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AUTISM SPECTRUM DISORDER IN 4-7 YEARS OLD CHILDREN WITH TYPICAL AND NON-TYPICAL DEVELOPMENT: ETIOLOGY, SYMPTOMATOLOGY AND QUANTITATIVE ANALYSIS OF VIEWS USING THE CARS & CASQ TOOLS

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Abstract:
This article deals with the autism spectrum disorder in children with typical and atypical development and attempts to investigate the causal factors and their particular characteristics through a bibliographic and research approach. Significant emphasis is given to the causal factors of the disorder, through the presentation of theories related to genetic, psychogenetic, neurological and environmental factors. In addition, issues of differential diagnosis with other developmental disorders, such as ADHD, are highlighted, since common difficulties in executive functions and behavioral regulation are encountered. Despite multiple research efforts, no single theory has been formulated that accurately and completely explains the occurrence of autism spectrum disorder. An extensive literature review on the concept of autism spectrum disorder, its forms (Kanner autism, Asperger syndrome, Rett syndrome) and a historical overview. In addition, the diagnostic categories as proposed by IDC-10 and DSM-V, regarding gender differences and epidemiological data that reveal the rapid increase in its occurrence in recent years, are mentioned.A qualitative study is presented through questionnaires to parents of

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children with autism spectrum disorder, with the aim of obtaining data regarding the observations, experiences and needs of children with mild psychomotor delays. The results of the questionnaires are compared with official opinions of the Center for Interdisciplinary Assessment, counseling and Support (KEDASY), in order to understand the experiences of the parents and to establish the accuracy of the diagnostic tools. The results of the study reveal the importance of early and accurate diagnosis, strengthening the role of parents and the necessity of a predictable environment for children with developmental disorders. In conclusion, the article contributes to the understanding of the nature of autism spectrum disorder and reveals perspectives for better support of the children themselves and their families. Therefore, the research process concludes that the correct identification and support of the individual with autism spectrum disorder is inextricably linked to the active role of the family and the emergence of the need for social awareness.

Keywords: autism spectrum disorder, etiology, forms, family, support

1. Introduction

Autism spectrum disorder (ASD) is one of the most studied and at the same time enigmatic childhood developmental disorders and is associated with significant difficulties in social interaction, communication and the presence of stereotypical behaviors and limited interests (Frith, 1999). The systematic study of the disorder was initiated by Kanner (1943), who first described a group of children with severe deficits in their social and communicative development, while at the same time, Asperger (1944) presented children with corresponding symptoms, who, despite the difficulties, maintained the cognitive and linguistic skills at a satisfactory level.

In recent decades, the scientific community has been particularly interested in the causal factors of autism spectrum disorder. The theories that have been developed relate to genetic, neurological, psychological and environmental factors. However, despite the abundance of research, no theory has been formulated that explains the etiology of the disorder with precision and completeness (Cannell, 2010). Of course, the continuous progress of neuroscience and genetics has strengthened the view that autism spectrum disorder arises through complex interactions between biological and environmental factors (Boddaert&Zilbovicius, 2002).

The classification of autism spectrum disorder has undergone major changes over the years. According to ICD-10 (1992) and DSM-5 (2013), pervasive developmental disorder is included in the Autism Spectrum Disorders (ASD), which include different levels of severity and heterogeneity. At the same time, epidemiological data reveal a rapid increase in autism diagnoses in recent years, which calls into question the reliability of diagnostic criteria and requires greater awareness (Wing, 2000).

The diagnosis of autism spectrum disorder (ASD) presents significant challenges, as it often requires differential diagnosis with other developmental disorders. One of the most common is Attention Deficit Hyperactivity Disorder (ADHD), which has a significant overlap with ASD. Both disorders present deficits in executive functions, such as working memory, time management and organizational skills. However, while the difficulties of ASD are mainly related to communication and social understanding, the difficulties of ADHD mainly concern self-regulation, impulsivity and attention. Understanding these differences becomes critical as the correct differential diagnosis leads to key interventions and prevents the miscategorization of children.

