

Autism Spectrum Disorders



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Universitätsklinik Zürich

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Dr. Ronnie Gundelfinger



Contents

1. Definition
2. Classification
3. Epidemiology
4. Diagnosis
5. Neuropsychology
6. Asperger Syndrome
7. Savants
8. Treatment
 - Early intervention
 - KOMPASS program
 - medication

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Definition of the Autistic Disorder by Leo Kanner 1943



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Autistic Disturbances of Affective Contact

Inability to make social connections
Inability to use language for the
purpose of communication
Compulsive desire to keep sameness
Fascination for objects
Onset of symptoms before the age of 2
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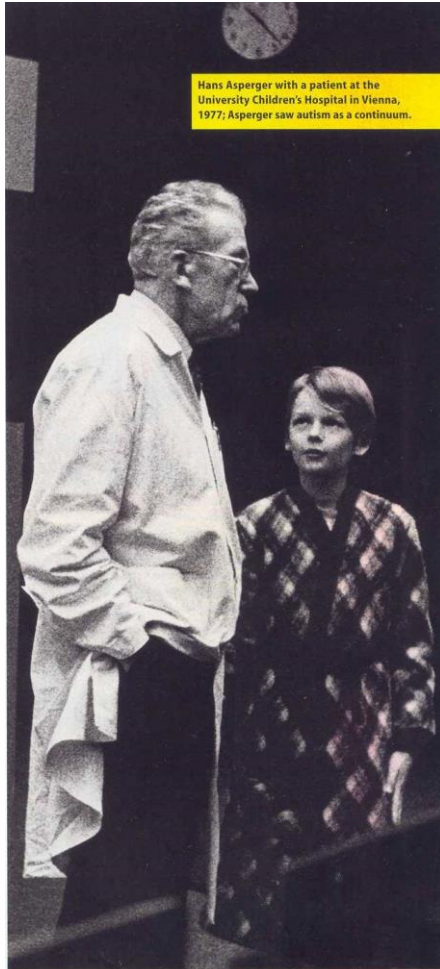
(normal cognitive abilities)



Hans Asperger



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“The nature of these children is revealed most clearly in their behaviour towards other people. Indeed, their behaviour in the social group is the clearest sign of their disorder and the source of conflicts from earliest childhood.”



Definition of Autism Spectrum Disorders

- Qualitative impairment in reciprocal social interaction
- Qualitative impairment in verbal and nonverbal communication
- Restricted interest and repetitive patterns of behaviour
- Onset before age 2 ½ years
- (unusual sensory interests)

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Autism Spectrum Disorders

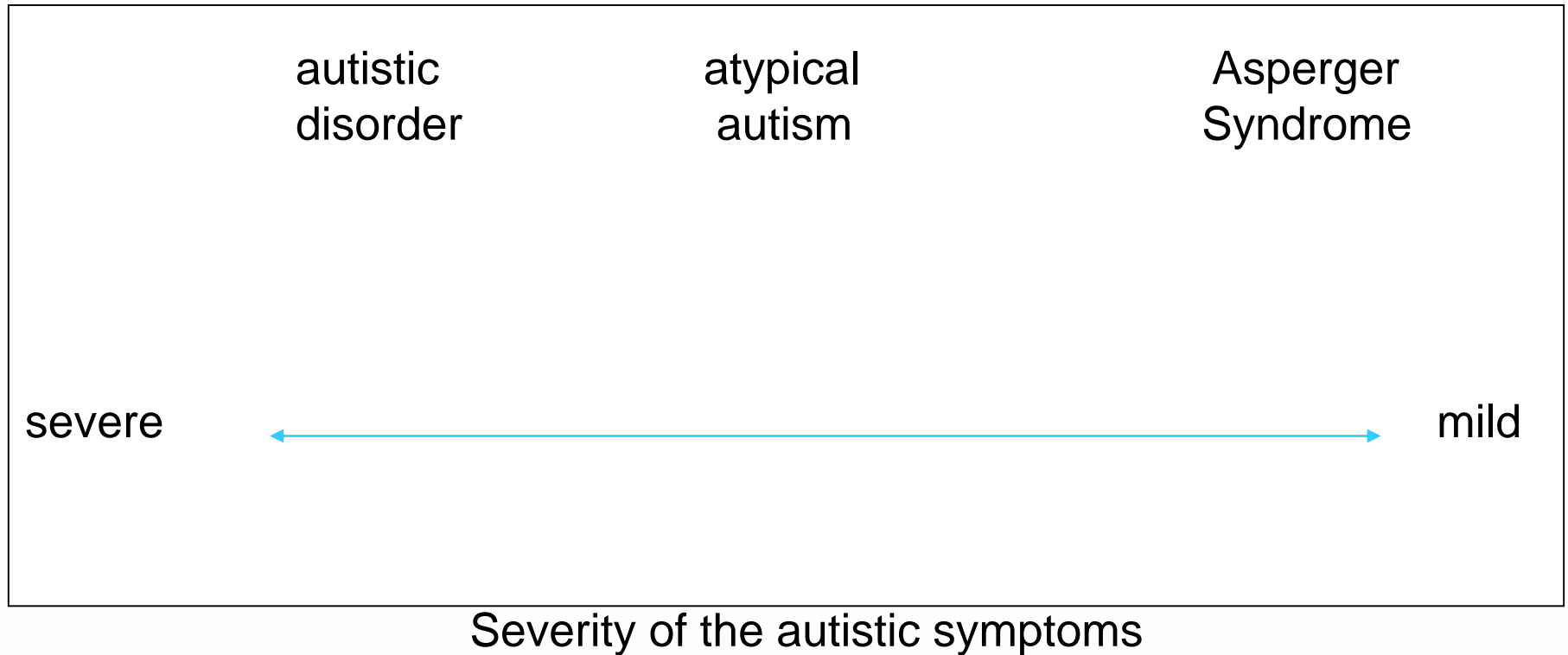


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- Autistic Disorder
 - Atypical Autism (PDD – NOS)
 - Asperger Syndrome
-
- Childhood Disintegrative Disorder
 - Rett Syndrome



