

Psychological diagnosis of ADHD symptoms in adults: a review of selected diagnostic tools

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Abstract

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that has its onset in childhood and whose symptoms can persist into adulthood. On the one hand, ADHD symptoms in adults often go untreated, while on the other hand, there is a risk of overdiagnosis of the disorder. One of the reasons for this phenomenon is the lack of accurate and reliable diagnostic tools. The purpose of this article is to provide an introduction to the available scales, interviews, and psychological diagnostic tools that can be used to diagnose ADHD in adults. An accurate psychological diagnosis of attention deficit hyperactivity disorder is not an easy task. It requires not only specialized knowledge based on the latest classifications of disorders, but also the expertise and ability to appropriately apply a range of diagnostic tools that allow a holistic assessment of the subject's functioning. A holistic psychological diagnosis that includes the areas of patient mental functioning covered in this paper seems to be a necessity.

Introduction

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that has its onset in childhood and whose symptoms can persist into adulthood. It is defined as clinically present symptoms of inattention and/or hyperactivity and impulsivity that can lead to impaired functioning in many areas of daily life [1].

The prevalence of ADHD in children worldwide is estimated to be between 5% and 7% [2]. According to researchers, symptoms of the disorder identified in childhood persist in 35% to as many as 70% of adults [3], and the estimated global prevalence of ADHD in adults is approximately 2.5% [4]. According to Prakash *et al.* [5], there has been a gradual increase in this rate in recent years (up to 5%).

During childhood, the prevalence of ADHD is higher in boys than in girls. Boys are more often diagnosed with the subtype with predominantly hyperactive behaviour, and the symptoms present often lead to learning difficulties, conduct problems, and even oppositional defiant disorder [6]. In adults, the ratio of males to females is changing (estimated at 3 : 2.9). The course of the disorder is also shifting – in adulthood, symptoms are similar in both sexes, with deficits in the attention sphere predominating [7].

The disorder has a multifaceted negative impact on the lives of those affected, both children and adults. Researchers confirm lower effectiveness of patients in the workplace, significantly lower occu-

pational performance in this group [8], relationship problems, increased likelihood of risky behaviour [9], and psychiatric comorbidity [10]. In addition, according to the authors, this group is also at a higher risk of premature death compared to the general population [11]. Subjective quality of life is also significantly reduced in this group [12, 13]. A meta-analysis conducted by Pedersen *et al.* [14] also suggests lower self-esteem in adults diagnosed with ADHD (compared to a control group of healthy individuals). The cited study did not confirm gender differences in self-esteem levels in the study group [14].

On the one hand, ADHD symptoms in adults often go untreated, while on the other hand, there is a risk of overdiagnosis of the disorder. One of the reasons for this phenomenon is the lack of accurate and reliable diagnostic tools. Moreover, no single tool is available that can unequivocally confirm or exclude the presence of attention deficit hyperactivity disorder. Due to the nature of the symptoms, the diagnosis ADHD in adults is even more difficult.

Objective

Given the relevance of the issue presented, as well as the growing interest in this topic, the purpose of this article is to provide an introduction to the available scales, interviews and psychological diagnostic tools that can be applied to the diagnosis of ADHD in adults.

Due to the transitional period for the introduction of a new classification of mental disorders prepared

by the World Health Organization (WHO), the classification of mental disorders addressed by the diagnostic tool (DSM-IV-TR, DSM-5, DSM-5-TR, ICD-10, ICD-11) is also a criterion for selection. Since the purpose of the article is to help practicing psychologists choose appropriate diagnostic procedures, the article includes the tools that were translated into Polish.

Two independent reviewers searched the PubMed Medline database and Google Scholar. The following terms were used (in English): “ADHD”, “adults”, “diagnosis”, “DSM-IV-TR”, “DSM-5”, “DSM-5-TR”, “ICD-10” and “ICD-11”. Only peer-reviewed journals published in English or Polish were included in the analysis. The publication year of the article (years from 2004 to 2024) was also a criterion for inclusion. The resulting data was analysed to eliminate articles with different keyword meanings. Failure to meet the inclusion criterion was equivalent to exclusion from the analysis. Records were evaluated for compliance with inclusion and exclusion criteria based on an analysis of abstracts. Full articles that met the inclusion criterion were analysed in detail for their content: participants were adults, 18 years of age or older; ADHD was diagnosed based on DSM or ICD criteria; ADHD was diagnosed based on a widely used clinical or research interview, semi-structured or structured; group study including interviews, behavioural assessment scales and/or neuropsychological tests for diagnosis, screening or identification of ADHD; comparison groups – adults with diagnosed ADHD compared to control participants and/or participants diagnosed with a mental disorder; neuropsychological tests were standardized and had normative data; neuropsychological tests, behavioural assessment scales and interviews were commercially available or in the public domain.