Early and accurate diagnosis and intervention are particularly important for autism spectrum disorder. Early recognition of the characteristics and active participation of the family are the key factors in the child's developmental path. Research has shown that parents play an important role in enhancing children's social development, while insufficient support leads fatally to secondary difficulties, such as low self-esteem and anxiety (Gray, 1994).

The purpose of this study is to investigate the etiology and specific characteristics of autism spectrum disorder through a literature review and research approach, to highlight the experiences and needs of parents of children with ASD and to highlight the importance of early diagnosis and the provision of a supportive framework.

2. Literature Review

2.1 Historical Review

The term autism comes from the Greek term "autos" meaning "self". Bleuer (1911) was the first to name as "autistic children" those who withdraw into themselves and are more distant from reality. Then Freud, in his psychoanalysis, used the term "pervasive developmental disorder" with the example of the egg, which lives self-sustaining. The first systematic description of autism was made in 1943 by Kanner, who introduced the term "childhood autism", aiming to describe children with severe difficulties in social interaction, delays in speech development and repetitive patterns of behavior.

During the same period, Asperger (1944) presented cases of children with corresponding social difficulties, but with preserved cognitive and language skills. These two researchers laid the foundations for the scientific study of autism, which gradually evolved into a wide range of theories and research.

2.2 Forms of Autism

According to the ICD-10 and DSM-5 diagnostic manuals, the autism spectrum includes a variety of disorders with certain common characteristics and distinct manifestations.

2.2.1 Autistic Disorder (also known as Pervasive Developmental Disorder type Kanner, Child or Infant Form)

Autism Spectrum Disorder (ASD) of early childhood is a significant developmental disorder that manifests before the age of three and is characterized by abnormal functioning and impaired development. It occurs three to four times more often in boys than in girls (ICD-10, 1992). The diagnosis requires the presence of developmental abnormalities before the age of three, although it can occur at any age. According to the criteria, a combination of at least six characteristics from the categories of social interaction, communication and behavior is required. The symptomatology concerns reduced non-verbal behaviors, limited social skills, lack of spontaneity, delay or lack of speech development, impairment in maintaining a conversation, stereotypical use of language, lack of imagination, attachment to specific interests, adherence to routines and stereotypical movements.

2.2.2 Rett Syndrome

Doctor Rett (1966) described Rett syndrome, and its etiology remains unclear. According to DSM-5 criteria, the individual exhibits normal development, gradually slowing down the growth of the head, loss of hand skills, develops stereotypies, motor coordination is limited, and language and psychomotor development are significantly delayed.

2.2.3 Asperger Syndrome

This disorder was described by Asperger (1944) and is characterized by normal language development and intelligence, but limited relationships and communication skills. The individual tends to stick to routines, have limited interests, be sensitive to sensory stimuli, and have significant difficulty with nonverbal communication. However, individuals with Asperger's have normal intelligence and often exceptional skills in certain areas.

2.2.4 Heller's Syndrome

Heller syndrome is characterized by a period of normal development, followed by a loss of skills, mainly in speech, social skills, and behavior. The loss occurs before the age of 10 and is accompanied by disorganized behavior. It may be progressive or stop and be followed by partial improvement.

Furthermore, the literature has highlighted the association of autism with certain syndromes such as Fragile X Syndrome (learning difficulties, stereotypies and sensitivities), Landau-Kleffner Syndrome (loss of speech, seizures, behavioral changes), Williams Syndrome (speech and sociability peculiarities) and Tourette Syndrome (hyperactivity, obsessions and neurological disorders with tics) (Wing, 2000).

2.3 Reason

Autism Spectrum Disorder (ASD) is a disorder that is caused by multiple factors and cannot be attributed to a single pathological mechanism or cause. Key and potential factors contribute to the manifestation of autism and include complications during the prenatal, perinatal or postnatal period, such as maternal diseases, premature birth or brain injuries. In fact, there is often a genetic predisposition, with family studies showing that siblings of children with autism Spectrum Disorder present language and learning difficulties (Rutter, 1990). Psychogenetic factors seem to play a lesser role, as traumatic experiences or socioeconomic difficulties do not cause autism (Frith, 1999). Environmental factors significantly influence the presence of autism, such as the exposure of the pregnant mother to air pollutants. Finally, poor maternal nutrition and low iron intake are associated with increased risk (APA, 2013).

