LUBELSKI ROCZNIK PEDAGOGICZNY
T. XLIV, z. 2 – 2025

DOI: 10.17951/lrp.2025.44.2.133-151

Anna Gawron
Maria Curie-Skłodowska University in Lublin
ORCID – 0000-0001-8854-5934

THE SEVERITY OF ADHD AND ASD SYMPTOMS AND DEPRESSIVE TENDENCIES IN CHILDREN*

Introduction: Research shows a rise in depression among children and adolescents. Children with neurodevelopmental disorders face a significantly higher risk compared to their neurotypical peers. However, depressive symptoms are often misinterpreted as secondary to these disorders, leading to a lack of diagnosis and inadequate therapeutic support.
Research Aim: This study aims to analyze the relationship between the severity of ADHD and ASD symptoms and depressive tendencies in children.
Research Method: The survey method was used with standardised psychological tests: the Conners Comprehensive Behaviour Rating Scale (CONNERS 3), the Autism Spectrum Rating Scales (ASRS) and the Children's Depression Inventory 2 (CDI 2).
Results: A correlation was found between the overall questionnaire scores: CONNERS 3, ASRS, and the CDI 2. There is a statistically significant positive correlation between the *Functioning Problems* scale of the CDI 2 and the *Learning Problems* scale of CONNERS 3, as well as the ASRS subscales: *Attention*, *Adult Socialization*, *Social/Emotional Reciprocity*, *Self-Regulation*, *and Social/Communication*. The *Emotional Problems* scale of the CDI 2 correlates only with the *Rigidity in Behaviour* scale of the ASRS.
Conclusions: There is a relationship between the severity of ADHD and ASD symptoms and depressive tendencies in children. Co-diagnosing depression alongside autism spectrum disorder and attention deficit hyperactivity disorder is justified, despite some of the issues assessed in the CDI 2 for Children and Adolescents overlapping with ADHD and ASD symptoms.

Keywords: depressive disorders, ADHD, ASD, depression in children

* Suggested citation: Gawron, A. (2025). The Severity of ADHD and ASD Symptoms and Depressive Tendencies in Children. *Lubelski Rocznik Pedagogiczny*, *44*(2), 133–151. http://dx.doi.org/10.17951/lrp.2025.44.2.133-151

INTRODUCTION

The prevalence of mood disorders among children and adolescents is steadily increasing. It is estimated that 10–20% of minors struggle with mental health problems (Barker et al., 2019). Diagnosing mental disorders in children poses significant challenges, often resulting in a lack of appropriate support. There is a shortage of diagnostic tools adapted to the needs of young children, as well as a lack of specialists in child psychiatry. According to data from the World Health Organization (WHO) presented in the Mental Health Atlas 2020, there are only 3.4 child and adolescent mental health professionals per 100,000 people, including just 0.3 child psychiatrists (WHO, 2020). Many researchers still question the legitimacy of diagnosing mental illnesses at such an early age. Concerns are raised about potential overdiagnosis and the negative effects of early therapeutic interventions, particularly pharmacological treatment (Beck et al., 2021). Nonetheless, increasing emphasis is being placed on the importance of early identification of depression, which plays a crucial role in the psychological, social, and physical development of a child and later, an adolescent and adult (Charles & Fazeli, 2017).

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), does not recognize childhood depression as a distinct diagnostic category, treating young patients similarly to adults. It includes only a brief note indicating that, unlike adults, children may exhibit increased irritability rather than sadness or apathy. According to DSM-5, depressive disorders are characterized by irritability or low mood, somatic symptoms, and cognitive impairments that significantly hinder daily functioning (APA, 2013). The International Classification of Diseases (ICD-11), developed by the WHO, describes depressive disorders in a very similar manner. ICD-11 likewise does not distinguish childhood depression as a separate disorder (ICD-11, 2019). In the literature, symptoms of depressive disorders include low mood, reduced energy and motivation, persistent fatigue, cognitive difficulties, low self-esteem and self-worth, feelings of guilt, loss of interest or pleasure in activities, and in more severe cases, suicidal thoughts or ideation. Additional somatic symptoms may include appetite and sleep disturbances, as well as psychomotor retardation or agitation (Bernaras et al., 2019). In children, depression more often presents as headaches, stomach aches, generalized pain, and nocturnal enuresis (Raczkowski, 2017), as well as self-injury, anger, anxiety, and oppositional behaviour, which may contribute to academic failure (Kolendo & Wronka, 2021).

The risk of developing depressive disorders is significantly higher in children who have an existing disorder or disability compared to their neurotypical peers (Whitney et al., 2019). Both groups may experience traumatic events, family problems, victimization, and low self-esteem. They may also carry genetic predispositions to mental health issues (Bernaras et al., 2019). However, children with additional disorders face further challenges directly related to those conditions.

This article focuses on two disorders that are frequently comorbid with depression – attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). Janas-Kozik and Wolańczyk (2021) note that neurodevelopmental disorders often co-occur with other psychiatric conditions, such as anxiety or depressive disorders, and some of these conditions may interact and exacerbate each other. Gałecki and Szulc (2023) emphasize the importance of a holistic approach that addresses both types of disorders, which is crucial for effective treatment of children and adolescents with emotional and developmental difficulties.

Depression in children with ADHD

The presence of ADHD in children may increase the risk of developing additional medical conditions, disabilities, or psychological disorders. According to the literature, 33% of children with ADHD have at least one comorbid condition, and 18% present with three or more (Garcia-Argibay et al., 2024). The prevalence of depression in this population reaches as high as 20%, which is significantly higher compared to children without ADHD, where the rate is approx. 2% (Cuffe et al., 2015; Mitchison & Njardvik, 2015). This makes ADHD a significant risk factor for mental health breakdowns, which may lead to the development of depressive disorders – if not during childhood, then potentially in later stages of life. The co-occurrence of ADHD and depression results in far more severe difficulties than when either condition occurs independently (Meinzer & Chronis-Tuscano, 2017; Nigg et al., 2019). Depression can exacerbate ADHD symptoms and hinder the effectiveness of treatment. Moreover, the co-occurrence is associated with increased rates of suicide attempts and, consequently, a higher risk of suicide compared to individuals with ADHD alone (Levy et al., 2020).

