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## Severity of symptoms in children with Asperger's syndrome and stress coping styles in their mothers

Nasilenie zaburzeń u dzieci z zespołem Aspergera a style radzenia sobie ze stresem u ich matek

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### Abstract

The key aspect of Asperger's syndrome is durability in time. Deficits, especially social ones, which are typical of the disorder, remain unchanged throughout life. However, adaptation is sometimes improved, and some people with Asperger's syndrome may achieve a relative degree of social integration. The aim of the study was to investigate the relationship between the severity of the disorder in children with Asperger's syndrome and their mothers' stress coping styles – measured at two points in time (the second measurement six years after the first one). The relationship between the severity of the disorder in children and their mothers' stress coping styles was also analysed with respect to the mother's age and the mother's professional work. The overall severity of the disorder in children with Asperger's syndrome decreases from the time of the initial study. Over time, mothers of children with Asperger's syndrome are more likely to use the avoidance coping style (at the level of statistical trend). Limitations of verbal communication (in the first measurement) and deficits in the child using visual contact to adjust the social interactions (in the second measurement) may reduce their mothers' readiness to apply the task-oriented coping style, especially in the context of chronic stress associated with disorders in children. In the course of the disorder in children, a number of statistically significant correlations between the severity of these disorders, mothers' coping styles and the sociodemographic variables of mothers were also found.

**Keywords:** Asperger's syndrome, severity of symptoms, stress coping styles in mothers

### Streszczenie

Kluczowym aspektem zespołu Aspergera jest trwałość w czasie. Charakterystyczne dla zaburzenia deficyty – szczególnie społeczne – pozostają niezmiennie przez całe życie, jednak niekiedy następuje poprawa przystosowania, a część osób z zespołem Aspergera może osiągnąć względny stopień integracji społecznej. Celem podjętych badań było poznanie związków między nasileniem zaburzeń u dzieci z zespołem Aspergera a stylami radzenia sobie ze stresem stosowanymi przez ich matki mierzonymi w dwóch momentach czasowych (drugi pomiar po upływie sześciu lat od pierwszego). Przeanalizowano również związki między nasileniem zaburzeń u dzieci, stylami radzenia sobie ze stresem stosowanymi przez ich matki a wiekiem i pracą zawodową matek. Ogólne nasilenie zaburzenia u dzieci z zespołem Aspergera obniża się od czasu początkowego badania. W miarę upływu czasu matki dzieci z zespołem Aspergera częściej stosują styl skoncentrowany na unikaniu (na poziomie tendencji statystycznej). Ograniczenia w zakresie komunikacji werbalnej (w pierwszym pomiarze) oraz deficyty w wykorzystywaniu przez dzieci z zespołem Aspergera kontaktu wzrokowego do odpowiedniego regulowania interakcji społecznych (w drugim pomiarze) mogą obniżać u ich matek gotowość do stosowania stylu skoncentrowanego na zadaniu, szczególnie w sytuacji chronicznego stresu związanego z występowaniem zaburzeń u dzieci. W przebiegu zaburzeń u dzieci stwierdzono również szereg statystycznie istotnych korelacji między ich nasileniem, stylami radzenia sobie ze stresem przez matki i cechującymi je zmiennymi socjodemograficznymi.

**Słowa kluczowe:** zespół Aspergera, nasilenie zaburzeń, style radzenia sobie ze stresem u matek

## INTRODUCTION

In the international classifications of mental disorders and behavioural disorders ICD-10 (World Health Organization, 1992) and DSM-IV (American Psychiatric Association, 1994), Asperger's syndrome (AS) is defined as one of the forms of pervasive developmental disorder (PDD) with the onset in the period of early development, which consist in qualitative deviations in the areas of social interaction, communication, limited and stereotypical behavioural patterns and interests. It is characterised with irregularities in social interactions and intensified isolated interests, or limited, repetitive and stereotypical behavioural patterns, interests and activities. There are no delays in speech development and cognitive functions, although they are often accompanied with limitations in non-verbal communication, understanding social contexts, and deficits in the dialogue. Motor development may be slightly delayed and motor clumsiness usually occurs. These disorders result in difficulties in the area of social, professional, and other important spheres of life.