Diagnostic criteria for ADHD according to the current classification of mental disorders

The DSM-5-TR classification uses the following term to describe the disorder in question: “Attention-Deficit/Hyperactivity Disorder” [15]. The ICD-10 Classification of Mental and Behavioural Disorders uses the name: “Hyperkinetic disorders (Disturbance of activity and attention, F90)” [16]. Its latest edition (ICD-11) provides the term: “Attention deficit hyperactivity disorder” (code: 6A05) [6]. In the DSM-5-TR and ICD-11 classifications, ADHD belongs to the group of neurodevelopmental disorders.

According to both DSM-5-TR and ICD-11, ADHD symptoms should appear before the age of 12 and be present for at least 6 months. The stated age limit is different from previous editions of the two classifications. Both older versions of the DSM and ICD classifications indicated a cut-off age for the onset of symptoms of 7 years (“Onset of the disorder no later than age 7”). The number of symptoms needed to make

a diagnosis in adults also changed. For ages 17 and older, the DSM-5-TR classification now includes “at least five” symptoms for Inattention and “at least five” symptoms for Hyperactivity and Impulsivity (change from “six of nine” to “five of nine” respectively) [15].

Similar to DSM-IV-TR and ICD-10, the diagnostic criteria presented in DSM-5-TR and ICD-11 focus on childhood symptom expression, and it should be kept in mind that their diagnostic utility for adults may be limited [17]. However, both classifications highlight elements specific to patients over the age of 17 (Table 1). The symptoms of ADHD in an adult, however, can be masked by a number of compensatory strategies developed over a lifetime (e.g. note-taking, calendars, task division), which should be paid special attention to during the diagnostic process. In addition, the predominant symptoms may change with age (e.g., the excessive motor agitation observed in childhood usually manifests in an adult as feelings of inner restlessness and tension) [18].

Table 1 shows the diagnostic criteria for ADHD according to DSM-5-TR [15] and ICD-11 [6], while Table 2 lists the characteristics of the most common symptoms of ADHD in adults [1]. Diagnostic scales/interviews based on contemporary classifications will be described later in the article.

Both DSM-5-TR and ICD-11 divide the disorder into three presentations (so-called clinical picture types): combined presentation if both criterion 1 (inattention) and criterion 2 (hyperactivity-impulsivity) are met for the past 6 months; predominantly inattentive presentation; and predominantly hyperactive/impulsive presentation. It should also be determined whether there is partial remission (“When full criteria were previously met, fewer than the full criteria have been met for the past 6 months, and the symptoms still result in impairment in social, academic, or occupational functioning”), as well as the severity of the course of the disorder (Mild: few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in no more than minor impairments in social or occupational functioning. Moderate: symptoms or functional impairment between “mild” and “severe” are present. Severe: many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning) [15].

Review of selected diagnostic tools

In the next part of the article, we will introduce those diagnostic tools that are worth using in the psychological diagnosis of ADHD symptoms in adults. The tools are divided into five groups: self-report scales; structured clinical interviews; tests used to assess cognitive functioning; tests/scales to assess

Table 1. Diagnostic criteria for ADHD according to DSM-5-TR [15] and ICD-11 [6]

DSM-5-TR
A. A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by (1) and/or (2): (1) Inattention: Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities: Note: The symptoms are not solely a manifestation of oppositional behaviour, defiance, hostility, or failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required. - Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses details, work is inaccurate). - Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy reading). - Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction). - Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked). - Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines). - Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, reviewing lengthy papers). - Often loses things necessary for tasks or activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones). - Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts). - Is often forgetful in daily activities (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments). (2) Hyperactivity and impulsivity: Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities: Note: The symptoms are not solely a manifestation of oppositional behaviour, defiance, hostility, or a failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required. - Often fidgets with or taps hands or feet or squirms in seat. - Often leaves seat in situations when remaining seated is expected (e.g., leaves his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place). - Often runs about or climbs in situations where it is inappropriate. (Note: In adolescents or adults, may be limited to feeling restless.) - Often unable to play or engage in leisure activities quietly. - Is often "on the go," acting as if "driven by a motor" (e.g., is unable to be or uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with). - Often talks excessively. - Often blurts out an answer before a question has been completed (e.g., completes people's sentences; cannot wait for turn in conversation). - Often has difficulty waiting his or her turn (e.g., while waiting in line). - Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people's things without asking or receiving permission; for adolescents and adults, may intrude into or take over what others are doing). B. Several inattentive or hyperactive-impulsive symptoms were present prior to age 12 years. C. Several inattentive or hyperactive-impulsive symptoms are present in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities). D. There is clear evidence that the symptoms interfere with, or reduce the quality of, social, academic, or occupational functioning. E. The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder, substance intoxication or withdrawal).

