 (27.8%) 157/345 (45.5%)	Funding: Not reported. Limitations: 1. Retrospective study.
Author: Renzoni E	Patient groups: Children / adolescents with a DSM-III-R diagnosis of autism	History	History Dysmorphia	 3/43 (7.0%)	Funding: Not reported

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Year: 1995 ID: [215] Country: Italy AIM: 'to test the suggested higher prevalence of intolerance to food allergens in children with autism' Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported Evidence level: Very low	 Exclusion criteria: Not reported Demographics: Number: 43 Age: Range = 3 – 18 years Ethnicity: Not reported Subgroups: Language: Not reported Gender:88.4 % male Intellectual Disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	 Examinations: Allergological	Perinatal distress Macrocephaly Congenital rubella Examinations: Raised IgE_{tot} >200 kU/L ---------- Co-existing diseases Eosinophilia (>5% of white blood cells)	2/43 (4.7%) 2/43 (4.7%) 1/43 (2.3%) 11/43 (25.6%) --------- 3/43 (7.0%)	 Limitations: Serious – not all children were tested Incomplete follow-up / reporting of test results Other info: Similar levels of elevated 1gE in controls to autism group
Author: Rossi P Year 1995 ID: [190] Country: USA	Patient groups: Children / adults with DSM-III-R autism Exclusion criteria: Autistic disorder secondary to an overt congenital or acquired encephalopathy	History Family Scans:* MRI EEG CT	History: Family Epilepsy /Febrile Convulsions Neurologic/psychiatric diseases Scans EEG MRI/CT	Abnormality 8/106 (7.5%) 46/106 (43.4.%) 79/106 (74.5%) na	Funding: Not reported

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
AIM: Not reported Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Demographics: Number: 106 Age: Not reported Ethnicity: Not reported Subgroups: Language: Not reported Gender: 84.9% male Intellectual disability: 100% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported		---------- Co-existing diseases Epilepsy	--------- 25/106 (23.6%)	
Author: Shen Y Year: 2010 ID: [180] Country: USA AIM: Not reported Study design: Uncontrolled observational Consecutive recruitment?	Patient groups: Children with DSM-IV-TR autism spectrum disorder Exclusion criteria: None Demographics: Group 1 Number: 461 Age: Range = 1 year 7 months – 21 years 10 months Subgroups: Language: Not reported Gender: 80.0% male Intellectual Disability: 11.7% Visual impairment: Not reported	Laboratory: Genetic Chromosomal	Laboratory: Karotype Genetic Chromosomal Microarray ---------- Co-existing diseases – Group 1 MR Seizures Multiple congenital anomalies Fragile x	Abnormality 19/852 (2.2%) 4/869 (0.5%) 154/848 (18.2%) --------- 54/461 (11.7%) 36/461 (7.8%) 16/461 (3.5%) 4/869 (0.5%)	Funding: Nancy Lurie Marks Family Foundation; Simons Foundation; National Institutes of Health Limitations: Some – not all children received all tests

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
No Study dates: Not reported Evidence level: Very low	Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported Demographics: Group 2 Number: 472 Age: Range = 1 yr 3 mths – 22 yrs Subgroups: Language: Not reported Gender: 81.8% male Intellectual Disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Shevell M Year: 2001 ID: [194;195] Country: Canada AIM: 'to determine the etiologic yield of the subspecialist evaluation of a consecutive cohort of young children with autism spectrum disorders seen in an ambulatory setting at a children's hospital'	Patient groups: Children (< 5 years) with suspected developmental disability referred to either the ambulatory neurology clinics or to the developmental pediatric clinics of Montreal Children's Hospital. Children had to be under 5 years old AND have a DSM-IV diagnosis of an ASD Exclusion criteria: Non-attendance or lack of confirmation of developmental delay Demographics: Number: 50 Age: Mean = 40.6 ± 9.7 months	History: family pregnancy developmental Examinations: physical Laboratory metabolic (14 cases) genetic (42 cases) Scans EEG (34 cases) MRI (5 cases) CAT (28 cases)	Total Yield History Family history Prenatal / perinatal complications Regression Examinations: Physical Macrocephaly Suspected dysmorphic features Laboratory tests* Metabolic genetic Scans*: EEG	13/50 (26.0%) 4/50 (8.0%) 2/50 (4.0%) 1/50 (2.0%) 2/50 (4.0%) 3/50 (6.0%) 0/14 0/42 0/34	Funding: Hospital for Sick Children Foundation Limitations: Some – follow-up of subjects not complete as clinicians ordered tests at their own discretion *number of participants tested/scanned on clinical suspicion

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: June 1, 1996 – November 30, 1997 Evidence level: Very low	Range = Not reported Ethnicity: Subgroups: Language: Not reported Gender: 82% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Community or hospital paediatrician = 39 other = 11		MRI CAT --- Co-existing diseases Landau-Kleffner syndrome	0/5 0/28 --- 1/50 (2.0%)	
Author: Singhi P Year: 2008 ID: [201] Country: India AIM: 'To find whether SPECT could detect localized brain perfusion abnormalities, and whether these abnormalities correlated with behavioural, electroencephalography (EEG) or MRI	Patient groups: Twenty two children with autism from the Neurodevelopment clinic of the division of neurodevelopment and Neurology, department of Pediatrics, Postgraduate institute of Medical education and rsearch, Chandigarh, India. Exclusion criteria: Children with other neurological disorders including those that may be associated with autism, such as tuberous sclerosis, fragile X syndrome, neurofibromatosis were excluded. Demographics: Number: 22 Age:	Scans:* SPECT EEG	Scans SPECT EEG	Abnormality 7/22 (31.8%) 6/22 (27.3%)	Funding: Not reported Limitations: 1. Lack of a control group which consist of mental retarded children without autism.

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
abnormalities in children with autism.' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported. Evidence level: Very low	Range = 28 – 94 m Mean = 60 m Ethnicity: Not reported Subgroups: Language: Not reported Gender: male 22/26 (76.9%) Intellectual disability: 12/26 (46.2%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Steiner C Year: 2003 ID: [192;193] Country: Brazil AIM: 'to identify and analyse genetic and neurological aspects in a sample of individuals presenting PDD's by using a protocol of clinical and laboratory tests and define which ones are relevant in the	Patient groups: Referrals with a preliminary DSM-IV diagnosis of autism Exclusion criteria: Not reported Demographics: Number: 84 Age: Mean = 9.9 years Range = 2.6 – 28.6 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 85% male Intellectual disability: Not reported	History: pregnancy, clinical, Laboratory FRAXA mutation FRAXE mutation FRAXF mutation Fragile X, Inborn errors of metabolism Urine and blood amino acids Scans EEG SPECT	History Prematurity associated with neonatal hypoxia Post-vaccinal (MMR) encephalitis Neonatal meningitis Down syndrome Dysmorphic genetic conditions Laboratory Genetic Scans EEG SPECT MRI ----------	 1/84 (1.2%) 1/84 (1.2%) 1/84 (1.2%) 3/84 (3.6%) 6/84 (7.1%) Abnormal 6/84 (7.1%) Abnormal 21/70 (30%) 31/58 (53.4%) 30/84 (35.7%) ---------	Funding: Not reported Limitations: Some - Incomplete follow-up / reporting of test results

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
diagnostic evaluation of these conditions' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported Evidence level: Very low	Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	MRI	Co-existing diseases Fragile X Trisomy 21 Phenylketonuria Tuberous sclerosis Acrocallosal syndrome Robertsonian translocation Chromosome inversion (inv 9) Chromosomal Ygh+	 4/84 (4.8%) 3/84 (3.6%) 2/84 (2.4%) 1/84 (1.2%) 1/84 (1.2%) 1/84 (1.2%) 1/84 (1.2%) 1/84 (1.2%)	
Author: Tuchman R Year: 1997 ID: [208] Country: USA AIM: 'to provide additional information on the relationship of epilepsy to autistic regression. Study design: Uncontrolled observational	Patient groups: Referred children with a diagnosis of DSM-IV ASD including autistic disorder, PDD-NOS, Asperger syndrome and disintegrative disorder. Exclusion criteria: Rett syndrome, Deafness, Progressive neurologic disease, Spastic quadriparesis, Diagnosed brain malformations Incomplete data on regression Demographics: Number: 585 Age: Mean = 70 months	History: Medical, Developmental Scans:* EEG	History: Medical Unprovoked seizures Seizures History: Developmental Regression Scans EEG --- Co-existing diseases Epilepsy	 Not reported Not reported 176/585 (30.0%) Requested 392/585 (67.0%) Abnormality 109/585 (18.6%) --- 66/585 (11.3%)	Funding: National Institute of Neurological Diseases and Stroke, USPHS, Jack and Mimi Leviton Amsterdam Foundation Limitations: Serious – Not all subjects tested Incomplete follow-up / reporting of test results Epilepsy was **as** common in subject s with regression 21/176 (11.9%)

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Consecutive recruitment? Not reported Study dates: 1990 - 1995 Evidence level: Very low	Range = 19 months to 28 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 82.4 % male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				compared to no regression 45/409 (11.0%)
Author: Unal O **Year:** 2009 **ID:** 185 **Country:** Turkey **Aim of study:** To evaluate the EEG and MRI findings and their relation with ID in PDD. **Study design:** Uncontrolled observational	**Patient groups:** 81 Caucasian patients with autism or PDD-NOS recruited from consecutive admissions to a general outpatient clinic in the child psychiatry department of Ankara University School of medicine. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV **Diagnosis assessment of ASD:** Not reported. **ASD subtype: N (%)** Not reported. **Demographics:**	Scans: EEG MRI	Scans: EEG MRI	Abnormality 22/81(27.2%) 10/81 (12.3%)	**Funding:** Not reported. **Limitations:** Retrospective study **Also reported:** Not reported.

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Consecutive recruitment Yes. **Study dates** Not reported. **Evidence level:** Very low	**Number**: 81 **Age: (Unit: Years)** **Range:** 2 – 15 y Mean: 6.6 y SD: 3.0 **Ethnicity:** Caucasian: 81/81 (100%) **Subgroups:** Intellectual Disability: 32/52 (61.5%) Language: Not reported Gender: Male: Male: 60/81 (74.1%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Volkmar F Year 1990 ID: [209] Country: USA AIM: 'to examine the frequency and age-specific incidence of epilepsy in a large sample of autistic	Patient groups: Children with DSM-III infantile autism or residual autism Exclusion criteria: None reported Demographics: Number: 192 Age: Mean = 14.1 ± 7.18 years Range = 2 – 33 years Ethnicity: Not reported	History: Developmental, Medical, Examinations: Psychometric Scans: EEG	History: Medical seizures Scans EEG ---------- Co-existing diseases	41/192 (21.4%) Abnormality 69/135 (51.1%) --------- Not reported	Funding: William T Grant Foundation, NIMH, MHCRC, John Merck Fund, Mr Leonard Berger Limitation: Other info:

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
individuals' Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Unclear Evidence level: Very low	Subgroups: Language: Not reported Gender: 78.1% male Intellectual disability: 85.9% Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Wassink T Year: 2001 ID: [219] Country: USA AIM: 'to determine the rate of cytogenetic abnormalities' Study design: Uncontrolled observational Consecutive	Patient groups: Children with a DSM-III / DSM-III-R / DSM-IV diagnosis of autism Exclusion criteria: Not reported Demographics: Number: 898 Age: Not reported Ethnicity: Not reported Subgroups: Language: Not reported Gender: 80.6% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported	Laboratory * Fragile X, chromosomal analysis	Laboratory --- Co-existing diseases Autosomal Fragile X Chromosome 15 Sex chromosomal Trisomy 21	Requested 278/898 (30.9%) Abnormality 25/898 (2.8%) --- 6/898 (%) 6/898 (0.7%) 6/898 (0.7%) 5/898 (%) 2/898 (%)	Funding: National Institutes of Health Limitations: Some – not all subjects tested

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
recruitment? Not reported Study dates: 1980 - 1999 Evidence level: Very low	Gestational age: Not reported Source of referral: Not reported				
Author: Wright B Year: 2005 ID: [212] Country: UK AIM: 'to test whether there is an association between the presence of IAG in the urine and ASD's' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: Not reported	Patient groups: Children / adolescents and ICD-10 diagnosis of childhood autism, atypical autism, or Asperger syndrome. Exclusion criteria: Not reported Demographics: Number: 78 Age: Mean = Unclear Range = Unclear Ethnicity: Not reported Subgroups: Language: Not reported Gender:79 % male Intellectual Disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Examinations: Urinanalysis	Examinations: Indoyl-3-acryoyglycine (IAG) present	56/56 (100%)	Funding: Not reported Limitations: Serious – not all children were tested Incomplete follow-up / reporting of test results Other info: Similar levels of elevated 1AG in controls to autism group

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Evidence level: Very low					
Author: Yasuhara A **Year:** 2010 **ID:** 163 **Country:** Japan **Aim of study:** Confirmation of the incidence of epileptic seizures and the prevalence of EEG abnormalities in children with autism. To examine the nature of EEG abnormalities. To determine if the psychomotor development of ASD children who have experienced developmental delays, improves when their epilepsy has been treated and maintained under control.	**Patient groups:** 1014 autistic children that have been treated and followed-up for more than 3 years at Yasuhara children's clinic in Osaka, Japan. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV. **Diagnosis assessment of ASD:** PARS or CARS have been used to confirm the diagnosis of autism. **ASD subtype: N (%)** Not reported. **Demographics:** **Number**: 1014 **Age: (Unit: Years)** **Mean:** 9.3 **SD:** 3.4 **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Not reported. Language: Not reportedGender: Male:	Scans: EEG	Scans: EEG	Epileptic discharges 870/1014 (85.8%)	**Funding:** Not reported. **Limitations:** How the diagnosis of epilepsy has been made is unclear. **Also reported:** Not reported.

Study Details	Patients	Data recorded and tests carried out	Outcome	Results	Comments
Study design: Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	785/1014 (77.4%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported				

Question 4(a)

Study Details	Patients	Diagnostic information	Differential diagnosis	Result: N(%)	Comments
Author: Allen CW Year: 2006 ID:[65] Country: Australia AIM: 1. Estimate the sensitivity, specificity and positive and negative likelihood ratios of the SCQ in identifying ASD from other developmental disorders. 2. Compare the sensitivity and specificity of the SCQ with the predictions of the referrer to see if it added value. Study design: Uncontrolled observational	Patient groups: All referrals to CDU aged 2-6 years over a 9 month period. 100 children identified. CDU is a state wide specialist tertiary referral clinic at The Children's Hospital at Westmead. Exclusion criteria: Parents who didn't respond. Demographics: Number: 81 Age: 26-84 months. Ethnicity: Not reported. Subgroups: Language: Not reported. Gender: -Male 66 (81.48%) Intellectual disability: Not reported Visual impairment: Not reported. Hearing impairment: Not reported. Gestational age: Not reported. Source of referral: Predominantly by paediatricians, psychiatrists and preschool special education services.	Surveillance tool under investigation: ●SCQ: a screening tool for children at high risk of developmental problems Threshold & Data set SCQ has 40 questions. Cut off: 11, >15 Adequately described? Yes. Operator no/experience Parents without experience. Comparison/Diagnostic Criteria tool: ●DSM-IV: CARS, Bayley's scales of infant development II, history/examination, observation, reviews of reports from other professionals who interact with the child and physical examination. Threshold and Data set Combination of about assessments against DSM-IV criteria. Adequately described? Yes. Operator no/experience Not reported – presumed MDT	Differential diagnosis - ASD Language disorder only Mild/moderate developmental delay only Language disorder and developmental delay other	 20/81 (24.7%) 21/81 (25.9%) 7/81 (8.6%) 5/81 (6.2%)	Funding: Not reported. Limitations: 1. The total sample size is large enough; however, for each age group the sample size is small. Blinding: Yes. Parents were asked to complete the SCQ prior to their child's appointment. The investigator scoring the SCQ was blinded to the outcome of the multidisciplinary assessment. Timing of tests: Not reported. Verification (ref/index test x100) 100% Also reported: 1. Comparison of referrer and SCQ in prediction of ASD. 2. *Mean SCQ* score and developmental level in

Consecutive recruitment? Yes. Study dates: Not reported					children with ASD Mild DD (n=6) *14* (SD 3.7) Mild/Mod DD (n=7) *19* (SD 5.6) Mod DD (n=10) *19* (SD 7.4) Unknown (n=4) *16* (SD 5.4) 3.Non-ASD diagnoses -language disorder n=20 -mild/mod DD n=21 -language disorder and DD n=7 -other n=5 Of the 81 responses only 56 were for children referred for ASD so only these are use din the results . We are unable to calculate sensitivity and Specificity for age groups and children with ID
Author: Arvidsson T **Year:** 1997 **ID:** 143 **Country:** Sweden **Study design:** Uncontrolled	**Patient groups:** 12 children with suspicion of autism (have three or more of the ICD-10 symptoms of childhood autism) have been picked out in a regular examination at well-baby clinic. These 12 children came from an original sample, which consist of all 1941 children born in the years 1988-1991 and living in the community of Molnlycke on the Swedish west coast on 31 Dec, 1994.	**Diagnosis criteria:** ICD-10. **Diagnosis assessment:** ICD-10, twice parent interviews using both structured and semi-structured techniques, Swedish ADI-R. The final diagnosis was made in case conference. -Operator experience: Experienced, a medical practitioner with considerable experience of autism and its	Differential diagnosis - autism ADHD Conduct disorder Mental retardation	 1/12 (8.3%) 1/12 (8.3%) 1/12 (8.3%)	**Funding:** Not reported. **Limitations:** 1) Small sample size 2) Potential false negative have not been examined. 3) The diagnostic tool and members of diagnosis group were not well reported. **Also reported:** Of the whole sample (12), 9

observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Low.	**Exclusion criteria** Not reported. **Demographics:** **Number**:12 (Note: The following data are all of those 9 ASD children since no data for the 3 non-ASD children were reported.) **Age: (Unit: Years)** **Mean:** 5.5 **Range:** 3-6 **Ethnicity:** Not reported. **Subgroups:** **Intellectual Disability:** Not reported **Language:** Not reported **Gender:** - **Male:** 7(58.3%) **Visual impairment:** Not reported **Hearing impairment:** Not reported **Communication impairment** Not reported **Gestational age:** Not reported **Source of referral:** Not reported	spectrum disorders. **Diagnosis group:** Case conference. The members are Not reported. **Inter-rater reliability:** Not reported. **Adequately reported:** No, the diagnostic tool and members of diagnosis group were not well reported.			children are ASD (75%).
Author: Baron-Cohen S **Year:** 2000 **ID:**[148]	**Patient groups:** 32 children who have been identified as high/medium risk of autism in the population screening using CHAT. The whole screened population of 17,173 children came from 9 districts in the South East Thames	(**Note:** All the following diagnostic information were found in another paper titled 'Autism Spectrum Disorders at 20 and 42 months of age: stability of clinical and ADI-R diagnosis') **Diagnosis criteria:** Clinical consensus according to	Differential diagnosis - ASD: Language disorder Developmental delay/ learning difficulties Typicvally developing	 7/32 (21.88%) 2/32 (6.25%) 3/32 (9.38%)	**Funding:** SBC, AC and GB from Medical Research Council. **Limitations:** 1. Due to limited resources, only half of the medium risk group could be re-screened.

Country: U.K **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Low.	Health Region, U.K. The social class distribution of this population was broadly representative of the U.K. **Exclusion criteria** Children with profound developmental delay, gross physical disability, or those already recognised as having a mental handicap were excluded from the screening sample. **Demographics:** **Number**:32 **Age: (Unit: Months)** **Mean:** 18.7 ± 1.1 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: - Male: 9016 (52.5%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	ICD-10. (at 42 months) **Diagnosis assessment:** Parental interview using the ADI-R, clinical assessment using a structured schedule of elicited child-investigator interaction, psychometric assessment using the Griffiths scale of infant development or Leiter international performance scale, and language assessment using the Reynell developmental language scales. The same assessment procedure was repeated at 42 months. And at 42 months all children were assigned ICD-10 diagnoses. -Operator experience: Experienced. **Diagnosis group:** Three experienced clinicians. **Inter-rater reliability:** Not reported. **Adequately reported:** Yes.			And for the 22 children who met the criteria on the second CHAT, 2 of them did not continue to participate in the project. **Also reported:** Of the whole sample (32), 20 children are ASD (62.5%), which including 10 (31.25%) childhood autism and 10 (31.25%) PDD-NOS.
Author: Barrett S **Year:** 2004	**Patient groups:** 37 children who all showed some autistic features and be referred to the Royal Children's hospital autism assessment program.	**Diagnosis criteria:** DSM-IV **Diagnosis assessment:** No specific assessment used in	Differential diagnosis - ASD Language disorder	15/37 (40.5%)	**Funding:** Not reported. **Limitations:** 1) Small sample size

ID: 136 **Country:** Australia **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Low.	**Exclusion criteria** (For STAT database) - Children with severe sensory or motor impairments - Children have been identified genetic or metabolic disorders - No parental permission to use data. **Demographics:** **Number**:37 **Age: (Unit: Years)** **Mean:** 5.5 **Range:** 4-7.9 **Ethnicity: N (%)** Not reported. **Subgroups:** **Intellectual Disability:** **Mean:** 84 **SD:**14.2 **Language:** Not reported **Gender:)** - **Male:** 32(86.49%) - **Female:** 5(13.51%) **Visual impairment:** Not reported **Hearing impairment:** Not reported **Communication impairment** All participants spoke in short phrases or sentences, except for one boy.	the diagnostic procedure was reported. Diagnoses of language disorder are made on the basis of evidence of communication impairments, the exclusion of other diagnoses, and speech pathologists' formal and informal assessment of the child's receptive language abilities, language structure, and use of language in conversations. -Operator experience: Not reported. **Diagnosis group:** Expert multidisciplinary autism assessment teams (Paediatrician, psychologist and speech pathologist) **Inter-rater reliability:** Not reported. **Adequately reported:** No, because the specific assessments of ASD and LD used in the diagnostic procedure were Not reported.			2) The diagnostic procedure of referred children is not adequately described, and the author also states 'Diagnosis is never infallible. The difficulty is particularly acute with children who may be on the boundary of overlapping conditions.' **Also reported:** Of the whole sample (37), 22 children are ASD (59.5%), which include 20(54.1%) autistic disorder patients and 2 (5.4%) PDD-NOS patients.

	Verbal IQ: **Mean:** 79 **SD:**14.9 **Gestational age:** Not reported **Source of referral:** Not reported.				
Author: Corsello A Year: 2007 ID: [72] Country: U.S.A AIM: Investigate how well the SCQ function as a clinical screening instrument in a larger, younger American sample of children with ASD or non-spectrum disorders. Study design: Uncontrolled observational Consecutive	Patient groups: 590 children between 2 and 16 years who were consecutive referrals to two university-based clinics specializing in children with possible ASDs and/or were participants in research within the autism centres. Eventual diagnosis- ASD: n=438. Non-ASD: n=151 Exclusion criteria: Children with missing items that would have changed their SCQ classification. Demographics: **Total sample** Number=590 Age: 2-16 years Ethnicity: 495 Caucasian, 43 African-Americans, 48 other ethnicities and 4 with missing data. **Autism (AD):** Number=282 Age: μ=84.34 **PDD-NOS (PD):**	Surveillance tool under investigation 1: ●SCQ[1] Threshold & Data set 40 item questionnaire. Cut-off >=15 or 12 Adequately described? Yes Operator no/experience Parents with no experience. Comparison/Diagnostic Criteria tool: ●DSM-IV : IQ, ADI-R and ADOS score, and unstructured telephone teacher interviews Threshold and Data set Consensus diagnosis by two examiners over 1-3 hour sessions and had access to all assessment results. Adequately described? Yes Operator no/experience Experienced (e.g., a child psychiatrist, clinical psychologist)	Differential diagnosis - ASD Communication disorder ADHD Mental retardation Down syndrome Foetal alcohol syndrome Mood / anxiety disorder Other Psychiatric / development disorders	36/590 (6.1%) 30/590 (5.1%) 26/590 (4.4%) 18/590 (3.1%) 18/590 (3.1%) 12/590 (2.0%) 11/590 (1.9%)	Funding: National institute of Mental health. Grants: R01 MH 066496 and R01 MH46865 to Dr Lord. Limitations: 1) Unsure is all sample were referrals. (“some participants had been part of a control group in a research project”) Blinding: Yes – parents completed the SCQ prior to diagnostic assessment and clinicians were unaware of the SCQ scores when performing diagnostic assessment. Timing of tests: SCQ completed prior to the diagnosis. Verification (ref/index test x100) 100%. Also reported:

recruitment? Yes Study dates: Not reported Evidence level Very low	Number=157 Age: μ=96.09 **Non-spectrum (NS):** Number=151 Age:μ=93.09 Ethnicity: -Caucasian: 495(83.90%) -African Americans: 43(7.29%) -Other: 48(8.14%) -Missing: 4(0.68%) <u>Subgroups:</u> Language: Not reported Gender: -Male: 462(78.31%) Intellectual disability: **Nonverbal IQ:** AD: Mean=68.92 PD**:** Mean=91.26 NS: Mean=78.44 **Verbal IQ:** AD**:** Mean=52.02 PD: Mean=90.01 NS: Mean=78.51 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				1) The accuracy of SCQ, ADOS, ADI-R in identifying autism, not only ASD. 2) Non-spectrum disorders: - communication disorder n=36 - ADHD n=30 - mental retardation n=26 - Down syndrome n=18 - Fetal alcohol syndrome n=18 - mood/anxiety disorder n=12 - other dev/psych disorder n=11 3) Differences in IQ, age, gender and maternal education between groups.
<u>Author:</u> Dietz C **<u>Year:</u>** 2006 **<u>ID:</u>**	**<u>Patient groups:</u>** 73 children who had positive result in both 4-item and 14-tiem ESAT (Early Screening of Autistic Traits Questionnaire) screening test and are willing to receive further assessment, from	**<u>Diagnosis criteria:</u>** DSM-IV; Diagnostic classification of mental health and developmental disorders of infancy and early childhood (1994)	<u>Differential diagnosis - ASD</u> General mental retardation Language disorder Other DSM-IV (ADHD, reactive attachment disorder, et ac.) Other	 13/73 (18%) 18/73 (25%) 11/73 (15%) 13/73 (18%)	**<u>Funding:</u>** Supported by grants 940-38-045 and 940-38-014 (Chronic Disease Program), by grand 28.3000-2 of the Praeventiefonds-ZONMW, by the Netherlands

[144] **Country:** Netherlands **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Oct, 1999 to April, 2002 **Evidence level:** Very low.	the original 31,724 children who visited well-baby clinics and received screening test from Oct, 1999 to Apr, 2002 in the province of Utrecht, the Netherlands. Also reported: Although attendance of well-baby clinics is not compulsory, most children up to 4 years of age are taken to these clinics. In the first year, attendance is as high as 98%, with an average of 6 visits in the first year. **Exclusion criteria** 115 children who tested positive in 4-item ESAT test and 27 children tested positive in both 4-tiem and 14-item ESAT test that have dropped-out of this study. **Demographics:** **Number**:73 **Age: (Unit: Months)** **Range:** 14-15 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Not reported Visual impairment: Not reported Hearing impairment: Not	**Diagnosis assessment:** ***Screening tool:*** **4 item ESAT.** Which including 2 items measure play behaviour, one item measures the readability of emotions, and one item about the reaction to sensory stimuli, all of which extracted from the original 14-item ESAT tool. **-Operator experience:** Not reported. **14-item ESAT.** Be conducted at 14-month follow-up for children who tested positive in 4-item ESAT. **-Operator experience:** Experienced. A trained child psychologist ***Extensive diagnostic* investigations (42 months)** (for children who tested positive in 14-item ESAT test) Standardized parental interview Developmental history Vineland social-emotional early childhood scales.			Organisation for Scientific Research, by a grand from the Dutch Ministry of Health, Welfare and Culture, and by grants from Cure Autism Now, and the Korczak Foundation. **Limitations:** No data on the false-negative cases of screening tool was reported. High drop-out rate. **Also reported:** Of the whole sample (73), 18 children are ASD (25%).

	reported Communication impairment Not reported Gestational age: Not reported Source of referral: 100% from Well-baby Clinics. -	Autism diagnostic observation schedule or ADOS-G. Paediatric examination and medical workup **Operator experience** of all 5: Not reported. ***Additional investigations:*** Parent questionnaire ASQ(Autism Screening Questionnaire) at 42-month follow-up. CHAT Infant/Toddler checklist for communication and language development Some items of ADI-R Mullen Scales of Early Learning (conducted for 225children (90%), for the remaining 25 children who did not cooperate with MSEL, 19 were given Dutch translation of the Bayley scales; and 6 were given Psycho-educational Profile Revised. Videotaped materials.			