According to Asperger (2005), this kind of psychopathology is very expressive, however, children with AS differ from one another in the severity of contact disorder as well as intellectual abilities, and special interests. They are characterised by disharmony between the affective and intellectual spheres (the affective sphere is usually disturbed, while the intellectual functioning may be above the average), extreme egocentrism, lack of sense of humour, and sometimes tendency to malice. The psychopathic clarity of vision and intellectual perceptiveness displayed by them could often be treated as an indicator of higher than average level of intellectual functioning, which, especially at a younger age, can be a source of positive emotions for their parents. It is only the handicapped emotionality, expressed through the deficit of empathy and limitations in the area of building close personal relationships, which is usually perceived later in the child's development, that results in the more frequent appearance of negative emotions in the parents' reactions.

AS diagnosis is made at various ages – from very young children through adults (Attwood, 2006). Its key aspect is durability in time. The expression and the severity of symptoms across the PDD group in specific development periods can vary and can change (Piven et al., 1996). Impaired functioning of patients with AS during adolescence period is usually observed (Gillberg and Steffenburg, 1987; Pisula, 2000; Tantam, 2005). When diagnosing autistic disorder in children, the assessment of social development and general development level is of special importance (Gillham et al., 2000). Behaviour, especially social behaviour, typical of the disorder, remains unchanged throughout life. However, adaptation is sometimes improved, and some people with AS may achieve a relative degree of social integration (Asperger, 2005).

In the DSM-5 classification (American Psychiatric Association, 2013), three previously distinguished diagnostic units, i.e. autistic disorder, Asperger's syndrome,

and pervasive developmental disorder not specified otherwise, were replaced by a new diagnostic category defined as the autism spectrum disorder (ASD). This includes the occurrence of two axial symptoms: communication/social interaction disorder, and stereotypical and repetitive behaviours. According to DSM-5, it is possible to combine the diagnosis of ASD with other concomitant disorders (attention-deficit/hyperactivity disorder, oppositional defiant disorder, eating disorder, anxiety disorder, obsessive-compulsive disorder, affective disorder, schizophrenia). It is assumed that at least one concomitant disorder may occur in about 70% of people with ASD.

In the ICD-11 classification (World Health Organization, 2019) there is also a diagnosis of autism spectrum disorder that combines the categories of childhood autism, atypical autism and Asperger's syndrome distinguished in ICD-10. In ICD-11; the intellectual development and the level of functional language were also included in the diagnosis of autism spectrum disorders.

Schopler et al. (1988) developed the Childhood Autism Rating Scale (CARS), which describes the child's behaviour, and on this basis autistic disorder is diagnosed. The scale also allows to determine the severity of autism – from mild through moderate to severe.

In the studies involving parents of children with developmental disorders, the Lazarus and Folkman's (Lazarus, 1986) transactional model of stress and coping is often applied. In this model, psychological stress results from the relation of adaptation, as perceived by the subject, and is defined as a transaction. The stressful nature of a given transaction between an individual and the environment is determined by two basic psychological processes that involve subjective transactions – cognitive assessment and coping. Cognitive assessment includes the evaluation of significance of a specific transaction for the position of the individual (primary assessment), and the valuation of possibilities and coping resources (secondary assessment). Emotional reactions are an integral element of a stress reaction. Individual tendencies to cope in a certain way are referred to as coping styles. This is a set of strategies of coping with stressful situations, characteristic to an individual (Heszen-Niejodek, 2005).

With reference to the Lazarus' transactional stress model, where remedial actions result from the interaction between the properties of the situation and a coping style typical of a specific individual, Endler and Parker (1990) developed the CISS (Coping Inventory for Stressful Situations) questionnaire to test the styles of coping with stress. They distinguished three styles: task-oriented coping (TOC), emotion-oriented coping (EOC), and avoidance-oriented coping (AOC). According to the authors of the questionnaire, the TOC is the most effective, while EOC and AOC are ineffective.

As one of the forms of PDD (American Psychiatric Association, 1994; World Health Organization, 1992), AS affects the family situation holistically, usually leading

to changes in the previous functioning and life of the family members. Due to its specific and holistic character, AS in a child is a source of special stress for parents, particularly for mothers. Mothers, who report more problems related to the behaviour of their children with ASD, present a higher level of depression and stress (Hastings et al., 2005b; Meltzer, 2011). Depression in mothers may indirectly hinder both the diagnostic process and getting proper therapeutic help for their children with ASD (Russell et al., 2011).