Table 1. Cont.

ICD-11	
Essential (Required) Features:	A persistent pattern (e.g., at least 6 months) of inattention symptoms and/or a combination of hyperactivity and impulsivity symptoms that is outside the limits of normal variation expected for age and level of intellectual development. Symptoms vary according to chronological age and disorder severity.
Inattention	Several symptoms of inattention that are persistent, and sufficiently severe that they have a direct negative impact on academic, occupational, or social functioning. Symptoms are typically from the following clusters: – Difficulty sustaining attention to tasks that do not provide a high level of stimulation or reward or require sustained mental effort; lacking attention to detail; making careless mistakes in school or work assignments; not completing tasks. – Easily distracted by extraneous stimuli or thoughts not related to the task at hand; often does not seem to listen when spoken to directly; frequently appears to be daydreaming or to have mind elsewhere. – Loses things; is forgetful in daily activities; has difficulty remembering to complete upcoming daily tasks or activities; difficulty planning, managing and organizing schoolwork, tasks and other activities. Note: Inattention may not be evident when the individual is engaged in activities that provide intense stimulation and frequent rewards.
Hyperactivity impulsivity	Several symptoms of hyperactivity/impulsivity that are persistent, and sufficiently severe that they have a direct negative impact on academic, occupational, or social functioning. These tend to be most evident in structured situations that require behavioural self-control. Symptoms are typically from the following clusters: Excessive motor activity; leaves seat when expected to sit still; often runs about; has difficulty sitting still without fidgeting (younger children); feelings of physical restlessness, a sense of discomfort with being quiet or sitting still (adolescents and adults). – Difficulty engaging in activities quietly; talks too much. – Blurts out answers in school, comments at work; difficulty waiting turn in conversation, games, or activities; interrupts or intrudes on others' conversations or games. – A tendency to act in response to immediate stimuli without deliberation or consideration of risks and consequences (e.g., engaging in behaviours with potential for physical injury; impulsive decisions; reckless driving). – Evidence of significant inattention and/or hyperactivity-impulsivity symptoms prior to age 12, though some individuals may first come to clinical attention later in adolescence or as adults, often when demands exceed the individual's capacity to compensate for limitations. – Manifestations of inattention and/or hyperactivity-impulsivity must be evident across multiple situations or settings (e.g., home, school, work, with friends or relatives), but are likely to vary according to the structure and demands of the setting. – Symptoms are not better accounted for by another mental disorder (e.g., an Anxiety or Fear-Related Disorder, a Neurocognitive Disorder such as Delirium). – Symptoms are not due to the effects of a substance (e.g., cocaine) or medication (e.g., bronchodilators, thyroid replacement medication) on the central nervous system, including and withdrawal effects, and are not due to a Disease of the Nervous System.
Additional clinical features	– Attention Deficit Hyperactivity Disorder usually manifests in early or middle childhood. In many cases, hyperactivity symptoms predominate in preschool and decrease with age such that they are no longer prominent beyond adolescence or may instead be reported as feelings of physical restlessness. Attentional problems may be more commonly observed beginning in later childhood, especially in school and in adults in occupational settings. – The manifestations and severity of Attention Deficit Hyperactivity Disorder often vary according to the characteristics and demands of the environment. Symptoms and behaviours should be evaluated across multiple types of environments as a part of clinical assessment. – Where available, teacher and parent reports should be obtained to establish the diagnosis in children and adolescents. In adults, the report of a significant other, family member, or co-worker can provide important additional information. Some individuals with Attention Deficit Hyperactivity Disorder may first present for services in adulthood. When making the diagnosis of Attention Deficit Hyperactivity Disorder in adults, a history of inattention, hyperactivity, or impulsivity before age 12 is an important corroborating feature that can be best established from school or local records, or from informants who knew the individual during childhood. In the absence of such corroborating information, a diagnosis of Attention Deficit Hyperactivity Disorder in older adolescents and adults should be made with caution. In a subset of individuals with Attention Deficit Hyperactivity Disorder, especially in children, an exclusively inattentive presentation may occur. There is no hyperactivity and the presentation is characterized by daydreaming, mind-wandering, and a lack of focus. These children are sometimes referred to as exhibiting a restrictive inattentive pattern of symptoms or sluggish cognitive tempo. In a subset of individuals with Attention Deficit Hyperactivity Disorder, combined presentation, severe inattentiveness and hyperactivity-impulsivity are both consistently present in most of the situations that an individual encounters, and are also evidenced by the clinician's own observations. This pattern is often referred to as hyperkinetic disorder and is considered a more severe form of the disorder.