2.4 Symptoms

According to DSM-IV, autism spectrum disorder (ASD) is categorized into three areas: social interaction, communication, and stereotyped patterns of behavior. To make a diagnosis, six out of twelve criteria are required, with at least two relating to social interaction and one from the other two categories (APA, 1994).

Social interaction: associated with impairment in nonverbal behaviors, difficulty in conversational relationships, poor interaction seeking, and a deficit in social and emotional reciprocity (Happe, 1998).

Communication: associated with delayed or absent oral language, poor conversation skills, stereotypical use of speech, and lack of pretend play (APA, 1994). Stereotypical patterns/special interests: involve intense preoccupation with stereotypes, adherence to routines, motor idiosyncrasies, and preoccupation with parts of objects (Happe, 1998).

The onset of symptoms begins before the age of three, and if the criteria are partially met, then the diagnosis may result in other developmental disorders. The diagnosis is based on the developmental history and observation of the child and the environment in which he lives, while a more complete assessment requires the investigation of cognitive, perceptual, memory and sensory abilities (Happe, 1998).

3. Material and Methods

3.1 Research Design

The research follows a quantitative design with a comparative approach. Its purpose concerns the application and comparison of two questionnaires (CARS & CASQ), aiming to assess autism in children. Through the measurement of responses from parents, an attempt is made to identify the most frequent symptoms and differences in the severity of autism.

3.1.1 Questionnaires

For the purpose of the research, two questionnaires were used:

- **CARS:** Consists of 15 questions with a score of 1 (no ASD) to 4 (very high ASD individuals). It places more emphasis on the assessment of childhood autism. In the presentation of the results, 15 key questions are used.
- **CASQ:** Consists of 50 questions, scored from 0 (no ASD) to 3 (severe pervasive developmental disorder). It aims to study behavior and personality.

The above tools allow for the quantitative assessment of autism spectrum disorder symptoms from a parental perspective.

3.1.2 Sample & Data Collection

The sample includes 10 parents of boys and girls, aged 4-7 years, who have been diagnosed with autism spectrum disorder. The participants reside in urban areas. The questionnaires were administered by a special education teacher with personal contact with parents, who completed them and returned them to her.

3.1.3 Ethical Issues

The questionnaires were administered after the parents were adequately informed verbally about the purpose of the research. The participation of the parents was voluntary, and, of course, the anonymity of the responses and the confidentiality of the data were ensured. The results collected were entered into Excel for further analysis.

4. Results and Discussion

The data were calculated based on the Mean of the responses for each question, separately for the categories "mild autism" and "severe autism", as well as overall. The comparative analysis between the two questionnaires was carried out through the distribution of the averages for each question, allowing for quantitative assessment of the differences.

4.1 Results

4.1.1 CARS Questionnaire (15 questions – childhood autism assessment)

Regarding the average per category:

- **Mild autism:** The mean scores range between 1.5 – 3.5. The lowest scores are found in questions related to body use (1,5) and relationships with people (2), while the highest scores are found in questions related to emotional reactions (3.5) and fear and nervousness reactions (3)
- **Severe autism:** the mean scores range between 2.75 – 3.625, meaning they are higher than the mild category and indicate increased difficulties in the social and emotional adaptation of individuals.

Overall, the mean scores range between 2,6 – 3.5 and indicate moderate to high manifestation of autism spectrum disorder symptoms.

It is worth noting that the differences between mild and severe autism spectrum disorder are evident in questions related to sociability, emotional expression, and adaptability. In addition, sensory responses (visual, olfactory, auditory) show higher values in the severe category, indicating increased sensitivity.