The irregular development, whereby some functions are retarded while other functions are well-developed, is a special source of stress for the parents of children with PDD, e.g. AS (Schuntermann, 2002). Also, accepting the temporary accumulation of the symptoms of the disorder and their variability in time may be particularly difficult for the parents (Randall and Parker, 2001). Objective changes in AS diagnostic criteria in various classifications also complicate the general picture of the problems that may occur in a specific child (Ghaziuddin, 2010; Huerta et al., 2012; Kaland, 2011; South et al., 2005; Wing et al., 2011). Mattila et al. (2010) point to the frequent concomitance of behavioural disorders, anxiety disorder, tics as well as oppositional defiant disorder and depressive disorder in the course of AS. In this context, the changes related to concomitance of other disorders in a child with AS may also affect the parents' functioning and form another reason for their stress (Mannion et al., 2014).

Problems with social adaptation in children with AS usually coincide with their parents' difficulties with adaptation to the stressful situation related to this disorder. Due to the chronic nature of the disorder in children, the parents' stress is of a long-term nature, which can lead to an overload and even a temporary breakdown of the family's adaptation mechanisms.

The results of previous studies on the impact of the severity of the child's disorder on the level of parental stress are unclear (Bayat, 2007; Hastings et al., 2005a; Phelps et al., 2009; Smith et al., 2008), but they usually point to a positive relationship between the severity of the disorder in a child with AS and parental stress (Athari et al., 2013; Benson, 2006; Schieve et al., 2007, 2011). According to Lecavalier et al. (2006), in children with ASD, behavioural problems and stress in their parents show stability over time, but may build up as the disorder progresses. Based on longitudinal study on the psychosocial adaptation of parents to the situation connected with looking after children with autistic disorders, Gray (2002) indicates that this adaptation is positive in the majority of the families, except for the families with children who present heightened aggressiveness. Over time, the frequency of parental strategies focused on emotions also increases (Gray, 2006).

The aim of the study was to discover the relationship between the severity of the disorders in children with AS and the styles of coping with stress applied by their mothers, measured at two points in time – the second measurement

taking place six years after the first one (in this respect, the study was a longitudinal study). The analysis also involved the relationship between the severity of the disorder in the children with AS and the style of coping with stress applied by their mothers, and the sociodemographic variables.

## MATERIAL AND METHODS

### Participants

The study involved 31 children with AS and their mothers. The children were the patients of "Syntonia" Psychiatric Outpatient Clinic in Kielce. The inclusion criteria for the study of children were diagnosed AS (F84.5 according to ICD-10 criteria) and the age of the child ranging between 6 and 15 years. The criteria for the mothers' inclusion in the study were the incidence of developmental disorders in their children (AS), lack of a mental disorder and permanent residence with their children.

### Tools

The following standard research tools were applied in the study: Endler and Parker CISS questionnaire – to study stress coping styles and CARS – to measure the severity of autism in the studied children. The test was conducted in the longitudinal test scheme, with a two-time measurement of the variable. In the case of the mothers, the Endler and Parker CISS questionnaires were used twice (first and second measurement). The children with AS were assessed twice with the CARS scale (first and second measurement). All of the patients were tested by the same team of researchers with clinical experience.

The CISS by Endler and Parker (1994) consists of 48 items which deal with various types of behaviour in stressful situations. The subject determines the frequency at which they undertake a specific activity in stressful situations on a 5-point scale. In the CISS questionnaire, three scales defining the styles of coping with stress are distinguished. The TOC consists in undertaking tasks. People who represent this style in stressful situations show a tendency to make efforts to solve the problem through cognitive transformations or attempts to change the situation. The EOC refers to the people who, in stressful situations, tend to focus on themselves, on their own emotional experiences (anger, sense of guilt, tension), wishful thinking and fantasising. On the other hand, the AOC is typical of the people who tend to avoid thinking and experiencing stressful situations. It can take two forms: distraction coping (DC) or social diversion coping (SDC).