Table 1. Cont.

ICD-11	Attention Deficit Hyperactivity Disorder symptoms often significantly limit academic achievement. Adults with Attention Deficit Hyperactivity Disorder often find it difficult to hold down a demanding job and may be disproportionately underemployed or unemployed. Attention Deficit Hyperactivity Disorder can also strain interpersonal relationships across the life span including those with family members, peers, and romantic partners. Individuals with Attention Deficit Hyperactivity Disorder often have greater difficulty regulating their behaviour in the context of groups than in one-on-one situations. Attention Deficit Hyperactivity Disorder often co-occurs with other Neurodevelopmental Disorders, including Developmental Speech or Language Disorders, and Primary Tics or Tic Disorders, which are classified in the Chapter on Diseases of the Nervous System but cross-listed under Neurodevelopment Disorders. Attention Deficit Hyperactivity Disorder is associated with an increased risk of Obsessive-Compulsive Disorder and with elevated rates of epilepsy. Emotional dysregulation, low frustration tolerance, and subtle clumsiness and other minor ('soft') neurological abnormalities in sensory and motor performance in the absence of any identifiable brain pathology are also common in Attention Deficit Hyperactivity Disorder. – Attention Deficit Hyperactivity Disorder is associated with an increased risk for physical health problems including accidents. – Acute onset of hyperactive behaviour in a school-age child or adolescent should raise the possibility that symptoms are better accounted for by another mental disorder or by a medical condition. For example, abrupt onset of hyperactivity in adolescence or adulthood may indicate an emergent Primary Psychotic or Bipolar Disorder. – Although Attention Deficit Hyperactivity Disorder tends to run in families with evidence of high heritability, the predominant symptom pattern in Attention Deficit Hyperactivity Disorder in a given individual often changes over time and cannot be predicted based on the predominant symptoms of other family members. Boundary with Normality (Threshold) Inattention, hyperactivity and impulsivity symptoms are present in many children, adolescents and adults, especially during certain developmental periods (e.g., early childhood). The diagnosis of Attention Deficit Hyperactivity Disorder requires that these symptoms be persistent across time, pervasive across situations, significantly out of keeping with developmental level, and have a direct negative impact on academic, occupational, or social functioning.
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personality structure/temperament and emotional functioning; and differential diagnosis tools. A summary of the tools listed is included in Table 3. Due to the comprehensiveness of the content presented, a selection of the tests/scales listed in Parts C, D and E will be briefly characterized.

A. Self-report scales

Adult ADHD Self-Report Scale, ASRS

The ASRS is a self-report 18-item scale for assessing ADHD symptoms in adults created by the World Health Organization (WHO) in collaboration with experts in the field. It was developed in conjunction with the revision of the WHO Composite International Diagnostic Interview (CIDI).

The subsequent questions of the scale correspond to the diagnostic criteria specified in DSM-IV-TR. They are arranged into two groups of symptoms, known as Part A and Part B [19].

The scale contains one fully structured question for each symptom from A1-A2 grouping described in DSM-IV (inattention and hyperactivity-impulsivity), as well as questions relating to 11 symptoms of deficits in higher executive functions that are not listed in DSM-IV, but which are thought to be relevant to ADHD in adults [20].

The presented scale also exists in a shortened version (Adult ADHD Self-Report Scale Screener ver. 1.1.) as a tool used in screening diagnostics. In this version, the scale consists of six questions (four items to assess attention deficit disorder, two to assess activity/impulsivity). A score of 14 points (out of 24 possible points) is considered the cutoff point [19].

The six questions, extracted from the full version of the scale using stepwise logistic regression to optimize consistency with clinical classification, were found to be the most predictive of ADHD symptoms in adults [19, 21, 22]. However, the literature emphasizes that the shortened version of the ASRS scale is only used for screening purposes and should not be considered a diagnostic test. It is therefore imperative that cases exceeding the threshold undergo further detailed functional and symptomatic evaluation [19].