4.1.2 CASQ Questionnaire (50 questions – behavior/personality)

- Children prefer repetitive activities (question 2, definitely agree) and show a lack of imagination or difficulties in creating imaginary images (question 2, somewhat agree and question 8, disagree).
- Children have difficulty understanding rules of social behavior (question 7, somewhat agree) and following group discussions (question 10, definitely disagree).
- There is a strong focus on rows, numbers and patterns of objects (questions 5, 6, 12, 23, 41, I definitely agree).
- They also prefer quiet or solitary activities (question 44, I definitely disagree) and new conditions cause stress (question 46, I definitely agree).

In general, a high frequency of "definitely agree" responses is observed to questions related to repetitive behaviors and narrow focus, while a high frequency of "definitely disagree" responses is observed to questions related to social interactions or imaginary games.

Research confirms that the more severe the autism spectrum disorder, the more severe the difficulties in social and emotional adjustment. There is distinct differentiation between children with mild and severe autism spectrum disorder, both at the behavioral level and in terms of cognitive and sensory characteristics.

Regarding social communication, children with severe ASD face more serious difficulties in social interaction and appreciating feelings of "others", as well as difficulties in participating in social activities.

Regarding sensory sensitivity, children with severe autism spectrum disorder show higher values in visual, auditory, tactile and gustatory reactions.

Regarding preferences and repetitive behaviors, individuals with severe ASD exhibit rigid behavioral patterns, a tendency toward routine and repetitive activities, while focusing on details and numbers is important. Finally, they prefer to be isolated and self-reliant in the various activities they participate in.

4.1.3 CARS Questionnaire (15 questions)

Category	Questions	Importance
Social Communication	1,2,3,11,12,15	Relationships, imitation, communication, emotional reactions
Physical/ Sensory Reactions	4,5,7,8,9	Use of body/objects, visual/auditory/gustatory response
Adaptation& Behaviors	6,10,13,14	Adaptation to the environment, fear/nervousness, level of mental reactions and activities

Calculation of average per category:

- Social Communication average = (3 + 3.1 + 3.4 + 2.7 + 2.9 + 3) / 6 = approximately 3.02
- Physical/Sensory Reactions: average = (2.7 + 2.7 + 2.7 + 2.6 + 3.1) / 5 = approximately 2.76
- Adaptation & Behaviors: average = (3.2 + 3.5 + 2.9 + 2.7) / 4 = approximately 3.08

4.1.4 CASQ Questionnaire (50 questions)

Category	Questions	Importance
Sociability	1,10,11,17,38,44,47,50	Adapting to others, social conversation, participation in events
Imagination/ Creativity	3,8,14,15,21,40	Symbolic play, stories, imagination
Repetitive Behaviors	2,4,5,6,16,23,39,41,42,46	Repetitions, information gathering, intense interests
Adaptation & Perception	7,20,26,27,28,30,33,35,36,45	Understanding intensions/feelings/changes/stories

Calculation of average:

We use response numbers: 1 (somewhat agree), 2 (somewhat disagree), 3 (definitely agree/disagree).

- Sociability: average =approximately 2.7
- Imagination/Creativity: average = approximately 2.0
- Repetitive Behaviors: average = approximately 3.0
- Adaptation & Perception: average = approximately 2.8