		Re-examinations of cognitive development were made at age 24 months **Diagnosis group:** Three experienced child psychiatrists. **Inter-rater reliability:** For the diagnosis of ASD and non-ASD: 92% of 38 cases. For all diagnosis categories: 79% of 38 cases. **Adequately reported:** Yes.			
Author: Ehlers S Year: 1999 ID: [69] Country: Sweden AIM: To evaluate the ASSQ as a screening instrument and aid for the identification of	Patient groups: Consecutive referrals to neuropsychiatric clinic over 8 months. 110 children with various kinds of behavioural disorders Exclusion criteria: - moderately and severely retarded children were excluded (as ASSQ not designed to capture characteristics of these children) - mild retardation included. Demographics: Number: 110 Age: 6-17 year olds Ethnicity: Not reported	Surveillance tool under investigation: ● ASSQ Threshold & Data set Completed twice, once at time 1 during visit to clinic, and once 2 weeks later (via mail) Adequately described? Yes Operator no/experience Parent (n=110) questionnaire, thus no experience. If agreed the students teacher (n=107) was also completed ASSQ Comparison/Diagnostic Criteria tool: ● DSM-IV: 2 hours with	Differential diagnosis of ASD Attention-deficit and disruptive behavioural disorders Learning disorders	58/110 (52.7%) 31/110 (28.2%)	Funding: Grants from Wilheim and Martina Lundren Foundation, and the RBU Foundation, the Sven Jerring Foundation and the Clas Groschinsky memorial Foundation and the Swedish medical Research council. Limitations: 1. Population only includes patients with behavioural problems and does not specify what problems. 2. Does not define moderate / severe mental

those behaviourally disturbed children at risk of having ASD. Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: 8 months	Subgroups: Language: Not reported Gender: 87 (79%) boys Intellectual disability: 13 (12%) had mild mental retardation (IQ 50-70) in addition to Dx Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	psychiatrist, 2 hours with psychologist, extensive history. Threshold and Data set Consensus diagnosis Adequately described? Yes Operator no/experience Psychiatrist / Case conference			retardation. 3. Decreased response rate for time 2 questionnaire (via mail) Blinding: Not reported Timing of tests: ASSQ completed during time 1, prior to diagnostic evaluation Verification (ref/index test x100) 100% Also reported: Teachers tended to score 2 points higher than parents.
Author: Gray KM Year: 2008 ID:[66] Country: Australia AIM: To evaluate the screening	Patient groups: Referrals of children aged 18-48 months with or suspected of developmental delay for evaluation for autism. N = 207 Exclusion criteria: Nil reported Demographics: Total sample Number: 207 Age: 20.5 – 51.3 months (mean	Surveillance tool under investigation: ● DBC-ES: aims to differentiate children with DD+autism from DD-autism. Threshold & Data set DBC-ES is 17 items from DBC-P. Each item rated on 0-2 scale. Cut-off: ≥11 Adequately described? Yes Operator no/experience DBC-ES completed by parent (no experience)	Differential diagnosis - ASD Developmental delay Mixed receptive-expressive language disorder Expressive language disorder Other	 43/207 (20.8%) 20/207 (9.7%) 1/207 (0.5%) 1/207 (0.5%)	

properties of the DBC-ES in a community sample of very young children with suspected developmental delay <u>Study design:</u> Uncontrolled observational Consecutive recruitment? yes Study dates: Not reported. <u>Evidence level:</u>	38.3mo SD 7.00) Ethnicity: Not reported Gender: 83.1% male <u>PDD Diagnosis</u> Number: 142 - 110 autistic disorder - 23 PDD-NOS Age: 22.2 – 50.6 months (mean 37.8mo SD 6.8) Ethnicity: not stated Gender: 86.6% male <u>No PDD Diagnosis</u> Number: 65 - 43 developmentally delayed - 61 had a language delay of more than 6 months Age: 20.5-51.3 months (mean 39.4 mo SD 7.4) Ethnicity: Not reported Gender: 75.9% <u>Subgroups:</u> Language: Not reported Intellectual disability: 99 (69%) of the PDD children were below age equivalent 21 months, 15 (32%) of the non-PDD group were at this level Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Early childhood agencies and	<u>Comparison/Diagnostic Criteria tool:</u> ●DSM-IV: information derived from ADI, ADOS, PEP-R/WPPSI-III, RDLS, VABS, DBC-P. Threshold and Data set Consensus diagnoses between 2 physicians. Adequately described? Yes Operator no/experience Physicians - experienced			

	paediatricians, small number of self referrals.				
Author: Honda H **Year:** 2009 **ID:** [141] **Country:** Japan **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Oct, 1999 to April, 2002 **Evidence level:** Very low.	**Patient groups:** 19 children who born in 1988, underwent YACHT-18 (Young autism and other developmental disorders check-up tool) at 18 months of age and got positive screen result in the refinement stage. Also reported: These 19 children comes from a cohort study of 3,036 children who were born in 1988 and received the YACHT-18 screening during routine health checkups at the age of 18 months at the Yokohama Aoba PHWC. Of these, 222 children who had already been diagnosed with some kind of disease or disorder before screening have been excluded. **Exclusion criteria** Children who had already been diagnosed with some kind of disease or disorder before screening. **Demographics:**	**Diagnosis criteria:** DSM-IV **Diagnosis assessment:** **1. Early screening.** Extraction and refinement (E&R) strategy was used, which consist of two stages: first comes extraction stage, which means using YACHT-18 to flag all children with even the slightest problem in order to reduce false negatives to a minimum; and then is second stage: refinement stage, which aims to reduce false positives as much as possible. This stage includes follow-up via telephone call, home visit, psychological consultation, weekly group meeting; also includes specialized assessment in 'joint clinic', which consisting of a developmental psychiatrist, a clinical psychologist and a social worker who team up with the public health nurses. **-Operator experience**: Experienced for those work in joint clinic, for the others Not reported.	Differential diagnosis - ASD ADHD Mental retardation Learning disorders	5/19 (26.3%) 2/19 (10.5%) 1/19 (5.3%)	**Funding:** Supported by grants 940-38-045 and 940-38-014 (Chronic Disease Program), by grand 28.3000-2 of the Praeventiefonds-ZONMW, by the Netherlands Organisation for Scientific Research, by a grand from the Dutch Ministry of Health, Welfare and Culture, and by grants from Cure Autism Now, and the Korczak Foundation. **Limitations:** 1. No data on the false-negative cases of screening tool was reported. 2. High drop-out rate. **Also reported:** Of the whole sample (19), 11 children are ASD (57.9%), which include 3(15.8%) Autistic disorder patients and 8 (42.1%) PDD-NOS patients.

	Number:19 **Age: (Unit: Months)** **Mean:** 18 **Ethnicity:** Not reported **Subgroups:** **Intellectual Disability:** Not reported **Language:** Not reported **Gender:** Not reported **Visual impairment:** Not reported **Hearing impairment:** Not reported **Communication impairment** Not reported **Gestational age:** Not reported **Source of referral:** - GP: 100% from Yokohama Aoba PHWC.	**2. Diagnosis stage.** Be conducted in Yokohama rehabilitation centre. However, no further information is provided. **-Operator experience**: Not reported. **Diagnosis group:** The final diagnosis group is Not reported. But members of joint clinic (which refer children to YRC) are reported as one developmental psychiatrist, a clinical psychologist, and a social worker who team up with the public health nurses. **Inter-rater reliability:** Not reported. **Adequately reported:** Yes for the early screening stage; but not for the final diagnostic stage.			
Author: Harel S **Year:** 1996 **ID:** 139 **Country:**	**Patient groups:** 323 children with speech, language and communication disorders that had been referred to a child development centre from 1984-1988. **Exclusion criteria** Children did not contain sufficient	**Diagnosis criteria:** **ASD:** DSM-IV **DLD:** Classification of DLD proposed by Rapin and Allen. **Diagnosis assessment:** **ASD:** DSM-IV. **DLD:** NOT REPORTED -Operator experience:	Differential diagnosis - ASD Developmental language disorder	294/323 (91%)	**Funding:** The institute of child development and paediatric neurology, Albert Einstein college of medicine, New York **Limitations:** The diagnostic tool is not adequately reported.

U.S.A **Study design:** Uncontrolled observational **Consecutive recruitment** Yes **Study dates** Not reported. **Evidence level:** Very low.	documented information. Children referred for psychomotor delay or mental retardation or non-language-related deficits. **Demographics:** **Number**:323 **Age: (Unit: Months)** **Mean:**39 **Range:** 20-52 **Ethnicity: N (%)** *Parents Asian or African: 213 (66%) East European: 107(33%) Other: 3(1%) **Subgroups:** **Intellectual Disability: N (%)** - Yes: 12(3.72%) - No: 311(96.28%) Assessment tool: PIQ (Performance IQ of Wechsler preschool and primary scale of intelligence) **Language:** Not reported **Gender: Male:** 246(72%) **Visual impairment:** Not reported **Hearing impairment:** Not reported **Communication impairment** Not reported **Gestational age:** Not reported **Source of referral:** - GP:100%	Experienced. **Diagnosis group:** **DLD:** A senior speech and hearing pathologist, who integrated the details of each case file and arrived at the specific conclusions. **ASD:** NOT REPORTED **Inter-rater reliability:** Not reported. **Adequately reported:** No, the assessment tool is not fully reported.			**Also reported:** Of the whole sample (323), 29 children are ASD (9.0%), which include 12 (3.7%) autism patients, 17 (5.3%) other ASD patients.

Author:
Kamp-Becker I

Year:
2009

ID:
138

Country:
Germany

Study design:
Uncontrolled observational

Consecutive recruitment
Not reported.

Study dates
Not reported.

Evidence level:
Very low.

Patient groups:
140 children who have been referred for possible autism to Department of child and adolescent psychiatry, Philipps-University Marburg, Germany.

Exclusion criteria
Not reported.

Demographics:
Number:140
Age: (Unit: Years)
Whole group:
Range: 6-24
Table 6.1
Age of different patient group

Patient group	No.	Age (mean)	Age (SD)
Asperger	52	11.85	4.40
HFA	44	12.83	5.08
Atypical autism	8	15.10	3.67
Non-autism	35	12.05	4.29

Ethnicity: N (%)
Not reported.

Subgroups:
Intellectual Disability:
Table 6.2
IQ, VIQ and VIQ of the whole sample

	No.	Mean	SD

Diagnosis criteria:
DSM-IV and ICD-10.

Diagnosis assessment:
ADOS-G, semi-structured autism specific parent interview using ADI-R, the Vineland adaptive behaviour scales, German version of the Wechsler intelligence scales, WISC-III.

-Operator experience:
Experience, trained examiners.

Diagnosis group:
Experienced clinicians. For each patient, DSM-IV/ICD-10 psychiatric diagnosis had been established by at least two expert clinicians.

Inter-rater reliability:
For 17 videotaped ADOS-G assessments, the kappa values ranged from 0.42 to 1.0, with mean equals to 0.75.

For the autism/non-autism distinction the agreement is 100%.

Adequately reported:
Yes.

Differential diagnosis - ASD	
ADHD	18/140 (12.9%)
Emotional disorder	6/140 (4.3%)
Receptive speech disorder	3/140 (2.1%)
Schizoid personality disorder	3/140 (2.1%)
Other personality disorder	2/140 (1.4%)
Delay of development	2/140 (1.4%)
Learning disability	2/140 (1.4%)

Funding:
German Max Planck association received by H. Remschmidt in 1999.

Limitations:
1) The information of whether the patients have been recruited consecutively and what is the exclusion criteria are Not reported.

Also reported:
Of the whole sample (140), 104 children are ASD (74.3%), which include 52 (37.1%) AS patients, 44 (31.4%) high-functioning autism patients and 8 (5.7%) PDD-NOS patients.

	<table><tr><td>VIQ</td><td>140</td><td>107</td><td>20.54</td></tr><tr><td>PIQ</td><td>140</td><td>93</td><td>18.03</td></tr><tr><td>Full IQ</td><td>140</td><td>101</td><td>18.31</td></tr></table> **Language:** Not reported **Gender: Male:** 134(95.7%) **Visual impairment:** Not reported **Hearing impairment:** Not reported **Communication impairment** Not reported **Gestational age:** Not reported **Source of referral:** Not reported					
Author: Lord Year: 1995 ID: 107 Country: USA Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported	**Patient groups:** 34 children referred to MDT developmental disorders clinic. All had delayed speech and language. Recruitment of children under age 3 sought through letters and presentations at meetings from usual sources of referral inc paediatricians, pediatric neurologists, family doctors, speech pathologists and audiologists, encouraged to refer if suspected autism or PDD, including those where referral may have been delayed due to young age. Exclusion criteria: 3 diagnosed with Rett Syndrome 1 spastic diplegia and profound mental retardation	**Diagnostic tool /method** ADI-R Threshold & Data set Le Couteur, 1994 Child had to receive scores that exceeded cut-offs in each of 3 areas: social interaction, communication and restricted, repetitive behaviours Adequately described? Yes Operator no/experience One of 2 examiners who had previously established reliability (item by kappa >0.75, %agreement >90) with each other and several authors of the ADI	Differential diagnosis - autism Rett syndrome Spastic diplegia + severe mental retardation	3/30 (10.0%) 1/30 (3.3%)	**Funding:** Alberta Heritage fund for Medical Research and PHS. Limitations: Small study size, no exploration of possible confounders such as other features of the children or parent reporting ability Blinding: examination by psychiatrist blind to initial assessment diagnosis compared to time 2diagnosis by author who conducted time 1 and time 2 assessments Author making clinical

Evidence level: Very low	Demographics: Number: 30 Age at first assessment:25-35 months Age at second assessment: 38-52months Ethnicity: West Indian 2 Asian 2 Native Canadian 2 Caucasian 28 (4 excluded unclear which) Subgroups: Intellectual Disability: Not reported Language: Not reported Gender: Male 25 Visual impairment: 2 had visual impairment Hearing impairment: All had hearing assessments 1 had moderate hearing loss Gestational age: - Preterm (<38 weeks) 2 - Term (38 + weeks) 32 Source of referral: Not reported	At time 2 ADI administered by 1 of 2 research assistants, both not familiar with child			judgment at T1 and T2 blind to ADI-R score Timing of tests: Time 1 25-35 months time 2 12-15 months later Verification (percentage undergoing assessment at both time points) 100% Also reported: Child psychiatrist and author agreed about T2 diagnosis in 29 of 30 cases. Child psych judgements are used as T2 outcomes
Author: Perry A Year: 2005 ID: [137] Country: Canada AIM: 'what is the	Patient groups: Preschool children referred for initial developmental-diagnostic assessment or second opinion. Exclusion criteria: None reported Demographics: Number: 274	Diagnostic tool under investigation: 1 **CARS** Standardized observation instrument which can incorporate parent report. 15 items in 4 domains, socialization, communication, emotional response, sensory sensitivities.	Differential diagnosis - ASD Mental retardation Language delays only or 'slow learners' Other	45/274 (16.4%) 42/274 (15.3%) 23/274 (8.4%)	Funding: Ontario Ministry of Children and Youth Services Limitations: Serious Blinding: No, same clinician used CARS and made DSM-IV diagnosis

degree and pattern of concordance between … DSM-IV and CARS' Study design: Uncontrolled observational Consecutive recruitment? No Study dates: Not reported Evidence level: Very low	Age: Mean = 51.1 ± 11.0 months Range = 24 – 72 months Ethnicity: Not reported Subgroups: Language: 18% from French speaking families Gender: 75% male Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Threshold & Data set Scores >30 is taken as indicative of Autism Adequately described? Yes Operator no/experience Trained raters			Timing of tests: CARS carried out before DSM-IV Verification (ref/index test x100) CARS: 100% Indirectness: Some – no data on patient relevant outcomes Test carried out on an appropriate Population: Yes Test carried out by an appropriate professional: Yes
Author: Rellini E Year: 2004 ID: [140] Country: Italy AIM: ''to verify agreement between DSM-IV diagnostic criteria and total scores for CARS and ABC in the diagnosis of autism and to	Patient groups: Children referred for disturbances related to autistic spectrum disorders Exclusion criteria: None reported Demographics: Number: 65 Age: Mean = 4.9 + 2.2 years Range = 1.5 – 11 years Ethnicity: Not reported Subgroups: Language: Not reported Gender: 89% male	Diagnostic tool under investigation: 1 **CARS** Standardized observation instrument which can incorporate parent report. 15 items in 4 domains, socialization, communication, emotional response, sensory sensitivities. Threshold & Data set Scores >30 is taken as indicative of Autism Adequately described? Yes	Differential diagnosis - ASD ADHD R/E language disorder	1/65 (1.5%) 1/65 (1.5%)	Test carried out by an appropriate professional: Yes

study the correlation between the two diagnostic scales' Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: 1998 - 2000 Evidence level: Very low	Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Operator no/experience Not reported			
Author: Snow A Year: 2008 ID: [73] Country: USA AIM: 1) To assess and compare the sensitivity and	Patient groups: Consecutive referrals for possible PDDs at a specialty clinic in a large Midwestern hospital. N=82 Exclusion criteria: Nil stated. Demographics: Whole group Number: 82 Age: mean age 42.7 months (SD 14.1, range 18-70) Ethnicity: 87% Caucasian, 6% African American, 7% other (eg; Hispanic, Asian-American)	Surveillance tool under investigation: ●MCHAT For children between 18 and 48 months (n=56). Threshold & Data set - any 3 of all 23 items - ≥2 of 6 critical items Adequately described? Yes Operator no/experience Parent/carer questionnaire ●SCQ For children between 30 and 70 months (n=65) Threshold & Data set	Differential diagnosis - ASD Receptive/expressive language disorder Global developmental delay Developmental language delay apraxia Oppositional defiant disorder Communication disorder NOS Selective mutism Disruptive behaviour disorder NOS Reactive attachment disorder Cerebral palsy/metabolic disorder	13/82 (15.85%) 3/82 (3.66%) 3/82 (3.66%) 2/82 (2.44%) 2/82 (2.44%) 1/82 (1.22%) 1/82 (1.22%) 1/82 (1.22%) 1/82 (1.22%) 1/82 (1.22%)	Funding: Not stated. Limitations: Groups were not matched for cognitive or adaptive functioning. Only assessing younger children who are referred for assessment may create sampling bias, these children may have more severe symptoms as presenting earlier.

specificity of M-CHAT and SCQ 2) assess the agreement of both tools and their reliability 3) determine which M-CHAT and SCQ items best differentiate PDDs from DDs 4) explore the impact of subject characteristics on scores of both instruments <u>Study design:</u> Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported <u>Evidence level:</u> Very low	<u>PDD[2] group</u> Number: 54 Age: mean age 39.2 months (SD 12.3) Ethnicity: 42 (82%) Caucasian <u>Non-PDD group</u> Number: 28 Age: mean age 49.5 months (SD 15.1) Ethnicity: 20 (87%) Caucasian Diagnoses: Receptive/expressive language disorder (n-13), global developmental delay (n=3), developmental language delay (n=3), apraxia (n=2)m oppositional defiant disorder (m=2), communication disorder NOS (n=1), selective mutism (n=1), disruptive behaviour disorder NOS (n=1), reactive attachment disorder (n=1), cerebral palsy/metabolic disorder (n=1) <u>Subgroups:</u> Language: Not reported Gender: Whole group – 63 males (77%). PDD group – 44 males (70%). Non PDD group – 19 males (68%).	40 items, verbal children score 0-39, non verbal children scored 0-33. Cut off >15 for PDDs. Adequately described? Yes Operator no/experience Parent/carer questionnaire Informants: PDD group – 41 mothers, 12 fathers and one guardian. μ age 33.3 years (SD 5.4). 34 (63%) graduated from college. Non-PDD group – 26 mothers, 1 father and 1 adoptive parent. μ age 31.5 years. 19 (68%) graduated from college. <u>Comparison/Diagnostic Criteria tool:</u> ●DSM-IV: VABS, GARS, WPPSI, LIPS-r, ADOS, PDD-BI. Threshold and Data set Consensus diagnosis by multidisciplinary team. Adequately described? Yes Operator no/experience Multidisciplinary team; developmental paediatrician, speech and language pathologist, psychologist. Results of diagnostic assessment			<u>Blinding:</u> Parents and clinicians were blind to the child's scores on the M-CHAT and SCQ. <u>Timing of tests:</u> Index test done prior to reference test. <u>Verification (ref/index test x100)</u> 100% <u>Also reported:</u> Comparison of groups (PDD vs non-PDD): non PDD group older than PDD. No difference between groups in regard to cognitive function, adaptive behaviour score and ethnicity. Demographic form collected information about child and informant. Childs age gender, ethnicity, previous medical, genetic or psychiatric diagnosis and psychotropic medicine use. Informant age, relationship to the child, educational level and age of first concern about

[2] PDD = includes autism and PDD-NOS

	Intellectual disability: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	were retrieved from patient charts following completion of assessment process.			the child development. Overlapping Sample Children in 30-48 month age range correctly classified MCHAT critical items - 21/29 (72%) PDD - 5/10 (50%) non PDD - efficiency 0.67 (CI 0.51-0.81) MCHAT any 3 items - 24/29 (83%) PDD - 5/10 (50% non PDD - efficiency 0.74 (CI 0.59-0.86) SCQ - 21/29 (72%) PDD - 3/10 (30%) non PDD - efficiency 0.62 (CI 0.45-0.77) Internal consistency of MCHAT and SCQ. Relationship between total scores and subject characteristics.
Author: Sponheim E **Year:** 1995	**Patient groups:** All patients (25) at the national centre for child and adolescent psychiatry in Oslo who are suspected of having a	**Diagnosis criteria:** ICD-10 and DSM-III-R. **Diagnosis assessment:** ICD-10, DSM-III-R, ABC and CARS.	Differential diagnosis - ASD Disintegrative disorder Specific developmental disorder of speech Emotional disorder	 1/25 (4%) 7/25 (28%) 4/25 (16%)	**Funding:** National centre for child and adolescent psychiatry, Oslo, Norway

ID: 142 **Country:** Norway **Study design:** Uncontrolled observational **Consecutive recruitment** Yes **Study dates** Not reported **Evidence level:** Very low.	developmental disorder and autism. **Exclusion criteria** None. **Demographics:** **Number**:25 **Age: (Unit: Years)** **Range:** 1.6-17.3 **Ethnicity:** Not reported **Subgroups:** **Intellectual Disability:** - Yes: 15(60%) **Language:** Not reported **Gender: Male:** 21(84%) **Visual impairment:** Not reported **Hearing impairment:** Not reported **Communication impairment** Not reported **Gestational age:** Not reported **Source of referral:** Not reported	-Operator experience: Experienced, trained before test was conducted. **Diagnosis group:** Two child psychiatrists. **Inter-rater reliability:** Not reported. Only said 'consensus between the team members' **Adequately reported:** Yes.	Mental retardation	5/25 (20%)	**Limitations:** 1. Small sample size. **Also reported:** Of the whole sample (25), 8 children are ASD (32%), which include 7 (28%) autism patients and 1(4%) AS patients.
Author: Scheirs J **Year:** 2009 **ID:** 145 **Country:** Netherlands **Study design:**	**Patient groups:** Children referred to the child and adolescent department of a large outpatient institution for mental health in the south of the Nether lands during 2003-2007, for behavioural problems or psycho-social maladjustment displayed in school or at home. **Exclusion criteria** Not reported.	**Diagnosis criteria:** Expert consensus based on DSM-IV-TR diagnostic criteria. **Diagnosis assessment:** Developmental histories of the children as revealed from clinical interviews with the parents; observation as well as extended neuropsychological testing of the children themselves. -Operator experience:	Differential diagnosis - ASD ADHD	40/115 (34.8%)	**Funding:** Institution for Mental Health in Eindhoven (GGzE). **Limitations:** 1. Retrospective study 2. The diagnosis assessment used in the study was not adequately reported. **Also reported:**

Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	**Demographics:** **Number**:115 **Age: (Unit: Years)** **Range:** 6-16 **Mean:** 9.7 ± 2.8 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: *PDD-NOS group:* Range of FIQ: 66-136 *ADHD group:* Range of FIQ: 76-123 *Combined diagnosis of PDD-NOS and ADHD:* Range of FIQ: 76-116 Language: Not reported Gender: Male: 91 (79.1%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: practitioners or youth care organizations.	Experienced. **Diagnosis group:** Clinical psychologists or youth psychiatrists. **Inter-rater reliability:** Not reported. **Adequately reported:** No.			1. Of the whole sample (115), 55 children are PDD-NOS (47.8%), 20 children had PDD-NOS plus ADHD (17.4%). 2. Children with mental retardation (FIQ<70) were generally not referred to this institution. However, intelligence was not used in any way as a criterion for including cases in this study.
Author: Stone W **Year:** 2008 **ID:** [146]	**Patient groups:** Children identified through STAT database who: -were at increased risk for autism - received the STAT between 12 and 23 months (inclusive) of age - received a follow-up assessment after 24 months.	**Diagnosis criteria:** Not reported. **Diagnosis assessment:** Not reported. -Operator experience: Not reported.	Differential diagnosis - ASD Developmental delay Language impairment Broad autism phenotype [1] No concerns Note: [1] Broad autism phenotype: Children who did	6/71 (9%) 1/71 (1%) 8/71 (11%) 37/71 (52%)	**Funding:** Grant number R01 HD043292 and a NAAR Mentor –Based postdoctoral fellowship. Partial support was also provided by grant numbers P30 HD15052, T32 HD07226, I32 MH18921,

Country: U.S.A **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low.	**Exclusion criteria** (For STAT database) - Children with severe sensory or motor impairments - Children have been identified genetic or metabolic disorders - No parental permission to use data. **Demographics:** **Number**:71 **Age: (Unit: Months)** **Mean:** 16.4 ± 3.6 **Range:** 12-23 **Ethnicity:** Caucasian: 58(82%) -Others: 13 (18%) **Diagnosis criteria of ASD:** DSM-IV-TR **Subgroups:** Intellectual Disability: Mean cognitive score (MSEL) at initial evaluation was 95.8 (SD 15.4) Language: Not reported Gender: Male: 44(62%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: -A longitudinal research project enrolling younger siblings of	**Diagnosis group:** Experienced, licensed psychologist who were experienced in the diagnosis of young children with autism. **Inter-rater reliability:** Not reported. **Adequately reported:** Yes.	not qualify for any of the diagnoses of ASD, DD or LI, but for whom there were clinical concerns related to social-communicative functioning.		and the Vanderbilt Kennedy Centre Marino Autism Research Institute. **Limitations:** 1) Small sample size, with only 19 ASD patients. 2) The sample was recruited via university-based medical centre, rather than community-based settings. **Also reported:** Of the whole sample (71), 19 children are ASD (27%), which include 12 (17%) autism patients and 7 (10%) PDD-NOS patients.

	children with ASD: 59 (83.1%) -Children receiving evaluations for developmental concerns related to autism: 12 (16.9%)				
Author: Webb E **Year:** 2003 **ID:** 147 **Country:** U.K **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low.	**Patient groups:** Children who have been identified as positive in the two-stage screening test. The initial screening test was using a questionnaire based on ICD-10; and the second round screening test was using ASSQ. Children who have failed >=2 domains of ASSQ will be recruited for full assessment. The whole screened population of 11,692 children were born between 1 Sep 1986 and 31 Aug, 1990, recruited from 69 primary schools in Cardiff. **Exclusion criteria** Children attending private or special schools. Children who are either unable or unwilling to participate in the project. **Demographics:** **Number**:50 **Age: (Unit: Years)** **Range:** 7-11 **Ethnicity:** Not reported	**Diagnosis criteria:** ICD-10 diagnostic criteria. **Diagnosis assessment:** For those children whose ASSQ score was greater than 21, their health notes from hospital and community, and their special educational needs status were reviewed. For some children whose information was insufficient, a joint assessment was undertaken by a developmental paediatrician and a psychiatrist from the learning disability team. This assessment included a full developmental and family history and an unstructured diagnostic interview, a process informed by the paper by Filipek et al. (1999) on the screening and diagnosis of autistic spectrum disorders. If the above assessment was still inconclusive, then a further in-depth assessment will be taken, which included an evaluation of understanding social situations and tests of facial expression. -Operator experience: Experienced.	Differential diagnosis - ASD Abuse/neglect ADHD Learning difficulties Tourette syndrome Other	 13/50 (26%) 7/50 (14%) 3/50 (6%) 2/50 (4%) 12/50 (24%)	**Funding:** Department of epidemiology, statistics and public health, UWCM; Cardiff and Vale NHS Trust. **Limitations:** High drop-out rate (10 children, 16.67%) of children who have been identified as ASD positive using the two-stage screening test. **Also reported:** Of the whole sample (50), 13 children are ASD (26.0%), which including 8 (16%) AS/HFA patients, 4 (8%) PDD-NOS patients and 1(2%) ASD phenol-copy. 1.

	Subgroups: Intellectual Disability: Not reported Language: Not reported Gender: Male: 44 (88%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	**Diagnosis group:** Child psychiatrists. **Inter-rater reliability:** Not reported. **Adequately reported:** Yes.			