ADHD is characterized by inattention, impulsivity, and hyperactivity, which disrupt development, impair daily functioning, and are inconsistent with the child's developmental level. Additionally, these symptoms must be present across more than one setting (APA, 2013; ICD-11, 2019; Levy et al., 2020). The presence of ADHD symptoms in a child can lead to stressful situations in academic, peer, and family contexts. Impulsivity may contribute to peer conflicts, bullying, and social exclusion, while difficulties with concentration negatively impact academic achievement, often resulting in school failure. The accumulation of these factors creates fertile ground for the development of depression and, consequently, leads to a further decline in functioning (Riglin et al., 2021). The comorbidity of these two serious disorders results in significant difficulties in education, family relationships, and peer interactions. It may also increase the risk of delinquent behaviour and even suicide attempts (Cuffe et al., 2015). As previously noted, the mood of children with depression is more often described as irritable rather than sad. When symptoms of emotional dysregulation typical of ADHD are added to this picture, parenting challenges and strain in the parent–child relationship may

intensify. These difficulties affect not only the child but the entire social unit – the family. Studies indicate that more than 50% of mothers raising a child with ADHD experience depressive episodes, which in turn is a predictor of depressive symptoms in the child (Meinzer & Chronis-Tuscano, 2017).

It is important to note that support is more frequently provided to children and adolescents who externalize depressive symptoms – for example, through aggressive behaviour, delinquency, risk-taking, or defiance. In contrast, children who withdraw and direct aggression inward are less likely to be noticed. This latter group is often perceived by caregivers as "less problematic, which results in a lower likelihood of seeking professional help" (Meinzer & Chronis-Tuscano, 2017). Moreover, research indicates that teachers tend to underestimate depressive symptoms in their students (Bernaras et al., 2019). As a result of such oversight, affected children may not receive appropriate mental health support. Instead, interventions tend to focus on hyperactivity, while mood disorders remain unaddressed. The co-occurrence of depressive symptoms and neurodevelopmental disorders leads to the intensification of both, with poorer prognoses and reduced treatment effectiveness (Garcia-Argibay et al., 2024).

Depression in children with ASD

Autism is also associated with an increased risk of mood disorders in both children and adults. It is estimated that as many as 7% of children with ASD experience at least one episode of depression. These figures are particularly concerning in the 13–17 age group, where the co-occurrence rate of both disorders exceeds 20%. Among younger children, this rate is significantly lower, at less than 5% (Greenlee et al., 2016). Given that the risk of depression increases with age, there is a strong rationale for initiating therapeutic interventions as early as possible.

Autism spectrum disorder is a lifelong neurodevelopmental condition. According to the ICD-11, it is characterized by "persistent deficits in the ability to initiate and sustain reciprocal social interactions and social communication, as well as a range of restricted, repetitive, and inflexible patterns of behavior and interests" (ICD-11, 2019). Due to the significant functional impairments associated with ASD itself, comorbid depressive disorders are often underdiagnosed. Depressive symptoms are frequently misattributed to the autism spectrum, and psychiatric treatment becomes a secondary concern (Chandrasekhar & Sikich, 2015; De-la-Iglesia & Olivar, 2015;). Depressive symptoms can overlap with those of ASD and be masked by them (Pezzimenti et al., 2019). Furthermore, difficulties with communication and emotional expression – common in autism – present an additional barrier to accurate diagnosis. Even high-functioning individuals with ASD rarely express sadness or report depressive symptoms, and they tend to disclose fewer symptoms during clinical interviews than are actually present (De-la-Iglesia & Olivar, 2015).

The co-occurrence of depression and ASD lowers the overall level of functioning both for the individual and the entire family system. It can lead to significant developmental regression and, in extreme cases, even death (Hudson et al., 2018; Pezzimenti et al., 2019). Research indicates that the risk of depressive disorders is positively correlated with age, intellectual ability, and functional level. The higher a child's cognitive functioning, the greater their awareness of their own difficulties and of the differences between themselves and their neurotypical peers. These children often attempt to compensate for these differences, but due to deficits in social and cognitive skills, such efforts frequently result in failure (De Filippis, 2018). Higher-functioning children also tend to seek out peer relationships, often with negative outcomes. Children with ASD are frequently subjected to peer victimization – studies suggest that up to 77% of them experience bullying, compared to 10–20% among typically developing children (De-la-Iglesia & Olivar, 2015). The co-occurrence of depression and ASD can also contribute to escalating family difficulties, such as conflict, caregiver burnout, and parental depression, ultimately creating a vicious cycle of mutual influence (Rai et al., 2018).

In children with ASD, depression may manifest differently than in their neurotypical peers, which makes accurate diagnosis more difficult. Commonly observed symptoms include increased self-injurious behaviour, mood instability, impulsivity, and psychomotor agitation. Developmental regression, intensification of stereotypical behaviours, or their sudden disappearance are also frequently reported – and in some cases, the latter may be mistakenly interpreted as significant therapeutic progress in autism treatment. Other signs include reduced self-care, lowered self-esteem, difficulties with adaptation, social withdrawal, and persistent thoughts and behaviours related to death (De-la-Iglesia & Olivar, 2015).

In summary, based on the literature reviewed above, it can be concluded that depression in children with ASD and ADHD continues to be underdiagnosed, and mood disorders are likely regarded as a secondary issue. The available diagnostic tools are not sufficiently tailored to the specific functioning profiles of children with these conditions, resulting in support that is often inadequate or insufficient. Consequently, the effectiveness of therapeutic interventions is significantly reduced.