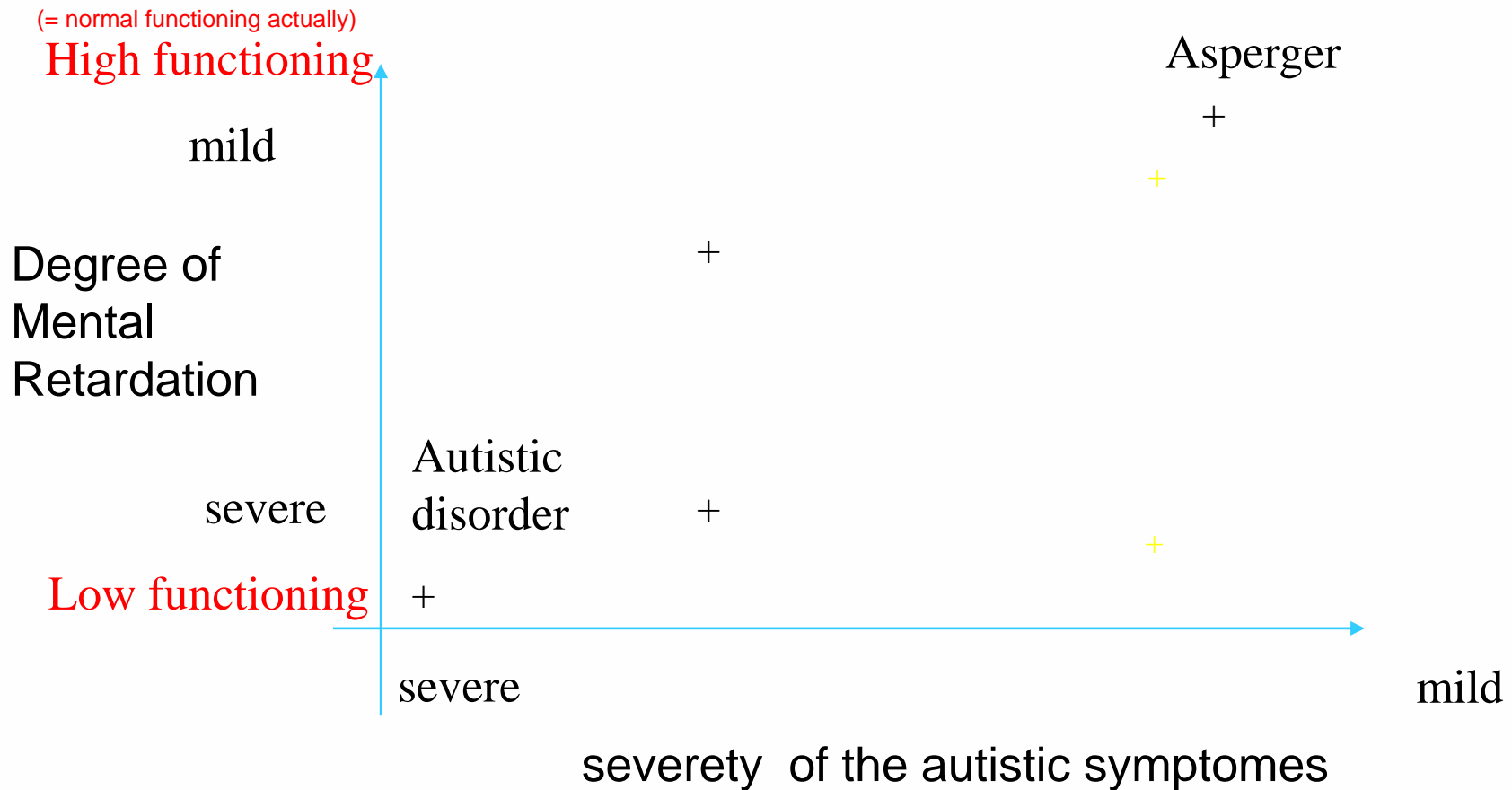
The autistic spectrum



Evaluation of a Child with an Autistic Disorder



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Tommy MacKay , Edinburg 2016

autismus spectrum disorders ASD 1% oder 1 : 100

< 6 years 0,37 %

6 – 12 years 1,04 %

> 12 years 1,13 %

33% with mental retardation (IQ < 70)

Is there a biological reason for autistic disorders ?

- Sex ratio ~> X-chr linkage
more in boys
- Mental retardation
- Epilepsy
- Multi-case families
- ASD with neurological disorders like Tuberous sclerosis,
- Fra-X syndrome,
- extreme prematurity
- Age of parents
- Migration of parents no one knows why
- Medication during pregnancy
- Infection during pregnancy, eg rubella or a fever is also enough for negative developmental effects
- Environmental influences during pregnancy
- Effect of folic acid

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categorical diagnosis <-> dimensional diagnosis

yes or no, qualitative statement

bell shape, a number, quantification

2 std would be considered too extreme (too big, too small, ...)