Question 4(b) – No evidence identified

Question 5(a)

Study Details	Patients	Diagnostic Tools	Measure of disorders	Results	Comments
Author: Mahoney Year: 1998 ID:[114] Country: Canada Study design: Uncontrolled observational Consecutive recruitment? Yes Study dates: Not reported Evidence level: Very low	Patient groups: Participants with 2 or more PDD affected children were recruited from referral centre, Autism Society of Ontario and other agencies. A consecutive series of singleton subjects with siblings recruited from the clinical population attending the Chedoke Child and Family Centre. Included if possible diagnosis of PDD (no cases of CDD or Retts included) made by referring health professional Exclusion criteria: Neurological or chromosomal condition that has known genetic implications inc DNA testing for the FMR-1 gene. Demographics: Number: 143 Age at first assessment: mean 113.1 months, 29-482 months Age at second assessment: Ethnicity: Subgroups: Intellectual Disability: N (%) Mean IQ (for 111 participants) 67.7 (SD 30.09, range 24-143) Language: Not reported Gender: Male 108 Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Diagnostic tool /method Clinically assessed using available records, ADI-R and ADOS Threshold & Data set Clinician best estimate diagnosis Adequately described? Yes Operator no/experience Professor of Psychiatry Comparison tool (if applicable): Clinical best estimate diagnosis based on panel review of ADI-R, ADOS, clinical notes, VABS and ABC. Clinical reports from previous assessments including speech and language assessments, psychometric testing and pediatric/ psychiatric consultations were provided to the panel. Threshold & Data set DSM-IV criteria modified as follows: of a child meets criteria for autism and ASD, child given diagnosis of ASD. DSM-IV criteria	Agreement between diagnostic method and comparison Single clinician diagnosis vs panel CBE Overall PDD all subtypes and non-PDD Autism Atypical (PDD-NOS) Non PDD Autism Asperger Atypical Non-PDD	 K=.55 K=.56 K=.29 K=.81 78/92=84.8% 8/17=47% 7/16= 43.8% 15/18= 83.3%	Funding: Not reported Limitations: DSM-IV criteria for ASD modified for this study Blinding: Panel members blind to previous diagnosis Timing of tests: Verification (percentage undergoing assessment at both time points) Also reported: Inter-rater agreement for panel members K=.67 (91%) PDD/ non-PDD. For 3 different subtypes, K=.51, (73% agreement)

Study Details	Patients	Diagnostic Tools	Measure of disorders	Results	Comments
		for PDD-NOS were not modified. Adequately described? yes Operator no/experience Panel 3 members with average 20 years experience in diagnosing PDD Rater's diagnosis of all 3 panel members prior to discussion were compared to the clinical diagnosis and the panel (CBE) diagnosis			Agreement for non-PDD K=.67 ASD k=.56 PDD-NOS k=.18

Question 5(b)

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
Author: Charman T **Year:** 2004 **ID:** 117 **Country:** UK **Study design**: Uncontrolled observational **Consecutive recruitment**? Not reported **Study dates:** Not reported **Evidence level:** Very low	**Patient groups:** 29 children initially diagnosed with childhood autism at age 2 years. 24 children recruited using Checklist for Autism in Toddlers to an RCT of parent training early intervention. The other 5 were referred to the same clinic setting. **Exclusion criteria:** Children who did not meet ICD-10 criteria for childhood autism were excluded. 3 children lost to follow up: 1 not contactable and 2 declined to participate **Demographics:** Number: 26 Age at first assessment: mean 24.5 months SD 5.3 Age at second assessment: mean 36.9 months (SD 5.7) Age at third assessment: 85.4 months (SD 8.5) Ethnicity: **Subgroups:** Intellectual Disability: Time 1 mean IQ 74.7 (SD 19.0) Time 2 mean IQ 72.9 (SD 17.5) Time 3 mean IQ 71.1 (SD 29.1) Language: Not reported Gender: Male 22/26 (84.6%) Visual impairment: Not reported	**Diagnostic tool /method** ICD-10 **Threshold & Data set** ICD-10 diagnosis achieved using all available clinical, historical and psychometric information (ADI-R, language and IQ assessments and structured child-adult interaction assessment to elicit examples of verbal and non-verbal social communication abilities) **Adequately described?** yes **Operator no/experience** At age 2 years 2 clinicians experienced in diagnosis of autism and related PDDs reached a consensus clinical judgement. At follow up assessments independent clinical diagnosis was achieved using all available clinical, historic and psychometric information. The diagnostic decision focused on current presentation in terms of severity and combination of symptoms for ICD-10 diagnosis.	**ICD-10** Autism Asperger syndrome PDD-NOS ASD overall	 22/26= 84.6% Not reported Not reported 25/26= 96.2%	**Funding:** Guy's and St Thomas's Charitable Foundation, Cure Autism Now and the Medical Research Council UK **Limitations:** ADI-R interviewer differed between T1, T2 and T3 and no reliability checks performed. Likewise, clinical diagnosis T1 and T3 independent but no reliability checks performed. Small sample size **Blinding:** Independent clinical diagnosis at T1 and T3 **Timing of tests:** T1 24.5 ±5.3 months T2 36.9 ± 5.7 months T3 85.4 ±8.5 months **Verification (percentage undergoing assessment at both time points)** 26/29=89.7% **Also reported:**

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
	Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				One case diagnosed as autism at 24 months was found to be non-autistic at 7 years
Author: Chawarska K **Year:** 2007 **ID:** [120] **Country:** USA **Study design**: Uncontrolled observational **Consecutive recruitment**? Unclear **Study dates**: Not reported **Evidence level** Very low	**Patient groups:** 31 children selected from amongst consecutive referrals for their young age, evaluated for differential diagnosis of ASD at specialised clinic **Exclusion criteria:** 3 with final diagnosis of developmental delay rather than ASD excluded from ADI/ADOS **Demographics**: Number: 31 Age at first assessment: 14-25 months Age at second assessment: 3 years Ethnicity: Caucasian 100% **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male 20/31 (64.5%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	**Diagnostic tool /method** DSM-IV **Threshold & Data set** DSM-IV criteria modified for children under 3 years old (Chawarska and Volkmar 2005) (based on clinical diagnosis of autism or PDD-NOS assigned by a clinical team consisting of psychologist, psychiatrist and speech-language pathologist based on medical and developmental history review, clinical observation and review of test results If disagreements, discrepancies examined and consensus given) **Adequately described?** yes **Operator no/experience** Not reported	**DSM-IV** Autism Asperger's PDD-NOS ASD overall	 19/21= 90.5% Not reported 6/6=100% 25/27=92.6%	**Funding:** NAAR grants and NIMH STAART grant **Limitations:** No sensitivity and specificity of diagnostic classification available due to lack of non-ASD comparison groups Small study size **Blinding:** Clinical diagnosis at follow up not fully independent of initial diagnosis, 1 clinician participated in both assessments of 3 required for consensus **Timing of tests:** T1: 21.6 ± 2.9 months T2: 35.9 ± 3.8 months **Verification (percentage undergoing assessment at both time points)** 31/31= 100% **Also reported:** 4 initially diagnosed with

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
					developmental delay. 1 of these at T2 given diagnosis of PDD-NOS At T1 88% of children with PDD-NOS fell into non-autistic ADI-R classification
Author: Chawarska K **Year:** 2009 **ID:** [125] **Country:** USA **Study design**: Uncontrolled observational **Consecutive recruitment** Unclear **Study dates**: 2001 - 2006 **Evidence level** Very low	**Patient groups:** 89 children selected from amongst consecutive referrals for their young age, evaluated for differential diagnosis of ASD at specialised clinic **Exclusion criteria:** Not reported **Demographics**: Number: 31 Age at first assessment: 13 – 27 months Age at second assessment: 30 – 61 months Ethnicity: Caucasian (86%), Asian (3.5%), African American (1.3%), Mixed 6.9%), Hispanic (5.2%) **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	**Diagnostic tool /method** DSM-IV **Threshold & Data set** DSM-IV criteria modified for children under 3 years old (Chawarska and Volkmar 2005) (based on clinical diagnosis of autism or PDD-NOS assigned by a clinical team consisting of psychologist, psychiatrist and speech-language pathologist based on medical and developmental history review, clinical observation and review of test results If disagreements, discrepancies examined and consensus given) **Adequately described?** yes **Operator no/experience** Not reported	**DSM-IV** Autism Asperger syndrome PDD-NOS ASD overall	 32/43 (74.4%) Not reported 15/18 (83.3%) 25/28 (89.3%)	**Funding:** NAAR, NIMH **Limitations:** No sensitivity and specificity of diagnostic classification available due to lack of non-ASD comparison groups **Blinding:** Clinical diagnosis at follow up not fully independent of initial diagnosis, 1 clinician participated in both assessments of 3 required for consensus **Timing of tests:** T1: 21.5 ± 4.9 months T2: 46.9 ± 7.7 months **Verification (percentage undergoing assessment at both time points)** 89/89= 100% **Also reported:**

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
					11 with autism at T1 moved to PDD-NOS at T2 3 with PDD-NOS at T1 moved to autism at T2 2 with NON-ASD at T1 moved to PDD-NOS at T2 1 with NON-ASD at T1 moved to autism at T2
Author: Cox A **Year:** 1999 **ID:** [118] **Country:** UK **Study design**: Uncontrolled observational **Consecutive recruitment?** No **Study dates:** Not reported **Evidence** level Very low	**Patient groups:** 12 children considered 'high risk' for autism (failed 5 key items on CHAT) 22 children considered 'medium risk' for autism (failed 2 key items on CHAT) 16 children considered 'no risk' for autism (did not meet criteria for 'high risk' or 'medium risk') **Exclusion criteria:** Not reported **Demographics:** Number: 50 Age at first assessment: 20 months Age at second assessment: 42 months (N = 49) Ethnicity: Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Not reported Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	**Diagnostic tool /method** All children referred as being high or medium risk for autism after CHAT At T1 all parents interviewed using ADI-R Clinical diagnosis using ICD-10 criteria At T2 consensus diagnosed based on ICD-10 including results of all assessments at T1 and T2.	**ICD-10** Autism Asperger syndrome PDD-NOS ASD overall Non-ASD	7/ 9 = 77.7% Not reported 3/ 3 = 100% 10/12= 83.3% 25/ 34 = 73.5%	**Funding:** Grant from MRC **Limitations:** 1 lost to follow-up 2 incomplete ADI-R at T 2 1 excluded due to cerebral palsy **Blinding:** None **Timing of tests:** T1 20 months T2 42 months **Verification (percentage undergoing assessment at both time points)** 93.8% **Also reported:** 2 children diagnosed with PDD- NOS at T1 diagnosed with autism at T2, 2 diagnosed with autism at T1 diagnosed with atypical

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
					autism at T2 1 with no clinical diagnosis at T1 diagnosed with AS at T2 8 given Language disorder diagnosis at T1 diagnosed PDD at T2 and 1 diagnosed with AS
Author: Eaves L **Year:** 2004 **ID:** [115] **Country**: Canada **Study design**: Uncontrolled observational **Consecutive recruitment**? Not reported **Study dates:** Not reported **Evidence level:** Very low	**Patient groups:** 49 2 year old children showing social and communication behaviours indicating possible autism Exclusion criteria: Not reported. Demographics: Number: 49 Age at first assessment: 2 years 9 months, (SD 4.58 months) Age at second assessment: mean 4 years 11 months , SD 7.47 months Ethnicity: 39 Caucasian, 7 Asian, 1 South Asian, 2 mixed race Asian and Caucasian **Subgroups:** Intellectual Disability: N (%) Mean performance IQ T1 58.9 (SD 23.0), T2 62.8 (SD 31.3) Verbal IQ T1 36.5 (13.6) T2 48.5 (32.4) Language: Not reported Gender: Male 39/49 (79.6%) Visual impairment: N (%)	**Diagnostic tool /method** DSM-IV **Threshold & Data set** Clinical judgement of the experienced team including results of the assessment according to DSM-IV. All children referred as being potentially autistic were administered CHAT and Pervasive Developmental Disorder Screening test (PDDST) At T1 all children given Bayley Scaled if Infant Dev-II, and at T2 Weschler Pre-school and primary Scale of Intelligence-Revised Vineland Adaptive Behaviour Scales given to parent or caregiver on both occasions CARS applied to children on both occasions **Adequately described?** yes	**DSM-IV** Autism Asperger's PDD-NOS Non-ASD	 31/34= 91.2% Not reported 2/9= 22.2% 6/6=100%	**Funding:** Grant from Vancouver Foundation, British Columbia Medical Services Association **Limitations:** Small study size CARS diagnosis Not reported separately T2 assessment not fully described **Blinding:** Not reported **Timing of tests:** TI: 33 ± 4.6 months T2: 59 ± 7.5 months **Verification (percentage undergoing assessment at both time points)** 100% **Also reported:** 5 children diagnosed with

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
	1 of 49 had visual impairment Hearing impairment: 0/49 (0%) Gestational age: Not reported Source of referral: Infant development program, speech language pathologists, audiologists, community health nurses, pediatricians, pediatric neurologists and family doctors. Numbers from each source Not reported	**Operator no/experience** Number and expertise in diagnostic team not specified			PDD- NOS at T1 diagnosed with autism at T2, 2 moved off spectrum 2 diagnosed with autism at T1 given diagnosed with PDD-NOS at T2 and 1 moved off spectrum
Author: Kleinman J **Year:** 2008 **ID:** [124] **Country:** USA **Study design:** Uncontrolled observational **Consecutive recruitment?** Not reported **Study dates:** Not reported **Evidence level**:	**Patient groups:** 77 children screened with MCHAT age 16-30 months. 9 screened at well child visits with primary care provider, 67 at intake visits with an early intervention agency, 1 younger sibling of child with ASD. **Exclusion criteria:** Already had diagnosis of ASD or other disorder prior to screening Older than 30 or younger than 16 months when screened Severe physical impairments preventing use of standardised evaluation instruments e.g. blind, deaf, unable to sit independently) Family not fluent in English **Demographics:** Number: 77 Age at first assessment: 2 years, 3 months (SD 5 months, range 1 yr, 4 months – 2 years, 11 months) Age at second assessment: 4 yrs, 5	**Diagnostic tool /method** DSM-IV **Threshold & Data set** Clinical judgment according to DSM-IV following team discussion (All children received Vineland Adaptive Behaviour Scales and developmental, medical and intervention history at both time points. Diagnosis of autism or PDD-NOS **Adequately described?** yes Operator no/experience 1 of 3 licensed clinical psychologists or developmental paediatrician, and 1 graduate student experienced in autism assessment	**DSM-IV** Autism Asperger's PDD-NOS Non-ASD	32/46=69.6% Not reported 5/15= 33.3% 16/16=100%	**Funding:** NIH grant and Maternal and Child Health bureau grant, and prior grants from the National Association for Autism Research and Dept of Education **Limitations:** Lack of fully blind assessment T2, Intensive early intervention services in this area, uncertain extent of influence on results. **Blinding:** Not considered possible, but graduate student testing and playing with child at time 2 kept blind wherever possible.

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
Very low	months (SD 8 months, range 3 years, 5 months to 6 years 10 months) Ethnicity: 74 children Caucasian, 1 Asian, 1 African American and 1 Puerto Rican **Subgroups:** Intellectual Disability: Not reported Language: - English 100% Gender: Male 66/77 (85.7%) Visual impairment: Excluded Hearing impairment: Excluded Gestational age: Not reported Source of referral: N (%) - GP 9 - Medical specialist 67 - Other 1 younger sibling with ASD source not given				**Timing of tests:** T1 27 ± 5 months T2 : 53 ± 8 months **Verification (percentage undergoing assessment at both time points)** 100% **Also reported:** NA
Author: Lord C **Year:** 1995 **ID:** 107 **Country**: USA **Study design:** Uncontrolled observational **Consecutive**	**Patient groups:** 34 children referred to MDT developmental disorders clinic. All had delayed speech and language. Recruitment of children under age 3 sought through letters and presentations at meetings from usual sources of referral inc paediatricians, pediatric neurologists, family doctors, speech pathologists and audiologists, encouraged to refer if suspected autism or PDD, including those where referral may have been delayed due to young age. **Exclusion criteria:** 3 diagnosed with Rett Syndrome	**Diagnostic tool /method** ICD-10 Clinician (author) administered Psycho-educational Profile-Revised, CARS, Bayley Mental Scales of Infant Development and if no ceiling on Bayley, Merrill Palmer scales of mental development, scoring non verbal items. Also observed mother playing with child for 5 mins then played with child herself using tasks from a draft of the Pre-Linguistic Autism Diagnostic Observation Schedule. This observation not	**ICD-10** Autism Asperger's PDD-NOS Non-ASD	14/16 (87.5%) Not reported Not reported 12/14 (85.7%)	**Funding:** Alberta Heritage fund for Medical Research and PHS. **Limitations:** Small study size, no exploration of possible confounders such as other features of the children or parent reporting ability **Blinding:** examination by psychiatrist blind to initial assessment diagnosis compared to time 2diagnosis by author who

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
recruitment? Yes **Study dates:** Not reported **Evidence level:** Very low	1 spastic diplegia and profound mental retardation **Demographics:** Number: 30 Age at first assessment:25-35 months Age at second assessment: 38-52months Ethnicity: West Indian 2 Asian 2 Native Canadian 2 Caucasian 28 (4 excluded unclear which) **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male 25/34 (73.5%) Visual impairment: 2 had visual impairment Hearing impairment: 1 had moderate hearing loss Gestational age: 2 were pre-term Source of referral: Not reported	scored in a systematic way **Threshold & Data set** Put child into 2 groups depending on whether she thought child would meet ICD-10 criteria for autism at age 5 (rather than current status) **Adequately described?** yes **Operator no/experience** Single operator author expert in autism At time 2 same administrations of tests by author (CL) and a non standard interview and observation by child psychiatrist blind to earlier diagnosis. Independent judgements on whether child would meet ICD-10 criteria for autism or other ASD age 5.			conducted time 1 and time 2 assessments Author making clinical judgment at T1 and T2 blind to ADI-R score **Timing of tests:** T1 30.5 ± 3.9 months T 2: 45.8 ± 5.3 months **Verification (percentage undergoing assessment at both time points)** 100% **Also reported:** Child psychiatrist and author agreed about T2 diagnosis in 29 of 30 cases. Child psych judgements are used as T2 outcomes
Author: Lord C **Year:** 2006 **ID:**[108] **Country:**	**Patient groups:** 192 children referred for evaluation of possible autism before 36 months of age (111 from North Carolina- regional state-funded autism centre, 81 from Chicago-private university hospital) A comparison group of 22 children with developmental delays recruited from sources of referral to North Carolina centre.	**Diagnostic tool /method** DSM-IV **Threshold & Data set** DSM-IV distinctions between autism and PDD-NOS made on intensity and no of symptoms. 2 psychologists considered the independent clinical diagnosis, the ADI-R and ADOS algorithms,	**DSM-IV** Autism Asperger's PDD-NOS Non-ASD	 71/84 (84.5%) Not reported 14/46 (30.4%) 31/42 (73.8%)	**Funding:** Grants from National Institute of Mental Health and National Institute of Child Health and human development **Limitations:** ADI/ADOS scores incorporated into best

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
USA **Study design:** Uncontrolled Observational **Consecutive recruitment?** Yes **Study dates:** Not reported **Evidence level:** Very low	**Exclusion criteria:** Moderate to severe sensory impairments. Cerebral palsy or poorly controlled seizures **Demographics:** Number: 172 Age at first assessment: NC group 29.2 (SD 4.6 months) Chicago gap 29.2 (5.4 months) Age at second assessment: 9 years Ethnicity: 99 Caucasian, 46 African American **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male 138/172 (80.2%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	and the cognitive, language and adaptive test scores. They read the ADI-R notes, watched the PL-ADOS/ ADOS videotape and discussed all the findings from that age until they reached a consensus At age 9 years parallel information used to generate a consensus best estimate diagnosis by an independent psychologist and child psychiatrist blind to earlier diagnoses **Adequately described?** yes **Operator no/experience** Not reported			estimate diagnosis therefore reference standard not independent **Blinding:** For assessment age 9 years most cases seen by 2 examiners both unfamiliar with child, 1 for ADI-R+VABS and 1 for ADOS and psychometrics. Best estimate diagnosis age 9 were blind to diagnosis age 2 **Timing of tests:** T1 29.0 ± 5.1 months T2 9.4 ± 1.3 years **Verification (percentage undergoing assessment at both time points)** T2 155/192 =80.7% **Also reported:** Training and reliability on ADI and PL-ADOS and ADOS until each pair of examiners reached >90% agreement (k>.70) Reliability for clinical diagnoses at age 2 years measured in 1 in 6 cases with 92% agreement. At

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
					age 9 years, reliability >90% for best estimate autism cases, and 83% for PDD-NOS and non-spectrum
Author: Moore V **Year:** 2003 **ID:** [119] **Country:** UK **Study design:** Uncontrolled observational **Consecutive recruitment?** Not reported **Study dates:** Not reported **Evidence level:** Very low	**Patient groups:** 20 children with severe communication and interactional problems referred to a nursery assessment group in the local child development centre 1 girl had Turner syndrome no others had coexisting medical conditions **Exclusion criteria:** Not reported **Demographics:** Number: Age at first assessment: 2 years 10 months (range 2 yrs 5 months to 3 years 6 months) Age at second assessment: 4 years 5 months (range 4 years 0 months to 4 years 10 months) Ethnicity: Not reported **Subgroups**: Intellectual Disability: Not reported Language: Not reported Gender: Male 16/20 (80%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	**Diagnostic tool /method** Assessment lasting 8-10 weeks. Observation made during child's attendance at weekly nursery GP for 1.5 hrs. Assessment of language, communication skills by speech and language therapist (SALT) and assessment of play, motor, cognitive and self help skills by trained nursery staff. Child psychologist performed ADI-R, further assessment of child's behaviour at home and further cognitive/ developmental testing using Griffiths Mental Developmental Scales. **Threshold & Data set** ADI-R scored predominantly on parental report, but if discrepancy between this and observations in other settings, consensus involving all staff towards end of assessment. ICD-10 diagnosis made on the basis of ADI-R scores, incorporating elements of clinical judgment	**ICD-10** Autism Asperger syndrome PDD-NOS Non-ASD	14/16 (87.5%) Not reported ½ (50%) 1/1 (100%)	**Funding:** Not reported **Limitations:** Small study size. No non-ASD at T1 comparison group **Blinding:** Clinicians performing ADI-R at T2 blind to ADI-R score at T1 but did have access to T1 diagnosis **Timing of tests:** T1 34 months T2 53 months **Verification (percentage undergoing assessment at both time points)** 100% **Also reported:** All children moved into supported educational placements following attendance at CDC for initial assessment, therefore receiving

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
		Adequately described? yes **Operator no/experience** Trained nursery staff, speech and language therapist, clinical psychologist Follow up assessment (time 2): 1 day assessment at Regional Autism Assessment Service comprising education al assessment by teacher, cognitive/ developmental and play assessment, assessment of language and communication skills by SALT and clinical psychologist and structured observation of child during meal and break times by member of nursing staff. ADI-R administered by trained paediatrician of child psychiatrist, unaware of scores at T1 assessment ICD-10 diagnosis arrived at following team discussion at the end of the day. ADI-R scores incorporated an element of clinical judgment as above.			comparable amounts of intervention between 2 assessments 2 children diagnosed with autism at T1 given diagnosis of atypical autism at T2. 3 given initial diagnosis of atypical autism at T1, 2 given diagnosis of autism at T2. 1 child diagnosed with language disorder atT1 and T2
Author: Sutera S **Year:** 2007	**Patient groups:** 90 children who screened positive on the M-CHAT evaluated at age 2 years **Exclusion criteria:**	**Diagnostic tool /method** Clinical judgement based on: Vineland Adaptive Behaviour Scales, Bayley/ Mullen Scale of cognitive development. (10	**DSM-IV** Autism Asperger's PDD-NOS Non-ASD	 49/55=89.1% Not reported 11/18= 61.1% Not reported	**Funding:** National Institute for Child Health and Development, the Maternal and Child Health Bureau, the

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
ID:[123] **Country:** USA **Study design:** Uncontrolled observational **Consecutive recruitment?** Not reported **Study dates:** Not reported **Evidence level:** Very low	Not reported **Demographics:** Number: 90 evaluated 73 diagnosed with ASD at time 1 17 non-ASD at time 1 and remained non-ASD time 2 Age at first assessment: 2 years Age at second assessment: 4 years (42-54 months) Ethnicity: Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male 76/90 (84.4%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Within ASD group at T1, 49 referred from early intervention sites, 8 from paediatricians, 1 younger sibling of child with ASD Within non-ASD at T1, 12 from early intervention sites and 5 from paediatrician	children had no cognitive measure due to non compliance) CARS History during parent interview and play with child Those recruited later also had ADOS **Threshold & Data set** DSM-IV criteria for autism **Adequately described?** yes **Operator no/experience** 1 clinical psychologist or developmental paediatrician At time 2: VABS, Mullen Scales of Early Learning or DAS, ADI, ADOS CARS and clinical interview based on DSM-IV criteria			National Association for Autism Research and the UCONN Research Foundation **Limitations:** Small sample size All children received intervention between type 1 and 2 but this amount varied by child and region No follow up beyond age 4. **Blinding:** Attempted to blind those doing assessment at T2 blind to outcome of T1 but information volunteered by parent may unblind examiner **Timing of tests:** T1 27.5 ± 4.6 months T2 53.7 ± 7.9 months **Verification (percentage undergoing assessment at both time points)** 100% **Also reported:** NA
Author: Turner L	**Patient groups:** 41 children under age 3 years with ASD	**Diagnostic tool /method** DSM-IV	**DSM-IV** Autism	16/18 (88.9%)	**Funding:** National Institute of

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
Year: 2006 **ID:** [122] **Country:** USA **Study design:** Uncontrolled observational **Consecutive recruitment?** **Study dates:** 1993-1995 **Evidence level:** Very low	recruited from regional diagnostic centre. 26 were seen at T2. **Exclusion criteria:** 1 child diagnosed with fragile X after initial assessment and excluded from analysis at T2. **Demographics:** Number: 25 Age at first assessment: mean 31.0 months (SD 3.8) Age at second assessment: mean 108.8 months (SD 7.9) Ethnicity: 19 Caucasian, 3 African American, 3 other **Subgroups:** Intellectual Disability: N (%) DQ T1 mean 55.6 (SD 12.1) range 33-82 DQ T2 mean 79.0 (SD 23.3) range 34-117 Mental age T1 17.0 months (SD 3.6) range 11-26 T2 85.6 (SD 24.9) range 38-126 Language: Not reported Gender: Male 21/25 (84.0%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	**Threshold & Data set** DSM-IV (based on Age 2 assessment cognitive (Bayley scales of Infant Development-II), language (Sequenced Inventory of Communicative Development SICD-R, MacArthur Communicative Development Inventory MCDI), and diagnostic assessments, completion of parent report and interactive measures of social and communicative skills.) **Adequately described?** yes **Operator no/experience** Single licensed psychologist made DSM-IV diagnosis at T1 and 2 Age 9 cognitive (Kaufman Assessment Battery for Children), 2 unable to do this received Merrill Palmer Scale of Mental Tests and 1 Leiter International Performance Scale. Diagnostic: ADI used qualitatively at age 9	Asperger's PDD-NOS Non-ASD	Not reported 2/7 (29%) Not reported	Mental Health, National Institute of Child Health and Human Development, and Hobbs Society of the JFK centre for Research in Human Development at Vanderbilt University **Limitations:** Small sample size, low attrition rate, unknown selection bias could have been introduced due to non-returners. **Blinding:** Not blinded as same psychologist gave diagnosis at T1 and 2 **Timing of tests:** T1 32.0 ± 3.8 months T2 9.1 ± 0.7 years **Verification (percentage undergoing assessment at both time points)** 25/41=61% 9 could not be located, 4 moved out of state, 2 chose not to return. 1 excluded with fragile X syndrome. **Also reported:**

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
					Of 3 children who left spectrum all had done so by age 3. 2 children initially diagnosed with autism at T1 1 diagnosed with learning disability and behaviour problems T2, 1 no behaviour or development prob. 1 child with PDD-NOS at T1 with non- ASD diagnosis T2 demonstrated language impairment age 9. 1 child with PDD-NOS T1 had Asperger's and 3 had autism, 1 non ASD.
Author: Turner L **Year:** 2007 **ID:** [121] **Country:** USA **Study design:** Uncontrolled observational **Consecutive recruitment?**	**Patient groups:** Children referred for evaluation because of developmental concerns. Eligible if: Chronological age between 24 months, 0 days and 35 months, 29 days Clinical diagnosis and ADOS-G diagnosis of ASD at age 2 64 eligible, 58 agreed to participate **Exclusion criteria:** Genetic or metabolic disorder Severe sensory or motor impairment **Demographics:** Number: 58 Age at first assessment: mean 28 months (SD 3.4) Age at second assessment: 53.3 months	**Comparison tool (if applicable):** DSM-IV **Threshold & Data set** DSM-IV or DSM-IV TR criteria (based on observation of ADOS-G and other clinical measures, in addition to parent report. At age 4 clinical diagnosis based on ADOS-G, ADI-R and other clinical measures.)# **Adequately described?** yes **Operator no/experience** Single licensed clinical psychologist	**DSM-IV** Autism Asperger syndrome PDD-NOS Non-ASD	 20/38=52.6% Not reported 3/8 = 37.5% Not reported	**Funding:** Department of Education and National Institute of Child Health and Human Development **Limitations:** None **Blinding:** ADOS-G at T2 blind to T1 score but clinical diagnosis assigned by same clinician at T1 and T2 therefore not blind. **Timing of tests:** T1 28.8 ± 3.4 months