RESEARCH AIM AND QUESTION

The aim of the present study was to analyze the relationship between the severity of ADHD and ASD symptoms and depressive tendencies in children. Symptom severity was treated as a continuous variable, without categorization by intensity levels. Specifically, the study investigated whether there is a statistically significant correlation between scores obtained on the CONNERS 3 questionnaire (assessing

ADHD) and the ASRS (assessing ASD) and depressive tendencies measured using the CDI 2. In addition, the study examined the relationship between test results for ADHD, ASD, and depression and selected demographic variables. Analyzing these relationships may contribute to a better understanding of the risk factors for depression in children presenting with ADHD and ASD symptoms, which could support more accurate diagnoses and more effective therapeutic interventions.

Several key hypotheses were formulated within the framework of this study regarding the relationship between the severity of ADHD and ASD symptoms and depressive tendencies in children. It was hypothesized that higher severity of ADHD symptoms would be associated with greater depressive tendencies, suggesting the potential comorbidity of these difficulties. In the case of ASD, a negative correlation was assumed, meaning that lower severity of ASD symptoms might be associated with a higher risk of developing depression. Additionally, the study considered the potential relationships between the aforementioned dependent variables and independent variables such as gender, age, and place of residence.

The study received ethical approval from the Research Ethics Committee of Maria Curie-Skłodowska University in Lublin on March 16, 2021. It was conducted as part of the research project entitled "Identification of developmental disorder markers in children based on quantitative EEG analysis. Application with norms developed from a statistical analysis of 200 EEG recordings". The research was carried out by a team of educators and psychologists from the Faculty of Pedagogy and Psychology at Maria Curie-Skłodowska University in Lublin.

RESEARCH METHOD AND SAMPLE CHARACTERISTICS

A survey-based method was used in the study, and data were collected using standardized psychological assessment tools, including: the Conners Comprehensive Behaviour Rating Scale (CONNERS 3) by Conners for the diagnosis of ADHD and comorbid disorders; the Autism Spectrum Rating Scales (ASRS) by Goldstein and Naglieri for the assessment of autism spectrum symptoms; and the Children's Depression Inventory 2 (CDI 2) by Kovacs for the evaluation of depressive symptoms in children and adolescents. For each of the instruments, results were based on the full versions of the parent-report forms. Teacher-report forms were not included, and due to the age of the participants, self-report versions (CONNERS 3 and CDI 2) were also omitted.

The CONNERS 3 is a diagnostic tool used to assess ADHD, oppositional defiant disorder, and conduct disorder in children aged 6 to 18 years. The full version of the parent-report questionnaire includes 108 items related to the child's functioning over the past month, along with two additional open-ended questions.

This allows for a precise evaluation of the child's functioning across several subscales, with a reliability coefficient exceeding 0.8. The instrument includes the following scales:

- content scales: inattention, hyperactivity/impulsivity, learning problems, executive functioning, defiance/aggression, peer relations;
- validity scales: positive impression, negative impression, inconsistency index;
- DSM symptom scales: ADHD inattentive type, ADHD hyperactive-impulsive type, conduct disorder, oppositional defiant disorder (Conners, 2008).

The ASRS is a tool used to assess symptoms associated with autism spectrum disorder. In this study, the parent-report version for children aged 6 to 18 years was used. The full parent-report forms are characterized by high reliability (above 0.8). They contain 71 items referring to the child's functioning over the past month and provide information on various subscales, including:

- ASRS symptom scales: social/communication, unusual behaviours, self-regulation;
- DSM symptom scale (based on the Diagnostic and Statistical Manual of Mental Disorders);
- treatment scales: peer socialization, adult socialization, social/emotional reciprocity, atypical language, stereotypy, behavioural rigidity, sensory sensitivity, and attention (Goldstein & Naglieri, 2009).

Depressive symptoms were assessed using the CDI 2, a tool characterized by high reliability (ranging from 0.82 to 0.86). It is primarily used for depression screening, monitoring therapeutic progress, and supporting the clinical diagnosis of mood disorders in children and adolescents aged 7 to 18 years. As in the previous tools, the parent-report version was used. The questionnaire consists of 28 items, based on which two main scales are distinguished:

- emotional problems;
- functional problems (Kovacs, 2011).

In addition, parents completed a custom-designed demographic questionnaire concerning their child. They were asked to provide information such as the child's age, biological sex, school grade, and basic family background data (place of residence, family structure, parental education, and age).

Participant recruitment was conducted in several stages. Information about the study was distributed to schools, preschools, and psychological and pedagogical counselling centers located in urban and suburban areas of Lublin. Exclusion criteria included: a history of brain injury, below-average intelligence level, regular use of medication significantly affecting cognitive functioning, medication use or illness within two weeks prior to the study and age. Based on responses, parents and their children were invited to the Neuroeducation Research Laboratory at the Institute of Pedagogy, Maria Curie-Skłodowska University. In addition to

the psychological questionnaires mentioned above, a psychologist administered an intelligence assessment using the Intelligence and Development Scales (IDS) for children aged 5–10, developed by Grob and Mann-von Arx.

The initial study group included 120 children. Based on the IDS results, 32 children whose full-scale IQ scores fell within the average to high range were qualified for further analysis. One participant was excluded due to incomplete documentation. The final sample consisted of children aged 6 to 10 years, including 16 girls (51.6%) and 15 boys (48.4%). The average age of the children was 8 years and 4 months (SE = 0.193, SD = 1.077). The sample included children with a clinical diagnosis of ASD or ADHD as well as those with suspected symptoms of these disorders. Only test results collected by the research team (CONNERS 3, ASRS, and CDI 2) were analyzed, and previous clinical diagnoses were not taken into account. Symptom severity was treated as a continuous variable in the analyses, without categorizing symptom levels or dividing participants into clinical and non-clinical groups. Among the participants, 25 children (80.6%) came from intact families, one child was raised by a single parent, three lived in blended families, and two had foster parents. In terms of sibling status, 22.6% were only children, while 77.4% had siblings. Additionally, 67.7% of the families lived in urban areas and 32.3% in rural areas.

Analysis of the overall ADHD index revealed that 16.1% of participants exhibited statistically significant symptoms of the disorder. Regarding ASD symptoms, 22.6% of the children scored within the very high range on the ASRS, 6.5% fell into the high range, and no participants scored within the low range. As for depressive symptoms, 16.1% of children obtained scores classified as very high, 19.4% as high, and 38.7% as elevated. Not a single participant scored within the low range.