- No measurable changes (lab tests, EEG, MRI)
- no biomarkers
- only behavioural symptoms

Suspicious Symptoms during the 1. Year of Life

Difficulties in the Parent- Child Interaction

- Acoustic:
 - Little reaction to parents' voice
 - No reaction to name calling
 - Very few preverbal sounds
- Visual:
 - Missing or unusual eye contact
- Tactile
 - Unusual reaction to touch or body contact

Suspicious Symptoms during the 2. Year of Life

Delay in speech development

No sharing of the world with others (joint attention)

- No pointing towards interesting objects
- No bringing of objects in order to show them
- No looking at parents' face for social clues
- No joint looking at pictures

Lack of imitative play

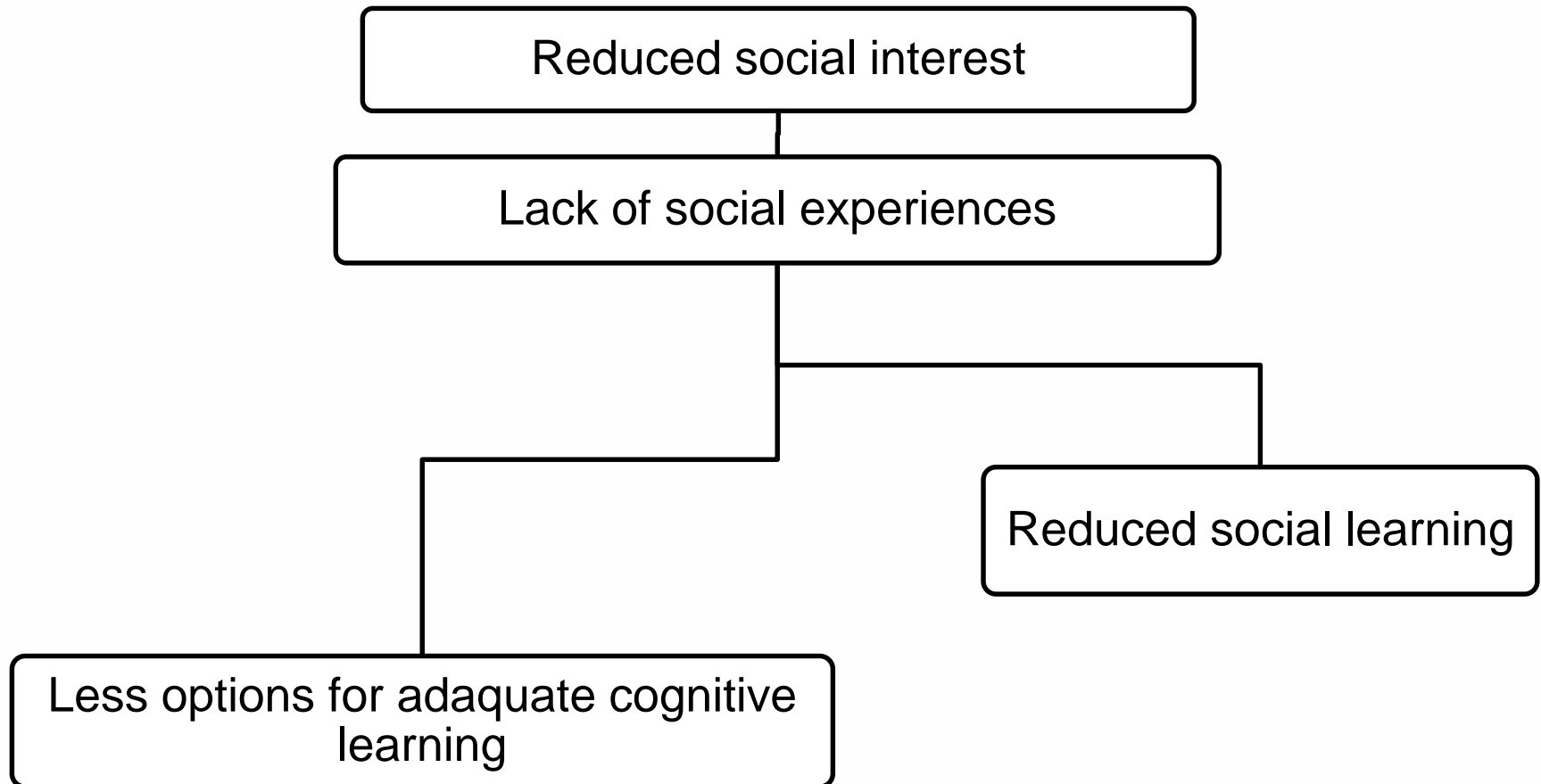
Very little or unusual nonverbal communication