In 2017, the ASRS scale was adapted to the latest fifth edition of the DSM [23]. These versions reduce the number of required symptoms and increase the required age of onset of the first symptoms of the disease (to 12 years of age). The use of an earlier version of the scale results in under-identification of those affected by ADHD [24]. In addition, in their analysis, Pettersson *et al.* [25] estimated the scale's sensitivity at 92% and specificity at only 27%.

For more information on the scale, visit the National Comorbidity Survey (NCS) website at <https://www.hcp.med.harvard.edu/ncs/asrs.php>.

Table 2. Typical characteristics of ADHD in adults [1]

Inattention ("attention deficit")	– Quickly losing focus, shifting attention, absent-mindedness. – Easily distracted by low-priority activities or activities that other people tend to ignore. – Spontaneous mind-wandering, "zoning out" or daydreaming which makes it hard to focus on reading, writing, or listening to others. – Can overlook details, which leads to errors or incomplete work. – Quietly getting bored, especially when the novelty has worn off.
Hyper-attentiveness	– May be a coping mechanism for distraction – tuning out and becoming totally absorbed in self-interesting, stimulating or rewarding tasks and activities.
Disorganisation and forgetfulness	– Poor organizational skills (e.g., problems with planning, goal setting, decision making, keeping track of tasks/responsibilities, problem solving). – Procrastination, poor time management, forgetting commitments, appointments, or deadlines. – A habit of losing or misplacing things (keys, wallet, phone, documents). – Difficulty in listening to the given instructions to the end. – Failure to complete routine tasks or so-called paperwork. – Feeling "crushed" by large projects. – Failure to meet deadlines. – Prominent disorganization, especially combined with very poor time management. – Forgetting various daily commitments. – Being late for meetings. – Postponing. – Difficulty making decisions and starting tasks.
Hyperactivity, restlessness, fidgety or having lots of energy	– Feeling agitated, inner restlessness, always "on the go" as if driven by a motor, talking excessively, trouble sitting still, or tapping. – Getting quickly or easily bored, craving excitement or stimulation. – Engaging in high intensity or extreme sports/activities that involve speed, height, a high level of physical exertion and highly specialised gear. – Although appearing to be constantly busy, is actually very inefficient.
Impulsivity	– Interrupting others or talking over them; blurting out thoughts or saying things without thinking. – Engaging in reckless or risk behaviours without much concern for the consequences (e.g., spontaneous sexual "hook-ups", gambling, Internet overuse, binge drinking or drug taking, driving too fast).
Emotional lability (or emotional dysregulation)	– Regular feelings of irritability, inability to cope, short or explosive temper, being easily flustered and/or stressed, hypersensitive to criticism. – Low self-esteem, sense of underachievement, constantly worrying about making the same mistakes, not meeting obligations, fatigue or burn-out, finding it hard to stay motivated.

The Wender Utah Rating Scale (WURS)

Like the tool described above, the WURS self-report scale assesses childhood symptoms and behaviours consistent with ADHD that continue into adulthood [26]. It was created in 1993 [27]. The scale enables a detailed retrospective assessment of childhood functioning (including an assessment of the emotional sphere). Its undoubted advantage is the identification of a threshold value that suggests that symptoms of ADHD were present in childhood [28].

The scale is available in both a full version (originally 61 items, now 60) and a 25-item shortened version (WURS-25) [28]. The full version allows diagnosis of five areas: disruptive mood/behaviour, ADHD, anxiety/dysphoria, social problems, and academic problems [27, 29]. In the literature, we can also find a 45-item version of the scale [30] and an 8-item version [31].

According to Gift *et al.* [28], the full version of the scale is a more sensitive test in terms of differentiating

between adults with ADHD symptoms and patients with generalized anxiety disorder and a diagnosis of a depressive episode, while the shortened version more accurately diagnoses those with ADHD, separating them from those without symptoms.

Conners' Adult ADHD Rating Scales (CAARS)

According to Marshall *et al.* [32], the Conners' scale should be the recommended scale for diagnosing symptoms of ADHD (in conjunction with a structured clinical interview). It consists of more than just the 18 DSM symptoms. Its specificity rates assessed in young adults are also satisfactory. The tool is the only scale that has control questions to reveal false-positive answers. However, a meta-analysis conducted by Smyth and Meier [33] revealed significantly weaker internal consistency for the part of the test assessing hyperactivity/impulsivity symptoms for female diagnoses.