STATISTICAL DATA ANALYSIS PROCEDURE

Data analysis began with an assessment of the normality of distribution for each numerical variable. This was done by analyzing histograms, skewness, and kurtosis. The results indicated that all variables met the assumptions of a normal distribution. For the variable *Child's age* and other dependent variables with a normal distribution, Pearson's correlation coefficient (r) was applied. For the variable *Gender*, an independent samples t-test was used. In the case of *Place of residence*, the Mann–Whitney U test was employed, as it allows for comparisons between groups of unequal size. Additionally, correlation analyses were conducted between scores on specific subscales of the CONNERS 3, ASRS, and CDI 2 questionnaires in order to examine the relationships between the severity of ADHD, ASD, and depressive symptoms.

RESULTS

Relationships between demographic variables and standardized test scores

The average overall index score on the CONNERS 3 questionnaire for the study group was 60.7, which falls within the mildly elevated range and exceeds the normative threshold for this age group. Similarly, in the case of the ASRS and CDI 2, the average overall scores were 60.9 and 62.87, respectively – both of which also fall into the elevated range.

After confirming the normality of distributions, the analysis proceeded to examine whether the independent demographic variables correlated with the questionnaire scores. Pearson's correlation coefficient (*r*) was used for the variable *Child's age*. The analysis was conducted separately for both the ASD and ADHD groups. In the case of ASD, a statistically significant negative correlation was found between age and the *Adult socialization* subscale of the ASRS. In contrast, for ADHD, no statistically significant relationships were observed between age and any of the CONNERS 3 subscales.

Table 1.
Pearson's correlation between child's age and the ASRS subscale "Adult socialization"

Variables		ASRS Adult Socialization
Child's age	Pearson's correlation	-.362*
	Significance (two-tailed)	0.045

*$p < 0.05$

Source: Author's own study.

Table 1 indicates that the older the child, the fewer points they score on the *Adult socialization* subscale of the ASRS, which suggests better functioning in interactions with adults.

To compare groups based on the independent variable *Gender*, an independent samples *t*-test was conducted. Three statistically significant differences were found between boys and girls.

Table 2.
Gender differences in overall scores and subscales of the CONNERS 3 and ASRS questionnaires

Dependent variable	*M* girls	*M* boys	*SD* girls	*SD* boys	*t*-test for equality of means: *t*	*Df*	*p* (two-tailed)	*SE*	Lower bound	Upper bound
CONNERS 3 Defiance/ aggression	53.63	63.67	9.952	11.082	-2.658	29	0.013*	3.778	-17.769	-2.314
ASRS Atypical language	50.13	58.73	11.735	10.306	-2.164	29	0.039*	3.978	-16.744	-0.473
ASRS Overall score	57.19	64.87	10.895	9.635	-2.073	29	0.047*	3.704	-15.255	-0.104

* $p < 0.05$

Source: Author's own study.

Boys obtained significantly higher scores on the subscales presented in the table above, as well as on the overall ASRS score, which may suggest a higher prevalence of autism spectrum symptoms among boys.

The Mann–Whitney *U* test was used to analyze differences between children living in urban and rural areas. No statistically significant differences were found, with *p*-values ranging from 0.059 to 0.950.

Correlations between test scores

After analyzing the demographic variables, correlations were examined between the results of tests assessing ADHD and ASD symptoms and the scores on the CDI 2 questionnaire. Pearson's correlation coefficient was used for this purpose. The results are presented in Table 3.

Table 3.
Correlation between overall CONNERS 3 and ASRS scores and CDI 2 subscales

Variables		CDI 2 Overall score	CDI 2 Emotional problems	CDI 2 Functional problems
CONNERS 3 Global index	Pearson's correlation	.395*	.397*	0.304
	Significance (two-tailed)	**0.028**	**0.027**	0.097
ASRS Overall score	Pearson's correlation	.439*	0.138	.485**
	Significance (two-tailed)	**0.014**	0.459	**0.006**

*$p < 0.05$; **$p < 0.01$

Source: Author's own study.

A positive correlation was found between the overall scores on the CONNERS 3 and ASRS questionnaires and the CDI 2 overall score. This finding can be theoretically explained by the presence of similar symptoms across the three assessed disorders. It was also observed that the overall CONNERS 3 score positively correlates with the CDI 2 *Emotional problems* subscale, while the overall ASRS score shows a positive correlation with the CDI 2 *Functional problems* subscale.

The final stage of the statistical analysis involved examining whether there were correlations between the individual subscales of the three questionnaires. Pearson's correlation coefficient (*r*) was used once again for this purpose.

Table 4.
Significant correlations between subscales of the CONNERS 3 (Learning problems and Executive functioning) and CDI 2 scores

Variables		CDI 2 Emotional problems	CDI 2 Functional problems	CDI 2 Overall score
CONNERS 3 Learning problems	Pearson's correlation	0.037	.359*	0.240
	Significance (two-tailed)	0.844	**0.047**	0.193
CONNERS 3 Executive functioning	Pearson's correlation	0.206	0.335	.373*
	Significance (two-tailed)	0.267	0.065	**0.039**

*$p < 0.05$

Source: Author's own study.

A statistically significant positive correlation was found between the CONNERS 3 *Learning Problems* subscale and the *Functional Problems* subscale of the CDI 2. This indicates that greater learning difficulties are associated with an increase in functional impairments. Additionally, *Executive functioning* deficits as measured by the CONNERS 3 were associated with higher overall depression scores on the CDI 2.

Statistical analyses were also conducted for the independent variable represented by scores on individual subscales of the autism spectrum diagnostic questionnaire (ASRS). Table 5 presents the questionnaire areas in which statistically significant correlations were identified. The analyses revealed that the CDI 2 *Overall score* positively correlates with the following ASRS subscales: *Social/communication*, *Social/emotional reciprocity*, *Behavioural rigidity*, and *Attention*. The CDI 2 *Emotional Problems* subscale showed a positive correlation only with the ASRS *Behavioural rigidity* subscale. In contrast, the CDI 2 *Functional Problems* subscale positively correlated with the following ASRS subscales: *Social/communication*, *Self-regulation*, *Adult socialization*, *Social/emotional reciprocity* and *Attention*.