Loss of verbal or social abilities

The social motivation hypothesis



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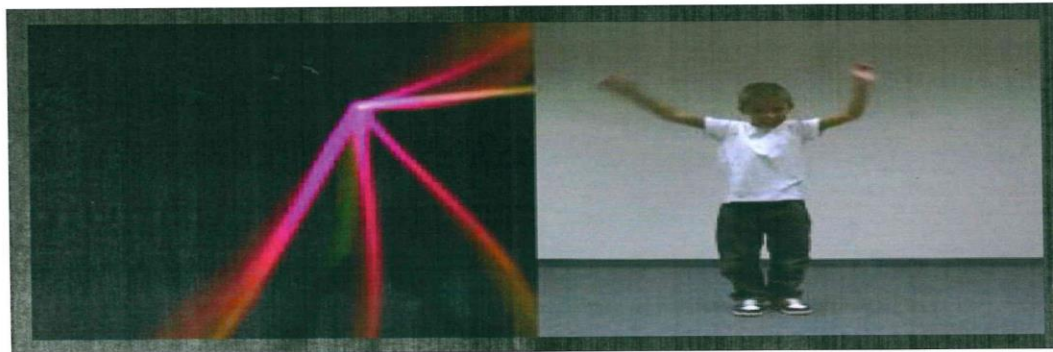
Eye tracking



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sometimes we have late talkers, but they have other means of communication which is non-verbal

Measuring social orienting



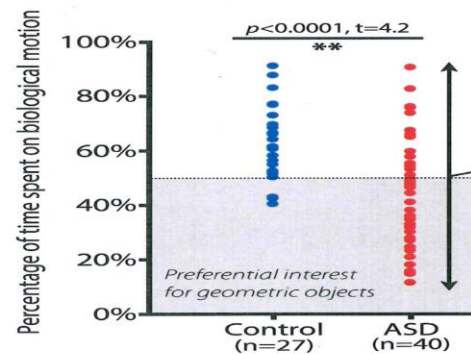
Inspired from Pierce et al, Arch Gen Psy 2011

2012 - 2018

BSV/OFAS/UFAS Meeting | June 11th, 2015



A primary deficit in social orienting?



- Is the heterogeneity in social orienting related to heterogeneity in the clinical phenotype?
- Can social orienting be used to predict subsequent development of socio-communication skills in ASD?

2012 - 2018

Franchini et al., in preparation

BSV/OFAS/UFAS Meeting | June 11th, 2015

blue: 50% looking at child of the time presented in the film
red: autism. all autistic kids are those below 50% it has been found

Suspicious Symptoms after the 2. Year of Life



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- Little interest in other children
- Missing or unusual language
- Repetitive and restrictive play behaviour
- Little interest in picture books or stories
- Fascination for rotating or glittering objects
- Unusual hand or body movements
- Hyper- or hyposensitivity to sounds, smells or touch



Screening

- CHAT, Checklist for Autism in Toddlers
- M-CHAT, Modified CHAT
- SCQ, Social Communication Questionnaire
- ASSQ, Autism Spectrum Screening Questionnaire

Interview

- ADI-R, Autism Diagnostic Interview – Revised
- ASDI, Asperger Syndrome Diagnostic Interview

Play observation

- ADOS, Autism Diagnostic Observation Scale
- CARS, Childhood Autism Rating Scale

Diagnostic problems



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Mental retardation (with autistic features?)

Severe language disorder



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Neuropsychology

Social motivation hypothesis
Theory of Mind

Weak central coherence
Intense world model

Theory of Mind

- The ability to think about other peoples thoughts
- The ability to realize, that other people have other thoughts, wishes, motives then one self
- The ability to take another person's perspective.

Theory of Mind is a precondition for empathy.

The Sally and Ann task



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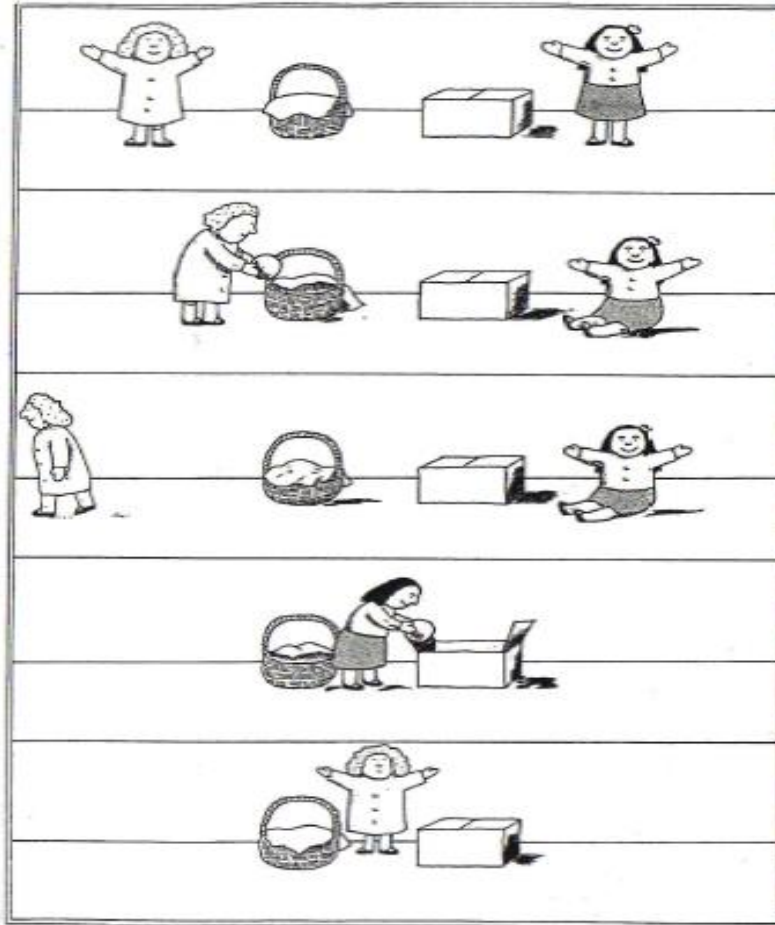


Figure 5.1 The Sally–Anne task (by kind permission of the artist, Axel Scheffler). Reprinted from Frith 1989a.

