

# Checklist for Autism Spectrum Disorder as an In-class Observation Tool for Teachers

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**Abstract**—The majority of Special Educational Needs checklists are intended for preliminary screening in the special education disability process. The aim of the present paper is to present their potential usefulness as in-class observation tools for teachers working with students who have already been diagnosed with a disorder. A checklist may complement and organize information about a given child, which is indispensable to improve his or her condition. The case of a Polish boy with autism will serve as an example. Last but not least, alternative uses of checklists are suggested in the article.

**Keywords**—Autism Spectrum Disorders, case study, checklist, observation tool.

## I. INTRODUCTION

CHECKLISTS are intended as aids for the conveniences of professionals working with a range of students with Special Educational Needs (SEN). Although the majority of checklists are supposed to be preliminary screening instruments and decision aids in the special education disability identification process, the aim of the following paper is to present their potential usefulness as in-class observation tools for teachers working with already diagnosed students, taking Autism Spectrum Disorders as an example. Informative documents available to teachers, like medical certificates or psycho-pedagogical statements, are often written in a specialized language. Descriptions of disorders and recommendations offered by doctors, psychologist, speech therapists and other specialists can be difficult to translate into school practice. A teacher-friendly checklist may come in handy, proving to be a valuable and helpful tool in this process.

## II. AUTISM SPECTRUM DISORDERS

### A. Defining Autism Spectrum Disorders

Autism Spectrum Disorders (ASD) belong to lifelong neurodevelopmental disorders [8]. When several neural networks malfunction early in a child's life (the symptoms usually become noticed before three years of age), Pervasive Developmental Disorders (PDD) appear. They include: Autistic Disorder (classic autism), Asperger Syndrome, Pervasive Developmental Disorder – not otherwise specified (PDD-NOS), Rett Syndrome, Childhood Disintegrative Disorder [2]. PDDs are characterized by varying degrees of impairment, from mild to severe, in:

- communication skills (verbal and nonverbal),
- social interactions,
- restricted, repetitive, stereotyped behaviours or interests [9].

The severe form is called Autistic Disorder. The term Autism Spectrum Disorders generally refers to: Autistic Disorder, Asperger Syndrome, PDD-NOS [9]. Table I gives an overview of different types of ASD.

TABLE I  
TYPES OF AUTISM IN THE AUTISM SPECTRUM

Type of autism	iq	language delay	other
Asperger's syndrome	above 85	no	
high-functioning autism	above 85	yes	
medium-functioning autism	between 71-84	yes/no	
low-functioning autism	below 70	yes/no	
pervasive developmental disorder			symptoms too mild for diagnosis, but higher than usual number of autistic traits

Adapted from [6], based on [3]

Individuals with classic autism and Asperger's Syndrome are similar in communication, social and behavioural difficulties. However, as can be seen in Table I, in Asperger's Syndrome IQ is at least average and the individuals do not exhibit delay in language acquisition [6].

Autism was first described by Leo Kenner in 1943. Broadly speaking, it is characterized by:

- detachment from the environment,
- severe communication difficulties (both in language development and in social interaction)
- self-absorption [11].

Moreover, ASD brains seem unable to balance senses appropriately. As a consequence, many ASD individuals are oversensitive to specific sounds, textures, tastes or smells. Also, some have a certain degree of mental retardation, i.e. selective spheres of ability may be normal, while others may be particularly weak [9].

### B. Causes of Autism Spectrum Disorders

Researchers have struggled to find the exact causes of ASD. Still, the precise mechanisms underlying the disorders are still to be determined.

Nowadays, most experts agree that these disorders are associated with abnormal brain developments beginning in the infant's first months. It is suggested that these anatomical abnormalities are caused by genetic defects controlling brain growth. This hypothesis is called *the growth dysregulation*

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*hypothesis.* Research has found that head sizes of ASD children start out smaller, but grow dramatically faster as compared to the brains of children without ASD. Faster growth predicts greater impairment, since the interconnection of so many extra cells may become impossible and result in functional abnormalities [9].

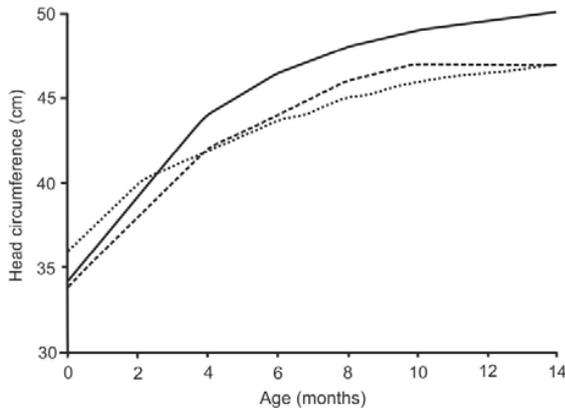


Fig. 1 Comparison of head size and age (adapted from [9])

The solid and dashed lines in Fig. 1 represent the head sizes of children with Autism Spectrum Disorders, which start out smaller but grow faster than in typically developing individuals (dotted line).