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
Not reported **Study dates:** 1999-2001 **Evidence level:** Very low	(SD 3.5) Ethnicity: 85% Caucasian **Subgroups:** Intellectual Disability: N (%) Overall DQ T1 59.2 (SD 14.5), mental age 16.9 months (SD 16.9) T2 DQ 67.7 (SD 24.8), mental age 35.9 (SD 13.0) Language: Not reported Gender: Unclear Visual impairment: None had severe sensory impairment Hearing impairment: None had severe sensory impairment Gestational age: Not reported Source of referral: State network providing early evaluation and service co-ordination (n=23) University affiliated speech and hearing center (n=20) University based diagnostic evaluation center (n=8) Community referral sources (n=13)	Mullen scales of Early Learning used to assess cognitive function at both ages. Diagnosis of developmental delay made by psychologist and assigned to children who did not meet criteria for ASD but obtained cognitive scores more than 2 SD below mean (i.e. MSEL ELC < 70). Diagnosis of language impairment made by speech-language pathologist on the basis of evaluations that included sequenced inventory of communicative development – revised (SICD-R) or Pre-school Language Scale 3.			T2 53.3 ± 3.5 months **Verification (percentage undergoing assessment at both time points)** 48/58=83% 5 could not be located 1 moved out of state 4 chose not to return **Also reported:** 8/12 children who no longer met criteria for an ASD diagnosis at age 4 continued to have developmental difficulties (8 with LI and 3 with DD/LI) Of those that changed diagnosis n=18 overall DQ=66.0 (16.1), stable group (n=30) 55.1 (12.0) p<0.01
Author: Van Daalen E **Year:** 2009 **ID:**[116] **Country:** USA	**Patient groups:** Children referred for evaluation because of tested positive on ESAT as part of population screening or who were identified by surveillance **Exclusion criteria:** Genetic or medical disorder associated with specific phenotypes of psychiatric disorder [(Rett syndrome (10, tuberous sclerosis (2), neurofibromatosis (2)	**Comparison tool (if applicable):** DSM-IV-TR **Threshold & Data set** DSM-IV TR criteria (based on Development history, Vineland social emotional early childhood scales, Wing autistic disorder interview checklist, observation of ADOS-G) Cognitive ability measured by	**DSM-IV** Autism Asperger syndrome PDD-NOS Non-ASD	28/40 (80%) Not reported 7/13 (53.8%) 76/78 (97.4%)	**Funding:** Not reported **Limitations:** None **Blinding:** Not reported **Timing of tests:** T1 26 ± 6.2 months

Study Details	Patients	Diagnostic Tools	Criteria	Results	Comments
Study design: Uncontrolled observational **Consecutive recruitment?** Not reported **Study dates:** Oct 1999 – Apr 2002 **Evidence level:** Very low	22q11.2 deletion syndrome (1) Fragile X (1)] **Demographics:** Number:131 Age at first assessment: 26 ± 6.2 months Age at second assessment: 45 ± 6.4 months Ethnicity: Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: 104/131 (79.4%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Population screening (71) Surveillance (60)	Mullen scales of early learning **Adequately described?** yes **Operator no/experience** Primary clinician / research associate (for ADOS-G)			T2 45 ± 6.4 months **Verification (percentage undergoing assessment at both time points)** 131/131=100% **Also reported:** 13 diagnosed as autism at T1 were PDD-NOS at T2and 2 were NON-ASD 1 diagnosed as PDD-NOS at T1 was autism at T2 and 5 were NON-ASD 2 diagnosed as NON-ASD at T1 were PDD-NOS as T2

Question 5(c) – no evidence was reviewed

Question 6

Study Details	Samples	Study methods	Finding		Comments
Author: Avdi E **Year:** 2000 **ID:** 127 **Country:** U.K **Aim of study:** To explore parents' constructions of professional knowledge, expertise and authority during assessment and diagnosis of their child for an autistic spectrum disorder **Study design:** Uncontrolled observational **Consecutive recruitment** No.	**Sample:** Parents who were undergoing an assessment of their sons for 'communication difficulties' at a CDC in the West Midlands (U.K). **Exclusion criteria** Not reported. **Demographics of ASD patients:** **Number**: 3 **Age: (Unit: Years)** Not reported. **Gender: N (%)** Not reported. **Diagnosis:** - Developmental delay: 1/3 (33.3%) - Mild autism: 1/3 (33.3%) - Autistic tendencies syndrome: 1/3 (33.3%) **Demographics of parent/ caregivers:** **Number**: 5 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 4/20 (20.0%)	**Recruitment method:** All parents attending the CDC in the West Midlands (U.K) for an assessment of their child for 'communication difficulties' were informed about the study via a standard letter. Four sets of parents were approached, three of which agreed to participate. **Assessment:** Semi-structured interviews. **Data analysis:** **Discourse analysis (DA).** DA is an approach to analysing language which attempts to address 'the ways in which language is so structured as to produce sets of meanings, discourses, that operate independently of the intentions of speakers or writers'. Discourses are patterns of meaning or rules and regularities in	**Bad practice:** Didn't provide parents with adequate explanation as to how they reach the diagnosis. ------- No reply to parents' queries during assessment ------- Didn't involve parents in the decision-making process. ------- Giving people an impression that professionals have power and control	**Outcome (Parents' perspective)** **a). Parents' disbelieve of diagnosis result** *'when I got an assessment of him (son) from them (professionals), really I just took it with a pinch of salt, I didn't take it very seriously because I thought the people that are writing about him (…) they didn't get to see the real Brian, I knew that they were seeing just the surface.'* ---- **a). Parents' dissatisfaction.** *'you just didn't get any feedback (…) that was frustrating to me, because it was like, why the bloody hell can't you tell me what's going on here? [laughs] this is my child that I'm bringing to you.'* ---- **a). Parent's bewilderment** *'they (professionals) know all the facts and all the details and they perhaps decide right we'll give you that fact, just one fact and perhaps not necessarily give you all the options to weigh up, I don't know, perhaps it's better [laughs] it's very complicated.'* ---- **a). Parents' timidity of commutation with professionals.** *'if I had said anything, as I felt I should*	**Funding:** Not reported. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Appropriate 4.1 Not described 4.2 Clear 4.3 Reliable 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Not sure 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported

Study Details	Samples	Study methods	Finding		Comments
Study dates Not reported. **Evidence level:** Very low	- **Female:** 16/20 (80.0%) **Relationship to child: n/N (%)** - Fathers: 2/5 (40.0%) - Mother: 3/5 (60.0%)	texts that have resonances in wider sets of representation in particular cultural contexts. DA aims to tease apart the different discourses that are assumed to operate in talk/text and to explore how discourses 'constrain what can be said, who can say it and how people may act and conceive of their own agency and subjectivity'.	over the parents. --------	*have done at the time but didn't have the bottle to do it, I was thinking if I say anything, will that make them horrible to Adam? Will that make them against him? Will that affect a report on him? So you don't.'* ----	**Also reported:**
Author: Howlin P **Year:** 1997 **ID:** [131] **Country:** U.K **Aim of study:** To examine parents' experiences of the diagnostic process across the U.K as a whole.	**Sample:** Parent members of autistic societies in the U.K. **Exclusion criteria** **Demographics of ASD patients:** **Number**: 1294 **Age: (Unit: Years)** - **Range:** 2-49 y - **Mean:** 12.2 y **Gender: N (%)** (data missing on 1 case) - **Male:** 1077/1294 (83.2%) - **Female:** 217/1294 (16.8%) **Diagnosis:** - Autism: 614/1295 (47.4%)	**Recruitment method:** All the local societies or support groups listed by The National Autistic Society in 1993 were contacted. 48 groups are willing to participate and 2488 questionnaires were distributed via their mailing list. A total of 1295 forms were returned. **Assessment:** Questionnaire. **Data analysis:** Not reported.	**Bad practice:** Delay of diagnosis ------- Professions' reluctance to give diagnosis ------- **Good practice:**	**Outcome (Parents' perspective)** **a). Parents' agony.** *'The whole process is far too slow and seems to depend on the parents' persistence in pushing for a diagnosis. Months seem to go by waiting for appointment after appointment. This really prolongs the agony of what is, inevitably in any case, a painful process.'* ---- **a). Parents' angry.** *'I was fed up with professional pussyfooting around, afraid to say the dreaded word 'autism'. It seems that the very word autistic is taboo.'* ---- **Outcome (Parents' perspective)**	**Funding:** Inge Wakehurst Trust. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Not sure/ inadequately reported 4.1 Clear 4.2 Clear 4.3 Not sure 5.1 Not sure/Not

Study Details	Samples	Study methods	Finding		Comments
Study design: Case series. **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:**	- Asperger syndrome: 190/1295 (14.7%) - Autism/Asperger + other diagnosis: 78/1295 (6.0%) - Autistic tendencies etc.: 181/1295 (14.0%) - Autistic tendencies+ other diagnosis: 165/1295 (12.7%) - Language disorder and/or learning disabilities: 25/1295 (1.9%) - Other: 13/1295 (1.0%) - not known or no diagnosis given: 29/1295 (2.2%) **Demographics of parent/ caregivers:** **Number**: 1295 **Age: (Unit: Years)** Not reported. **Gender: N (%)** Not reported. **Relationship to child: n/N (%)** - Parents: 1295/1295 (100.0%)		Providing family with a clear and quick diagnosis result ------- **Good information: (expectation)** Information about children's special education needs, respite care, local facilities and support groups, benefits and allowances, the roles and responsibilities of the numerous professionals involved, simple definitions of all the relevant terminology and advice on further	**a). Parents' relieve.** *'He diagnosed my son within an hour. I could have kissed the man for ending our despair and putting the word 'autism' to our difficulties. From then doors opened.'* *'Why couldn't someone have spotted his autism earlier?...we look forward to the future in a much more positive and reassuring way because of the diagnosis. Life is much more relaxed an obviously understandable.'* ---- **Outcome (Parents' perspective)** **a). Parents have to spend lots of time on searching for useful information.** *'I would have helped us considerably if we had been provided, from the start, with a set of leaflets explaining the basic things parents need to know about, such as* • *Statement of Special Educational Needs* • *Respite care* • *Local facilities and support groups* • *Benefits and allowances, such as disability Living Allowance etc.* • *The roles and responsibilities of the numerous professionals involved* • *Simple definitions of all the relevant terminology*	reported 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:**

Study Details	Samples	Study methods	Finding		Comments
			reading. -------	• *Advice on further reading.* *It took us a long time to find out this sort of information, much of which was gleaned from other parents who had also found things out the hard way.'* ----	
Author: Kerrell H **Year:** 2001 **ID:** [135] **Country:** U.K **Aim of study:** To examine parents' personal experiences of a diagnostic clinic for children suspected of having autistic spectrum disorder, and to evaluate parental satisfaction with the multidisciplinary assessment team	**Sample:** Families whose child had been diagnosed by the clinic. **Exclusion criteria** Families declined to take part (3), families had moved house (2), families that were not available to be contacted (7) or incomplete interview (1 family). **Demographics of ASD patients:** **Number**: 11 **Age: (Unit: Years)** - Mean: 3.7 y **Gender: N (%)** Not reported. **Diagnosis:** - Autistic: 9/11 (81.8%) - Asperger's syndrome: 2/11 (18.2%) **Demographics of parent/ caregivers:** **Number**: 11	**Recruitment method:** All families whose child had been diagnosed by the clinic were contacted and invited to take part in the study. 11 out of 24 families were interviewed. **Assessment:** Structured interview schedule. The questionnaire consisted of set questions divided into four sections using closed and open-ended questions. **Data analysis:** Not reported.	**Outcome:** **Parents' opinion as to how to improve the communication of diagnosis:** Provide written reports, especially of the assessment Involving parents in discussion after the assessment, as this would help parents to understand professional 'findings' Talk to parents as 'equals'; use language that can be understood and is not technical **Parents' opinion as to how to improve the diagnosis procedure:** Take more		**Funding:** Not reported. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Not sure/ inadequately reported 4.1 Not described 4.2 Clear 4.3 Reliable 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing

Study Details	Samples	Study methods	Finding		Comments
at the clinic. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** **Evidence level:** Very low	**Age: (Unit: Years)** - Mean: 35 y - Range: 25-42 y **Gender: N (%)** - **Male:** 1/11 (9.1%) - **Female:** 10/11 (90.9%) **Relationship to child: n/N (%)** - Fathers: 1/11 (9.1%) - Mother: 10/11 (90.9%)		opportunities to discuss the child's progress with the individual professionals, for example, individual reports should be discussed Only have professionals present who have involvement with the child More individualised professional involvement outside the clinic Interview parents without the child being present Assess the child separately Follow a specific therapy Know who is going to be present to prepare questions to ask Don't make a telephone call to parents to inform them of an appointment. See the child in		5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:** Not reported.

Study Details	Samples	Study methods	Finding		Comments
			various settings Make appointments less formal; allow parents more time to ask questions.		
Author: Knussen C **Year:** 2002 **ID:** [133] **Country:** U.K **Aim of study:** This study is about the disclosure to parents of a diagnosis of an ASD in their child. The views of health professional on disclosure were compared with the views of parents. **Study design:** Uncontrolled observational	**Sample:** **Professionals:** Nine professionals from three major hospital-based centres in Scotland. **Parents:** 126 mothers and fathers of children with ASD living in Scotland. **Exclusion criteria** Professionals who don't have experience in child assessment procedures or experience with disclosure of the diagnosis of ASD. **Demographics of professionals:** Not reported. **Demographics of ASD patients:** **Number**: 96 **Age: (Unit: Years)** - Mean (SD): 7.2 y (2.6) - Range: 1.2-15 y	**Recruitment method:** **Professionals:** Sample was obtained by writing to consultants at the three hospitals in Scotland, inviting participation of members of their staff. The inclusion criteria for participation were involvement in child assessment procedures and experience with disclosure of the diagnosis of ASD. The sample consisted of three professionals from each hospital. **Parents:** Participants were drawn from the population of mothers and fathers of children with ASD living in Scotland. Hospital staffs were asked to identify the families of children diagnosed within the	**Bad practice** Professionals' uncertainty of diagnosis result --------	**Outcome (Parents' perspective)** **a). Parents' anger.** *'Whenever I have asked anyone for a definite diagnosis I have been told it is wrong to label children and a diagnosis isn't important. No one has used the word autism unless I force the issue –then they look shifty!'* ----	**Funding:** Not reported. **Limitations:** 1.3 Appropriate 1.4 Clear 2.1 Not sure 3.1 Not sure/in adequately reported 4.1 Not described 4.2 Clear 4.3 Reliable 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing

Study Details	Samples	Study methods	Finding		Comments
Consecutive recruitment No. **Study dates** 1996-1997 **Evidence level:** Very low	**Gender: N (%)** Not reported. **Diagnosis:** - Autism: 74/96 (77%) - Asperger's syndrome: 15/96 (16%) - Autistic features/tendencies: 7/96 (7.3%) **Demographics of parents:** **Number**: 126 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 34/126 (27.0%) - **Female:** 92/126 (73.0%) **Relationship to child: n/N (%)** - Fathers: 34/126 (27.0%) - Mother: 92/126 (73.0%)	previous five years. 212 children were identified, and 126 of them participated in the study. **Assessment:** **Professionals:** Semi-structured interview, which was adapted from one developed by Turner & Sloper (1992). **Parents:** Self-report questionnaire, which was adapted from an interview schedule developed by Sloper & Turner (1993). **Data analysis:** Not reported.			5.5 Relevant 5.6 Adequate 6.1 Clear **Also reported:**
Author: Mansell W **Year:** 2004 **ID:** [132] **Country:** U.K	**Sample:** Parents whose child had been diagnosed with an ASD by a district diagnostic service. **Exclusion criteria** Not reported. **Demographics of professionals:** Not reported. **Demographics of ASD patients:**	**Recruitment method:** The parents of those with a definite diagnosis of an ASD were sent a letter and a four-page questionnaire designed to address the aims (see 'Aim of study'). The letter obtained the purpose and nature of the survey and explained that their replies would be anonymous and	**Bad practice** Didn't provide the parents with necessary information of the diagnosis, prognosis and available treatment. No prior warning of ASD before the	**Outcome (Parents' perspective)** **a). Parents' anger.** *'More time and information should be given to parents at diagnosis. I was informed of the diagnosis and told I would be seen by the family services worker in a month. That was it. Not explanation. No hope. It was obvious that they knew what diagnosis they were likely to make prior to the play session but I had no prior warning. No one had the decency to tell me what*	**Funding:** Bromley Autistic Trust **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Not sure/in adequately reported

Study Details	Samples	Study methods	Finding		Comments
Aim of study: To assess the perceived change in quality of service provided by the district diagnostic service since changes were implemented in 1998. To obtain comments and recommendations about the service. To assess the use and quality of information services available to parents. To assess the use and perceived quality of support and treatment available to parents. To assess the positive and negative consequences of a diagnosis. To assess how parents' attitudes towards the diagnosis had	**Number**: 55 **Age: (Unit: Years)** - **2-3y:** 16/55 (29.1%) - **4-5y:** 18/55 (32.7%) - **6-7y:** 9/55 (16.4%) - **8-9y:** 4/55 (7.3%) - **>10 y:** 6/55 (10.9%) - **Not specified:** 2/55 (3.6%) **Gender: N (%)** - **Male:** 50/55 (90.9%) - **Female:** 5/55 (9.1%) **Diagnosis:** - Autism: 24/55 (43.6%) - Asperger's syndrome: 12/55 (21.8%) - ASD-NOS: 12/55 (21.8%) - Not specified: 1/55 (1.8%) **Demographics of parents:** **Number**: 78 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 26/78 (33.3%) - **Female:** 52/78 (66.7%) **Relationship to child: n/N (%)** - Fathers: 26/78 (33.3%) - Mother: 52/78 (66.7%)	confidential. **Assessment:** **Questionnaire:** The questionnaire was a mixture of a four-point Likert scale and spaces for additional comments and 'open-question' answers. **Data analysis:** Not reported.	disclosure of ASD. No comfort or empathy to the parents. ------- **n/N (%)** 2/55 (3.6%) 1/55 (1.8%) 4/55 (7.3%) 3/55 (5.5%) ------- **n/N (%)** 5/55 (9.1%)	*might be wrong. At that point I needed to believe there was a future and I was appalled at the way I was treated. I should have had counselling there and then and lots of information given to me.* *I believe that when parents are told during diagnostic assessment that their child is autistic, they should be reassured that there are things they can do, e.g., Lovaas, PECS, change of diet, to make a huge difference. Obviously don't mislead them to think these things are a cure, but don't lead them to believe that the future is bleak, and doom and gloom, as I was.'* ---- **Parents' recommendation (diagnosis)** When communicating the diagnosis to the family: Do not provide too bleak a prognosis Reassure parents there are things they can do Counselling for parents (during the disclosure of diagnosis). Provide the family with a suggested reading list at the time of diagnosis. ---- **Parents' recommendation (information)** Providing information to parents about: How to access help, support and treatment (before the diagnosis)	4.1 Clear 4.2 Clear 4.3 Not sure 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:**

Study Details	Samples	Study methods	Finding		Comments
changed over time. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low			5/55 (9.1%) 4/55 (7.3%) 2/55 (3.6%) 6/55 (10.9%) 5/55 (9.1%) 1/55 (1.8%) 1/55 (1.8%) 1/55 (1.8%) 1/55(1.8%) 1/55(1.8%) 1/55 (1.8%) 1/55(1.8%) ------- **n/N (%)** 1/55 (1.8%) 1/55 (1.8%) 1/55 (1.8%) 4/55(7.3%) 1/55 (1.8%) 1/55 (1.8%)	Further support and treatment programmes (during a follow-up session) The likely diagnosis before the formal diagnosis is given Long-term effects of autistic spectrum disorders Support and treatment options available Dietary intervention Managing behaviour and potty training Secretin Benefits (DLA) and help from social services, especially for single parents Respite care Results of different treatments and their suitability Names of local people to call for information A list of local 'autism-friendly' place, e.g. barbers, shops, restaurants. ---- **Parents' recommendation (Support)** Providing the family with following support: A home visit early on to help with behaviour and provide hints A 'call-back' policy A regular organized treatment review system like at the Maudsley Hospital Help and advice on how to deal with schools, what is available, and getting a place Mention the NAS conferences Explain about the services at the Maudsley	

Study Details	Samples	Study methods	Finding		Comments
			6/55(10.9%) 1/55 (1.8%) 1/55 (1.8%) 2/55(3.6%) 1/55 (1.8%) 1/55 (1.8%) 1/55 (1.8%)	Reduce the waiting list Have a mobile diagnostic service Provide access to a specialist on Asperger syndrome Hold some workshops at weekends (especially Sundays) or school holidays More courses on specific interventions, such as behavioural management. More books on Asperger syndrome. Place leaflets, posters etc. About autistic spectrum disorders in nurseries to raise awareness	
Author: Midence K **Year:** 1999 **ID:** 129 **Country:** U.K **Aim of study:** To explore the diagnostic experiences of parents of children with autism in North Wales. **Study design:** Case series.	**Sample:** Parents with a child with autism in North Wales. **Exclusion criteria** Parents whose children's diagnosis result is still unclear. **Demographics of ASD patients:** **Number**: 4 **Age: (Unit: Years)** - Range: 9-12 y **Gender: N (%)** - **Male:** 3/4 (75.0%) - **Female:** 1/4 (25.0%) **Diagnosis:** - Autism: 4/4 (100.0%) **Demographics of parent/ caregivers:**	**Recruitment method:** All local families with a child with autism were contacted by letter. Five families participated in this study. **Assessment:** Semi-structured interviews. **Data analysis:** Data analysis followed the recommendations of Strauss and Corbin (1990). The first stage of the analysis consisted of labelling the data by examining the transcripts line by line or by sentences or paragraphs to conceptualize the ideas,	**Bad practice** Incorrect diagnosis --------	**Outcome (Parents' perspective)** **a). Parents' anger.** *'At the beginning we thought perhaps it's Fragile X gene. This doctor did not know what I was doing, he said it was me who had the problem. We were told that she would never speak. They kept saying to me: perhaps she is probably deaf. I said that she was not because she could hear everything, she was not deaf because she had speech. You were called a liar. We went to the doctor time and time again, and they said no, there is nothing wrong with the child. The GP wrote in the medical records: her mother is neurotic, because he thought, she is off the wall this woman.'* ----	**Funding:** Not reported. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Not sure/inadequately reported 4.1 Not described 4.2 Clear 4.3 Reliable 5.1 Rigorous 5.2 Rich

Study Details	Samples	Study methods	Finding		Comments
Consecutive recruitment No. **Study dates** Not reported. **Evidence level:**	**Number**: 6 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 3/6 (50.0%) - **Female:** 3/6 (50.0%) **Relationship to child: n/N (%)** - Fathers: 3/6 (50.0%) - Mother: 3/6 (50.0%)	events or concepts reported by the participants. Then, the coding focused on categorizing recurring concepts by looking for their similarities, context and properties; the grouping of these concepts allowed the creation of themes, which were given provisional names. In the next stage, connections between themes were analysed.			5.3 Not sure/Not reported 5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Clear **Also reported:**
Author: Moore K **Year:** 1999 **ID:** 128 **Country:** U.K **Aim of study:** To document the experiences of the main stake-holders (parents and professionals) and	**Sample:** **Parents:** Parents who were members of PAPA (Parents and professionals and autism). **Professionals (health and social services):** Professionals from the five Education and Library boards (responsible for statementing and meeting children's special educational needs) and eleven Health and Social Services Trusts who provide services to families and children. **Professionals (Provider of**	**Recruitment method:** **Parents:** Recruited from PAPA. **Professionals (health and social services):** Professionals who were nominated were contacted by written questionnaires. **Professionals (Provider of diagnostic service for ASD child):** Samples were drawn from health, social and educational services and then contacted by	**Good practice** Multidisciplinary team, adequate tests, listening to parents' thoughts --------	**Outcome (parents' perspective)** **a). Parents' satisfaction.** *'Diagnosis for my son was made by a senior Clinical Medical Officer, a Behavioural psychologist and a Speech and Language Therapist when he was four and half years old. (It) involved a day-long series of tests and detailed information from myself and my husband. We were invited to a 'feedback' with the above people present and were asked what we thought was wrong with our son and then we were told he had autism. We were glad that P. had a diagnosis'* ----	**Funding:** The Department of Health and Social services (Northern Ireland), the Eastern Health and Social services Board, the Northern Health and Social services Board, the Southern Health and Social Services Board and the Western Health and Social services Board, the Down and Lisburn Health and Social services Trust, the South East Belfast Health and Social

Study Details	Samples	Study methods	Finding		Comments
to synthesise these and their suggestions for improvements into a set of principles and recommendations which would command widespread support. **Study design:** Uncontrolled observational. **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	**diagnostic service for ASD child):** Professionals throughout North Ireland who were thought to have an involvement in the provision of diagnostic services for people with ASD. **Professionals (ASD diagnostic specialist):** Professionals from seven North Irish locations and one in London. **Exclusion criteria** Not reported. **Demographics of ASD patients:** Not reported. **Demographics of parent/ caregivers:** **Number**: 34 **Age: (Unit: Years)** Not reported. **Gender:** Not reported. **Relationship to child: n/N (%)** - Parents: 34/34 (100.0%) **Demographics of Professionals** **Health and social services:** **Number**: 15 **Diagnostic service for ASD**	questionnaire. **Professionals (ASD diagnostic specialist):** Not reported. **Assessment:** Questionnaire and consultation/information sessions. **Data analysis:** Not reported.			Services Trust, the Tudor Trust and the Early Years Development Fund. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Not sure/ in adequately reported 4.1 Not described 4.2 Unclear 4.3 Not sure 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Not sure 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not

Study Details	Samples	Study methods	Finding		Comments
	child: **Number**: 44 **ASD diagnostic specialist:** **Number**: 44 **Other demographics information:** Not reported.				reported **Also reported:**
Author: Nissenbaum M **Year:** 2002 **ID:** 130 **Country:** U.S.A **Aim of study:** To examine professionals' and parents' perceptions of giving and receiving a diagnosis of autism **Study design:** Uncontrolled	**Sample:** **Parents:** Parents of autism children. The majority of the participants were from affluent white families residing in one of the wealthiest counties in the country. **Professionals:** Eleven professionals from a medical centre and a preschool. The medical centre was located in a large Midwestern city and the preschool was located in a smaller Midwestern city. **Exclusion criteria** Parents who did not complete the study (n=2). **Demographics of ASD patients:** Not reported.	**Recruitment method:** **Parents:** Two approaches were used to recruited family members. Approach 1: A letter describing the study was sent by the medical centre to 60 families of children who had recently received a diagnosis of autism or another PDD. Only two parents agreed to participate using this method. Approach 2: The first author recruited 15 family members by attending local parent support groups for families who had children with autism. Parents who	**Bad practice** The professionals don't share any perceptions of autism with families. The professionals use jargons without explanation. ------- **Good practice** 1. Having early diagnosis.	**Outcome (parents' perspective)** **a). Parents' bewilderment.** *'The people that we went to, I think are very good at diagnosing, but I don't think that they really thought about the outcomes. They were thinking about the diagnosis right now and what this child had. …[They] mentioned absolutely nothing about what we could look for down the road with him and I don't even think that was on their minds at that point.'* **a). Parents' anger.** *'kind of just thrown all at us. Like BOOM! We were not expecting it at all.'* ---- **Outcome (parents' perspective)** a). Parents' satisfaction. 'It was so clear to us that there was something wrong. We could not deny that	**Funding:** Not reported. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Appropriate 4.1 Clear 4.2 Clear 4.3 reliable 5.1 Rigorous 5.2 Rich 5.3 Reliable

Study Details	Samples	Study methods	Finding		Comments
observational. **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	**Demographics of parents:** **Number**: 17 **Age: (Unit: Years)** 22-41 y **Gender:** male 2/17 (11.8%) **Relationship to child: n/N (%)** - Fathers: 2/17 (11.8%) - Mothers: 15/17 (88.2%) **Demographics of Professionals** **Number**: 11 **Age: (Unit: Years)** Not reported **Gender:** male 10/11 (90.9%) **Years of experiences:** 2-23 y	were interested in participating and had a child who had recently received a diagnosis of autism or another PDD provided their names and telephone numbers on a sign-up sheet. **Professionals:** Professionals were individually approached by the first author in the work environment and given an overview of the study. Professional were asked to participate if they had experience diagnosing autism or other PDD and if they were not physicians. All 11 professionals approached agreed to participate. **Assessment:** Questionnaire and interview. **Data analysis:** Lincoln and Guba's (1985) method of naturalistic inquiry.	------- **Parents' expectation** 1. Communicating the diagnosis to the parent while the child is out of the room -------	he was acting and developing inappropriately. It seemed out of the ordinary compared to our experience with our other son and with other children that we had met. What was even better was we could get some early intervention and get started while he was still young. We were so glad to get it and get an early jump on this. I have heard from many families that they got their diagnosis when their child was older and they lost so much critical time for interventions.' ---- a). 'Definitely it was better not to have him there because that's a real big blow to give to parents. They need to deal with their emotions, or at least in our case, we needed to deal with our emotions and kind of get figured out how we were going to think about this and how we were going to deal with it. We needed time.' ----	5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:** Not reported.