Table 5.
Correlation between ASRS and CDI 2 scores

Variables		CDI 2 Emotional problems	CDI 2 Functional problems	CDI 2 Overall score
ASRS Social/communication	Pearson's correlation	0.015	.578**	.456**
	Significance (two-tailed)	0.937	**0.001**	**0.010**
ASRS Self-regulation	Pearson's correlation	-0.001	.419*	0.303
	Significance (two-tailed)	0.997	**0.019**	0.097
ASRS Adult socialization	Pearson's correlation	0.018	.388*	0.287
	Significance (two-tailed)	0.923	**0.031**	0.117
ASRS Social/emotional reciprocity	Pearson's correlation	0.046	.534**	.435*
	Significance (two-tailed)	0.808	**0.002**	**0.015**
ASRS Behavioral rigidity	Pearson's correlation	.391*	0.175	.357*
	Significance (two-tailed)	**0.029**	0.347	**0.048**
ASRS Attention	Pearson's correlation	0.056	.524**	.395*
	Significance (two-tailed)	0.764	**0.002**	**0.028**

*$p < 0.05$; **$p < 0.01$

Source: Author's own study.

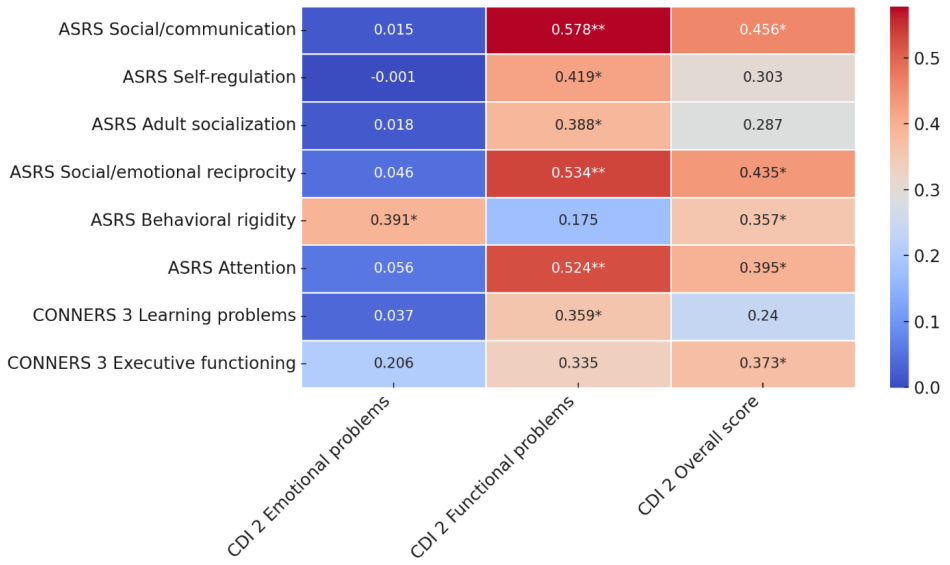
DISCUSSION

The aim of the present study was to analyze the relationship between the severity of ADHD and ASD symptoms and depressive symptoms in children, as well as to evaluate the validity of co-diagnosing depression as a separate clinical entity rather than viewing it solely as a symptom of ASD or ADHD. A group of 31 children aged 6–10 years was assessed using three standardized tools: the Conners Comprehensive Behavior Rating Scale (CONNERS 3), the Autism Spectrum Rating Scales (ASRS), and the Children's Depression Inventory 2 (CDI 2).

Statistical analysis of the overall test scores obtained by the children (CDI 2, CONNERS 3, and ASRS) revealed a moderate level of correlation. The severity of autism spectrum and ADHD symptoms was associated with increased severity of depressive symptoms. These findings are partially consistent with previous research. In the case of ADHD, the current study confirms the direction of the relationship observed by other researchers (Levy et al., 2020; Meinzer & Chronis-Tuscano, 2017; Nigg et al., 2019). In contrast, previous studies on ASD have indicated a negative correlation, suggesting that children with higher functioning in terms of ASD symptoms are at greater risk of developing mood disorders (De

Filippis, 2018; Dickerson Mayes et al., 2011). This may be due to a higher level of self-awareness regarding personal difficulties and differences compared to neurotypical peers, as well as difficulties in verbalizing emotions in children with more pronounced ASD symptoms, which may lead to underdiagnosed depression (Muskett et al., 2019). Discrepancies between the current results and previous findings may be explained, among other factors, by varying socio-economic conditions influencing the presentation of depressive symptoms or by differences in participant selection procedures. Detailed analyses revealed differences related to the symptoms of the disorders under investigation.

Figure 1.
Correlation matrix of questionnaire scores



*$p < 0.05$,**$p < 0.01$

Source: Author's own study.

The analysis of children's results on the ASRS and CDI 2 subscales revealed numerous correlations. The CDI 2 *Emotional problems* subscale was positively correlated only with the ASRS *Behavioural rigidity* subscale. The *Emotional problems* subscale includes lowered mood such as sadness, anxiety, low self-esteem, internalized negative emotions, guilt – as well as physical symptoms (e.g. sleep or eating disturbances, reduced energy levels) (Anant et al., 2023). In turn, *Behavioural rigidity* refers to difficulties with adaptation, resistance to change, and a strong need for routine and predictability (Goldstein & Naglieri, 2009). According to researchers, the need to function within strict routines is associated with increased anxiety levels in indi-

viduals with ASD (cf. Muskett et al., 2019; Lidstone et al., 2014;). Therefore, behavioural rigidity is often considered a predictor or indicator of depressive and anxiety disorders (Muskett et al., 2019). This may explain the positive correlation found in the present study, where higher scores on the ASRS *Behavioural rigidity* subscale were associated with higher scores on the CDI 2 *Emotional problems* subscale, which includes symptoms of anxiety. Although these symptoms are not identical, they may mutually influence one another. In contrast, the CDI 2 *Functional problems* subscale was positively and significantly correlated with several ASRS subscales: *Social/communication*, *Self-regulation*, *Adult socialization*, *Social/emotional reciprocity* and *Attention.* This is consistent with the nature of the *Functional problems* scale, which focuses more on how depressive symptoms affect the child's overall functioning in various areas of life, rather than on the symptoms themselves. It includes both social difficulties and academic failure (Anant et al., 2023). According to the literature, such difficulties may result from depression, disabilities, somatic illnesses, or neurodevelopmental disorders (Hudson et al., 2018; Pezzimenti et al., 2019; Riglin et al., 2021), meaning that they cannot be considered specific indicators of depressive disorders.