Yet another theory, *the underconnectivity theory of autism* attributes the disorder to lower anatomical and functional systems connectivity between frontal and more posterior cortical processing. This theory emerged from functional magnetic resonance imaging (fMRI) measurements of cortical activation in several thinking tasks [5].

On the other hand, two studies from San Diego State's Brain Development Imaging Laboratory suggest the *overconnectivity* in the autistic brain. Müller found that that in autism, the brain may be partly overconnected. This hypothesis was tested by Shih. Research has shown that a brain region in the temporal lobe is more widely connected with other parts of the brain in children with autism than in typically developing ones. Networks too broadly connected may not specialize well [1].

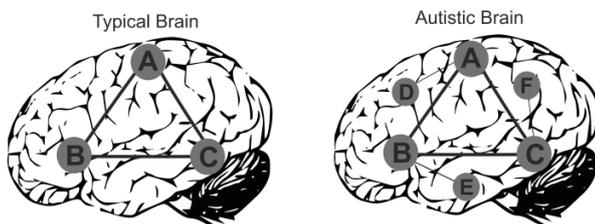


Fig. 2 A typical connectivity patterns observed using functional connectivity MRI (adapted from [1])

Fig. 2 illustrates the atypical connectivity patterns observed using functional connectivity magnetic resonance imaging (MRI). In the typically developing brain, a simplified example

network shows strong connectivity (thick lines) between three brain regions (A, B, C). These three regions are connected more weakly in Autism Spectrum Disorders. However, the network also includes connections (thin lines) with other brain regions (D, E, F) that do not exist in the typical brain [1].

Nevertheless, several lines of evidence support the genetic factors as predominant cause of ASD. One of the twin studies has shown that the concordance for autism was 91% in monozygotic and 0% in dizygotic pairs [10].

Reference [7] suggests that no single neurobiological factor currently dominates the mechanism, pathology and prevalence of autism. Interactions between multiple genes may cause autism, but the exposure to environmental modifiers may contribute to variable expression of autism-related traits.

### III. THE AUTISM CHECKLIST

The Autism Checklist by Hannell [4] is consistent with the *Diagnostic and Statistical Manual of Mental Disorders* [2] which is recognized worldwide as the standard diagnostic evidence and can be used for children and adolescents between the ages of 4 and 18. The checklist is divided into subcategories so that the observation can fall into a pattern. This pattern can also help teachers understand the particular nature of their students' difficulties or special needs. In the present paper the diagnosis is taken for granted, thus no further space will be devoted to the special education disability identification process. As already stated, the aim of the paper is to present the usefulness of the checklist as an in-class observational tool for teachers working with children with autism. Written forms help make sense of what is being observed and organize systematically the incoming information.

Reproduction of Hannell's Autism Checklist is authorized only for the local school site or nonprofit organization that has purchased the author's book [4]; therefore, it cannot be reprinted in the following article. Those who are interested, please refer to Hannell's publication.

In Hannell's Autism Checklist the person completing it has to consider each item in turn, recording his or her subjective evaluation of the extent to which that item applies to the child:

- 0 – not at all, does not apply;
- 1 – mild, sometimes observed, applies to some extent;
- 2 – moderate, often observed, certainly applies;
- 3 – severe, frequently observed, strongly applies [4].

There are 8 subcategories to help the observers isolate any specific areas of difficulty and, as a consequence, plan appropriate intervention strategies targeted to the child's individual needs:

- 1) *difficulties with nonverbal communication* (9 indications, max. 27 "points");
- 2) *difficulties with social and emotional empathy* (8 indications, max. 24 "points");
- 3) *difficulties with friendships* (8 indications; max. 24 "points");
- 4) *difficulties understanding socially appropriate behaviour* (3 indications; max. 9 "points");

- 5) *communication difficulties* (12 indications; max. 36 “points”);
- 6) *unusual physical mannerisms* (6 indications; max. 18 “points”)
- 7) *inflexible interests and adherence to routines* (6 indications, max. 18 “points”);
- 8) *exceptional “islands” of memory or skill* (2 indications; max. 6 points) [4].

#### IV. MIKE’S CASE

Mike was born in 2004 in Poland. Mike is not the real name of the boy. His real name is kept anonymous. Mike’s Psychological and Educational Services Centre (PESC) Statement for special education was issued in 2012. All the data concerning Mike were collected from documents available in the 2012/2013 school year.

Mike has been diagnosed with autism. The PESC Statement indicates that Mike’s intelligence is average. He manifests developmental language disorders. He is able to name some objects and actions in his mother tongue. He distinguishes colours and shapes. He can draw by tracing lines. Specialists from the PESC observe that Mike cooperates well in individual contact, but requires teacher supervision and support during group activities. Problematic behaviours appeared in the adaptation period when Mike started his education in the first grade primary.