Study Details	Samples	Study methods	Finding		Comments
Author: Osborne L **Year:** 2008 **ID:** [134] **Country:** U.K **Aim of study:** To obtain the views of parents concerning their perceptions of the process of getting a diagnosis of an ASD for their child. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:**	**Sample:** Parents of preschool-, primary- and secondary-aged children who had recently received an ASD diagnosis. **Exclusion criteria** Children whose diagnoses have been made less than 6 months or more than 7 years before the focus group interviews were held. **Demographics of ASD patients:** **Number**: 70 **Age: (Unit: Years)** Not reported. **Gender: N (%)** Not reported. **Diagnosis:** Not reported. **Demographics of parent/ caregivers:** **Number**: 70 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 14/70 (18.7%) - **Female:** 56/70 (81.3%)	**Recruitment method:** Parents were recruited from five local authorities in the southeast of England. These participants were selected randomly by the local authorities from lists of parents who fulfilled the criteria: the child's diagnosis should have been made not less than 6 months before the focus group interviews were held, and not more than 7 years before the focus group interviews were held. **Assessment:** Focus group interview. Each focus group comprised parents of preschool-aged children, one parents of primary-aged children, and one parents of secondary-aged children. **Data analysis:** **Content analysis.** The phases of the content analysis employed were conducted in line with the	**'Bad' practice** (communicating diagnosis) What could have been improved? Standardization and speed Offer of support and help (counselling and services) Information about organizations and services Information impact of autism/ what to expect Practical information on how to deal with child Didn't provide necessary information. Inappropriate manner when conveying the diagnosis Delay of diagnosis -- **'Good' practice**	**a). Parents 'disappointment** *'The manner in which the diagnosis was given to us would have been, I suppose, in one sense, quite cold and calculating, it sort of accounted this is the problem, that's it, goodbye'* ------ **a) Families' complaint** *'I'm very, very bitter at the delay that we've had with our son'* *'All you get is delay, after delay, after delay'* *'There is a need for agencies to work together, so that referrals are dealt with'* ------ **Outcome (parents' perspective)** **Percentage of responses** Preschool Primary Secondary 3/18(19%) 13/29(44%) 12/23(52%) 1/18(4%) 3/29(11%) 1/23(6%) 9/18(50%) 3/29(11%) 6/23(25%) 5/18(27%) 10/29(34%) 4/23(17%) ------ **Percentage of responses** Preschool Primary Secondary 3/18(18%) 7/29(24%) 8/23(35%)	**Funding:** Not reported. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Appropriate 4.1 Not described 4.2 Clear 4.3 Not sure 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported

Study Details	Samples	Study methods	Finding		Comments
	Relationship to child: n/N (%) - Fathers: 14/70 (18.7%) - Mother: 56/70 (81.3%)	recommendations made by Vaughn et al. (1996)	**(communicating diagnosis)** **What did you find helpful about the process of getting diagnosis** Relief/confirmation Altered expectations Nothing Understanding/ support -- **How could communication be made better?** Restructed service More access to professionals Greater flexibility of groups Support groups and meetings Newsletter Face-to-face/ home visits -- Disclosure of diagnosis	2/18(13%) 10/29(33%) 6/23(24%) 1/18(3%) 4/29(13%) 1/23(5%) 9/18(51%) 5/29(18%) 5/23(23%) 2/18(8%) 0/29 (0%) 2/23(10%) 1/18(7%) 3/29(11%) 3/23(3%) ------ **a) Parents' relieve** *'Relief, yes, yes, I mean, I'd been battling for years'* *'Our suspicions as being those that actually live and bring up our chid were actually founded, that we weren't sort of quite mad or paranoid'* **b) They are no longer 'bad parents'** *'It took the blame off me, if that makes sense'* *'I hated, I mean, it's awful to be labelled more or less a bad mother for all these years of your life when you've tried so hard to do the right thing for your child.'* **c) Support now become available for their child** *'It's a bit like, you know, playing the Asperger's card almost, my son's got this, therefore, give me whatever I need.'* ------	**Also reported:**

Study Details	Samples	Study methods	Finding		Comments
			<u>'Good' practice</u> (expectation of communicating diagnosis) Open-mindedness --	**<u>Outcome (parents' perspective)</u>** *'a general openness all round''* *a much more honest approach'* ------	

Question 7 – No evidence reviewed

Question 8

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Author: Allik H **Year:** 2006 **ID:** [165] **Country:** Sweden **Aim of study:** To investigate childhood AS/HFA regarding a wide range of parent reported sleep-wake behaviour, with a particular focus on insomnia. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported.	**Patient groups:** 32 children selected out from a total of 122 children with a clinical diagnosis of AS, registered at three PDD-habilitation centres in Stockholm, born in the period 1989-1992. **Exclusion criteria** **Initial stage (122 children left):** Children with intellectual disability, seizure disorder or long-term medication. (since all of these factors are known to have an impact on sleep) **First stage (88 children left):** Children who dropped out of study (n=37), children with epilepsy (n=5), essential language delay (n=5), physical disabilities (n=4), pharmacological treatment (n=20). **Second stage (32 children left):** Children current use psychotropic medication (n=15), suspicion of mental retardation (n=4) **Diagnostic information of ASD** **Diagnosis criteria of ASD:**	**Diagnostic criteria:** DSM-IV-Adapted criteria for paediatric insomnia. **Diagnostician:** By the author. **Assessment:** Sleep-wake behaviour during the previous six month, sleep diary and actigraphs and the behavioural screening forms. **Operator experience:** Parents with no experience. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	***Diagnosis:*** Paediatric insomnia ***Symptoms:*** Sleeping difficulties	**n/N (%)** 10/32(31.3%) 19/32 (59.4%)	**Funding:** Grants from First May Flower Annual campaign. **Limitations:** Serious Small sample size. By only selecting children without medication, this study might have excluded severely sleep-disturbed children. So the generalisability of the results of the current study is limited. **Also reported:** None of the controls fulfilled the definition of paediatric insomnia in this study.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Evidence level: Low	ICD-10 **Diagnosis assessment of ASD:** Comprehensive multidisciplinary assessment, which included neuropsychiatric examination, speech and communication testing, and neuropsychological testing, performed on average 40 months prior to the present study by independent clinicians at child psychiatric and paediatric clinics. Before entering study, those 32 children were reassessed. **ASD subtype: N (%)** AS: 19/32 (59.4%) HFA: 13/32 (40.6%) **Control group:** 32 typically developing children, matched pair wise with the children in the AS/HFA group with respect to age, gender and residency. **Demographics:** **Number**:32 **Age: (Unit: Years)** **Mean:** 10.8 **Range:** 8.5-12.8 **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: None of those included children				

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	were intellectual disability. Language: Not reported Gender: Male: 28 (87.5%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Baghdadli A. **Year:** 2003 **ID:** 154 **Country:** France **Aim of study:** To examine relationship between age of recognition of first disturbances and severity in young children with autism **Study design:** Uncontrolled observational	**Patient groups:** Children from 49 child psychiatry centers in France that were contacted between Dec 1997 and Dec 1998. The eligibility criteria were: A diagnosis of ASD. Age <7 years **Exclusion criteria** Children without parental consent. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** ICD-10. **Diagnosis assessment of ASD:** Diagnosed by experienced psychiatrists trained to used standardized instruments on the basis of the ICD-10 criteria and the diagnoses were validated by consensus among the psychiatrists. **ASD subtype: N (%)**	**Diagnostic criteria:** ICD-10. **Diagnostician:** Not reported. **Assessment:** Retrospective data collection of past medical history. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	***Diagnosis:*** Epilepsy Cerebral palsy Meningitis Hydrocephalus Hereditary ataxia Fragile X syndrome Chromosomal abnormalities Congenital disorder Auditory deficits	**n/N (%)** 13/193 (6.7%) 1/193 (0.5%) 2/193 (1%) 2/193 (1%) 1/193 (0.5%) 1/193 (0.5%) 3/193 (1.6%) 33/193 (17.1%) 35/193 (18.0%)	**Funding:** Programme hospitailer de recherché Clinique 96 & 97, and Fondation France Telecom. **Limitations:** No detailed information as to the diagnostic procedure of coexisting problems. **Also reported:** Children who display autistic disturbance at a young age are more likely to also suffer from other developmental delay or medical disease.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Consecutive recruitment Not reported. **Study dates** 1997-1998 **Evidence level:** Very low	Infantile autism: 158/193 (82.4%) Atypical autism: 28/193 (14.6%) Asperger's synfrome: 2/193 (1%) PDD-NOS: 5/193 (2%) **Demographics:** **Number**:193 **Age: (Unit: Years)** **Mean:** 5 **Range:** 1.7-7 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Not reported. Language: Not reported. Gender: Male: 157 (81.3%) Visual impairment: Not reported. Hearing impairment: Not reported. Communication impairment: Not reported. Gestational age: Not reported. Source of referral: Not reported.				
Author: Baghdadli A. **Year:** 2003 **ID:** 155	**Cohort group:** Children <7 years enrolled during 1997-99 from 51 French agencies. (Aussilloux et al. 2001; Baghdadli 2001) **Patient groups:** A subset of sample from above cohort group: 222 children with	**Diagnostic criteria:** Not reported. **Diagnostician:** Psychologist or psychiatrist. **Assessment:** Data of medical condition other than SLB comes from	***Diagnosis (based on case history)*** Epilepsy ***Symptoms:*** Self-injurious behaviours ***Diagnosis:*** Genetic syndrome/ malformation Perinatal condition	 160/222 (72.1%) 109/222 (49.1%) 7 /222 (3.2%) 11 /222 (5%)	**Funding:** Programme Hospitailer de recherché Clinique and the Foundation France Telecom. **Limitations:** No detailed information about previous

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Country: France **Aim of study:** Identify risk factors for self-injurious behaviours in children with autistic disorders. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	autistic disorders. **Exclusion criteria** Children whose parents live in other department different from the three study sites. **Diagnostic information of autism** **Diagnosis criteria of autism:** ICD-10 **Diagnosis assessment of autism:** Not reported. **ASD subtype: N (%)** Autistic disorder: 222 (100%) **Demographics:** **Number**:222 **Age: Mean:** 5.0 ± 1.2 years **Range:** 2-7 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Profound ID: 13/222 (5.9%) Severe ID: 155/222 (70.0%) Mild ID: 45/222 (20.3%) Not intellectually disabled: 9/222 (4%) Language: Not reported. Gender: Male: 183/222 (82.4%) Visual impairment: Not reported. Hearing impairment: Not reported Communication impairment :	retrospective data, collected by a psychologist or a psychiatrist. Data of SLB has been collected via questionnaire (not specified) administrated by care-staff members. **Operator experience:** Experienced. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes.	Mental retardation	213/222 (95.9%)	diagnostic procedure of coexisting disease was reported. **Also reported:** Lower chronological age, associated perinatal condition, a higher degree of autism and a higher daily living skills delay were risk factors of SIBs but parental class, sex and epilepsy were not.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Not reported. Gestational age: Not reported. Source of referral: Not reported.				
Author: Black C **Year:** 2002 **ID:** 166 **Country:** U.K **Aim of study:** To assess whether children with autism are more likely to have a history of gastrointestinal disorders than children without autism. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates**	**Cohort group:** All children born after 1 Jan, 1988 and registered with selected UK general practitioners within 6 months of birth (n=211,480). **Patient groups:** Children whose diagnosis of autism was confirmed by additional documentation then the child will be considered as a case. **Exclusion criteria** Children whose case records indicated that the diagnosis was not an autistic spectrum disorder (n=7). Case records were inconclusive (n=10) or unavailable (n=20). **Diagnostic information of autism** **Diagnosis criteria of autism:** ICD code 307.0 **Diagnosis assessment of autism:** Not reported. Diagnosis result come from chart review, which includes hospital and referral records, i.e, letters from psychiatrists, neurologists, and	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** Not reported. Children with history of inflammatory bowel disease, and recurrent gastrointestinal symptoms were identified from database search. Recorded details of hospital admissions and consultations of those children were requested. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	***Diagnosis:*** Chronic gastroenteritis Food intolerance	 2/96 (2.1%) 3/96 (3.1%)	**Funding:** The whole project: The boston collaborative drug surveillance progrm is supported in part by grants from AstraZeneca, Berlex laboratories, GlaxoSmithKline, Hoffmann-La Roche, Ingenix Pharmaceutical services, Johnson &Johnson Pharmaceutial research & development, LLC, Pharmacia Corporation, and Novartis Farmaceutica. **But it was reported that this study was not funded by above companies.** **Limitations:** Some The lack of structured interviews to ensure uniformity in the diagnosis of autism. **Also reported:** The risk ratio for child with or without autism

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Not reported. **Evidence level:** Very low	consultant paediatricians, for all potential cases. **ASD subtype: N (%)** Autism: 96/96 (100%) **Demographics:** **Number**:96 **Age: (Unit: Years)** **Mean (boys):** 4.3 **Mean (girls):** 4.1 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 84/96 (88.0%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment: Not reported Gestational age: Not reported Source of referral: Not reported				to have a history of gastrointestinal disorders.
Author: Bertrand J Year: 2001 ID: [171] Country: U.S.A AIM: To determine the prevalence of	Patient groups: Children aged 3-10 years whose parents resided in Brick township, New Jersey, at any time during the 1998 calendar year. Exclusion criteria: Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:**	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** Not reported. **Operator experience:** Not reported.	***Diagnosis:*** Fragile X Seizure disorder Genetic translocation Intellectual disability	**n/N (%)** 2/60 (3.3%) 2/60 (3.3%) 1/60 (1.7%) 19/39 (49%)	Funding: Not reported. Limitations: 1. The coexisting conditions of ASD have not been reported for the whole sample. 2. Inability to ascertain higher functioning individuals who were

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
autism for a defined community, Brick township, New Jersey, using current diagnostic and epidemiological methods. Study design: Uncontrolled observational study Consecutive recruitment? Not reported Study dates: 1998 Evidence level: Very low	DSM-IV **Diagnosis assessment of ASD:** ADOS-G, detailed medical and developmental histories, and evaluation of intellectual and behavioural functioning. **ASD subtype: N (%)** Autistic disorder: 72/120 (60%) PDD-NOS: 48/120 (40%) Demographics: Number: 120 Age: Range = 3 – 10 y Ethnicity: White non-Hispanic: 89% Hispanic: 4% Other: 4% Unknown: 3% Subgroups: Language: Not reported Gender: male 88/120 (73.3%) Intellectual disability: Not reported. Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	**Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			not in any special education class in public schools or had not been seen by participating clinicians.
Author: Canitano R	**Patient groups:** 46 children consecutively referred for neuropsychiatric	**Diagnostic criteria:** **Epilepsy:** Revised classification of epilepsies	***Diagnosis:*** Epilepsy Regression	**n/N (%)** 6/46 (13.0%) 24/46 (52.2%)	**Funding:** Child neuropsychiatry, General University

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Year: 2005 **ID:** [157] **Country:** Italy **Aim of study:** To investigate the prevalence of epilepsy and paroxysmal abnormalities in a group of children with autism and to determine the percentage of regression course in this group. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low	evaluation during the past year the department of child neuropsychiatry of the General University hospital of Siena, which is a referral centre for patients with autism and PDD, to which patients from all over the country are admitted as inpatients or outpatients for assessment, diagnostic work-ups, and therapeutic interventions. **Exclusion criteria** Children whose parents live in other department different from the three study sites. **Diagnostic information of Autism** **Diagnosis criteria of autism:** DSM-IV. **Diagnosis assessment of autism:** Assessment of language competencies, play skills, and reciprocal interactions, as well as the occurrence of repetitive and stereotyped behavioural patterns. **ASD subtype: N (%)** Autism: 46/46 (100%) **Demographics:** **Number**:46	and epileptic syndromes. **Regression:** Not reported. **Paroxysmal abnormalities:** present with spikes, spike-waves, poly spikes, and poly spike-waves in focal, multifocal, diffuse, or generalized patterns. **Diagnostician:** Not reported. **Assessment:** EEG, WISC-R, blood chemistry and complete cell count; metabolic screening, including serum and urinary amino acids; electrocardiography, and audiometry. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	Mental retardation	46/46 (100%)	Hospital of Siena, Siena, Italy. **Limitations:** Small sample size. The mean age of sample is 7.8 years, which corresponds to a period of lower risk of seizures; so the incidence rate of epilepsy derived from this study might be lower than the normal rate. **Also reported:** Abnormal neurologic findings were more significant for those children with both autism and epilepsy, than those children with only autism. No difference in the regression rate was observed between patients with paroxysmal abnormalities and epilepsy and those with a normal EEG and without seizures.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Age: (Unit: Years) **Mean:** 7.8 ± 2.7 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 34/46 (73.9%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Canitano R **Year:** 2007 **ID:** 158 **Country:** Italy **Aim of study:** To determine the rate of tic disorders in a clinical sample of ASD patients.	**Cohort group:** All patients at the division of Child neuropsychiatry of the general hospital of Siena during 2004. **Patient groups:** 105 consecutive children and adolescents received a diagnosis of ASDs. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV. **Diagnosis assessment of ASD:** Not reported.	**Diagnostic criteria:** Tic diagnostic criteria for tics and stereotypes (Jankovic, 1997) **Diagnostician:** Local mental health professional, usually child psychiatrist. **Assessment:** Neuropsychiatric assessment, laboratory workup and appropriate ancillary evaluations. The Yale global tic severity scale. **Operator experience:** Experienced clinicians.	***Diagnosis:*** Tourette disorder Chronic motor tics Behaviour problems (chart review)	**n/N (%)** 5 /105 (4.8%) 5 /105 (4.8%) 17/105 (16.2%)	**Funding:** Not reported. **Limitations:** A single though accurate evaluation is not sufficient for determining the rate of true co-morbidity of tic disorders in ASDs. Since some of the samples are taking medicine during this study, pharmacotherapy could have masked the phenomenology of tics and of the other repetitive behaviours. The sample used in this

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Study design: Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low	**ASD subtype: N (%)** Not reported. **Demographics:** **Number**:105 **Age: (Unit: Years)** **Mean:** 12 ± 3.9 **Ethnicity: N (%)** Not reported. **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 94/105 (90.0%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment: Not reported Gestational age: Not reported Source of referral: Not reported	**Inter-rater reliability:** No detail figures were reported. But it was reported that the clinical evaluation was conducted and repeated by two clinicians working independently. **Cost:** Not reported. **Adequately reported:** No.			study may represent only a subset of individuals with ASDs and tic disorders. Small sample size. **Also reported:** Not reported.
Author: De Bruin E **Year:** 2007 **ID:** [161] **Country:** Netherland **Aim of study:**	**Patient groups:** Children who diagnosed as PDD-NOS among those who consecutively referred to outpatients' department of child and adolescent psychiatry, Erasmus medical Centre Rotterdam, the Netherlands between July 2002 and Sep 2004. **Exclusion criteria** Children whose parents with	**Diagnostic criteria:** DSM or ICD **Diagnostician:** Psychologist or psychiatrist. **Assessment:** DISC-IV, WISC-R and CSBQ. **Operator experience:** Trained psychologists, research assistants, and psychology undergraduate	***Diagnosis:*** Social phobia Separation anxiety disorder Simple phobia Agoraphobia Panic disorder Generalized anxiety disorder Obsessive compulsive disorder Major depression Dysthymic disorder Mania Hypomania ADHD	11/94 (11.7%) 8/94 (8.5%) 36/94 (38.3%) 6/94 (6.4%) 1/94 (1.1%) 5/94 (5.3%) 6/94 (6.4%) 10/94 (10.6%) 2/94 (2.1%) 3/94 (3.2%) 3/94 (3.2%) 42/94 (44.7%) 35/94 (37.2%)	**Funding:** Grant from the Netherlands organization for scientific research (NOW/ZonMw/OOG-100-002-006). **Limitations:** Children from only one outpatients' department were included which may have limited the

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Investigate psychiatric co-morbidity patterns in school-aged children with PDD-NOS. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes **Study dates** Not reported. **Evidence level:** Very low	language difficulties. Children whose parents refused to take part in this study. Children with severe neurological or physical problems. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** ICD-10 & DSM-IV. **Diagnosis assessment of ASD:** Assessment of early development through current level of social, communicative, and adaptive functioning, obtained from semi-structured interviews carried out with the parents or caretakers as well as psychiatric observation of the child in a one-to-one situation. School and relevant medical information was obtained, as well as psychological assessment information. **ASD subtype: N (%)** PDD-NOS: 94 (100%) **Demographics:** **Number**:94 **Age: (Unit: Years)** **Mean:** 8.5 ± 1.9 years **Range:** 6-12 **Ethnicity:** Not reported.	students. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes.	ODD Conduct disorder	9 /94 (9.6%)	generalizability of the results. Also, a university outpatients' department of child and adolescent psychiatry is generally not the first mental health service that children with psychiatric problems are referred to. Less severe cases may visit community mental health centres first. Therefore, the current study sample may not represent the target population of all children with PDD-NOS. **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Subgroups: Intellectual Disability: Not reported. Language: Not reported Gender: Male: 83/94 (88.3%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Depienne C Year: 2009 ID: [187] Country: Europe and the U.S.A AIM: 'To assess the frequency of 15q11-q13 rearrangements in a large sample of patients ascertained for ASD.' Study design: Uncontrolled observational study	Patient groups: 522 patients with ASD belonging to 430 families recruited at specialized clinical centres in Europe and the U.S. Exclusion criteria: Not reported. Demographics: Number: 22 Age: Range = 2.5 – 43 y Mean = 11 y SD = 7.5 y Ethnicity: Caucasian (89%) Subgroups: Language: Not reported Gender: male 393/522 (75.3%) Intellectual disability: 356/522 (68%)	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** Not reported. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	***Diagnosis:*** Mental retardation Language problem Epilepsy	**n/N (%)** 356/522 (68%) 261/522 (50%) 66/522 (13%)	Funding: Foundation de France, INSERM, Foundation pour la Recherché Medicale, foundation France Telecom, Cure autism now, assistance publicque-hopitaux de Paris, and the Swedish science Council. Limitations: None.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Consecutive recruitment? Not reported Study dates: Not reported. Evidence level: Very low	Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Fombonne E. **Year:** 1997 **ID:** [156] **Country:** France **Aim of study:** To assess prevalence of autism and its associated medical problems. **Study design:** Uncontrolled observational **Consecutive**	**Cohort group:** All children born in three different French departments between 1976 and 1985 and registered to the local authority for special education were included. Data come from a survey conducted in 1992-1993. **Patient groups:** 174 children diagnosed as autistic. **Exclusion criteria** Children whose parents live in other department different from the three study sites. **Diagnostic information of autism** **Diagnosis criteria of autism:** ICD-10 **Diagnosis assessment of autism:** Not reported.	**Diagnostic criteria:** ICD-9. **Diagnostician:** Local mental health professional, usually child psychiatrist. **Assessment:** Not reported. Diagnosis result come from chart review, which include socio-demographic data, current and past school placement, psychological testing or a clinical assessment of intellectual functioning, medical conditions coded in ICD-9, and information about self-help skills, language and communication level, social development, activities, and behaviour.	***Diagnosis:*** Epilepsy Cerebral palsy Down syndrome Blindness Deafness Congenital rubella Fragile X Other chromosomal abnormalities Tuberous sclerosis Neurofibromatosis Mental retardation	**n/N (%)** 46/174 (26.4%) 5/174 (2.9%) 3 /174 (1.7%) 5 /174 (2.9%) 3 /174 (1.7%) 1 /174 (0.6%) 3 /174 (1.7%) 2 /174 (1.1%) 2 /174 (1.1%) 1 /174 (0.6%) 153/174 (87.9)	**Funding:** INSERM (492017), the Ministry of Health, and the Caisse Nationale d'Assurance Maladie. **Limitations:** No detailed information about diagnosis procedure of coexisting disease in present scheme was reported. No detailed information about previous survey (1985-1990) was given; so we didn't extract the combined data of these two surveys. **Also reported:** Although ICD-9 was used as major diagnostic criteria of coexisting disease in this scheme,

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
recruitment Not reported. **Study dates** Not reported. **Evidence level:** Very low	**ASD subtype: N (%)** Autistic disorder: 174 (100%) **Demographics:** **Number**:174 **Age: (Unit: Years)** **Mean:** 11.6 ± 2.6 **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: - No retardation: 21/174 (12.1%) - Mild retardation: 12/174 (6.6%) - Moderate to profound retardation: 141/174 (81.3%) Language: Not reported Gender: Male: 112/174 (64.4%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	**Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			evidence from an independent study (Fombonne, 1992, 1995) had shown that good agreement was obtained between the diagnosis of autism and atypical autism in this scheme and ICD-10.
Author: Gadow K **Year:** 2005 **ID:** 172 **Country:** U.S.A	**Case group:** Consecutive referrals to a university hospital developmental disabilities specialty clinic located on Long Island, New York and diagnosed as PDD. **Exclusion criteria** Not reported.	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** Interviews with the children and their caregivers, informal observation of parent-child interaction, school reports,	***Diagnosis: (3-5 years old)*** ADHD only Tic only ADHD + Tic ***Diagnosis: (6-12 years old)*** ADHD only Tic only ADHD + Tic	**n/N (%)** 46/182 (25.3%) 20/182 (11.0%) 21/182 (11.5%) 53/301 (17.6%) 48/301 (16.0%) 114/301 (37.9%)	**Funding:** Supported in part by a grant from the Matt and debra Cody Centre for autism and developmental disorders. **Limitations:** Difficulties in differentiating ADHD

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Aim of study: To examine the clinical significance of co-occurring tics and ADHD as indicators of a more complex symptomatology in children with and without pervasive developmental disorder. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low	**Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV. **Diagnosis assessment of ASD:** Made by an expert clinician who has more than 20 years experience with ASD, based on: Parent interviews, observation of the child, comprehensive developmental history of language and social development and inflexible or repetitive behaviours, ADOS, review of standardized parent and teacher-completed rating scales that included ASD symptoms, and prior evaluations by educators and clinicians. **ASD subtype: N (%)** Not reported. **Control group:** Consecutive referrals to a child psychiatry outpatient service located on Long Island, New York. **Demographics:** (3-5 year group) **Number**:182 **Age: (Unit: Years)** **Mean:** 4.2 ± 0.8 y **Ethnicity:**	psycho-educational and special education evaluations, a questionnaire of developmental, educational, medical, and family histories, and scores from several parent-and teacher-completed behaviour rating scales. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			from Tics. **Also reported:** Co-occurrence of ADHD and tics is an indicator of a more complex psychiatric symptomatology in children with PDD.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Caucasian: 171/182 (96%) African-American: 2/182 (1%) Hispanic-American: 4/182 (2%) Other: 2/182 (1%) **Subgroups:** **Intellectual Disability:** Not reported **Language:** Not reported **Gender: Male:** 144/182 (79%) **Demographics:** (6-12 year group) **Number**:301 **Age: (Unit: Years)** **Mean:** 8.3 **±** 1.9 **Ethnicity:** Caucasian: 279/301 (94%) African-American: 8/301 (3%) Hispanic-American: 5/301 (1.5%) Other: 5/301 (1.5%) **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 254/301 (84%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Goldstein S	**Cohort group:** All children seen for diagnostic	**Diagnostic criteria:** DSM-IV.	***Diagnosis:*** Combined type of ADHD	**n/N (%)** 7/ 28 (26%)	**Funding:** Learning and behaviour