Far fewer statistically significant correlations were observed when comparing CDI 2 results with those from the CONNERS 3. Only one positive correlation was found – between the *Functional problems* subscale (CDI 2) and the *Learning problems* subscale (CONNERS 3). This is consistent with previously cited studies indicating conceptual similarities between these subscales (Anant et al., 2023; Ciuhan & Iliescu, 2021). According to the literature, *Functional problems* include a child's educational difficulties, which causes a partial overlap between the two subscales. This was confirmed by the statistical analysis, where higher scores in one subscale were accompanied by higher scores in the other. Therefore, it can be inferred that these difficulties are not specific to mood disorders, and their etiology may stem from both neurodevelopmental and psychological problems (Ciuhan & Iliescu, 2021). The CDI 2 *Emotional problems* subscale did not correlate with any CONNERS 3 subscale, which suggests that emotional symptoms are specific to depressive disorders and that their observation in children with ADHD is justified. Conversely, the symptoms measured by the CONNERS 3 subscales more accurately describe attention deficit hyperactivity disorder and should not be considered a basis for diagnosing depression. However, it is important to keep in mind the increased risk of depressive disorders in children with various health-related burdens.

The correlations observed between individual scales may indicate a considerable overlap in the symptoms assessed across the different disorders. This suggests that expanding the diagnostic process in children to include depression-specific assessment tools may not always be warranted. Functional difficulties considered in the diagnosis of depression (e.g. decreased academic performance, limited or impaired relationships with peers and adults, reduced interests, or somatic symptoms) may stem from the specific characteristics of ASD or ADHD (Cygan, 2021).

However, it is worth considering the second CDI 2 scale – *Emotional problems*. This subscale does not correlate with any of the CONNERS 3 subscales, which suggests that emotional symptoms may be specific to depression. In the case of the ASRS, only one feature was found to correlate with this subscale. Identifying emotional difficulties is crucial in diagnosing depressive disorders in children, as these represent one of the two core indicators of the condition. Although emotional problems also play a role in neurodevelopmental disorders, they are just one of many symptoms. Both ADHD and ASD involve emotional difficulties, but these are qualitatively different from those observed in depression. The ASRS includes items related to difficulties in expressing and understanding emotions as well as emotional hypersensitivity, while the CONNERS 3 focuses more on impulsivity, anxiety, and poor emotional control (Conners, 2008; Goldstein & Naglieri, 2009). It is important to note that emotional problems may contribute to broader functional impairments, further lowering the child's quality of life (Kovacs, 2011) and increasing the risk of misdiagnosis, in which depression remains unrecognized. As a result, the therapeutic plan developed for the child may be less effective, and untreated depression may become more severe.

CONCLUSION

The results of the study and their analysis suggest that there are moderate associations between the severity of ADHD and ASD symptoms and depressive tendencies in children. Therefore, it is justified to consider the co-diagnosis of depression in children with ASD and ADHD, even though functional problems measured by the CDI 2 only partially overlap with the symptoms of ADHD and ASD. In diagnosing depression, a child's emotional functioning plays a crucial role. Its specific characteristics require the collection of information that does not correlate with results obtained from other assessment tools. Thus, it is reasonable to co-diagnose depression as a separate clinical disorder, particularly in the domain of emotionality – one of the two core clinical dimensions of depressive disorders. Based on these findings, it can be concluded that a dual diagnostic approach using different tools, and the assignment of two concurrent diagnoses, is appropriate in cases where depression is suspected in children with neurodevelopmental disorders.

STUDY LIMITATIONS

Several limitations of the present study should be acknowledged. First, the small sample size restricts the generalizability of the findings to the broader population of children with neurodevelopmental and psychiatric disorders. The limited number

of participants resulted from strict selection criteria. Although 120 children were initially assessed, participants with below-average intelligence scores (based on the IDS) were excluded to reduce the influence of cognitive functioning as an additional variable. While this decision improved internal validity, it also significantly reduced the size and representativeness of the sample, limiting the ability to generalize the results. Moreover, the study relied exclusively on parent-report questionnaires, which may not provide a fully comprehensive view of the child's functioning. To obtain a more nuanced and complete picture, future research should incorporate self-reports from children and teacher evaluations, enabling a multi-informant assessment of symptoms and difficulties. Another important limitation is the partial overlap between the scales used, which may affect the interpretation of the results. Moderate correlations were observed between some questionnaire subscales, suggesting that certain difficulties attributed to depression may in fact stem from neurodevelopmental symptoms. Therefore, caution is needed when interpreting the results and drawing conclusions regarding the co-occurrence of depression based solely on the diagnostic tools applied in this study.