Sensory overload, like moving from a dark quiet cave to a loud disco with stroboscopic lights and masses of people

Options for survival:

reducing sensory input by retiring to a quiet room

Minimizing surprises by following routines, searching for patterns and structures

Animal model: valproate rat with increased anxiety

Adults can flee from sensory overload, babies can't. They have to block out sensory stimuli and reduce communication and interaction

Research shows that the resting brain of people with ASS might process more information than the brain of neurotypical people

I was exploring the concept of consistency. It may have seemed that my world was upside down, but I was looking to get a grip on consistency. The constant change of most things never seemed to give me a chance to prepare myself for them. Because of this I found pleasure and comfort in doing the same things over and over again.”

this is a non-social theory

Strong central coherence

neurotypical information processing :

globale information processing, integrating different information to understand a situation

central coherence is the ability to combine different elements to create a picture and to neglect details

to memorize a message not literally but to remember the meaning

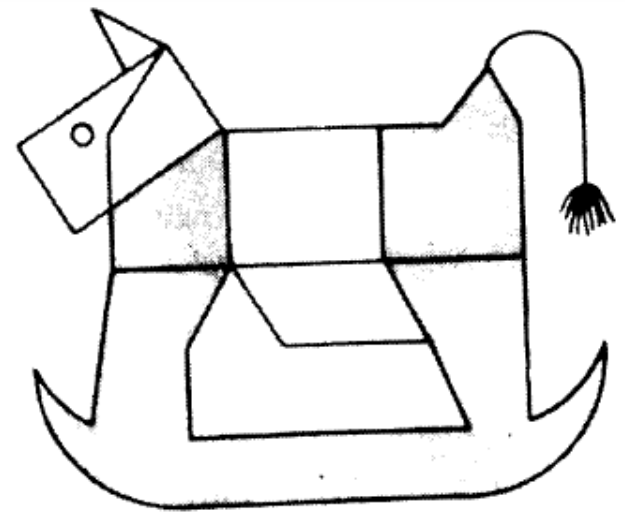
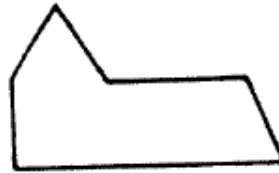
Information processing of people with ASD:

local information processing, focussing on details and not the whole picture

with weak central coherence comes an ability to recognize details, focus on details and a preference to occupy oneself with details

Memorizing details (words, sentences) of a message but not the meaning)

Hidden "house" figure



Children's Embedded Figures Task (CEFT)

Conceptual level – concretism



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Conceptual level – concretism

Difficulty to understand irony, jokes, proverbs, double meaning

- Words and sentences get meaning from context
- Can mean different things in different situations

It is necessary to interpret language on several levels

- text
- prosody
- gestures, mimic
- situation, experiences

Sensory issues



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effect is often underestimated
sensory overload



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“Reality to an autistic person is a confusing interacting mass of events, people, places, sounds and sights. There seem to be no clear boundaries, order or meaning to anything. A large part of my life is spent just trying to work out the pattern behind everything. Set routines, times, particular routes and rituals all help to get order into an unbearably chaotic life.”

Diagnostic Criteria (Gillberg)



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- Difficulties with reciprocal social interaction (extreme egocentricity)
- Restricted interests
- Routines and rituals
- Speech and language difficulties
- Difficulties with nonverbal communication
- Clumsiness



“The worst problem for me is socializing. I cannot make friends and I need friends badly. When you have friends you get more support and you can ask a lot of things from them and they’ll help you because they are your friends...And because I don’t have friends it means that I’m cut off from help. Whenever I have a problem I have to handle it on my own. I don’t know how to socialize and that means I don’t know how to use people to my advantage” (p127)

(H Molloy & L Vasil. (2004). Asperger Syndrome, adolescence and identity: looking beyond the label. Jessica Kingsley Pub.)

Asperger Syndrome in Girls



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Same pattern, less severe expression
less disruptive

Coping mechanisms:

- a. Hiding and mimicking
- b. Imitation, doll play peer support, reading
- c. Best girl friend

Special interests (animals, classic literature)