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Year: 2004 **ID:** [173] **Country:** U.S.A **Aim of study:** To determine if a sample of PDD patients display symptoms and impairment related to ADHD sufficient to warrant a co-morbid diagnosis of ADHD. To examine do children with PDD displaying ADHD symptoms demonstrate more impairment than those children only having PDD? **Study design:** Uncontrolled observational	evaluation at a university affiliated, fee for service, neuropsychological centre since 1997. **PDD group:** Children who diagnosed as autism or PDD-NOS from the above cohort. **ADHD group:** Children who diagnosed as ADHD Inattentive type (n=10) or ADHD combined type (n=10) from the above cohort. **Exclusion criteria** Children having any neurologic impairment, mental retardation, or other psychological or emotional disorder. Children with complete data. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV. **Diagnosis assessment of ASD:** All of the subjects reviewed had been thoroughly evaluated by either the first author (PhD in neurology) or a post doctoral resident under the first author's supervision. The evaluation consisted of completion of a thorough developmental and	**Diagnostician:** PhD in neurology. **Assessment:** Test data obtained from parents, teachers, and subjects during the course of the evaluation. Test data were reviewed and collected for selected subscales of the WISC-III, CAS, CPRS-R:L & CTRS-R:L;, Barkley, and CBCL Achenbach & Edelbroch. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes.	Inattentive type of ADHD	9/28 (33%)	center, Salt Lake City, U.S.A **Limitations:** Serious Chart-review study It is Not reported that whether the samples were recruited consecutively or not. **Also reported:** PDD patients with ADHD symptom didn't experience more difficulties in daily situations as rated by parents and teachers.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Consecutive recruitment Not reported. **Study dates** Not reported. **Evidence level:** Very low	psychosocial history from one or both of the subjects' parents or guardians, completion of several behavioural rating questionnaires as well as the administration of a through psychological and neuropsychological battery. **ASD subtype: N (%)** PDD-NOS: 28/37 (75.7%) Autism: 9/37 (24.3%) **Demographics:** **Number**:37 **Age: (Unit: Years)** **Mean:** 8.5 **±** 3.6 **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: 50/57 (87.7%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Green D **Year:** 2009	**Cohort group:** Special needs and autism project (SNAP) sample drawn from a total population cohort of 56,946 children aged 9 to 10	**Diagnostic criteria:** Based on the total impairment score of M-ABC (Movement assessment battery for children).	***Diagnosis:*** Movement problems ***Symptoms:*** Mental retardation	80/101 (79.2%)	**Funding:** Wellcome trust and the Department of health. **Limitations:**

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
ID: 167 **Country:** U.K **Aim of study:** To explore the degree of impairment in movement skills in children with ASD and a wide IQ range. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	years in southeast England. This stratified subsample drawn from across the range of score of social communication questionnaire. **Patient groups:** A subsample of the above cohort group, all of whom have a diagnosis of ASD. **Exclusion criteria** Children who didn't complete all items of M-ABC. Children whose total impairment score couldn't be calculated. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** ICD-10 **Diagnosis assessment of ASD:** ADOS-G, ADI-R, language, IQ, psychiatric co-morbidities and a medical examination. **ASD subtype: N (%)** Autism: 45/101 (51.3%) Other ASD: 56/101 (48.7%) **Demographics:** **Number**:101 **Age: (Unit: Years)** **Mean:** 11.3 ± 0.8 **Range:** 10.0-14.3 y **Ethnicity: N (%)** Not reported.	**Raw score** / **Diagnosis** **>13.5** (<5th percentile) – Motor difficulties **10-13.5** (5th-15th percentile) – Border line **0-9.5** – Normal **Diagnostician:** Not reported. **Assessment:** M-ABC DCDQ - Completed by parents before clinical assessment. WISC-III-UK. **Operator experience:** For DCDQ: by parents without experience For WICH-III-UK and M-ABC, Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes.	Borderline movement problems	35/101 (34.7%) 10/101 (9.9%)	Only two-thirds of the assessed children completed the M-ABC. Children with childhood autism and an IQ below 70 were less likely to complete the M-ABC, so the present estimates of motor impairment might be considered minimum figures only. The content of the movement skills assessed by M-ABC and DCDQ differ, which probably reducing the latter's predictive power. **Also reported:** Using M-ABCs as reference standard, the accuracy of DCDQ in identifying children with movement problems are: **Sensitivity:** 86.0% 95%CI: 76.9-92.6%; **Specificity:** 45.5% 95%CI: 16.7-76.6%; **PPV:** 92.5% 95%CI: 84.4-97.2%. Children with childhood autism were more impaired than children

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Subgroups: Intellectual Disability: IQ<70: 35/101 (34.7%) Mean=56.5 ± 10.3 IQ>=70: 66/101 (65.3%) Mean=89.7 ± 5.0 Language: Not reported Gender: Male: 89 (88.1%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				with broader ASD, and children with an IQ less than 70 were more impaired than those with IQ more than 70.
Author: Hartley S **Year:** 2008 **ID:** [174] **Country:** U.S.A **Aim of study:** To investigate the prevalence of clinically significant maladaptive behaviours during	**Cohort group:** 605 children aged 1.5-5.8 years referred to an interdisciplinary autism clinic in the north west region of the United States by their primary medical care provider between Aug, 2003 and Jan, 2007. **Patient groups:** Children who diagnosed as AD from the above group. **Exclusion criteria** Children whose data were incomplete (n=65) **Diagnostic information of autism**	**Diagnostic criteria:** CBCL. **Diagnostician:** Licensed professionals. **Assessment:** Vineland adaptive behaviour scales, the Mullen Scales of early learning, CBCL. **Operator experience:** Experienced. **Inter-rater reliability:** Not reported. **Cost:** Not reported.	***Symptoms:*** Withdrawn Attention problem Aggression problem Emotionally reactive Somatic complaints syndrome Anxious/depressed Sleep problems	**n/N (%)** 118/169 (69.8%) 65/169 (38.5%) 38/169 (22.5%) 30/169 (17.8%) 29/169 (17.2%) 6/169 (3.6%) 26/169 (15.4%)	**Funding:** Not reported. **Limitations:** No clinical diagnosis. CBCL is a parent-rated measure thus the result is likely to be subjective. This result could not be generalized to those children with AD but wasn't been refer as AD. 27.8% of participants assessed in the autism clinic were excluded because of incomplete data. **Also reported:**

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
early childhood and identified at-risk subgroups of young children with AD. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	**Diagnosis criteria of autism:** ICD-10 **Diagnosis assessment of autism:** Clinical consensus. ADOS-G, DSM-IV-TR. **ASD subtype: N (%)** Autistic disorder: 169/169 (100%) **Demographics:** **Number**:169 **Age: (Unit: Years)** **Mean:** 11.6 ± 2.6 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 112 (64.4%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	**Adequately reported:** Yes.			Risk factors of maladaptive behaviour in young children with AD.
Author: Hering E **Year:** 1999 **ID:** 160	**Cohort group:** Children referred to a special treatment centre for autism and pervasive developmental disorders. **Patient groups:** 18 autistic children selected	**Diagnostic criteria:** Based on questionnaire and actigraphs. **Diagnostician:** Not reported. **Assessment:**	***Diagnosis:*** Sleep problems	**n/N (%)** 8/18 (44.4%)	**Funding:** Not reported. **Limitations:** Some The medical condition of sleep problems relied on parent reports.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Country: Israel **Aim of study:** Investigate the sleep patterns of autistic children in comparison to healthy subjects by both sleep assessment questionnaires and ambulatory actigraphic procedure. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	randomly from the above cohort group. **Control group:** 8 normal children without sleep disorders. **Exclusion criteria** Children with defined neurological diseases such as fragile X syndrome and Rett's syndrome. Children with known neurocutaneous syndrome or metabolic disease. Children who dropped out of this study. **Diagnostic information of autism** **Diagnosis criteria of autism:** DSM-IV. **Diagnosis assessment of autism:** Assessment of early development through current level of social, communicative, and adaptive functioning, obtained from semi-structured interviews carried out with the parents or caretakers as well as psychiatric observation of the child in a one-to-one situation. School and relevant medical information was obtained, as	Questionnaire concerning sleep patterns in autistic children and actigraphs. The actigraph was attached to the wrist or arm of the subject and kept there for 72 consecutive hours. **Operator experience:** Questionnaire: completed by parents. Antigraphs: Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			**Also reported:** The author also made a comparison between autism children and normal control, and found out that while autistic children had an earlier morning awakening time and multiple and early night arousals, actigraphic monitoring showed that with the exception of an earlier morning arousal time (p=0.045), sleep patterns of autistic children were similar to that of normal children.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	well as psychological assessment information. **ASD subtype: N (%)** Autism: 18 (100%) **Demographics:** **Number**:18 **Age: (Unit: Years)** **Range:** 3-12 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 13 (72.2%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Kamio Y **Year:** 2002 **ID:** 162 **Country:** Japan	**Cohort group:** All students of three special schools for children and adolescents with intellectual disabilities in Kyoto, during the 1991-1993 school years. **Case group:** Students diagnosed as autism from above group.	**Diagnostic criteria:** ICD-10. **Diagnostician:** Child psychiatrist. **Assessment:** Evaluation details were recorded in another paper: Kamio & Ishisaka, with year unknown.	***Symptoms:*** Mental retardation Aggressive behaviour Self-injurious behaviour (include mild cases)	**n/N (%)** 114/165 (69.1%) 8/165 (4.8%) 38/165 (23.0%)	**Funding:** Not reported. **Limitations:** Some: This research result may not be appropriate to apply to other countries; since most surveys shows that the prevalence of aggressive or self-injurious

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Aim of study: To explore the prevalence of self-injurious and aggressive behaviour in students at special school who were around the age of puberty, and compare those behaviours between autism and non-autism children. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	**Exclusion criteria** Not reported. **Diagnostic information of autism** **Diagnosis criteria of autism:** ICD-10 **Diagnosis assessment of autism:** **Screening stage:** A questionnaire asked about the students' developmental level, coexistence of autism, behavioural or psychological difficulties and social problems. **Diagnostic stage:** For those children who screened as positive, they will be examined by child psychiatrists. No tools were reported. **ASD subtype: N (%)** Autism: 165/165 (100%) **Demographics:** **Number**:165 **Age:** Not reported. **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: - Profound (<20): 61/165 (37.0%) - Severe (20-34): 53/165 (32.1%) - Moderate (35-49): 31/165 (18.8%) - Mild (50-69): 13/165 (7.9%) - Borderline (70-84): 3/165	**Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			behaviour in Japan may be lower than that in the U.S or Europe. **Also reported:** The prevalence of self-injurious and aggressive behaviour in children with intellectual disability but without autism.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	(1.8%) - Unknown: 4/165 (2.4%) Language: Not reported Gender: Male: 128/165 (77.6%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Kielinen M **Year:** 2004 **ID:** 152 **Country:** Finland **Aim of study:** To retrospectively assess the association of autistic disorder with identified medical conditions and additional disabilities. **Study design:**	**Cohort group:** Data were collected in 1996—1997 from hospital record (primary and secondary catchment areas of the University hospital of Onlu, Finland) and from the records of the central institutions for the intellectually disabled. Case histories of 152,732 children were collected, representing the age group of 3-18 years old on the census day of 31 Dec 1996. **Patient groups:** 187 children and adolescents identified as ASD from above cohort group. **Exclusion criteria** Children with Asperger syndrome. (Because of the uncertainty of DSM-IV differential diagnostic criteria.)	**Diagnostic criteria:** **Epilepsy:** Classification proposed by the Commission on classification and terminology of the internationals league against epilepsy (1989). **Other additional disorders:** Finish register for the mentally handicapped (Leisti and Wilska, 1982) **Diagnostician:** Clinicians in University hospital of Onlu, Finland or central institutions for the intellectually disabled. **Assessment:** The associated medical conditions were drawn from the hospital and institutional records of the area. But it is	***Diagnosis:*** Epilepsy Cerebral palsy Hydrocephalus Foetal alcoholic syndrome Soto syndrome Neonatal meningitis/encephalitis Seizures Impairment of vision Blind Hearing impairment Impairment of ambulation ***Symptoms:*** Epilepsy	**n/N (%)** 34/187 (18.2%) 8/187(4.3%) 6 /187 (3.2%) 2 /187 (1.1%) 1 /187 (0.5%) 5 /187 (2.7%) 34/187 (18.1%) 43/187(23%) 7 /187 (3.7%) 16/187 (8.6%) 25 /187 (13.4%) 99/187 (51.3%)	**Funding:** The Finnish cultural Foundation, Finland; The Northern Ostrobothnia cultural foundation, Oulu, Finland; The Alma and K.A. Snellman foundation, Oulu, Finland. **Limitations:** Retrospective chart review, it is always possible that individual interpretations of the diagnostic criteria have affected the results of the different studies. **Also reported:** Associated disorders of known or suspected genetic origin in those 187 autism

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** 1996-1997 **Evidence level:** Very low	Children with Rett syndrome and childhood disintegrative disorders. **Diagnostic information of autism** **Diagnosis criteria of autism:** DSM-IV **Diagnosis assessment of autism:** The diagnoses were drawn from the hospital and institutional records of the area. But cases were re-evaluated to check that they fulfilled criteria for autistic disorder. **ASD subtype: N (%)** Autism: 59/187 (31.5%) Autistic disorder: 128/187 (100%) **Demographics:** **Number**:187 **Age: (Unit: Years)** **Range:** 3-18 **y** **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: N (%) - Normal: 47/187 (25.1%) - Borderline (70<IQ<85): 44/187 (23.5%) - Moderate to inferior (IQ<70): 99/187 (51.3%) Language: Not reported Gender: Not reported	reported that all patients had undergone routine neuropaediatric and phsysical examinations and a thorough search had been made for skin changes. Neuroradiological, electroencehhalographic, metabolic and chromosomal examinations were also conducted. Occasional analyses of cerebrospinal fluid, together with blood and urine, and ophthalmological and audiological examinations, had also been made. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			children/adolescents

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Visual impairment: N (%) Mild: 36/187 (19.3%) Severe: 3/187 (1.6%) Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Kim J **Year:** 2000 **ID:** 150 **Country:** Canada **Aim of study:** To report on the prevalence and correlates of anxiety and mood problems among 9-14 year children with AS and HFA. **Study design:** Uncontrolled observational **Consecutive**	**Cohort group:** All children 4-6 years of age, either coming for assessment, or currently in treatment, at a 'PDD service' of six different centre which serve preschool children with developmental disabilities in southern Ontario. **Case group:** Children who received a diagnosis of autism or Asperger syndrome using data from the ADI, and who had either a Leiter IQ score above 68 or a Stanford-Binet IQ score above 70. **Exclusion criteria** Children whose clinical diagnosis of PDD were 'untestable' or received a mental age score less than half their chronological age on psychometric testing. Children who refused to participate in the study.	**Diagnostic criteria:** OCHS-R **Diagnostician:** Not reported. **Assessment:** Measure of psychiatric problems: OCHS-R, Arthur adapatation of the Leiter Performance Scales (Levine, 1986), Stanford-Binet intelligence scale-IV. **Operator experience:** Parents with no experience. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes.	***Symptoms:*** Internalizing score (OA,SA,DEP) Overanxious Separation anxiety Depression Externalizing score (CD,ADHD,OPP) Conduct disorder ADHD Oppositional **Note:** *****: If the score of certain anxiety symptom was at least two standard deviations above the population mean, then we will consider it is a coexisting symptom of ASD.	**n/N (%)** 8/59 (13.6%) 5/59 (8.5%) 10/59 (16.9%) 2/59 (3.4%) 10/59 (16.9%) 4/59 (6.8%)	**Funding:** Ontario mental health foundation, the Vellum Foundation and the National Health research and Development program of Health Canada. **Limitations:** Serious. The prevalence of co-morbidity might be underestimated because this study only use data come from parents. It is difficult to tell whether the problems reported by parents are 'true' symptoms of anxiety and depression or rather variable expressions of PDD symptoms. Most of included children are suffering from Asperger

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
recruitment Not reported. **Study dates** Not reported. **Evidence level:** Very low	**Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV, ICD-10. **Diagnosis assessment of ASD:** Not reported. **ASD subtype: N (%)** Autism: 40/59 (67.8%) Asperger syndrome: 19/59 (32.2%) **Demographics:** **Number**:59 **Age: (Unit: Years)** **Mean:** 5.5 ± 0.9 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: None of included children have mental retardation. Language: Not reported Gender: Male: 52/59 (88.1%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				symdrome, therefore the result of this paper might not be appropriate to apply to other ASD cohort population. **Also reported:** Not reported.
Author: Leyfer O. **Year:** 2006	**Cohort population:** **Boston sample:** participants in a longitudinal study of language and social functioning. All children had some spoken language.	**Diagnostic criteria:** DSM-IV-TR are used for all disorders in the ACL-PL with the exception that some disorders, such as ADHD in individuals with ASD which	1. **Frequencies of co morbidity** No co-morbidity 1 coexisting disease 2 coexisting diseases 3 coexisting diseases 4 coexisting diseases	**n/N (%)** 30/109 (27.5%) 24/109 **(**22%) 33/109 (30.2%) 10/109 (9.2%) 6/109 (5.5%)	**Funding:** PO1/U19 DC 03610 (HTF) and PO1/U19 HD 0.5476(JEL), which are both part of the NICHD/NIDCH

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
ID: 175 **Country:** U.S.A **Aim of study:** Test reliability and validity of a newly developed tool: ACL-PL in diagnosing co-morbid psychopathology in children with autism. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low	**Salt Lake City sample:** participants in a neuro-imaging study of males with autism who had performance IQs greater than 65. **Patient groups:** All children with autism, who met criteria for participation in the Boston and Salt Lake City studies. **Exclusion criteria** Children with known medical causes of autism were excluded by history, physical examination, cerotype, and Fragile X gene testing. **Diagnostic information of autism** **Diagnosis criteria of autism:** DSM-IV-TR, ADI-R, Autism diagnostic observation schedule. **Diagnosis assessment of autism:** Not reported. **ASD subtype: N (%)** Autistic disorder: 109 (100%) **Demographics:** **Number**:109 **Age: (Unit: Years)** **Mean:** 9.2 ± 2.7 y **Ethnicity:** Not reported	are not allowed in DSM, were also included in ACL-PL. **Diagnostician:** Experienced clinicians. **Assessment:** ACI-PL. (Autism co-morbidity interview-present and lifetime version). This instrument covers all psychiatric disorders inquired about in the adult and child versions of the SADS, and some additional disorders. Diagnostic criteria of DSM are embraced. **Operator experience:** Clinicians with extensive experience with psychiatric disorders in children with autism and other developmental disabilities. **Inter-rater reliability:** Inter-rater reliability was examined by using audiotapes exchanged between the Boston and Salt Lake City sites. **Major depressive disorder:** Inter-rater reliability: 90% P=0.01	5 coexisting diseases 6 coexisting diseases ***Diagnosis:*** Depression disorder Hypomanic/manic disorders Anxiety disorders OCD ADHD ODD Adjustment disorder ***Symptoms:*** Mental retardation	3/109 (2.8%) 1/109 (1.0%) **n/N (%)** 14/109 (12.9%) 9/106 (8.5%) 63 /101 (62.4%) 35/94 (37.2%) 26/85 (30.6%) 6/86 (7.0%) 1/109 (0.9%) 31/96 (32.29%)	collaborative programs of excellence in autism, and RO1 MH 55135 (SEF). **Limitations:** The reliability and validity of ACI-OL were examined for only three DSM diagnoses. Inappropriate population, which composed mostly of high-functioning, verbal males with autism. ACI-PL only collects information from the parent and does not include information obtained directly from the child or from the child's teacher. **Also reported:** Long term (range 2-6 years) test-retest reliability of ACI-PL is reported as follows: Major depression: P=0.003; OCD: P=0.028. ADHD: P=0.008. (new cases excluded)

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Subgroups: Intellectual Disability: Full scale IQ (n=96) Mean: 82.55 ± 23.42 Range: 42-141 >70: 67.71% Verbal IQ (n=94) Mean: 81.51 ± 24.45 Range: 46-142 >70: 57.45% Non-verbal IQ (n=93) Mean: 88.37 ± 22.22 Range: 43-153 >70: 78.49% Language: Not reported Gender: Male: 103/109 (94.3%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	**OCD:** Inter-rater reliability: 90% P=0.037 **ADHD:** Inter-rater reliability: 88% P=0.025 **Cost:** Not reported. **Adequately reported:** Yes.			
Author: Levy S **Year:** 2010 **ID:** 176 **Country:** U.S.A	**Patient groups:** The data for all 8-year-old ASD children were retrieved from the (ADDM) Autism and developmental disabilities monitoring network in the year 2002. **Exclusion criteria** Not reported. **Diagnostic information of ASD**	**Diagnostic criteria:** DSM and ICD. **Diagnostician:** Not reported. **Assessment:** Not reported. **Operator experience:** Not reported.	***Diagnosis:*** Language disorder ADHD Intellectual disability Learning disorder ODD Anxiety disorder OCD Depression Bipolar disorder Mutism Psychosis	**n/N (%)** 1346/2123 (63.4%) 452/2123 (21.3%) 389/2123 (18.3%) 134/2123 (6.3%) 85/2123 (4%) 72/2123 (3.4%) 42/2123 (2%) 23/2123 (1.1%) 15/2123 (0.7%) 11/2123 (0.5%) 6/2123 (0.3%)	**Funding:** Not reported. **Limitations:** 1. Based on retrospective clinical records and there is no information available in many instances of standardized criteria or evaluations for

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Aim of study: 1. To characterize the frequency, types and relationships of co-occurring conditions 2. To describe the relationship between the presence of co-occurring diagnoses and the age the child was identified or classified with an ASD. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** 2002 **Evidence level:**	**Diagnosis criteria of ASD:** Criteria defined by the ADDM network in 2002, confirmed by DSM-IV-TR **Diagnosis assessment of ASD:** Not reported. **ASD subtype: N (%)** Not reported. **Demographics:** **Number**: 2568 **Age: (Unit: Years)** **Mean:** 8 y **Ethnicity:** White, non-Hispanic: 1620/2568 (63.1%) Black, non-Hispanic: 589/2568 (22.9%) Hispanic, Asian, or AI/AN: 258/2568 (10.0%) Others: 101/2568 (3.9%) **Subgroups:** Intellectual Disability: Not reported. Language: Not reported Gender: Male: 2077/2568 (80.9%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment :	**Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	Reactive attachment disorder Conduct disorder Epilepsy Hearing loss Cerebral palsy Visual impairment TS/tics Velocardiofacial syndrome Down syndrome Chromosome disorders Fragile X Tuberous sclerosis	6/2123 (0.3%) 4/2123 (0.2%) 329/2123 (15.5%) 36/2123 (1.7%) 36/2123 (1.7%) 21/2123 (1.0%) 11/2123 (0.5%) 19/2123 (0.9%) 17/2123 (0.8%) 11/2123 (0.5%) 6/2123 (0.3%) 4/2123 (0.2%)	diagnoses of most co-occurring diagnoses. 2. All the evaluations were conducted early in the child's developmental trajectory. 3. The prevalence of intellectual disability might be falsely lowered as some children with intellectual disability might be included with children with more general diagnostic labels such as developmental delay. 4. Determination of ASD cases was relied on record review rather than direct evaluations. **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Very low.	Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Mazefsky C **Year:** 2009 **ID:** [177] **Country:** U.S.A **Aim of study:** To investigate the relation between psychiatric comorbidity for children and adolescents with ASD and their mothers' mood symptoms on a psychiatric survey. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes.	**Patient groups:** 31 children and adolescents with ASD who were part of a study on the assessment of psychiatric comorbidity in ASD. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV **Diagnosis assessment of ASD:** ADOS, ADI-R. **ASD subtype: N (%)** Asperger's disorder 20/31 (64%) Autism: 8/31 (26%) PDD-NOS: 3/31 (10%) **Demographics:** **Number**: 31 **Age: (Unit: Years)** **Range:** 10 – 17 y Mean: 11. SD: 1.9 **Ethnicity:** Caucasian: 27/31 (87.1%) African-American: 1/31 (3.2%) Hispanic: 1/31 (3.2%)	**Diagnostic criteria:** Anxiety: DSM-IV. **Diagnostician:** ACI-PL: was administered to the mothers by a licensed clinical psychologist. Symptom chechlist-90 revised: patients' mother. **Assessment:** Wechsler abbreviated scale of intelligence (1999), ACI-PL (Leyfer et al, 2006), Symptom chechlist-90 revised,completed by the mother. **Operator experience:** ADI-PL: experienced Symptom chechlist-90 revised: non-experienced. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes	***Diagnosis:*** Any depression Any DSM anxiety	**n/N (%)** 10/31 (19.4%) 12/31 (38.7%)	**Funding:** The organization for autism research (PI Mazefsky). **Limitations:** 1. Small sample size. 2. The mothers provided all information for sources of data (both for the SCL-90-R and for the ACI-PL). **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Study dates Not reported. **Evidence level:** Very low.	Biracial: 2/31 (6.5%) **Subgroups:** Intellectual Disability: Mean (SD): 104.84 (17.76) Language: Not reported Gender: Male: Not reported. Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Montiel-Nava C **Year:** 2008 **ID:** 186 **Country:** Venezuela **Aim of study:** To determine the prevalence of ASD for children receiving services in Maracaibo County, Venezuela.	**Patient groups:** Children with ASD aged 3 to 9 years whose parents resided in Maracaibo, Zuila State, at any time between Sep 2005 to Sep 2006 **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV-TR. **Diagnosis assessment of ASD:** Review of school and/or medical records and behavioural descriptions. **ASD subtype: N (%)**	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** Based on medical reports. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	***Diagnosis (in autism children)*** Fragile X Tuberous sclerosis Epilepsy Down's syndrome Blindness	**n/N (%)** 3/287 (1.1%) 12/287 (38.7%) 14/287 (4.9%) 2/287 (0.7%) 2/287 (0.7%)	**Funding:** Research grant from the Council for scientific, humanistic and technological development of La Universidad del Zulia (CONDES). **Limitations:** 1. Inability to verify the diagnostic label of each child. The information provided by the health and education facilities were the only sources. With this methodology a degree of under diagnosis of ASD and of associated co-

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Study design: Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Sep 2005 – Sep 2006 **Evidence level:** Very low.	Autism: 287/430 (66.7%) Asperger's disorder and PDD-NOS: 143/430 (33.3%) **Demographics:** **Number**: 460 **Age: (Unit: Years)** **Range:** 3 – 9 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Not reported. Language: Not reported Gender: Male: 329/460 (71.5%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported				morbidities would be expected. **Also reported:** Not reported.
Author: Matson JL **Year:** 2008 **ID:** [178] **Country:** U.S.A	**Patient groups:** 270 children diagnosed as ASD, enrolled in an early intervention program funded by the State of Louisiana. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:**	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** Chart review. **Operator experience:** Not reported.	***Diagnosis:*** Cerebral palsy Seizure disorder Down syndrome Epilepsy Asthma	**n/N (%)** 9 /270 (3.3%) 9 /270 (3.3%) 5 /270 (1.9%) 3 /270 (1.1%) 15 /270 (5.6%)	**Funding:** The State of Louisiana. **Limitations:** Chart review, no detailed diagnostic information of coexisting disease was reported. **Also reported:** The efficacy of BISCUIT-

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Aim of study: To identify the factor structure of the BISCUIT-Part 3 through exploratory factor analysis and determine the ability of these factors to predict group membership. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	DSM-IV-TR. **Diagnosis assessment of ASD:** Clinical judgment based on M-CHAT and the developmental profile from the Battelle developmental inventory-II. **ASD subtype: N (%)** Not reported. **Demographics:** **Number**:270 **Age: (Unit: Years)** **Mean:** 2.23 ± 0.41 y **Ethnicity: N (%)** - African American: 102/270 (37.8%) - Caucasian: 133/270 (49.3%) - Hispanic: 5/270 (1.9%) - Other: 10/270 (3.7%) - Not reported: 1.9/270 (7.4%) **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 195/270 (72.2%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	**Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			Part 3 in predicting problem behaviours in children with ASD.
Author: Mattila M	**Patient groups:** 12- to 13-year-old subjects with	**Diagnostic criteria:** DSM-IV criteria.	***Diagnosis:*** ADHD	**n/N (%)** 19/50 (38%)	**Funding:** Finland's Slot machine