The CARS (Schopler et al., 1988) includes 15 items that relate to the behavioural aspects of a child's functioning. Individual items of the scale include: CARS1) relationship to people, CARS2) imitation, CARS3) emotional response, CARS4) body use, CARS5) object use, CARS6) adaptation to change, CARS7) visual response, CARS8) listening

response, CARS9) taste-smell-touch response and use, CARS10) fear and nervousness, CARS11) verbal communication, CARS12) non-verbal communication, CARS13) activity level, CARS14) level and consistency of intellectual response and CARS15) general impressions. Within each of the 15 areas included in the CARS, the person testing the child assessed his/her functioning on a 4-point scale. The basis for this assessment was a clinical trial (its main elements were the interview with the mother and observation of the child's behaviour) which served to determine which of the distinguished symptoms of autism were present in the case of the child.

### Statistical analysis

Descriptive statistics (percentage, minimum and maximum, mean, standard deviation and median) were used to describe the variables. Statistical analysis was based on the following statistics: Student's *t*-test for dependent samples (to compare the means in two measurements), the Wilcoxon test to compare the distribution of the variables in two measurements, the Mann-Whitney *U* test to measure the distribution of the results in two groups and the Spearman rho correlation coefficient to evaluate the relationship between the variables. Statistical significance  $p < 0.05$  was assumed. Data analysis was performed in the SPSS Statistics v.22.

## RESULTS

Descriptive statistics of the tested group of mothers and children with AS are presented in Tabs. 1 and 2. In order to determine the differences between the severity of the disorder in the children with AS and stress coping

Data of tested mothers		
Age		
	First measurement	Second measurement
Mean	36.87	42.87
SD	5.149	5.149
Min.	27	33
Max.	50	56
Education		
Basic/vocational	8 (25.8%)	
Secondary	13 (41.9%)	
Higher	10 (32.3%)	
Family status		
Two-parent family	24 (77.4%)	
Single mother	7 (22.6%)	
Professional work		
Yes	20 (64.5%)	
No	11 (35.5%)	

*SD* – standard deviation; *min.* – minimum value; *max.* – maximum value.

Tab. 1. Characteristics of the studied group of mothers (N = 31) of children with AS

Data of tested children with AS		
Age		
	First measurement	Second measurement
Mean	8.1987	14.1977
SD	1.90519	1.90649
Min.	6.05	12.05
Max.	14.04	20.04
Sex		
Male	26 (83.87%)	
Female	5 (16.13%)	
Siblings		
Yes	17 (54.8%)	
No	14 (45.2%)	

*SD* – standard deviation; *min.* – minimum value; *max.* – maximum value.

Tab. 2. Characteristics of the studied group of children with AS (N = 31)

styles in their mothers in the first and second measurements, the Student's *t*-test for dependent samples was used. The average results obtained by the tested children with AS and their mothers and the results of the *t*-test are presented in Tab. 3.

In terms of the general CARS result, a statistically significant difference was observed between the first and the second measurements. The severity of the disorder in children with AS was lower in the second measurement than in the first measurement. No differences were found between the first and second measurement in relation to the stress coping styles in mothers in the areas of TOC, EOC, DC and SDC. At the level of a statistical trend, only a difference

Severity of disorder in children with AS						
Variables	First measurement		Second measurement		<i>t</i>	<i>p</i>
	Mean	SD	Mean	SD		
CARS total score	41.97	3.332	38.16	3.475	4.482	0.000
Stress coping styles in mothers						
Variables	First measurement		Second measurement		<i>t</i>	<i>p</i>
	Mean	SD	Mean	SD		
TOC	61.81	7.880	63.42	4.738	-1.446	0.159
EOC	47.06	9.273	47.52	6.792	-0.334	0.741
AOC	40.55	8.512	42.61	7.055	-2.026	0.052
DC	17.65	5.541	17.81	4.622	-0.183	0.856
SDC	15.32	4.658	15.81	3.953	-1.083	0.288

*p* – significance (2-tailed).  
 CARS – Childhood Autism Rating Scale scores; TOC – task-oriented coping; EOC – emotion-oriented coping; AOC – avoidance-oriented coping; DC – distraction coping; SDC – social diversion coping; *SD* – standard deviation; *t* – result of Student's *t*-test; *p* – level of significance.