Imaginary friends

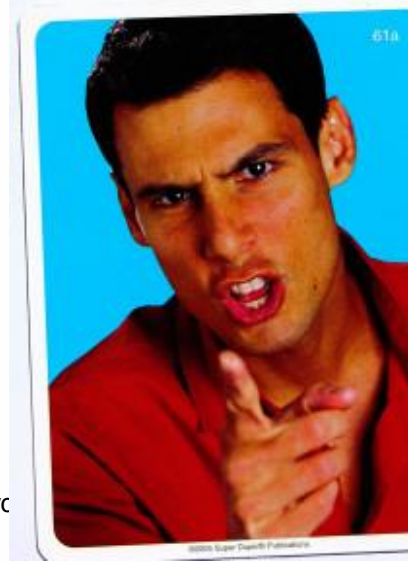
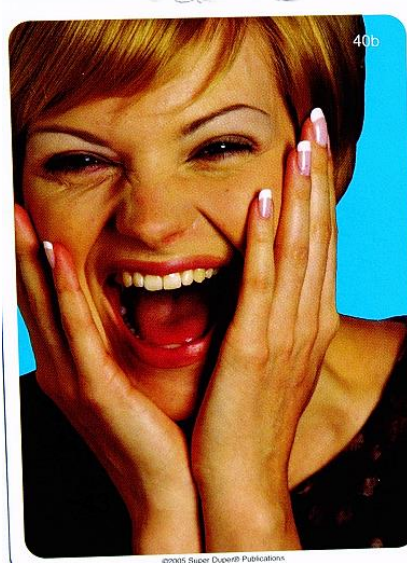
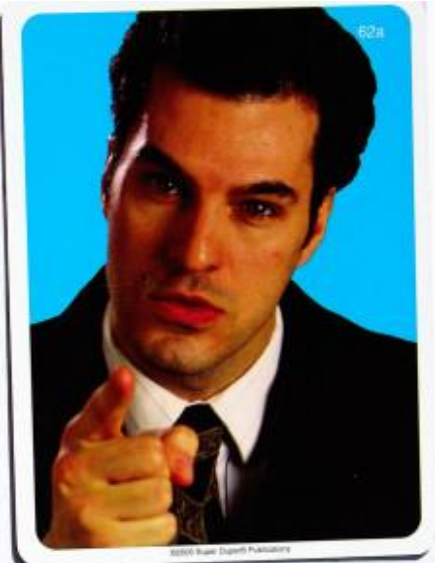


Social Situations



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'syc

Pretending to be normal



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the fun came from setting up and arranging things. Maybe this desire to organize things rather than play with things, is the reason I never had a great interest in my peers. They always wanted to use the things I had so carefully arranged. They would want to rearrange and redo. They did not let me control the environment.



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First description by Down 1887, he used the term „idiot savant“

Kanner's 10 cases: all had very good memory,
6 had a special talent for music

Savant syndrome: 50 % with ASD, 50 % with other neurological
symptoms

10 % of people with ASD have „savant syndrome“

Relatively few women with „savant syndrome“

Kim Peek, the model for the «Rain Man»

He knew 6000 books by heart

He had 14 special interests, e.g. music, sport,
geography, history

He was an extremely fast reader (2 pages simultaneously)

MRI with missing Corpus Callosum and other changes

Stephen Wiltshire: Trafalgar Square



A study compared professional musicians with and without perfect pitch

Musicians with perfect pitch

- Had better results in the mosaic subtest in the HAWIE
- Were more excentric
- Had lesser social abilities

Problems in daily life



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- They have problems finding friends and are often bullied
- They don't stick to rules and unwritten laws
- They make insulting remarks
- They talk only about their favourite subject
- They spend a lot of time (and money) for their special interest
- They stick to their routines and find changes in their activities very difficult
- Their motor coordination is weak
- They often show sensory problems with noise, light, smell
- They hate surprises and unexpected events
- They have problems functioning in groups



Diagnostic problems



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- broad autism phenotype
- ADHD
- Children with very high intelligence



Symptoms of Asperger's Syndrome seen as strenghts

People with Asperger Syndrome

- are extremely reliable and loyal
- are honest and communicate without second thoughts or double meaning
- show a highly original problem solving
- have an incredible memory for details
- often have an extraordinary knowledge in their special field

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- Behavioural models:
 - Applied Behavioral Analysis (ABA)
 - UCLA – Modell (Lovaas)
 - Verbal Behavior (Carbone)
 - Early Start Denver Model (Rogers und Dawson)

- Others:
 - Mifne (Alonim)
 - FIAS (KJPD Basel)
 - Floor Time (Greenspan und Wieder)
 - PLAY (Solomon)
 - Option (Kaufmann)
 - RDI (Gutstein)

Early intensive behavioural intervention – the Zurich model



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1:1 treatment at home or in the center

25-35 hours per week

Students as therapists

2 years

Based on Ivar Lovaas' work ABA

Individual program for every child and family



changing the child

changing the environment

- family
- school
- leisure time

changing the child

- increase his/her understanding
 - information
 - strengths and weaknesses
 - how do others function?
 - how can we work together?
- widen his/her behavioural repertoire

Changing the environment

- information
- expectations and demands
- adaptations

behaviour



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attention

I want to get:

object/activity

I want to avoid:

sensory stimulation



are main factors influencing the child's behaviour

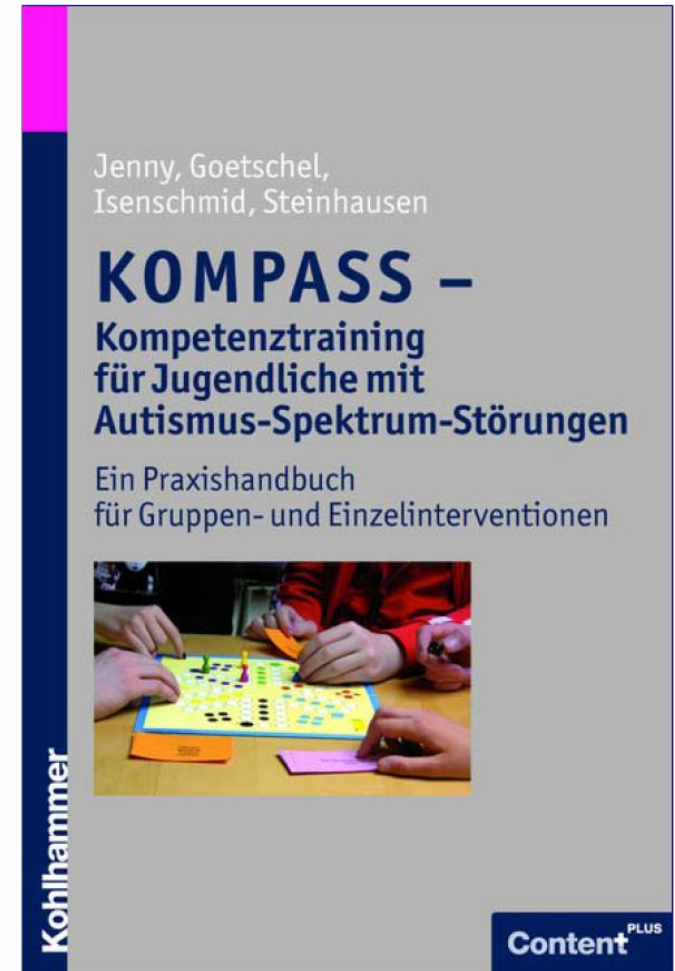
Are caused by:

- Sensory overload
- Unmet expectations
- Unexpected changes and surprises
- Lack of understanding of social situations
- Academic or social challenges

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- Recognizing emotions
- Expressing emotions
- Small Talk
- Nonverbal communication



Visualizing the session

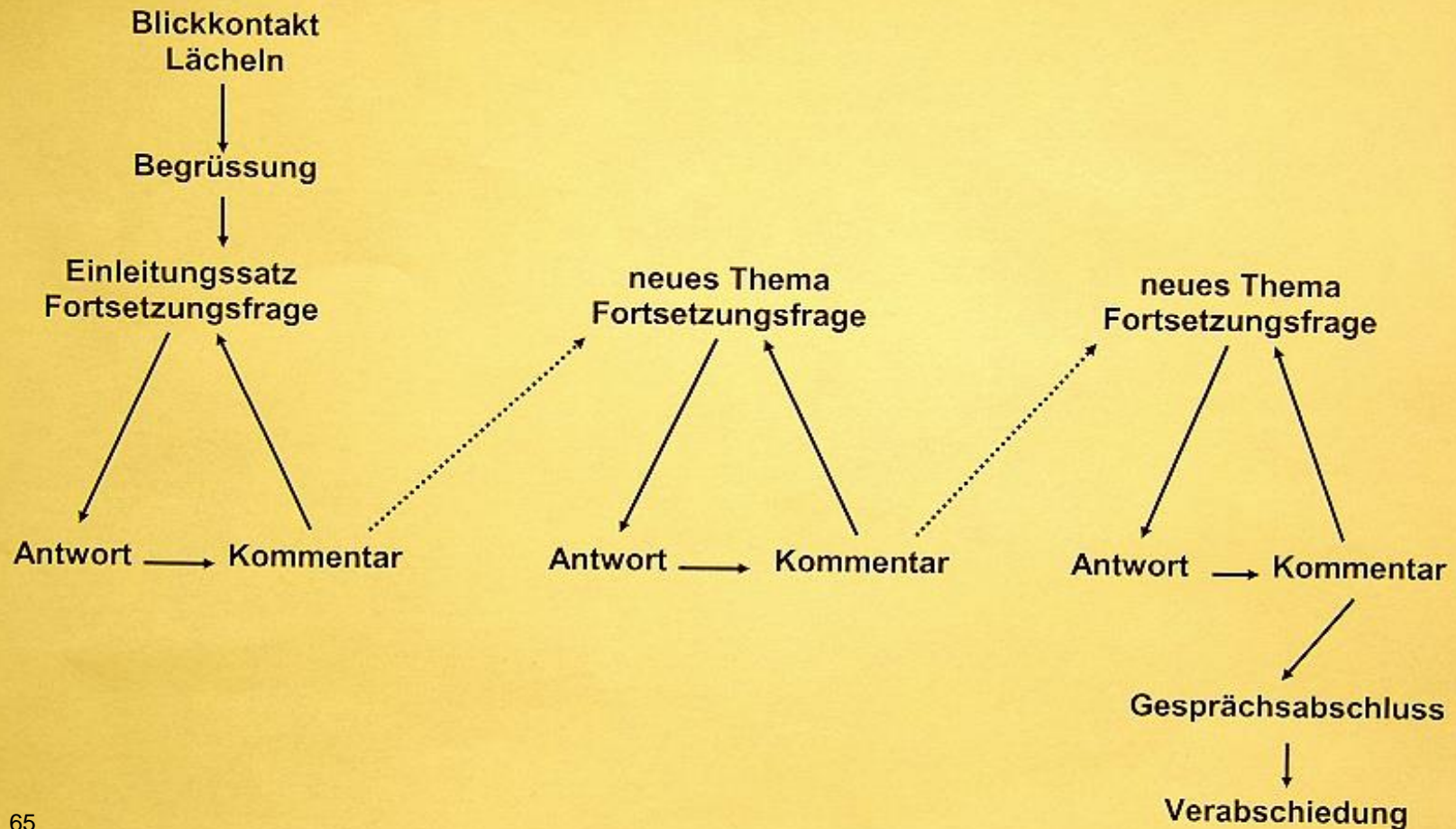


How does small talk work?