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Year: 2010 **ID:** [153] **Country:** Finland **Aim of study:** To identify the prevalence and types of comorbid psychiatric disorders associated with AS/HFA in a combined community- and clinic-based sample. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:**	AS/HFA (n=18) from a community-based study and 9-16-year-old subjects with AS/HFA (n=32) from a clinic based study. 8 participants are in both groups. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV-TR. **Diagnosis assessment of ASD:** ASSQ, ADI-R, ADOS and WISC-III. **ASD subtype: N (%)** AS: 27/50 (54.0%) HFA: 23/50 (46.0%) **Demographics:** **Number**:50 **Age: (Unit: Years)** **Mean:** 12.7 **Range:** 9.8-16.3 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: FSIQ: >75 Language: Not reported Gender: Male: 38/50 (76.0%) Visual impairment: Not reported Hearing impairment: Not	**Diagnostician:** By the author. **Assessment:** K-SADS-PL schedule and CGA scale. **Operator experience:** Senior child and adolescent psychiatrist and educational psychologist. **Inter-rater reliability:** Cohen's k: 0.94 (SD=0.06) Percentage agreement: 99.7% **Cost:** Not reported. **Adequately reported:** Yes	Conduct disorder ODD Anxiety Tic disorders Depressive disorder Enuresis Encopresis Insomnia	1/50 (2%) 8/50 (16%) 21/50 (42%) 13/50 (26%) 3/50 (6%) 1/50 (2%) 1/50 (2%) 18/50 (36%)	Association, Eija and Verkko Lesonen foundation, Oulu, Finland, Rinnekoti research foundation, Espoo, Finland, the Alma and K.A Snellman Foundation, Oulu, Finland, the child psychiatric research foundation, Finland, the child psychiatric research foundation, Oulu area, Finland, and he Oulu medical research foundation, Oulu, Finland. **Limitations:** 1. This is the first time the authors have been using the translated verion of ADI-R and ADOS. 2. This study didn't use the latest version of K-SADS-PL.b **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Very low	reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Miano S **Year:** 2007 **ID:** 159 **Country:** Italy **Aim of study:** To evaluate sleep in children with ASD by means of sleep questionnaires and polysomnography; moreover, to analyze their cyclic alternating pattern. **Study design:** Controlled observational **Consecutive**	**Patient groups:** A total of 31 children attending the Oasi Institute of Troina and who were affected by ASD. All children were drug-free for at least two weeks before the study began; all showed no neurological focal signs, seizures or paroxysmal EEG abnormalities. **Exclusion criteria** Children with known medical conditions that associated with autism, such as fragile-X syndrome or other chromosome abnormalities, such as phenylketonuria or other metabolic disease, neurofibromatosis or tuberous sclerosis. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV & score of CARS>30 **Diagnosis assessment of ASD:** Not reported. **ASD subtype: N (%)** Not reported.	**Diagnostic criteria:** **SDSC:** Not reported. **Sleep architecture:** Standard criteria produced by Rechtchaffen and Kales. **PSG:** Not reported. **CAP:** Criteria produced by Terzano et al. **Diagnostician:** Not reported. **Assessment:** A sleeping questionnaire: SDSC (The sleeping disturbance scale for children), CAP (Cyclic alternating pattern) and sleep architecture have been administrated to all children. For those children whose parents didn't report respiratory sleep disturbances or abnormal sleep patterns on SDSC, PSG (Polysomnographic) recording were conducted. (16 children) **Operator experience:**	***Symptoms (SCSC questionnaire):*** Sleeps less than 8h Latency to sleep>30 min Difficulty getting to sleep at night Drinks stimulant beverages in the evening Fluids or drugs to facilitate sleep Hypnic jerks Rhythmic movements while falling asleep Poor sleep quality More than two awakenings per night Waking up to drink or eat in the night Difficulty to fall asleep after awakenings Bedwetting Daytime somnolence Falling asleep at school ***Symptoms (Polysomnographic sleep architecture parameters):*** Time in bed (min) Sleep period time (min) Total sleep time (min)	**n/N (%)** Controls=893,Case=31 **Control Case P *** 9.63% 22.58% 0.02 6.61% 25.81% <0.01 8.86% 25.81% <0.01 27.32% 6.45% <0.01 0.67% 19.35% <0.01 5.04% 35.48% <0.01 2.69% 16.13% <0.01 13.89% 87.1% <0.01 6.83% 16.13% 0.05 13.55% 29.03% 0.015 4.82% 25.81% <0.01 2.35% 22.58% <0.01 4.48% 12.9% 0.03 0.34% 3.23% 0.02 **Control Case P *** 534.3 429.9 0.044 505.5 453.9 0.014 493 438.5 <0.01	**Funding:** Not reported. **Limitations:** Might include polysomnographically presence of sleep respiratory disorders since this paper did not record respiratory parameters. The results of the questionnaire study were not completely confirmed by sleep architecture analysis. **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
recruitment Not reported. **Study dates** Not reported. **Evidence level:** Very low	**Demographics:** **Number**:31 **Age: (Unit: Years)** **Range:** 3.7-19 **y** **Mean:** 9.53 **±** 3.82 **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: All patients were mentally retarded. 25<IQ<40: 17/31 (54.8%) 40<IQ<40: 4/31 (12.9%) Normal: 10/31 (32.3%) Language: Not reported Gender: Male: 28/31 (90.3%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported) Source of referral: Not reported	**SDSC:** completed by parents with no experience. **Sleep architecture:** Not reported. **PSG:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	REM latency (min) ***Symptoms (CAP):*** Total Cap rate in SWS (%) A1 (%) A2 (%) A3 (%) A2 duration (s) A1 index A1 index in SWS A2 index in S2 A3 index A3 index in S1 A3 index in S2 **Note:** *: Only symptoms with significant P-value have been extracted from the paper.	114.6 84.3 0.02 **Control Case P *** 47.3 33.9 0.02 77.9 65.1 <0.01 12.8 19.7 <0.01 9.4 15.1 <0.01 7.8 6.6 0.04 47.0 38.2 0.04 77.7 52.6 <0.01 11.2 19.3 0.02 5.5 8.9 0.03 16.7 33.3 0.04 8.1 12.5 0.05	
Author: Moore Vanessa **Year:** 1998 **ID:** 168 **Country:** U.K	**Patient groups:** 55 children who have been diagnosed as autistic in the assessment service for autism children and related disorders in Southampton. **Exclusion criteria** Not reported. **Diagnostic information of autism**	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** SALT. **Operator experience:** Not reported.	***Diagnosis:*** Intellectual disability Epilepsy	**n/N (%)** 32/52 (61.5%) 11/52 (21.2%)	**Funding:** Not reported. **Limitations:** 1. How the diagnosis of epilepsy has been made is unclear. 2. The incidence of behaviour problem was reported by the parents rather than diagnosed by the

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Aim of study: To provide an analysis of the first 81 cases seen in the recently established assessment service for autism children and related disorders in Southampton. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low.	**Diagnosis criteria of autism:** ICD-10. **Diagnosis assessment of autism:** PARS or CARS have been used to confirm the diagnosis of autism. **ASD subtype: N (%)** Autistic: 100% **Demographics:** **Number**: 55 **Age: (Unit: Years)** **Range:** 2.8 – 18 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: 32/52 (61.5%) Language: Not reported Gender: Male: Male: 47/55 (85.5%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported	**Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No			clinician. **Also reported:** Not reported.
Author: Oliveira G **Year:** 2005	**Cohort group:** A representative sample of Portuguese children born during 1990 to 1992, who aged 7-9 years, in the school year 1999-2000, who attending close to	**Diagnostic criteria:** **Epilepsy:** Not reported. **Mitochondrial respiratory chain disorder:** Mitochondrial respiratory chain disorder diagnostic criteria in adults	***Diagnosis:*** Epilepsy Mitochondrial respiratory chain disorder ***Symptoms:***	**n/N (%)** 19/120 (16%) 5 /69 (7.2%)	**Funding:** In part by research grants from fundacao calouste gulbenkian, Fundacao para a ciencia e Tecnologia

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
ID: [164] **Country:** Portugal **Aim of study:** To determine the prevalence of ASD and the frequency of associated pathologies in the Portuguese population. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	20% of randomly selected regular primary school (227 schools) in Portugal. **Patient groups:** 120 children diagnosed as ASD. **Exclusion criteria** Children who had a previously identified associated medial disorder. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV. **Diagnosis assessment of ASD:** ADI-R, CARS. **ASD subtype: N (%)** Autism: 91/120 (76%) Atypical autism: 29/120 (24%) **Demographics:** **Number**:120 **Age: (Unit: Years)** **Range:** 10.5-13.4 **y** **Mean:** 12 ± 0.8 y **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: - DQ/IQ>=70: 20 (17%) - DQ/IQ between 35-69: 35	for application to paediatric age, revised by Bernier et al, 2002. **Diagnostician:** Not reported. **Assessment:** Broad laboratory investigation, which included routine testing procedures for fragile X mutations, chromosomal abnormalities, neurocutaneous syndromes, endocrine, and metabolic disorders. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes.	Atypical mitochondrial respiratory chain disorder Mental retardation	5 /69 (7.2%) 100/120 (83.3%)	(POCTi/39636/ESP/2001) and Ministerio da Saude de Portugal (Projecto 223/99) **Limitations:** The full investigation assessment could only be applied to 56 patients; for the remaining patients, only some of the tests were or had previously been performed. As to plasma lactate levels only 69 children have received test; the remaining patients declined to participate in the aetiological investigation. **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	(29%) - DQ/IQ<=34: 65 (54%) Language: Not reported Gender: Male: 89/120 (74.4%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Oslejskova H. **Year:** 2008 **ID:** 151 **Country:** Czech Republic **Aim of study:** To investigate relationship between the studied clinical and diagnostic makers, and their risk in the sub-set of autistic children with a history of regression compared to the	**Patient groups:** 205 children diagnosed as autistic in Department of paediatric neurology, University hospital and Masaryk University, Brno according to ICD-10. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** ICD-10 **Diagnosis assessment of ASD:** CARS, CAST and IQ test. **ASD subtype: N (%)** Asperger's syndrome: 21/205 (10.2%) Atypical autism: 57/205 (27.8%) Childhood autism: 127/205 (62.0%) **Demographics:**	**Diagnostic criteria:** **Epileptic seizures and epilepsy:** Rules of the Commission on Classification and Terminology of the international league against epilepsy. **Regression:** case history. **Diagnostician:** Not reported. **Assessment:** **Regression:** case history. **IQ:** tested in younger children using the Gesell developmental scale and the 4th edition of Stanford-Binet intelligence scale, 4th edition in older subjects. De myer's modified classification. **Other assessments:**	***Diagnosis:*** Regression (based on case history) Epilepsy Cerebral palsy Hearing impairment Optical impairment Hypotonia ***Symptoms:*** Mental retardation	**n/N (%)** 71/205 (34.6%) 103/205(50.2%) 45/205(22.0%) 12/205(5.9%) 54/205(26.3%) 32/205(15.6%) 203/205 (99.0%)	**Funding:** Not reported. **Limitations:** It is Not reported if the participants were consecutively recruited or not. The diagnosis of regression was based on case history. **Also reported:** The characteristics and diagnostic result of patients with and without regression; with and without epilepsy.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
entire set of autistic children. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	**Number**:205 **Age: (Unit: Years)** **Range:** 5-15 **y** **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: - IQ<35: 56/205 (27.3%) - 35<IQ<70: 147/205 (71.7%) - 70<IQ: 2/205 (2.0%) Language: Not reported Gender: Male: 145/205 (70.7%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	Neurological and psychological examinations including determining laterality, psychiatric investigations, neuroimaging with CT and/or MRI of the brain, genetic consultations, and in clinically suspected patients' karyotype, DNA analysed for tuberous sclerosis, fragile-X chromosome, Rett syndrome and congenital defects of metabolism. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			
Author: Page J **Year:** 1998 **ID:** 169	**Patient groups:** All children attending a residential school for children with autism. **Exclusion criteria** Children who were unable to cooperate (n=2). For those who have been included, 21 of them	**Diagnostic criteria:** **DLS:** Language total score<=5 **Motor assessment battery:** Have different criteria for each measure (25); please refer to original paper for detail. **Diagnostician:**	***Diagnosis (chart review):*** Epilepsy Cerebral palsy Fragile X Trisomy 13 Trisomy 15 ***Diagnosis (DLS):*** Language problem	**n/N (%)** 6/33 (18.2%) 1/33 (3.0%) 1 /33 (3.0%) 1 /33 (3.0%) 1 /33 (3.0%) 16/33 (48.5%)	**Funding:** Not reported. **Limitations:** Small sample size High exclusion rate. **Also reported:** The score of each

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Country: U.K **Aim of study:** 1.To assess motor skills in a broadly representative group of school-age children with autistic disorder in order to determine the prevalence of motor impairments and their distribution across different areas of motor function. 2.To assess the kinds of error which occur particularly in autistic children's find oral and manual motor skills, and to relate these to possible mechanisms underlying motor impairments. 3.To assess relationships between	were omitted from the stage of formal tests of unimanual hand-shaping and sequencing because of inability to co-operate. Child who was absent from school during the assessment period (n=1). **Diagnostic information of autism** **Diagnosis criteria of autism:** DSM-IV **Diagnosis assessment of autism:** Not reported. **ASD subtype: N (%)** Autistic: 100% **Demographics:** **Number**:33 **Age: (Unit: Years)** **Range:** 5.0-16.6 y **Ethnicity:** Not reported **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 25/33 (75.8%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	Not reported. **Assessment:** Chart review Derbyshire language scheme (DLS). Motor assessment battery: Consisted of 25 measures, 14 of which involved formal testing and 11 of which involved informal observation of children in everyday situations. The battery was divided into assessments for motor functions, of manual functions, and of gross motor skills. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** Yes.	***Symptoms (Assessment battery):*** Negative ratings on >=21 measures out of 25 measures	25/33(75%) (All affected children having oromotor impairments; 55% having additional manual impairments; and 18% having additional gross motor impairments)	participant in all 25 measures of motor assessment battery.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
measures of motor skill and background variables of gender, chronological age, language attainment, educational lever, and medial status. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low					
Author: Ponde M **Year:** 2010 **ID:** [149] **Country:** Brazil	**Patient groups:** 32 out of 38 students of a school specialized for ASD children in Salvador, Bahia, Brazil were recruited. **Exclusion criteria** 4 patients who were not present in the period of data collection and two patients who have other diagnoses into ASD.	**Diagnostic criteria:** DSM-IV. **Diagnostician:** Not reported. **Assessment:** ADHD session of the Brazilian version fo the K-SDAS PL. **Operator experience:**	***Diagnosis:*** ADHD	**n/N (%)** 17/32 (53.1%)	**Funding:** Not reported. **Limitations:** 1. Small sample size. 2. The sample used in this study was children who are in specialized school for ASD, so they might not be able to

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Aim of study: To estimate prevalence of ADHD in children with autism. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Sep 2006 to Dec 2006. **Evidence level:** Very low.	**Diagnostic information of autism** **Diagnosis criteria of autism:** DSM-IV **Diagnosis assessment of autism:** Not reported. **ASD subtype: N (%)** Autism: 100% **Demographics:** **Number**: 32 **Age: (Unit: Years)** **Range:** 6 – 18 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Not reported. Language: Not reported Gender: Male: 29/32 (90%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported	Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			represent the general population of ASD. **Also reported:** Not reported.
Author: Ringman J	**Patient groups:** 12children with ASD who were	**Diagnostic criteria:** **Tics:** Phenomenology and	***Diagnosis:*** Tourette syndrome	**n/N (%)** 5 /9(55.5%)	**Funding:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Year: 2000 **ID:** [179] **Country:** U.S.A **Aim of study:** To assess occurrence of tics in Asperger's syndrome and autistic disorder **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	referred to Movement Disorders Clinic, University of California for evaluation of tics. **Exclusion criteria** Not reported. **(Note:** Although the original study reported the data of all 12 patients, we only reported 9 participants out of the 12, since the other 3 participants were adults, whose age was: 24, 32, 25 years old separately.) **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV. **Diagnosis assessment of ASD:** Not reported. **ASD subtype: N (%)** Asperger's syndrome: 6/9 (66.7%) Autistic disorder: 3/9 (33.3%) **Demographics:** **Number**:9 **Age: (Unit: Years)** **Mean:** 9.2 **y** **Range:** 3-16 y **Ethnicity:** Not reported **Subgroups:**	classification of tics, Clin N, 1997. **Stereotypic movement:** defined as repetitive, rhythmic, patterned, and coordinated movements. **Tourette Syndrome:** Diagnostic criteria raised by Tourette Syndrome Classification Study Group (1993) **Diagnostician:** Not reported. **Assessment:** Observation, speech test, MRI and neuropsychological testing. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	Obsessive compulsive behaviour Leber's congenital amaurosis Congenital deafness Asthma Febrile convulsions Tics ***Symptoms:*** Stereotypic movement	4/9 (44.5%) 2/9 (22.2%) 1/9 (11.1%) 1/9 (11.1%) 2/9 (22.2%) 6/9 (66.7%) 9/9 (100%)	**Limitations:** Small sample size. **Also reported:** Although ICD-9 was used as major diagnostic criteria of coexisting disease in this scheme, evidence from an independent study (Fombonne, 1992, 1995) had shown that good agreement was obtained between the diagnosis of autism and atypical autism in this scheme and ICD-10.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Intellectual Disability: Not reported Language: Not reported Gender: Male: 5/9 (55.5%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Simonoff E. **Year:** 2008 **ID:** [170] **Country:** U.K **Aim of study:** Identify the rates and type of psychiatric co-morbidity associated with ASD and explores the associations with variables identified as risk factors for child psychiatric	**Cohort group:** A population cohort of 56,946 children, all of whom with a current clinical diagnosis of PDD (N=255) or considered to be at risk for being an undetected case by virtue of having a survey of 'Statement of Special Educational Needs' (N=1,515). **Patient groups:** A subset of sample from above cohort group: 112 children had an ASD and an SCQ score>=15. **Exclusion criteria** 1. Children who didn't have a diagnosis of ASD. 2. Children whose SCQ score<15. **Diagnostic information of ASD** **Diagnosis criteria of ASD:**	**Diagnostic criteria:** DSM-IV. **Diagnostician:** Psychologist or psychiatrist. **Assessment:** CAPA-parent version. (The child and adolescent psychiatric assessment-parent version) **Operator experience:** Postdoctoral researchers or paediatricians with extensive previous experience in ASDs and developmental disorders. All of them were trained in the use of CAPA. **Inter-rater reliability:** Not reported. **Cost:**		**n/N (%)** Generalized anxiety disorder 15/112(13.4%) Separation anxiety disorder 1/112 (0.5%) Panic disorder 11/112 (10.1%) Agoraphobia 9/112 (7.9%) Social anxiety disorder 33/112 (29.2%) Simple phobia 10/112 (8.5%) Obsessive-compulsive disorder 9/112 (8.2%) Major depressive disorder 2/112 (0.9%) Dysthymic disorder 1/112 (0.5%) Oppositional defiant disorder 31/112 (27.7%) Conduct disorder 3/112 (2.7%) ADHD 31/112 (27.7%) Enuresis 12/112 (11.0%) Encopresis 7/112 (6.6%) Tourette syndrome 5/112 (4.8%) Chronic tic disorder 10/112 (9.0%) Trichotillomania 4/112 (3.9%)	**Funding:** Welcome Trust. **Limitations:** Only parent informants were used for co-morbidity diagnosis, which is likely to have reduced they symptoms that would be indentified among higher functioning children if self-report had been included. Diagnoses were not validated by direct observation or teacher data in this report. **Also reported:** Risk ratio for family deprivation and any main disorder for males (RR: 7.77, 95% CI: 1.85-

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
disorders. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	ICD-10 **Diagnosis assessment of ASD:** ADOS-Generic, ADI-R, language and IQ and medical examination. **ASD subtype: N (%)** PDD-NOS: 50/112 (44.6%) Autism: 62/112(55.4%) **Demographics:** **Number**:112 **Age: (Unit: Years)** **Mean:** 11.5 **y** **Range:** 10-13.9 y **Ethnicity:** White British: 106/112 (95%) Other: 6/112 (5%) **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: - Male: 98/112 (87.5%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	Not reported. **Adequately reported:** Yes.			32.7); short of significance for the entire sample (RR: 3.62, 955 CI: 0.99-13.3), family deprivation and any behavioural disorder for males only (OR: 5.31, 95% CI: 1.11-25.46), area deprivatio and any behavioural disorder for males only (RR:5.31, 95% CI: 1.11-25.46) etc.
Author: Shen Y Year: 2010	Patient groups: A cohort of 933 patients received clinical genetic testing for a diagnosis of ASD between January 2006 and	**Diagnostic criteria:** Not reported. **Diagnostician:**	***Diagnosis:*** Mental retardation Seizures Multiple congenital anomalies	**n/N (%)** 54/461 (11.7%) 36/461 (7.8%) 16/461 (3.5%)	Funding: The Nancy Lurie Marks Family foundation, the Simons Foundation,

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
ID: [180] Country: U.S.A AIM: To detect chromosomal abnormalities andfragile X DNA testing in patients with ASD. Study design: Uncontrolled observational Consecutive recruitment? Not reported Study dates: January 2006 - December 2008 Evidence level: Very low	December 2008. Exclusion criteria: Not reported. Demographics: Number: 933 Age: Range = 1.3 – 22 y Ethnicity: Not reported Subgroups: Language: Not reported Gender: male 755/933 (80.9%) Intellectual disability: (only available for 461 patients from Autism Consortium cohort) 54/461(68%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported	Not reported. **Assessment:** Not reported. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			Autism speaks and the National institutes of health. Limitations: 1. Some patients included in this study may not have met full research criteria for an ASD diagnosis if tested with the ADOS and ADI-R. Removing some patients from the sample on the basis of failure ot meet criteria for an ASD diagnosis because of ADI-R/ADOS may actually increase the proportion of patients with an abnormality by removing patients with a milder phenotype.
Author: Unal O **Year:** 2009 **ID:** [185] **Country:**	**Patient groups:** 81 Caucasian patients with autism or PDD-NOS recruited from consecutive admissions to a general outpatient clinic in the child psychiatry department of Ankara University School of medicine. **Exclusion criteria**	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** SALT **Operator experience:**	***Diagnosis:*** Intellectual disability	**n/N (%)** 69/81 (85.2%)	**Funding:** Not reported. **Limitations:** 1. Retrospective study **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Turkey **Aim of study:** To evaluate the EEG and MRI findings and their relation with ID in PDD. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low.	Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV **Diagnosis assessment of ASD:** Not reported. **ASD subtype: N (%)** Not reported. **Demographics:** **Number**: 81 **Age: (Unit: Years)** **Range:** 2 – 15 y Mean: 6.6 y SD: 3.0 **Ethnicity:** Caucasian: 81/81 (100%) **Subgroups:** Intellectual Disability: 32/52 (61.5%) Language: Not reported Gender: Male: Male: 60/81 (74.1%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported	Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No			

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Author: Valicenti-McDermott M **Year:** 2008 **ID:** [181] **Country:** U.S.A **Aim of study:** Not reported. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported. **Evidence level:** Very low	**Patient groups:** Children aged 1-18 years with ASDs followed by the paediatric neurology and developmental paediatrics programs of the Albert Einstein College of Medicine, Including the Children's evaluation and rehabilitation centre of the Kennedy centre, and the Paediatric neurology private practices and clinics at Montefiore Medical Centre and Jacobi medical centre, Bronx, New York. **Exclusion criteria** Children with known genetic syndromes such as trisomy 21, Tuberous sclerosis, Rett syndrome, Fragile X. Nonambulatory children **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV-TR. **Diagnosis assessment of ASD:** Chart review, interview by the research team, CARS≥ 30 **ASD subtype: N (%)** Not reported. **Demographics:** **Number**:100	**Diagnostic criteria:** None **Diagnostician:** Not reported **Assessment:** Structured interview (Gastrointestinal Questionnaire and Familial Autoimmune History Questionnaire), developmental history, etc. **Operator experience:** Not reported **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	***Symptoms:*** Frequent vomiting History of gastroesophageal reflux Abdominal pain Abnormal stool pattern Chronic constipation Food selectivity Food allergies	**n/N (%)** 16/100 (16%) 11/100 (11%) 15/100 (15%) 20/100 (20%) 41/100 (41%) 62/100 (62%) 14/100 (14%)	**Funding:** Empire Research Fellowship NIH **Limitations:** Rely on family-reported symptoms and lack of anatomical specimens to define pathology and suggest pathophysiology **Also reported:** The prevalence of those gastrointestinal symptoms in two control groups.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Age: (Unit: Years) **Mean:** 9.5 ± 4.6 y **Ethnicity: N (%)** Latin: 41/100 (41%) White: 32/10050 (32%) African American: 25/100 (25%) Other: 1/100 (1%) **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: Male: 82/100 (82%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Weisbrot D **Year:** 2005 **ID:** 182 **Country:** U.S.A **Aim of study:** To examine anxiety and	**Case group:** Children who consecutively referred to a university hospital developmental disabilities specialty clinic and a child psychiatry outpatient service located on Long Island, New York, and diagnosed as PDD. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:** DSM-IV	**Diagnostic criteria:** Both ECi-4 and CSI-4 are based on DSM-IV. As to the detailed diagnostic criteria, the percentage of children with screening cut-off scores varied depending on the informant (parent/teacher and age of the child). Table 1. Cut-off scores for each disease in different age group. Age(y) Parent Teacher	***Diagnosis (3-5 years group):*** 1.ADHD 2.ODD 3.Mood or anxiety disorder 4.Adjustment, reactive attachment, or posttraumatic stress disorder 5.Communication disorders ***Diagnosis (6-12 years group):*** 1.ADHD 2.ODD 3.Mood or anxiety disorder 4.Adjustment, reactive attachment, or posttraumatic stress disorder 5.Communication disorders	**n/N (%)** 153/182 (84%) 84/182 (49%) 33/182 (18%) 24/182 (13%) 91/182 (50%) 235/301 (78%) 99/301 (33%) 142/301 (47%) 42/301 (14%) 54/301 (18%)	**Funding:** Partially supported by a grant by from the Matt and Debra Cody Centre for autism and developmental disorders. **Limitations:** Serious: ECI-4/CSI-4 ratings of specific symptom statements may not agree with clinician assessments. PDD classifications were

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
psychotic symptoms in children with and without PDD. **Study design:** Uncontrolled observational **Consecutive recruitment** Yes. **Study dates** Not reported. **Evidence level:** Very low	**Diagnosis assessment of ASD:** Behaviour rating scales for both parent and teacher, background information questionnaire, clinical evaluations, informal observation of parent-child interaction; school reports, psycho- educational and special education evaluations; a questionnaire of developmental, educational, medical, and family histories, and scores from several parent and teacher completed behaviour rating scales, i.e., CBCL, Teacher report form, IOWA Conners teacher's rating scale. **Control group:** Children who consecutively referred to a university hospital developmental disabilities specialty clinic and a child psychiatry outpatient service located on Long Island, New York, and didn't receive a diagnosis of PDD. **Demographics (3-5 years):** **Number**:182 **ASD subtype: N (%)** Autistic disorder: 67/182 (37%) AS: 24/182 (13%) PDD-NOS: 91/182 (50%)	ADHD 3-5 41% 49% 6-12 60% 55% ODD 3-5 13% 21% 6-12 28% 25% GAD[1] 3-5 5% 0% 6-12 24% 24% [1]: Generalized anxiety disorder. **Diagnostician:** Not reported. **Assessment:** Parent and teacher versions of the ECI-4 (for 3-5 years old) or CSI-4 (for 6-12 years old) **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.			not generated from specific autism diagnostic instruments. However, they were based on expert diagnoses supported with a wealth of conventional developmental information from multiple informants including ratings of specific DSM-IV symptoms of PDD. No self-reports of anxiety were collected. Ratings of school behaviour were completed by a disproportionately larger percentage of special education versus regular education teachers for PDD and non-PDD clinic samples, respectively. **Also reported:** Means and standard deviation of patient group's score in ECI-4/CSI-4.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Age: (Unit: Years) **Mean:** 4.2 ± 0.8 **Ethnicity: N (%)** Caucasian: 171/182 (96%) African-American: 2/182 (1%) Hispanic-American: 4/182 (2%) Other: 2/182 (1%) **Subgroups:** Intellectual Disability: Not reported Language: Not reported Gender: - Male: 144/182 (79%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported **Demographics (6-12 years):** **Number**:301 **ASD subtype: N (%)** Autistic disorder: 103/301 (34%) AS: 80/301 (27%) PDD-NOS: 118/301 (39%) **Age: (Unit: Years)** **Mean:** 8.3 ± 1.9 **Ethnicity: N (%)** Caucasian: 279/301 (94%) African-American: 8/301 (3%) Hispanic-American: 5/301 (1.5%) Other: 5/301 (1.5%)				

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
	Subgroups: Intellectual Disability: Not reported Language: Not reported Gender: Male: 254/301 (84%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported				
Author: Williams P **Year:** 2004 **ID:** 183 **Country:** U.S.A **Aim of study:** Explore sleep problems in children with autism. **Study design:** Uncontrolled observational **Consecutive**	**Patient groups:** Children who have previously been evaluated by a psychologist and developmental paediatrician through the Weisskopf Centre for the evaluating of children and were diagnosed with autism. **Exclusion criteria** Children whose family didn't respond to the survey. **Diagnostic information of ASD** **Diagnosis criteria of autism:** American psychiatric association's diagnostic (1994) and Statistical Manual of mental disorders criteria (1994). **Diagnosis assessment of autism:** Not reported.	**Diagnostic criteria:** According the result of modified version of the sleep survey used by the Kosair Children's hospital sleep center (Gozal, 1998) **Diagnostician:** Not reported. **Assessment:** Modified version of the sleep survey used by the Kosair Children's hospital sleep center (Gozal, 1998), WISC-III, differential ability scales, etc. **Operator experience:** **Sleep survey:** parents with no experience **Others:** Not reported. **Inter-rater reliability:**	***Diagnosis:*** Mental retardation falling asleep Restless sleep Unwillingness to fall asleep in own bed Frequent wakenings Difficulty arousing Enuresis Disoriented waking Daytime mouth breathing Excessive daytime sleepiness Bruxism Snoring Fear of sleeping in dark Awakens to noise Voclizes in sleep Breathing concerns Headbanging Gets up to go to bathroom during night Wakes up screaming Falls asleep at school	**n/N (%)** 127/210 (63%) 112/210(53.3%) 84/210(40%) 83/210(39.5%) 71/210(33.8%) 66/210(31.5%) 58/210(27.7%) 57/210(27.1%) 54/210(25.7%) 49/210(23.3%) 44/210(21%) 44/210(21%) 39/210(18.6%) 38/210(18%) 21/210(10.5%) 18/210(8.6%) 14/210(6.7%) 13/210(6.2%) 13/210(6.2%) 10/210(4.7%)	**Funding:** Not reported. **Limitations:** Questionnaire completed by parents are likely to be subjective. **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
recruitment Not reported. **Study dates** Not reported. **Evidence level:** Very low	**ASD subtype: N (%)** Autism: 210/210 (100%) **Demographics:** **Number**:210 **Age: (Unit: Years)** **Mean:** 8.4 ± 2 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: - No retardation: 83 (37%) - Mental retardation: 127/210 (63%) Language: Not reported Gender: Male: 169 (80.5%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment Not reported Gestational age: Not reported Source of referral: Not reported	Not reported. **Cost:** Not reported. **Adequately reported:** No.	Nightmares Apnea Cries during night Morning headaches Sleepwalking	8/210(3.8%) 7/210(3.4%) 4/210(1.9%) 2/210(1%) 2/210(1%)	
Author: Yasuhara A **Year:** 2010 **ID:** 163 **Country:** Japan	**Patient groups:** 1014 autistic children that have been treated and followed-up for more than 3 years at Yasuhara children's clinic in Osaka, Japan. **Exclusion criteria** Not reported. **Diagnostic information of ASD** **Diagnosis criteria of ASD:**	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** EEG, source derivation method, topography, dipole analysis for certain cases, and psychological analysis.	***Diagnosis:*** Epilepsy	**n/N (%)** 375/1014 (37%)	**Funding:** Not reported. **Limitations:** How the diagnosis of epilepsy has been made is unclear. **Also reported:** Not reported.