REFERENCES

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.) DSM-5 (p. 160). https://doi.org/10.1176/appi.books.9780890425596

Anant, N., Kaur, D., Nadarajan, R., Phua, D.Y., Chong, Y.S., Gluckman, P.D., Yap, F., Chen, H., Broekman, B., Meaney, M.J., & Ang, Y.S. (2023). Validating the Children's Depression Inventory-2: Results from the growing up in Singapore towards healthy outcomes (GUSTO) study. *Plos One*, *18*(5), 0286197. https://doi.org/10.1371/journal.pone.0286197

Barker, M.M., Beresford, B., Bland, M., & Fraser, L.K. (2019). Prevalence and incidence of anxiety and depression among children, adolescents, and young adults with life-limiting conditions: A systematic review and meta-analysis. *JAMA Pediatrics*, *173*(9), 835–844. https://doi.org/10.1001/jamapediatrics.2019.1712

Beck, A., LeBlanc, J.C., Morissette, K., Hamel, C., Skidmore, B., Colquhoun, H., Lang, E., Moore, A., Riva, J.J., ... Stevens, A. (2021). Screening for depression in children and adolescents: A protocol for a systematic review update. *Systematic Reviews*, *10*(1), 24. https://doi.org/10.1186/s13643-020-01568-3

Bernaras, E., Jaureguizar, J., & Garaigordobil, M. (2019). Child and adolescent depression: A review of theories, evaluation instruments, prevention programs, and treatments. *Frontiers in Psychology*, *10*, 543. https://doi.org/10.3389/fpsyg.2019.00543

Chandrasekhar, T., & Sikich, L. (2015). Challenges in the diagnosis and treatment of depression in autism spectrum disorders across the lifespan. *Dialogues in Clinical Neuroscience*, *17*(2), 219–227. https://doi.org/10.31887/DCNS.2015.17.2/tchandrasekhar

Charles, J., & Fazeli, M. (2017). Depression in children. *Australian Family Physician*, *46*(12), 901–907.

Ciuhan, G.C., & Iliescu, D. (2021). Depression and learning problems in children: Executive function impairments and inattention as mediators. *Acta Psychologica*, *220*, 103420. https://doi.org/10.1016/j.actpsy.2021.103420

Conners, C.K. (2008). *Conners Comprehensive Behaviour Rating Scale* – Conners (3rd ed.). [Polska adaptacja: Czajkowska, E., & Kania, K. (2016). *Zestaw Kwestionariuszy do Diagnozy ADHD i zaburzeń współwystępujących – Conners wydanie trzecie*. Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego].

Cuffe, S.P., Visser, S.N., Holbrook, J.R., Danielson, M.L., Geryk, L.L., Wolraich, M.L., & McKeown, R.E. (2015). ADHD and psychiatric comorbidity: Functional outcomes in a school-based sample of children. *Journal of Attention Disorders*, *24*(9), 1345–1354. https://doi.org/10.1177/1087054715613437

Cygan, B. (2021). ADHD a zaburzenia zachowania i osobowość antyspołeczna. *Annales Universitatis Paedagogicae Cracoviensis Studia Paedagogica*, *13*, 47–57. https://doi.org/ 10.24917/22992103.13

DeFilippis, M. (2018). Depression in children and adolescents with autism spectrum disorder. *Children*, *5*(9), 112. https://doi.org/10.3390/children5090112

De-la-Iglesia, M., & Olivar, J.S. (2015). Risk factors for depression in children and adolescents with high functioning autism spectrum disorders. *The Scientific World Journal, 2015*(1). https://doi.org/10.1155/2015/127853

Dickerson Mayes, S., Calhoun, S.L., Murray, M.J., & Zahid, J. (2011). Variables associated with anxiety and depression in children with autism. *Journal of Developmental and Physical Disabilities*, *23*(4), 325–337. https://doi.org/10.1007/s10882-011-9231-7

Gałecki, P., & Szulc, A. (Eds.) (2023). *Psychiatria. Rozpoznania według ICD-11*., vol. 1, Edra.

Garcia-Argibay, M., Brikell, I., Thapar, A., Lichtenstein, P., Lundström, S., Demontis, D., & Larsson, H. (2024). Attention-deficit/hyperactivity disorder and major depressive disorder: Evidence from multiple genetically informed designs. *Biological Psychiatry*, *95*(5), 444–452. https://doi.org/10.1016/j.biopsych.2023.07.017

Goldstein, S., & Naglieri J.A. (2009). Autism Spectrum Rating Scales (ASRS). [Polska adaptacja: Wrocławska-Warchala, E., & Wujcik, R. (2016). *Zestaw Kwestionariuszy do Diagnozy Spektrum Autyzmu ASRS. Podręcznik*. Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego].

Greenlee, J.L., Mosley, A.S., Shui, A.M., Veenstra-Vander Weele, J., & Gotham, K.O. (2016). Medical and behavioral correlates, of depression history in, children and adolescents with, autism spectrum disorder. *Pediatrics*, *137*(2), 105–114. https://doi.org/10.1542/peds.2015-2851I

Hudson, C.C., Hall, L., & Harkness, K.L. (2018). Prevalence of depressive disorders in individuals with autism spectrum, disorder: A meta-analysis. *Journal of Abnormal Child Psychology*, *47*, 165–175. https://doi.org/10.1007/s10802-018-0402-1

ICD-11. (2019). *International Classification of Diseases (11th Revision). The global standard for diagnostic health information*. https://icd.who.int/en

Janas-Kozik, M., & Wolańczyk, T. (Eds.). (2021). *Psychiatria dzieci i młodzieży*, vol. 1. PZWL Wydawnictwo Lekarskie. https://doi.org/10.53270/2021.002

Kolendo, N., & Wronka, H. (2021). Depresja wśród dzieci i młodzieży – przebieg, leczenie oraz wpływ na system rodzinny. *Kwartalnik Naukowy Fides Et Ratio*, *1*(45), 158–166. https://doi.org/10.34766/fetr.v45i1.461

Kovacs, M. (2011). Child Depression Inventory 2 (CDI 2). [Polska adaptacja: Wrocławska-Warchala, E., & Wujcik, R. (2017). *CDI 2 Zestaw Kwestionariuszy do Diagnozy Depresji u Dzieci i Młodzieży. Podręcznik*. Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego].