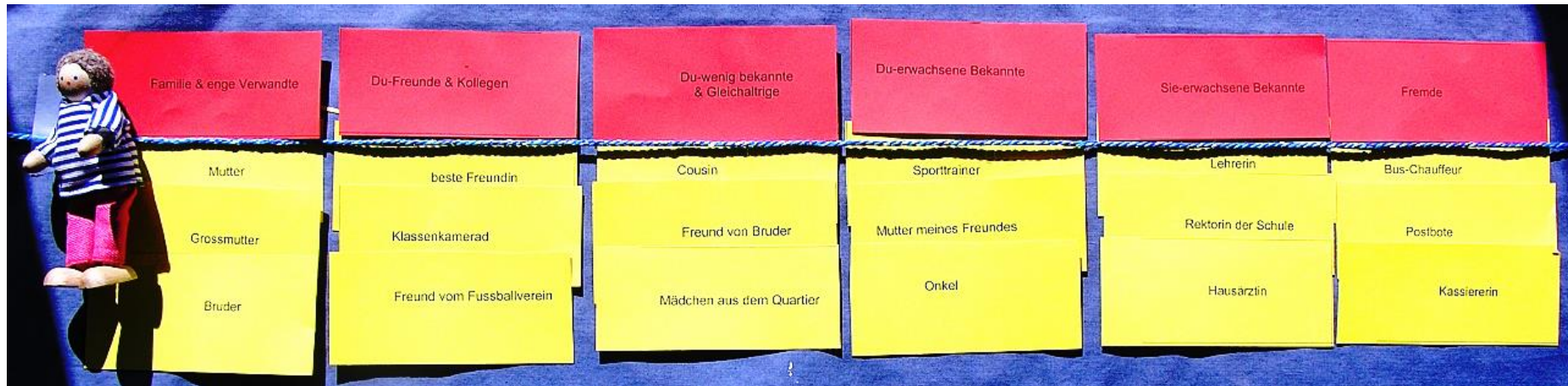


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Infoblatt: SMALL TALK - GESPRÄCHSGRAFIK



Structuring relationships



Social activities in public



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Medication has been disappointing
Until now there are no autism – specific drugs

Situation concerning neurotransmitters is complex
no good animal model

For comorbid symptoms or disorders

hyperactivity and attention problems

- stimulants, eg Methylphenidate
- Atomoxetine

aggressive, self injurious or extremely hyperactive behaviour

- antipsychotics, eg. Risperidon, Aripiprazole, Piperidone

depression, anxiety or compulsive symptoms

- SSRI, eg. Fluoxetine, Sertraline

Sleep disorders

- Melatonin

I don't mind my own company at all and have nothing in common with most other boys. This seems to cause teachers a problem. One teacher told me it was time I stopped being a 'Billy No Mates' and got out there and started having fun. As if his idea of fun was the only way – yeah right! That actually upset me quite a lot. Being alone doesn't. I would say that if you don't want to mix with people and are quite happy on your own, then carry on and don't let anyone push you into anything different.”

(H Molloy & L Vasil. (2004). Asperger Syndrome, adolescence and identity: looking beyond the label. Jessica Kingsley Pub.)

Temple Grandin

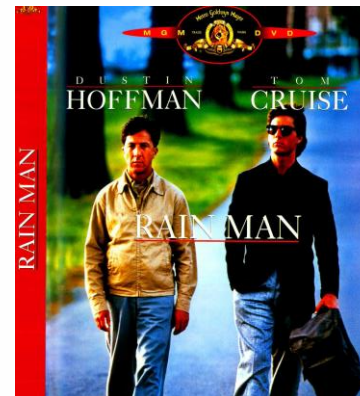
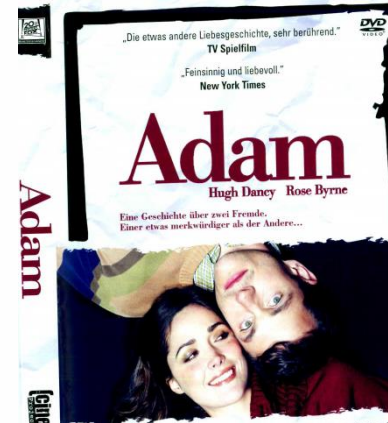
Mozart and the whale

Snow cake

Adam

Rain Man

Extremely loud and incredibly
close



www.autismus.ch

www.tonyattwood.com

Youtube

Temple Grandin
Peter Schmidt
Nicole Schuster
Daniel Tammet

TED talks

Books on Asperger Syndrome

Tony Attwood:

Ein ganzes Leben mit dem Asperger Syndrom, 2007, Trias, Stuttgart
The complete guide to Asperger's Syndrome, 2006, Jessica Kingsley

Mark Haddon:

Supergute Tage oder Die sonderbare Welt des Christopher Boone
The curious incident with the dog in the nighttime

Samantha Todd:

Eine eigene Welt–Einblick in das Autismus-Spektrum, 2015,
Kommode Verlag Zürich
The little book of the autism spectrum, 2013, Independent thinking
press

⑩

Gerland Gunilla : Ein richtiger Mensch sein

⑩

A real person: life on the outside (2003)

Grandin Temple : Ich bin die Anthropologin auf dem Mars

Thinking in pictures (2006)

Tammet Daniel :Elf ist freundlich und Fünf ist laut: Ein genialer Autist
erklärt seine Welt (2008)

Born on a blue day (2007)

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