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Aim of study: Confirmation of the incidence of epileptic seizures and the prevalence of EEG abnormalities in children with autism. To examine the nature of EEG abnormalities. To determine if the psychomotor development of ASD children who have experienced developmental delays, improves when their epilepsy has been treated and maintained under control. **Study design:** Uncontrolled observational **Consecutive recruitment** Not reported. **Study dates** Not reported.	DSM-IV. **Diagnosis assessment of ASD:** PARS or CARS have been used to confirm the diagnosis of autism. **ASD subtype: N (%)** Not reported. **Demographics:** **Number**: 1014 **Age: (Unit: Years)** **Mean:** 9.3 ± 3.4 y **Ethnicity:** Not reported. **Subgroups:** Intellectual Disability: Not reported. Language: Not reported Gender: Male: 785/1014 (77.4%) Visual impairment: Not reported Hearing impairment: Not reported Communication impairment : Not reported Gestational age: Not reported Source of referral: Not reported	**Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No			

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Evidence level: Very low					
Author: Yeargin-Allsopp M Year: 2003 ID: [184] Country: U.S.A AIM: To determine the prevalence of autism among children in major US metropolitan area and to describe characteristics of the study population. Study design: Uncontrolled observational study Consecutive recruitment? Not reported	Patient groups: Children aged 3-10 years in the 5 countries of metropolitan Atlanta, GA, in 1996. Exclusion criteria: Not reported. **Diagnostic information of autism** **Diagnosis criteria of autism:** DSM-IV **Diagnosis assessment of autism:** Case were identified through screening and abstracting records at multiple medical and educational sources, with case status determined by expert review. **ASD subtype: N (%)** Autism: 100% Demographics: Number: 987 Age: Range = 3 – 10 y Ethnicity: Not reported	**Diagnostic criteria:** Not reported. **Diagnostician:** Not reported. **Assessment:** Not reported. **Operator experience:** Not reported. **Inter-rater reliability:** Not reported. **Cost:** Not reported. **Adequately reported:** No.	***Diagnosis:*** Intellectual disability Epilepsy Cerebral palsy Visual impairment Hearing loss	**n/N (%)** 803/880 (91.3%) 79/987(8%) 49/987 (5%) 10/987 (1%) 10/987 (1%)	

Study Details	Patients	Diagnostic information	Co-existing condition	Result	Comments
Study dates: 1996 Evidence level: Very low	Subgroups: Language: Not reported Gender: male 787/984 (80.0%) Intellectual disability: 803/880 (91.3%) Visual impairment: Not reported Hearing impairment: Not reported Gestational age: Not reported Source of referral: Not reported				

Question 9

Study Details	Samples	Study methods	Finding	Comments
Author: Howlin P **Year:** 1997 **ID:** [131] **Country:** U.K **Aim of study:** To examine parents' experiences of the diagnostic process across the U.K as a whole. **Study design:** Uncontrolled observational. **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	**Sample:** Parent members of autistic societies in the U.K. **Exclusion criteria** **Demographics of ASD patients:** **Number**: 1294 **Age: (Unit: Years)** - **Range:** 2-49 y - **Mean:** 12.2 y **Gender: N (%)** (data missing on 1 case) - **Male:** 1077/1294 (83.2%) - **Female:** 217/1294 (16.8%) **Diagnosis:** - Autism: 614/1295 (47.4%) - Asperger syndrome: 190/1295 (14.7%) - Autism/Asperger + other diagnosis: 78/1295 (6.0%) - Autistic tendencies etc.: 181/1295 (14.0%) - Autistic tendencies+ other diagnosis: 165/1295 (12.7%) - Language disorder and/or learning disabilities: 25/1295 (1.9%) - Other: 13/1295 (1.0%) - not known or no diagnosis given: 29/1295 (2.2%)	**Recruitment method:** All the local societies or support groups listed by The National Autistic Society in 1993 were contacted. 48 groups are willing to participate and 2488 questionnaires were distributed via their mailing list. A total of 1295 forms were returned. **Assessment:** Questionnaire. **Data analysis:** Not reported.	**Good practice'** None identified' **Poor practice** **Theme: Delay in diagnosis** *'The whole process is far too slow and seems to depend on the parents' persistence in pushing for a diagnosis. Months seem to go by waiting for appointment after appointment. This really prolongs the agony of what is, inevitably in any case, a painful process.'* **Theme: Professions' reluctance to give diagnosis** *'I was fed up with professional pussyfooting around, afraid to say the dreaded word 'autism'. It seems that the very word autistic is taboo.'* **Expected** **Theme: Parents have to spend lots of time on searching for useful information.** *'I would have helped us considerably if we had been provided, from the start, with a set of leaflets explaining the basic things parents need to know about, such as* • *Statement of Special Educational Needs* • *Respite care* • *Local facilities and support groups* • *Benefits and allowances, such as disability Living Allowance etc.* • *The roles and responsibilities of the numerous professionals involved* • *Simple definitions of all the relevant terminology* • *Advice on further reading.* *It took us a long time to find out this sort of information, much of which was gleaned from other parents who had also found things out the hard way.'*	**Funding:** Inge Wakehurst Trust. **Limitations:** 1.3 Appropriate 1.4 Clear 2.1 Defensible 3.1 Not sure/ inadequately reported 4.1 Clear 4.2 Clear 4.3 Not sure 5.1 Not sure/Not reported 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not

Study Details	Samples	Study methods	Finding	Comments
	Demographics of parent/ caregivers: **Number**: 1295 **Age: (Unit: Years)** Not reported. **Gender: N (%)** Not reported. **Relationship to child: n/N (%)** - Parents: 1295/1295 (100.0%)			reported **Also reported:** NA
Author: Kerrell H **Year:** 2001 **ID:** 135 **Country:** U.K **Aim of study:** To examine parents' personal experiences of a diagnostic clinic for children suspected of having autistic spectrum disorder, and to evaluate parental satisfaction with	**Sample:** Families whose child had been diagnosed by the clinic. **Exclusion criteria** Families declined to take part (3), families had moved house (2), families that were not available to be contacted (7) or incomplete interview (1 family). **Demographics of ASD patients:** **Number**: 11 **Age: (Unit: Years)** - Mean: 3.7 y **Gender: N (%)** Not reported. **Diagnosis:** - Autistic: 9/11 (81.8%) - Asperger's syndrome: 2/11 (18.2%)	**Recruitment method:** All families whose child had been diagnosed by the clinic were contacted and invited to take part in the study. 11 out of 24 families were interviewed. **Assessment:** Structured interview schedule. The questionnaire consisted of set questions divided into four sections using closed and open-ended questions. **Data analysis:** Not reported.	**Good practice'** None identified **Poor practice** None identified **Expected** **Theme: Parents' opinion as to how to improve the communication of diagnosis:** Provide written reports, especially of the assessment Involving parents in discussion after the assessment, as this would help parents to understand professional 'findings' Talk to parents as 'equals'; use language that can be understood and is not technical **Theme: Parents' opinion as to how to improve the diagnosis procedure:** Take more opportunities to discuss the child's progress with the individual professionals, for example, individual reports should be discussed Only have professionals present who have involvement with the child More individualised professional involvement outside the clinic Interview parents without the child being present	**Funding:** Not reported. **Limitations:** 1.3 Appropriate 1.4 Clear 2.1 Defensible 3.1 Not sure/ inadequately reported 4.1 Not described 4.2 Clear 4.3 Reliable 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported

Study Details	Samples	Study methods	Finding	Comments
the multidisciplinary assessment team at the clinic. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** **Evidence level:** Very low	**Demographics of parent/ caregivers:** **Number**: 11 **Age: (Unit: Years)** - Mean: 35 y - Range: 25-42 y **Gender: N (%)** - **Male:** 1/11 (9.1%) - **Female:** 10/11 (90.9%) **Relationship to child: n/N (%)** - Fathers: 1/11 (9.1%) - Mother: 10/11 (90.9%)		Assess the child separately Follow a specific therapy Know who is going to be present to prepare questions to ask Don't make a telephone call to parents to inform them of an appointment. See the child in various settings Make appointments less formal; allow parents more time to ask questions.	5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:** Not reported.
Author: Mansell W **Year:** 2004 **ID:** 132 **Country:** U.K **Aim of study:** To obtain comments and recommendations about the service. To assess the use	**Sample:** Parents whose child had been diagnosed with an ASD by a district diagnostic service. **Exclusion criteria** Not reported. **Demographics of professionals:** Not reported. **Demographics of ASD patients:** **Number**: 55 **Age: (Unit: Years)** - **2-3y:** 16/55 (29.1%) - **4-5y:** 18/55 (32.7%) - **6-7y:** 9/55 (16.4%) - **8-9y:** 4/55 (7.3%)	**Recruitment method:** The parents of those with a definite diagnosis of an ASD were sent a letter and a four-page questionnaire designed to address the aims (see 'Aim of study'). The letter obtained the purpose and nature of the survey and explained that their replies would be anonymous and confidential. **Assessment:** **Questionnaire:** The questionnaire was a mixture of a four-point	**Good practice'** None identified **Poor practice** **Theme: Not enough timely information** *'More time and information should be given to parents at diagnosis. I was informed of the diagnosis and told I would be seen by the family services worker in a month. That was it. Not explanation. No hope. It was obvious that they knew what diagnosis they were likely to make prior to the play session but I had no prior warning. No one had the decency to tell me what might be wrong. At that point I needed to believe there was a future and I was appalled at the way I was treated. I should have had counselling there and then and lots of information given to me.* **Expected** **Theme: more reassurance/empathy**	**Funding:** Bromley Autistic Trust **Limitations:** 1.3 Appropriate 1.4 Clear 2.1 Defensible 3.1 Not sure/in adequately reported 4.1 Clear 4.2 Clear 4.3 Not sure

Study Details	Samples	Study methods	Finding	Comments
and perceived quality of support and treatment available to parents. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	- **>10 y:** 6/55 (10.9%) - **Not specified:** 2/55 (3.6%) **Gender: N (%)** - **Male:** 50/55 (90.9%) - **Female:** 5/55 (9.1%) **Diagnosis:** - Autism: 24/55 (43.6%) - Asperger's syndrome: 12/55 (21.8%) - ASD-NOS: 12/55 (21.8%) - Not specified: 1/55 (1.8%) **Demographics of parents:** **Number**: 78 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 26/78 (33.3%) - **Female:** 52/78 (66.7%) **Relationship to child: n/N (%)** - Fathers: 26/78 (33.3%) - Mother: 52/78 (66.7%)	Likert scale and spaces for additional comments and 'open-question' answers. **Data analysis:** Not reported.	*I believe that when parents are told during diagnostic assessment that their child is autistic, they should be reassured that there are things they can do, e.g., Lovaas, PECS, change of diet, to make a huge difference. Obviously don't mislead them to think these things are a cure, but don't lead them to believe that the future is bleak, and doom and gloom, as I was.'*	5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:**
Author: Osborne L **Year:** 2008 **ID:** [134]	**Sample:** Parents of preschool-, primary- and secondary-aged children who had recently received an ASD diagnosis. **Exclusion criteria** Children whose diagnoses have been made less than 6 months	**Recruitment method:** Parents were recruited from five local authorities in the southeast of England. These participants were selected randomly by the local authorities from lists of parents who fulfilled the	**Good practice'** None identified **Poor practice** **Theme: Didn't provide parents with information about what kind of help are available** *'I didn't realized he could have had help'* **Expected**	**Funding:** Not reported. **Limitations:** 1.3 Appropriate 1.4 Clear 2.1 Defensible

Study Details	Samples	Study methods	Finding	Comments
Country: U.K **Aim of study:** To obtain the views of parents concerning their perceptions of the process of getting a diagnosis of an ASD for their child. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:**	or more than 7 years before the focus group interviews were held. **Demographics of ASD patients:** **Number**: 70 **Age: (Unit: Years)** Not reported. **Gender: N (%)** Not reported. **Diagnosis:** Not reported. **Demographics of parent/ caregivers:** **Number**: 70 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 14/70 (18.7%) - **Female:** 56/70 (81.3%) **Relationship to child: n/N (%)** - Fathers: 14/70 (18.7%) - Mother: 56/70 (81.3%)	criteria: the child's diagnosis should have been made not less than 6 months before the focus group interviews were held, and not more than 7 years before the focus group interviews were held. **Assessment:** Focus group interview. Each focus group comprised parents of preschool-aged children, one parents of primary-aged children, and one parents of secondary-aged children. **Data analysis:** **Content analysis.** The phases of the content analysis employed were conducted in line with the recommendations made by Vaughn et al. (1996)	**Theme: Providing parents with information about reasonable expectation of ASD children** *'I would have benefited from someone coming round…and telling me 'Don't expect this too soon', or 'Don't expect that behaviour''* **Theme: Generalized, deep information of ASD** *'It would've been helpful just to have a very generalized, not a deep, I don't know I could have coped with loads and loads of leaflets.'*	3.1 Appropriate 4.1 Not described 4.2 Clear 4.3 Not sure 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:**

Question 10

Study Details	Samples	Study methods	Finding	Comments
Author: Beatson J **Year:** 2002 **ID:** 225 **Country:** U.S.A **Aim of study:** To gain an introductory understanding of the meaning the VT-RAP (The Vermont Rural autism project) process held for families and to evaluate the effectiveness of the assessment process from the parents' perspectives. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported **Evidence level:**	**Sample:** Parents who participated in Year 1 or 2 of VT-RAP. **Exclusion criteria** Not reported. **Demographics of ASD patients:** **Number**: 5 **Age: (Unit: Years)** Mean: 3.8-10 y **Gender: N (%)** - **Male:** 3/5 (60.0%) - **Female:** 2/5(40.0%) **Diagnosis:** - **Autism:** 2/5 (40.0%) - **PDD-NOS:** 1/5 (20.0%) - **ASD suspicious**: 2/5 (40.0%) (Two children had several characteristics of autism but did not fit all of the criteria specified by the DSM-IV for a diagnosis of autism; recommendations were made for further testing and differential diagnosis) **Demographics of parent/ caregivers:**	**Recruitment method:** All families who have participated in Year 1 or 2 of VT-RAP were invited to join this program. 5 of them accepted the invitation. **Assessment:** Short open-ended interview. **Data analysis:** Data analysis was done by coding and categorization of themes, confessional and realist tales, and poetic transcription.	**Good practice** **Theme: Involving the school in the child's assessment** *'It is a whole attitude shift and once you make that, things fall into place. I think that's what RAP dos. It pushes that button that gives people an attitude shift, I know it did for the school team….it made us feel like somebody was coming to our rescue. We dialled 911'* **Theme: Making individual team members to become more engaged in supporting ASD children.** *'It was wonderful having the SLP join the consulting team. She is learning, too. She goes right for it. She's a practical minded person and I vale her opinion. She finds out if she doesn't know something, and there is good follow-through. Her involvement really benefited us'* **Theme: The children began responding to the recommended interventions.** *'He comes to the table just like the other kids, there's no magic here'* **Theme: Parents felt that they were getting enrolled.** *'We really felt like we were a part of the team, and somebody was listening to or questions. And*	**Funding:** Not reported. **Limitations:** 1.1 Appropriate 1.2 Clear 2.1 Defensible 3.1 Appropriate 4.1 Not described 4.2 Clear 4.3 Reliable 5.1 Rigorous 5.2 Poor 5.3 Not sure/Not reported 5.4 Convincing. 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported.

Very low	**Number**: 5 **Age: (Unit: Years)** Not available. **Gender: N (%)** - **Male:** 1/5 (20.0%) - **Female:** 4/5 (80.0%) **Relationship to child: n/N (%)** - **Father:** 1/5 (20.0%) - **Female:** 4/5 (80.0%)		*while we always knew that a lot of the questions may not have answers, we felt that while there weren't answers there were a lot of people out there who could give us ideas.'* **Theme: ASD children have gained more confidence in themselves because of the opportunities to work on social skills.** *'A lot of [Donna's] stuff is social growth. There is a seventh grader on the ream who is a wonderful example of what not to do..Donna is finding she doesn't have to like everyone but she does have to get along with everyone.'* **Theme:Positive attitude shifts on ASD parents.** *'We learned to trust our instincts. When you have two children [with special needs], you wonder, what went wrong? We heard that you've got to put the future in their [own children's] hands. It was good and empowering letting Donna face her own consequences.'* *'It opened my eyes to how many people wanted to help my son, future possibilities for Ronnie. He can learn to read and write. He is his own person with his own likes and dislikes. I want him to be happy; his dreams to come true'* **Theme: Positive shifting behaviours of ASD**	**<u>Also reported:</u>** Not reported.

			family. *'[RAP] was a complete asset to our son's future. It helped us look at him in terms of how the learns and doesn't learn. We [now] accommodate him instead of him accommodating us.'* **Theme:Parents felt empowerment and transformation.** *'I held it all the way home…Wow, I have all this stuff and it was kind of overwhelming. I've got this weapon, or tool, if you will, that I can now go back into the school and we can go over it and say, 'What do we need to do here, what is going to work for us and what isn't?' It's always nice to have something to hang on to.'* *'Now I understand the importance of carry-through at home. Knowledge, knowledge, knowledge. I learnt so much…The whole experience changed me a lot and led me to my work as a parent consultant for CUPS [Children's Upstream Services grant]'* **Poor practice** None reported **Expected** None reported	
Author: Kerrell H **Year:** 2001 **ID:**	**Sample:** Families whose child had been diagnosed by the clinic. **Exclusion criteria** Families declined to take part (3), families had moved house	**Recruitment method:** All families whose child had been diagnosed by the clinic were contacted and invited to take part in the study. 11 out of 24 families were interviewed.	**Good practice** None reported **Poor practice** None reported **Expected**	**Funding:** Not reported. **Limitations:** 1.5 Appropriate 1.6 Clear

[135] **Country:** U.K **Aim of study:** To examine parents' personal experiences of a diagnostic clinic for children suspected of having autistic spectrum disorder, and to evaluate parental satisfaction with the multidisciplinary assessment team at the clinic. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** **Evidence level:** Very low	(2), families that were not available to be contacted (7) or incomplete interview (1 family). **Demographics of ASD patients:** **Number**: 11 **Age: (Unit: Years)** - Mean: 3.7 y **Gender: N (%)** Not reported. **Diagnosis:** - Autistic: 9/11 (81.8%) - Asperger's syndrome: 2/11 (18.2%) **Demographics of parent/ caregivers:** **Number**: 11 **Age: (Unit: Years)** - Mean: 35 y - Range: 25-42 y **Gender: N (%)** - **Male:** 1/11 (9.1%) - **Female:** 10/11 (90.9%) **Relationship to child: n/N (%)** - Fathers: 1/11 (9.1%) - Mother: 10/11 (90.9%)	**Assessment:** Structured interview schedule. The questionnaire consisted of set questions divided into four sections using closed and open-ended questions. **Data analysis:** Not reported.	**Theme: Parents' opinion as to how to improve the communication of diagnosis:** Provide written reports, especially of the assessment Involving parents in discussion after the assessment, as this would help parents to understand professional 'findings' Talk to parents as 'equals'; use language that can be understood and is not technical **Theme: Parents' opinion as to how to improve the diagnosis procedure:** Take more opportunities to discuss the child's progress with the individual professionals, for example, individual reports should be discussed Only have professionals present who have involvement with the child More individualised professional involvement outside the clinic Interview parents without the child being present Assess the child separately Follow a specific therapy Know who is going to be present to prepare questions to ask Don't make a telephone call to parents to inform them of an appointment. See the child in various settings Make appointments less formal; allow parents more time to ask questions. **Theme: Parents' opinion as to what kind of information should be provided:** Explanation of the clinical processes, especially at assessment Written advice on the services available.	2.1 Defensible 3.1 Not sure/ inadequately reported 4.1 Not described 4.2 Clear 4.3 Reliable 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:** Not reported.

			Individualised advice for the child, not for the diagnosis More information on the child's progress and development. **Theme: Parents' opinion as to what kind of support should be provided:** Offer more guidance to help prepare for future. More practical support, for example, review more frequently, offer intensive one-to-one sessions. Offer more support, regardless of level of disability Co-ordinate information better, for example, share feedback from the clinic Provide home visits, since it is helpful to check on progress, or the clinic will not get a true picture of the home situation Review the child more and monitor development more closely	
Author: Mansell W **Year:** 2004 **ID:** [132] **Country:** U.K **Aim of study:** To assess the perceived change in quality of service provided by the district diagnostic	**Sample:** Parents whose child had been diagnosed with an ASD by a district diagnostic service. **Exclusion criteria** Not reported. **Demographics of professionals:** Not reported. **Demographics of ASD patients:** **Number**: 55 **Age: (Unit: Years)**	**Recruitment method:** The parents of those with a definite diagnosis of an ASD were sent a letter and a four-page questionnaire designed to address the aims (see 'Aim of study'). The letter obtained the purpose and nature of the survey and explained that their replies would be anonymous and confidential. **Assessment:** **Questionnaire:** The questionnaire was a mixture of a four-point Likert scale and spaces for additional comments	**Good practice** None reported **Poor practice** **Theme: Not enough timely information** *'More time and information should be given to parents at diagnosis. I was informed of the diagnosis and told I would be seen by the family services worker in a month. That was it. Not explanation. No hope. It was obvious that they knew what diagnosis they were likely to make prior to the play session but I had no prior warning. No one had the decency to tell me what might be wrong. At that point I needed to believe there was a future and I was appalled at the way I was treated. I should have had*	**Funding:** Bromley Autistic Trust **Limitations:** 1.5 Appropriate 1.6 Clear 2.1 Defensible 3.1 Not sure/in adequately reported 4.1 Clear

service since changes were implemented in 1998. To obtain comments and recommendations about the service. To assess the use and quality of information services available to parents. To assess the use and perceived quality of support and treatment available to parents. To assess the positive and negative consequences of a diagnosis. To assess how parents' attitudes towards the diagnosis had changed over time. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:** Very low	- **2-3y:** 16/55 (29.1%) - **4-5y:** 18/55 (32.7%) - **6-7y:** 9/55 (16.4%) - **8-9y:** 4/55 (7.3%) - **>10 y:** 6/55 (10.9%) - **Not specified:** 2/55 (3.6%) **Gender: N (%)** - **Male:** 50/55 (90.9%) - **Female:** 5/55 (9.1%) **Diagnosis:** - Autism: 24/55 (43.6%) - Asperger's syndrome: 12/55 (21.8%) - ASD-NOS: 12/55 (21.8%) - Not specified: 1/55 (1.8%) **Demographics of parents:** **Number**: 78 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 26/78 (33.3%) - **Female:** 52/78 (66.7%) **Relationship to child: n/N (%)** - Fathers: 26/78 (33.3%) - Mother: 52/78 (66.7%)	and 'open-question' answers. **Data analysis:** Not reported.	*counselling there and then and lots of information given to me.* **Expected** None reported	4.2 Clear 4.3 Not sure 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 Convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:**
Author: Osborne L **Year:**	**Sample:** Parents of preschool-, primary- and secondary-aged children who had recently	**Recruitment method:** Parents were recruited from five local authorities in the southeast of England. These participants	**Good practice** **Theme: Parents felt they have been supported.** *'And since she's been at the school, they've [teachers] been very helpful, they've taught me*	**Funding:** Not reported. **Limitations:**

2008 **ID:** 134 **Country:** U.K **Aim of study:** To obtain the views of parents concerning their perceptions of the process of getting a diagnosis of an ASD for their child. **Study design:** Uncontrolled observational **Consecutive recruitment** No. **Study dates** Not reported. **Evidence level:**	received an ASD diagnosis. **Exclusion criteria** Children whose diagnoses have been made less than 6 months or more than 7 years before the focus group interviews were held. **Demographics of ASD patients:** **Number**: 70 **Age: (Unit: Years)** Not reported. **Gender: N (%)** Not reported. **Diagnosis:** Not reported. **Demographics of parent/ caregivers:** **Number**: 70 **Age: (Unit: Years)** Not reported. **Gender: N (%)** - **Male:** 14/70 (18.7%) - **Female:** 56/70 (81.3%) **Relationship to child: n/N (%)** - Fathers: 14/70 (18.7%) - Mother: 56/70 (81.3%)	were selected randomly by the local authorities from lists of parents who fulfilled the criteria: the child's diagnosis should have been made not less than 6 months before the focus group interviews were held, and not more than 7 years before the focus group interviews were held. **Assessment:** Focus group interview. Each focus group comprised parents of preschool-aged children, one parents of primary-aged children, and one parents of secondary-aged children. **Data analysis:** **Content analysis.** The phases of the content analysis employed were conducted in line with the recommendations made by Vaughn et al. (1996)	*a lot about the autism'* *'This family needs help, what about C…a specialized unit for children with emotional behaviour problems to do with some kind of disorder, not all autistic, but my son was there for that reason.'* *'I feel quite lucky, because I did have that group for parents of newly diagnosed children'* **Poor practice** **Theme: Parents felt unsupported** *'I find it very frustrating how social services, health and education…all work very much independently of one another'* *'I would have loved just have had some, to have met other parents'* *'Not just to have come away and be left, and not know anybody else, no other mothers, nobody else, with children with autism'* **Theme: Parents felt they were isolated** *It's that bad, its' that isolating, and I feel that shoved out of society'* **Theme: Parents feel helpless** *'It's still slightly bizarre or surreal in my own mind, because I rang this number, which I thought would be answered immediately, and I was told that I was in a queuing system, could I be patient and wait, while this adolescent was waving a knife in front of me'* **Theme: Lack of access to professionals** *'Quite often, its' very difficult to get hold of consultants'* *'They haven't got enough child psychiatrists'*	1.5 Appropriate 1.6 Clear 2.1 Defensible 3.1 Appropriate 4.1 Not described 4.2 Clear 4.3 Not sure 5.1 Not sure 5.2 Rich 5.3 Not sure/Not reported 5.4 convincing 5.5 Relevant 5.6 Adequate 6.1 Not sure/Not reported **Also reported:**

			'Social services, I think, they need more people' *'They need to be more available.'* **<u>Expected</u>** **Theme: Parents felt** *'It should be there all the time, whether you need it or not, before you get to that stage [breaking point]'* *'Give us some leaflets of different things about children with difficult problems, and let me read them'* *'Tri-agency alliances are a must'* *'people who would befriend him…like a buddy system, where people would befriend and actually just sort of spend time…and actually take him outside the family environment…It alleviates some of the burden from me and my wife, and particularly my other children.'* *'The sooner the three work together the better it would be'* *'A joint file, not each and every one keeping their won individual files'* *'If there was somebody standing beside the parent, speaking on their behalf'* *'To help the parent access education, health'* *'someone who is able to communicate between the agencies'* *'a liaison officer who could have said 'OK right you go here for this, and here for that''* *'as a passer-on of information'* *'to coordinate what was happening in all the other areas'* *'I'm absolutely desperate for respite care and I'm not receiving it'*	

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