Tab. 3. Differences between the severity of the disorder in the children with AS and stress coping styles in their mothers in the first and second measurements (results of the student's *t*-test for dependent samples)

in the style of AOC occurred (mothers of children with AS more often preferred this style in the second measurement compared to the first measurement).

The detailed score achieved by the children with AS in the CARS scale between the first and the second measurement was also compared using the Wilcoxon signed-rank test. Median values in the children with AS in respective CARS items and the Wilcoxon test results are presented in Tab. 4. Differences were found in the children with AS in two compared measurements (first and second) in the following areas: CARS1 (relationship to people), CARS2 (imitation), CARS5 (object use) (at the level of  $p < 0.01$ ), CARS3 (emotional response), CARS4 (body use), CARS6 (adaptation to change), CARS8 (listening response), CARS10 (fear and nervousness), CARS13 (activity level) and CARS15 (general impressions) (at the level of  $p < 0.05$ ). In all of these detailed items of the scale, the children with AS achieved a higher score in the first measurement than in the second measurement. However, no differences were found in the severity of the disorder in the children with AS assessed in the first and second measurements in the following areas: CARS7 (visual response), CARS9 (the way of using contact receptors), CARS11 (verbal communication), CARS12 (non-verbal communication) and CARS14 (level and consistency of intellectual response).

In order to determine the relationship between the severity of the disorder in the children with AS in respective items of the scale (CARS measured factors) and the styles of coping with stress in their mothers in the first

and second measurements, a correlation analysis was performed. This analysis was conducted separately in both measurements (Tab. 5).

In the first measurement, only in relation to CARS11 (verbal communication) a negative correlation with TOC in mothers appeared. In the second measurement, a negative correlation was found between CARS7 (visual response) in children with AS and TOC in their mothers. No relationship was found between individual CARS positions in the children and EOC, AOC, DC and SDC coping styles in the mothers.

Based on the correlation analysis, in the first and second measurements, no statistically significant connections were found in relation to the severity of the disorder in the children with AS (respective positions of the CARS scale) and the sociodemographic variable. However, in the second measurement, negative correlation between EOC coping style in the mothers and their age was found ( $p < 0.01$ ) (older mothers showed the emotion-oriented coping less often than younger mothers) (Tab. 6).

In the second measurement, the mother's professional work with her style of coping with stress was compared (Tab. 7). Using the Mann-Whitney  $U$  test, statistically significant differences were found between the mother's professional work and the AOC and DC coping styles with stress

Variables	First measurement		Second measurement		$U$	$p$
	<i>Me</i>	<i>SD</i>	<i>Me</i>	<i>SD</i>		
CARS1	3.39	0.495	2.97	0.180	-3.603	0.000**
CARS2	2.86	0.499	2.17	0.454	-4.300	0.000**
CARS3	3.31	0.588	2.89	0.597	-2.270	0.023*
CARS4	2.79	0.601	2.53	0.570	-2.324	0.020*
CARS5	2.48	0.724	1.93	0.657	-3.771	0.000**
CARS6	3.29	0.461	3.03	0.315	-2.138	0.033*
CARS7	2.70	0.529	2.55	0.506	-1.387	0.166
CARS8	2.04	0.706	1.80	0.735	-2.121	0.034*
CARS9	1.92	0.680	1.64	0.783	-1.698	0.090
CARS10	3.14	0.499	2.83	0.523	-2.183	0.029*
CARS11	2.42	0.502	2.52	0.508	-0.832	0.405
CARS12	3.06	0.250	2.97	0.180	-1.732	0.083
CARS13	3.04	0.657	2.60	0.558	-2.502	0.012*
CARS14	2.52	0.508	2.71	0.461	-1.732	0.083
CARS15	3.0	0.000	2.87	0.341	-2.000	0.046*

\*\* Correlation significant at 0.01 (2-tailed).  
 \* Correlation significant at 0.05 (2-tailed).  
**CARS** – Childhood Autism Rating Scale scores; **Me** – median;  
**SD** – standard deviation; **U** – statistics from the Mann-Whitney test;  
**p** – level of significance.