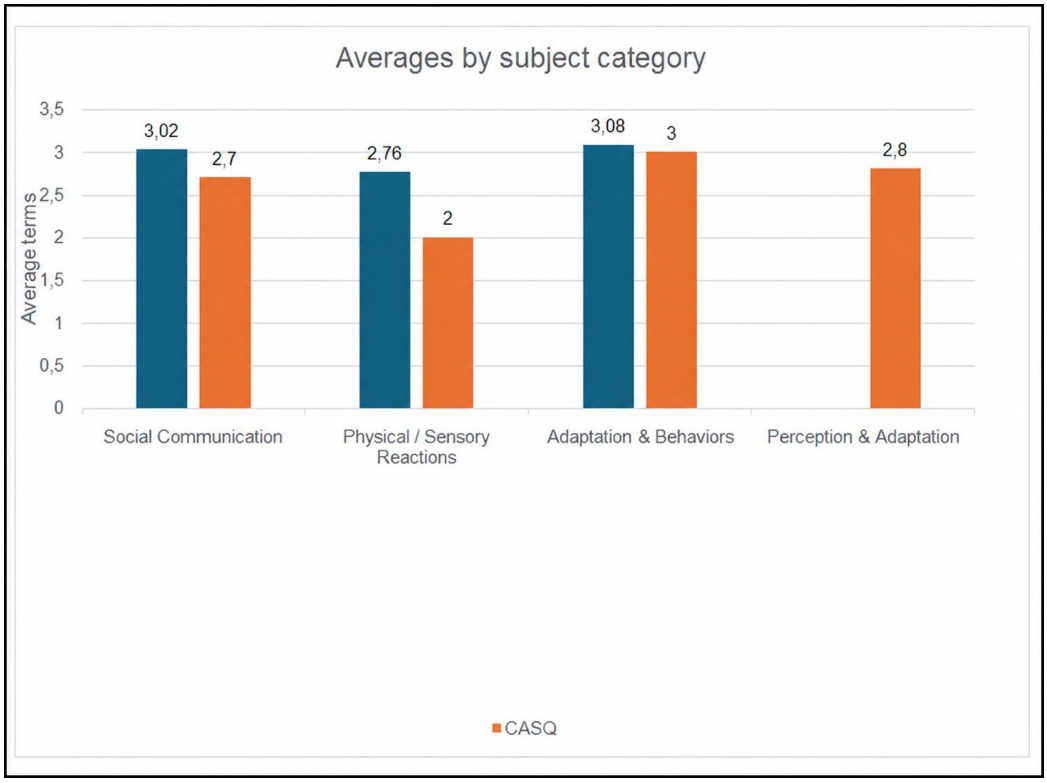


Figure 1: Comparison Chart

4.1.5 Reliability Analysis

Reliability is a key criterion for the quality of a research tool, as it reflects the degree of stability and consistency of the measurements. If Cronbach's Alpha is calculated for the CARS and CASQ (separately), it is clear that both tools have acceptable to high internal consistency. The tools have confirmed reliability from the international literature, as the values of the CARS range from 0.80 to 0.94 (Moonet et al., 2019), while the values of the CASQ range from 0.78 to 0.90 (Spilsbury et al., 2007).

However, the sample size of the present study is quite limited (N=10), and the values may be lower, and the statistical power may be limited. However, the two tools have been used in large samples in an international context and have demonstrated high reliability. In addition to internal consistency, the reliability of the tools is also demonstrated through cross-validation, the correlation between the results obtained from different instruments measuring the same phenomenon. In the present study, the results of the two questionnaires present similar findings regarding the most common symptoms of autism, reinforcing the reliability of the measurements.

4.2 Discussion

The results of this study demonstrate that the children who participated show symptoms to a significant extent and are identified through the two questionnaires (CARS & CASQ). The highest averages were identified in the categories of emotional reaction, fear/nervousness reaction and general impressions, which indicates that these behaviors are key indicators for the assessment of autism spectrum disorder. In addition, the

findings reinforce the usefulness of the two tools in terms of detecting and recording the characteristics of autism spectrum disorder, with some differences in the scope and focus of the questions.

5. Recommendations

Due to the limitations listed above, it would be useful to conduct research with a larger and more diverse sample, aiming to enhance reliability and generalizability. Then, the use of more areas (urban, rural) may help to understand possible differences in the manifestation of symptoms. Finally, the combination of research tools and intertemporal studies that examine the symptomatology of autism spectrum disorder over time can help in the evolution of the individual.