Levy, T., Kronenberg, S., Crosbie, J., & Schachar, R.S. (2020). Attention-deficit/hyperactivity disorder (ADHD) symptoms and suicidality in children: The mediating role of depression, irritability and anxiety symptoms. *Journal of Affective Disorders*, *265*, 200–206. https://doi.org/10.1016/j.jad.2020.01.022

Lidstone, J., Uljarević, M., Sullivan, J., Rodgers, J., McConachie, H., Freeston, M., Le Couteur, A., Prior, M., & Leekam, S. (2014). Relations among restricted and repetitive behaviors, anxiety and sensory features in children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *8*(2), 82–92. https://doi.org/10.1016/j.rasd.2013.10.001

Meinzer, M.C., & Chronis-Tuscano, A. (2017). ADHD and the development of depression: Commentary on the prevalence, proposed mechanisms, and promising interventions. *Current Developmental Disorders Reports*, *4*, 1–4. https://doi.org/10.1007/s40474-017-0106-1

Mitchison, G.M., & Njardvik, U. (2015). Prevalence and gender differences of ODD, anxiety, and depression in a sample of children with ADHD. *Journal of Attention Disorders*, *23*(11), 1339–1345. https://doi.org/10.1177/1087054715608442

Muskett, A., Capriola-Hall, N.N., Radtke, S.R., Factor, R., & Scarpa, A. (2019). Repetitive behaviors in autism spectrum disorder: Associations with depression and anxiety symptoms. *Research in Autism Spectrum Disorders*, *68*, 101449. https://doi.org/10.1016/j.rasd.2019.101449

Nigg, J.T., Karalunas, S. L., Gustafsson, H.C., Bhatt, P., Ryabinin, P., Mooney, M.A., Faraone, S.V., Fair, D.A., & Wilmot, B. (2019). Evaluating chronic emotional dysregulation and irritability in relation to ADHD and depression genetic risk in children with ADHD. *The Journal of Child Psychology and Psychiatry*, *61*(2), 205–214. https://doi.org/10.1111/jcpp.13132

Pezzimenti, F., Han, G.T., Vasa, R.A., & Gotham, K. (2019). Depression in youth with autism spectrum disorder. *Child and adolescent psychiatric clinics of North America*, *28*(3), 397–409. https://doi.org/10.1016/j.chc.2019.02.009

Rai, D., Culpin, I., Heuvelman, H., Magnusson, C.M.K., Carpenter, P., Jones, H.J., Emond, A.M., Zammit, S., Golding, J., & Pearson, R.M. (2018). Association of autistic traits with depression from childhood to age 18 years. *JAMA Psychiatry*, *75*(8), 835–843. https://doi.org/10.1001/jamapsychiatry.2018.1323

Raczkowski, A. (2017). Depresja dzieci i młodzieży – zjawisko i perspektywy pomocy. *Wychowanie w Rodzinie*, *16*(2), 315–329. https://doi.org/10.23734/wwr20172.315.329

Riglin, L., Leppert, B., Dardani, C., Thapar, A. K., Rice, F., O'Donovan, M.C., Smith, G.D., Stergiakouli, E., Tilling, K., & Thapar, A. (2021). ADHD and depression: Investigating a causal explanation. *Psychological Medicine*, *51*(11), 1890–1897. https://doi.org/10.1017/S0033291720000665

Whitney, D.G., Shapiro, D.N., Peterson, M.D., & Warschausky, S.A. (2019). Factors associated with depression and anxiety in children with intellectual disabilities. *Journal of Intellectual Disability Research*, *63*(5), 408–417. https://doi.org/ 10.1111/jir.12583

World Health Organization. (2020). *Mental Health Atlas 2020*. https://iris.who.int/bitstream/handle/10665/345946/9789240036703-eng.pdf?sequence=1

NASILENIE SYMPTOMÓW ADHD I ASD A SKŁONNOŚCI DEPRESYJNE U DZIECI

Wprowadzenie: Badania wskazują na wzrost częstości występowania depresji wśród dzieci i młodzieży. Ryzyko rozwoju depresji u dzieci z zaburzeniami neurorozwojowymi jest znacząco wyższe w porównaniu do ich pełnosprawnych rówieśników. Jednakże symptomy depresyjne bywają niekiedy interpretowane jako wtórne objawy tych zaburzeń, co prowadzi do braku diagnozy. W rezultacie dziecko nie otrzymuje odpowiedniej pomocy terapeutycznej.
Cel badań: Celem niniejszego badania jest analiza związku między nasileniem objawów ADHD i ASD a skłonnościami depresyjnymi u dzieci.
Metoda badań: Zastosowano metodę sondażową z wykorzystaniem wystandaryzowanych testów psychologicznych: Zestawu Kwestionariuszy do Diagnozy ADHD i Zaburzeń Współwystępujących (CONNERS 3), Zestawu Kwestionariuszy do Diagnozy Spektrum Autyzmu (ASRS) oraz Zestawu Kwestionariuszy do Diagnozy Depresji u Dzieci i Młodzieży (CDI 2).
Wyniki: Wykazano korelację pomiędzy ogólnymi wynikami kwestionariuszy: CONNERS 3 i ASRS a wynikiem testu do diagnozy depresji CDI 2. Stwierdzono istotną statystycznie dodatnią korelację pomiędzy podskalą *Problemy w funkcjonowaniu* CDI 2 a podskalami CONNERS 3 (*Problemy w nauce*) i ASRS (*Uwaga, Relacje z dorosłymi*, *Wzajemność społeczna i emocjonalna*, *Samoregulacja*, *Relacje społeczne/komunikacja*). Z podskalą *Problemy emocjonalne* CDI 2 koreluje jedynie podskala ASRS *Sztywność w zachowaniu*.
Wnioski: Wyniki badań oraz ich analiza pozwalają wnioskować, że istnieje związek pomiędzy nasileniem objawów ADHD i ASD a skłonnościami depresyjnymi u dzieci. Zasadne jest więc współdiagnozowanie depresji ze spektrum autyzmu oraz zespołem nadpobudliwości psychoruchowej z deficytem uwagi, mimo że niektóre problemy ujęte w CDI 2 u dzieci i młodzieży pokrywają się z symptomami ADHD oraz ASD.

Słowa kluczowe: zaburzenia depresyjne, ADHD, ASD, depresja u dzieci