Tab. 4. Comparison of detailed CARS scores between the first and second measurement – Wilcoxon signed-rank test results

Variables	First measurement		Second measurement		
	1TOC		Variables	2TOC	
	$\rho$	$p$		$\rho$	$p$
1CARS1	-0.193	0.299	2CARS1	-0.205	0.268
1CARS2	0.257	0.163	2CARS2	0.14	0.453
1CARS3	0.095	0.611	2CARS3	0.041	0.826
1CARS4	0.175	0.347	2CARS4	-0.235	0.203
1CARS5	0.096	0.606	2CARS5	0.203	0.274
1CARS6	0.334	0.066	2CARS6	0.074	0.691
1CARS7	0.108	0.562	2CARS7	-0.390*	0.03
1CARS8	0.016	0.932	2CARS8	0.218	0.239
1CARS9	-0.059	0.753	2CARS9	-0.066	0.725
1CARS10	0.017	0.929	2CARS10	-0.212	0.252
1CARS11	-0.355*	0.05	2CARS11	-0.094	0.614
1CARS12	0.103	0.582	2CARS12	-0.133	0.475
1CARS13	0.226	0.222	2CARS13	0.132	0.48
1CARS14	0.072	0.699	2CARS14	-0.176	0.345
1CARS15	.	.	2CARS15	0.065	0.729
General result 1CARS	0.19	0.306	General result 2CARS	-0.097	0.604

\* Correlation significant at 0.05 (2-tailed).  
**1CARS** – Childhood Autism Rating Scale scores (first measurement);  
**2CARS** – Childhood Autism Rating Scale scores (second measurement);  
**1TOC** – task-oriented coping (first measurement); **2TOC** – task-oriented coping (second measurement);  **$\rho$**  – Spearman's rho correlation coefficient;  
**p** – level of significance.

Tab. 5. The relationship between the severity of the disorder in the children with AS and the stress coping styles in their mothers in the first and second measurements – Spearman's rho correlation coefficient

Stress coping style in mothers of children with AS and the mothers' age		
Variables	Mothers' age	
	rho	p
2TOC	0,21	0.257
2EOC	-0.514**	0.003
2AOC	-0.068	0.714
2DC	-0.26	0.158
2SDC	0.174	0.35

\*\* Correlation significant at 0.01 (2-tailed).  
 2TOC – task-oriented coping (second measurement); 2EOC – emotion-oriented coping (second measurement); 2AOC – avoidance-oriented coping (second measurement); 2DC – distraction coping (second measurement); 2SDC – social diversion coping (second measurement); rho – Spearman's rho correlation coefficient; p – level of significance.

Tab. 6. The relationship between the mothers' age and their stress coping style in the second measurements – Spearman's rho correlation coefficient

Mother's professional work	Yes		No		Z	p
	Mean	SD	Mean	SD		
2TOC	64.30	4.426	61.82	5.076	1.514	0.130
2EOC	47.15	7.700	48.18	4.996	-0.517	0.605
2AOC	40.20	7.053	47.00	4.690	-2.732**	0.006
2DC	16.60	5.134	20.00	2.408	-2.447*	0.014
2SDC	14.95	4.136	17.36	3.202	-1.764	0.078

\*\* Correlation significant at 0.01 (2-tailed).  
 \* Correlation significant at 0.05 (2-tailed).  
 2TOC – task-oriented coping (second measurement); 2EOC – emotion-oriented coping (second measurement); 2AOC – avoidance-oriented coping (second measurement); 2DC – distraction coping (second measurement); 2SDC – social diversion coping (second measurement); SD – standard deviation; Z – statistics from the Mann-Whitney test; p – level of significance.

Tab. 7. Comparison of the grouping variable – the mother's professional work – with the style of coping with stress in the second measurement – U Mann-Whitney test

(non-working mothers more often than the working ones used the AOC and DC).