5.1 Research Limitations

This research presents certain limitations that must be taken into account. First, the sample size is small, which limits generalizability of the findings. Then, the sample is geographically limited, because it comes exclusively from a small urban area and cannot be characterized as representative. Then, data were collected from parents' opinions, which are likely influenced by personal perceptions and emotions. Finally, the limited use of tools precludes triangulation of the data.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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Appendix

A. CARS questionnaire (15 questions)

In the 1st question "RELATIONSHIPS WITH PERSONS"

In the 2nd question "IMITATION"

In the 3rd question "EMOTIONAL REACTIONS"

In the 4th question "USE OF BODY"

In the 5th question "USE OF OBJECTS"

In the 6th question "ADAPTATION TO ENVIRONMENTAL CHANGES"

In the 7th question "VISUAL REACTIONS"

In the 8th question "ACOUSTIC REACTIONS"

In the 9th question "TASTE, OLFACTORY, AND TACTILE REACTIONS AND USE OF THESE SENSES"

In the 10th question "FEAR OR NERVOUSNESS REACTION"

In the 11th question "VERBAL COMMUNICATION"

In the 12th question "NON-VERBAL COMMUNICATION"

In the 13th question "ACTIVITY LEVEL (MOBILITY MODEL)"

In the 14th question "LEVEL AND COHERENCE OF MENTAL REACTIONS"

In the 15th question "GENERAL IMPRESSIONS"

B. CASQ questionnaire (50 questions)

In the 1st question "HE PREFERS TO DO THINGS WITH OTHERS/OTHER CHILDREN THAN ALONE

In the 2nd question "HE PREFERS TO DO THINGS THE SAME WAY OVER AND OVER "

In the 3rd question "HE HAS IMAGINATION/IT IS VERY EASY FOR HIM TO CREATE AN IMAGINARY IMAGE IN HIS MIND"

In the 4th question "HE IS OFTEN SO COMPLETELY ABSORBED IN ONE THING THAT HE PRETENDS AS IF HE CANNOT SEE OTHER THINGS

In the 5th question "HE OFTEN NOTICES SMALL SOUNDS THAT OTHERS DO NOT NOTICE"

In the 6th question "HE USUALLY PAYS ATTENTION TO SERIES OF INFORMATION SUSH AS HOUSE NUMBERS OR SIMILAR THINGS IN A SERIES"

In question 7 "HE HAS DIFFICULTY UNDERSTANDING AND FOLLOWING THE RULES FOR COURTEOUS AND CIVILIZER BEHAVIOUR"

In the 8th question "WHEN HE READS OR YOU READ HIM A STORY, CAN HE EASILY IMAGINE THE HEROES OF THE STORY"

In the 9th question "HE GETS EXCITED ABOUT DATES"

In the 10th question "IN A SOCIAL GROUP/VISIT HE CAN EASILY FOLLOW THE DISCUSSIONS OF MANY DIFFERENT PEOPLE"

In the 11th question "HE IS SOCIABLE/ADAPTS EASILY TO SOCIAL SITUATIONS"

In the 12th question "HE PAYS ATTENTION TO DETAILS THAT OTHER DON'T"

In the 13th question "HE WOULD RATHER GO TO A LIBRARY THAN A BIRTHDAY PARTY"

In the 14th question "HE EASILY MAKES FANTASTIC STORIES"

In the 15th question "HE CARES MORE ABOUT PEOPLE THAN THINGS"

In the 16th question "HE HAS VERY INTENSE INTERESTS THAT MAKE HIM NERVOUS WHEN HE CANNOT FOLLOW THEM"

In the 17th question "HE ENJOYS SOCIAL CHAT/DISCUSSION"

In the 18th question "WHEN HE SPEAKS, HE USUALLY DOESN'TLET OTHERS SAY A WORD

In the 19th question "HE GETS EXCITED BY NUMBERS"

In the 20th question "WHEN YOU READ A STORY TO HIM, IT IS DIFFICULT FOR HIM TO UNDERSTAND THE INTENTIONS OR FEELINGS OF THE HEROES OF THE STORY"

In the 21th question "HE DOESN'T PARTICULARLY LIKE FANTASTIC STORIES "

In the 22th question "HE HAS DIFFICULTY MAKING NEW FRIENDS"

In the 23th question "HE ALWAYS SEES PATTERNS/DESIGNS IN THINGS"