Special education was recommended for Mike by one of the Polish Psychological and Educational Services Centre in the form of inclusion. Additionally, individual rehabilitation was suggested. The PESC highlighted that the methods and working conditions be adjusted to Mike’s needs and abilities. The Centre also advised to provide Mike with special support in peer contact.

All the information was gathered from Mike’s PESC Statement. No more can be learnt of him from this document. Therefore, the so-called multi-speciality evaluation of the student’s functioning level was done by a school team some time after the beginning of the school year. This evaluation discerns Mike’s weak, but also strong points. Mike’s graphomotor skills and communicative competence are poor. He has difficulties in social interactions. He is prone to react emotionally with cry, anger or withdrawal in stressful situations. Due to the avoidance of social contacts, he has difficulties in reading and interpreting other people’s behaviours. On the other hand, Mike is physically able and willing to participate in games and plays, although his actual engagement in them is limited. Mike is able to answer in one word to the teacher’s questions in the class forum.

Figs. 3 and 4 represent Mike taking part in classroom activities which proves that he is able and willing to participate, but has to be encouraged by the teacher and peers.



Fig. 3 Mike participating in mini drama “Three Little Pigs”



Fig. 4 Mike’s artistic interpretation of “Three Little Pigs”

After the analysis of available documentation, a general profile of Mike was created. Actually, not much is known for a conscientious teacher to prepare a decent action plan and instructional strategy of how to work with Mike. Of course, a careful examination of the child’s documents is indispensable and should constitute the first step. However, for the sake of knowledge extension and personal experience, it should be followed by teacher observation which can be aided by a checklist. Every child is an individual. Similarly, every autistic child is different. Each may display communication, social and behavioural symptoms that are unique but still fit into the overall diagnosis of ASD. No two children diagnosed with autism manifest it in exactly the same way [9]. Thus, we may obtain varied results using the same checklist with many subjects.

Owing to the Autism Checklist by Hannell [4], new information was gained about Mike, his attitudes and difficulties. The extent to which each item from Hannell’s checklist applied to Mike was evaluated. Thanks to the rating scale, it emerged that Mike is very wary of strangers. At first he seemed inhibited with the presence of a new person in

the classroom observing what was happening. When it comes to the nonverbal communication sphere, he has limited use of eye contact to express feelings. He does not find it easy to “read” facial expressions in others and does not readily exchange social smiles.

Mike’s gaze avoidance and difficulties is “reading” facial expressions in others are in accordance with autism symptoms. Children with ASD avoid looking into another people’s eyes, whereas typically developing peers tend to look at one another’s eyes [4]. Individuals without ASD also look at other parts of the face, most probably to observe and interpret facial expressions.

Moreover, Mike has difficulties with social and emotional empathy. He does not seem to understand or “connect” with other people’s feelings. He relates to just one male classmate with whom he shares the desk and does not attempt to make friends with others. Furthermore, Mike has communication difficulties, seeming to have a significant delay in spoken language. When nervous, he tends to use odd, meaningless utterances repeatedly. Often he hears but does not respond appropriately when spoken to. At times Mike engages in repetitive movements, e.g. banging on the desk. He is very sensitive to some smells, textures, tastes. What is more, Mike has intense preoccupation with social distance, e.g. when somebody approaches him to close. He is also distressed even by small changes in routine.

#### V. CHECKLIST DISCUSSION

Checklists, similar to Hannell’s, can be used to collect, complement and organize information about a given student in order to ameliorate his or her condition. They are a quick and easy way to pass on the observed child’s characteristics. After careful monitoring for a longer period of time and the completion of the checklist by one teacher, the results of the observation ought to be discussed and consulted with other colleagues and professional staff working with the child. Based on it and on the previously available documentation, the student’s unique profile, action plans and instructional strategies could be established during special intervention/assistance team meetings. As Hannell highlights [4], the team should be multidisciplinary, so that expertise from various fields can be brought together. Such consultations can surely provide educators with more information, validate their concerns, provide support and give more confidence in their decisions about the student instruction. Meetings of this type will not only aid the classroom teacher but all of those working with the child.

Moreover, analogic forms may be distributed to parents or legal caregivers who are asked to fill them out. As an alternative, checklists may be also used as an interview schedule. No matter the choice of procedure, both would raise the parents’ and the caregivers’ awareness and allow to see if a particular child manifests the same symptoms outside school in a less formal environment and different circumstances, e.g. recreation times. It should not be underestimated that perspectives of the parents and the teachers may differ considerably.

#### VI. CONCLUSION

It could be concluded that a checklist for Autism Spectrum Disorder may prove to be a useful observation tool for teachers, complementing and organizing information about autistic students needed to improve their condition. Analogically, checklists for other Special Educational Needs may prove equally valuable. Further research in this field is recommended.

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