## DISCUSSION

The presented studies showed decrease in the general severity of the disorder in the course of AS in children, measured with the CARS scale. As the children grew up, the severity of the disorder in the majority of the areas distinguished on the CARS scale was lower after six years (the second measurement) compared to the initial measurement. This is consistent with the literature data which indicate the possibility of improving the functioning in the course of AS (cf. Asperger, 2005). On the other hand, no differences were found in the severity of the disorder in terms of visual response, contact receptors, verbal and non-verbal communication, and the level and consistency of intellectual response, that is, basic areas, from the point of view of the diagnosis, in the children with AS tested six years apart. The achieved results also indicate the lack of differences

in styles of coping with stress – TOC and EOC in the first and second measurements, in the mothers of the children with AS. It is, therefore, possible that persisting deficits in these areas in the children with AS, despite the passage of time, may partially explain the lack of differences in the TOC and EOC coping with stress used by their mothers in both measurements (after six years). The only difference found, on the level of statistical trend, was in the mothers' using AOC more often in the second measurement compared to the first one. And although, in the study by Hastings et al. (2005a), the parents' coping with stress related to raising a child with autism did not differ regardless of the child's age, it could be assumed that the difficulties associated with caring for a child with AS and insufficient, in comparison with expectations, effects of rehabilitation may lead to mothers' activities aimed at avoiding the problem rather than solving it. This may also reflect the decreasing maternal resources and their burnout in coping with a chronic disorder in the child (cf. Galkowski, 1995), particularly in the context of deficits in the affective sphere in the children with AS, more frequently perceived by them over time.

In the conducted studies, the severity of the disorder in the children with AS in verbal communication (in the first measurement) and visual response (in the second measurement) negatively correlated with the frequency of the use of TOC by mothers, which may illustrate literature data indicating deficits in communication with regard to young children with ASD, and problems with social development and relationships with other people in the older children (where e.g. eye contact is an important factor) as a frequent source of stress for their mothers (Pisula, 2016). Although AS diagnosis requires identifying the absence of a significant delay in the development of speech, children with AS tend to have apparent difficulty with conducting a normal conversation, adapted to the social context (cf. Attwood, 2006). These limitations, besides the deficits in the use of eye contact to regulate social interactions adequately, may therefore reduce their readiness to use TOC, especially in the situation of chronic stress related to the persistence of the disorder in the children.

The results of the presented studies also showed that, among the analysed sociodemographic variables, only the age of the mothers in the second measurement was negatively related to their EOC coping style with stress. This relationship between the less frequent use of EOC by older mothers (in the second measurement) is interesting because, on the one hand, the EOC is considered not to bring satisfactory solutions to the difficulties experienced in the situation of long-term care for the child with a chronic disorder, while on the other, older mothers have greater experience in caring for children and the ability to maintain proper psychological distance from the difficulties encountered in their development compared to younger mothers. Also, as the children with AS developed (in the second measurement), their mothers working professionally presented

less frequently AOC and DC coping styles with stress compared to non-working mothers. These results may confirm the adaptive role of the professional activity of mothers in coping with stress related to raising a child with AS. It is also possible that occupational activity may reduce maternal aggravating concentration on the child, foster a certain distance to problems arising from the occurrence of disorders in the child development and counteract stiffening of ineffective coping and social isolation processes, which may lead to more realistic expectations for the child. Undoubtedly, a relatively small number of the subjects is the limitation of the study. Besides, the age of the investigated children with AS covered various development periods. In the studies to come, it would be interesting to consider both the concomitant disorders and therapeutic activities applied in the children with AS, as well as internal factors determining the adaptation skills in their mothers.

## CONCLUSIONS

1. As the child with AS develops, the severity of the disorder measured by the CARS scale decreases. No differences were found in the intensity of the disorder in verbal and non-verbal communication, visual reactions, the use of contact receptors, and the level and consistency of intellectual response, that is the basic areas of the child's functioning, from the point of view of the diagnosis.
2. As time passes, mothers of the children with AS more often apply the AOC style (at the level of statistical trend).
3. The intensity of the disorder in the children with AS in verbal communication (in the first measurement) and in visual response (in the second measurement) negatively correlates with the TOC style in their mothers.
4. In the development of AS in the children, relationships are found between the severity of the disorder, the mothers' styles of coping with stress, and the sociodemographic variables of the mothers (their age and professional work).

### Ethical approval

*All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.*

### Informed consent

*Informed consent was obtained from all individual participants included in the study.*

### Conflict of interest

*The authors declare that they have no conflict of interest.*

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