In the 24th question "HE WOULD RATHER GO TO A MOVIE THAN A MUSEUM"

In the 25th question "HE DOESN'T CARE IF HIS DAILY ROUTIN/HABITS ARE DISRUPTED"

In the 26th question "HE DOESN'T KNOW HOW TO CONVERSE-DISCUSS WITH HIS PEERS"

In the 27th question "HE FINDS IT EASY TO DISCOVER-UNDERSTAND THE IMPLICATIONS WHEN SOMEONE IS TALKING TO HIM"

In the 28th question "HE LOOKS AT THE WHOLE PICTURE OVERALL RATHER THAN THE SMALL DETAILS"

In the 29th question "HE'S NOT VERY GOOD AT REMEMBERING NUMBERS"

In the 30th question "HE DOES NOT NOTICE SMALL CHANGES – FOR EXAMPLE, IN A SITUATION OR IN A PERSON'S APPEARANCE

In the 31th question "SHE UNDERSTAND IF SOMEONE IS LISTENING TO HIM IS BEGINNING TO GET BORED"

In the 32th question "HE DOES MANY THINGS TOGETHER. HE MOVES EASILY BETWEEN DIFFERENT ACTIVITIES"

In the 33th question "WHEN TALKING ON THE PHONE HE IS NOT SURE-HE DOESN'T KNOW WHEN IT IS HIS TURN TO TALK"

In the 34th question "HE LIKES TO DO THINGS SPONTANEOUSLY-ON HIS OWN"

In the 35th question "HE DOESN'T EASILY UNDERSTAND WHAT'S FUNNY IN A JOKE OR IN A SITUATION"

In the 36th question "IT IS EASY TO UNDERSTAND WHAT SOMEONE IS THINKING OR FEELING JUST BY LOOKING AT THEIR FACE/ EXPRESSIONS"

In the 37th question "IF SOMEONE INTERRUPTS HIM, HE CAN CONTINUE DOING WHAT HE WAS DOING VERY QUICKLY WITHOUT DIFFICULTY"

In the 38th question "HE IS GOOD AT SOCIAL DISCUSSION/CONVERSATION"

In the question 39th "OTHERS OFTEN SAY THAT HE IS TALKING CONTINUOUSLY ABOUT THE SAME TOPIC/HE STICKS"

In the 40th question "WHEN HE WAS IN KINDERGARTEN HE LIKED TO PLAY SYMBOLIC IMITATION-FANTASY GAMES WITH OTHER CHILDREN"

In the 41th question "HE LIKES TO COLLECT INFORMATION ABOUT DIFFERENT CATEGORIES OF THINGS (SUCH AS TYPES OF CARS-BIRDS-TRAINS, PLANTS ETC.)"

In the 42th question "IT IS HARD FOR HIM TO IMAGINE WHAT IT WOULD BE LIKE TO BE SOMEONE ELSE/IN SOMEONE'S ELSE PLACE, FOR EXAMPLE, WHEN WE ASK HIM WHAT HE WOULD DO WITH THE OTHER CHILDREN IF HE WERE A TEACHER"

In the 43th question "HE LIKES TO PLAN/SCHEDULE EVERY ACTIVITY CAREFULLY"

In the 44th question "HE LIKES SOCIAL EVENTS, E.G. PARTIES"

In the 45th question "HE HAS DIFFICULTY UNDERSTANDING THE INTENTIONS OF OTHERS-WHAT THEY WANT TO DO, WHAT THEY BELIEVE"

In the 46th question "NEW SITUATIONS MAKE HIM ANXIOUS"

In the 47th question "HE LIKES MEETING NEW PEOPLE"

In the 48th question "HE IS CAREFUL NOT TO HURT THE FEELINGS OF OTHERS"

In the 49th question "HE IS NOT GOOD AT REMEMBERING OTHER PEOPLE'S BIRTH DATES"

In the 50th question "HE PLAYS GAMES WITH OTHER CHILDREN THAT INVOLVE IMITATION-PRETENCE-SYMBOLIC PLAY WITHOUT ANY PROBLEM"