Table 3. Psychological diagnostic tools used in assessing the presence of ADHD symptoms in adults (own study)

A. Self-report scales	B. Structured clinical interviews	C. Assessment of cognitive functioning	D. Assessment of personality structure/temperament and emotional functioning	E. Differential diagnosis tools
– Adult ADHD Self-Report Scale, ASRS – Wender Utah Rating Scale, WURS – Conners' Adult ADHD Rating Scales (CAARS)	– Adult ADHD Clinical Diagnostic Scale (ACDS) – Structured clinical interview based on DSM-5 – Conners' Adult ADHD Diagnostic Interview for DSM-IV, CAADID – Diagnostic Interview for ADHD in Adults, DIVA-5	– d2-R test, Revised version of the attention and concentration test – Attention and perceptiveness test, TUS – Trail Making Test, TMT – Color Trails Test – adult version, CTT – Wisconsin Card Sorting Test, WCST – Stroop Color–Word Interference Test – Nonverbal Stroop Card Sorting Test, NSCST – Repetition of WAIS-R scale digits – Ruff Figural Fluency Test, RFFT – Verbal fluency test, VFT – Nonverbal Learning and Memory Test, DCS-II – Benton Visual Retention Test, BVRT – Rey Complex Figure Test, RCFT – California Verbal Learning Test, CVLT	– Eysenck Personality Questionnaire-Revised, EPQ-R – Formal Characteristics of Behaviour – Temperament Questionnaire, Revised version, FCZ KT(R) – Young Schema Questionnaire, YSQ-S3-PL – Impulsivity Questionnaire, IVE – Coping Inventory for Stressful Situations, CISS – Coping Orientation to Problems Experienced, COPE – Emotion Control Questionnaire, KKE/ECQ – Psychological Inventory of Aggression Syndrome, IPASA-II – State-Trait Anxiety Inventory, STAI – Generalized Anxiety Disorder 7-item, GAD-7 – Courtauld Emotional Control Scale, CECS	– Beck Depression Inventory, BDI – Borderline Personality Disorder checklist, BPD-checklist – Structured Clinical Interview for DSM-5 Personality Disorders, SCID-5-PD – Personality Inventory for ICD-11, PiCD – Minnesota Multiphasic Personality Inventory-2, MMPI-2

In a comparative study they conducted, Kwan *et al.* [34] set the cutoff point for the full version of the scale for the total score at < 44 points, and < 54 points for the subscale assessing the presence of ADHD with predominantly inattentive presentation. When the accuracy of the analyses carried out improved, the values given increased to < 54 points and < 63 points, respectively. At the same time, the cited authors point out that this result is an unsatisfactory predictor of a false-negative diagnosis. A similar result was also obtained in their own study by Harrison *et al.* [35].

Alexander and Liljequist [36] showed no greater diagnostic accuracy of the Conners' Adult ADHD Rating Scale-Self-Report: Long Format (CAARS-S:L) compared to the Conners' Adult ADHD Rating Scale-Observer Report: Long Format (CAARS-O:L).

B. Structured clinical interviews

Adult ADHD Clinical Diagnostic Scale (ACDS)

Phase one of this interview includes a retrospective assessment of the symptoms of childhood ADHD. The second phase evaluates symptoms present in the 6 months before the day of the survey. This assessment includes all nine DSM-IV Criterion A symptoms for inattention and nine symptoms of hyperactivity/impulsivity. In addition, 14 symptoms outside the DSM that are considered relevant to adult ADHD (including difficulties with planning and organization, emotional lability) are assessed. Most of the additional items are consistent with the WURS scale described above [20, 37].

Structured Clinical Interview for the DSM (SCID-5)

This interview was created by First *et al.* [38]. The version of the scale presented here has been expanded to include a module that allows symptoms of ADHD in adults to be assessed (Module K – Externalizing Disorders). In addition to symptoms of ADHD in adults, this module also covers periodic explosive disorder and gambling disorder/pathological gambling. The assessment of the presence of symptoms encompasses the last 6 months before the date of the study for ADHD in adults, and 12 months for the other two disorders.

In a study by Gorlin *et al.* [39], satisfactory reliability and accuracy of the interview was demonstrated. The module had high internal consistency and correlated strongly with commonly used scales for assessing symptoms of ADHD in adults.

Conners' Adult ADHD Diagnostic Interview (CAADID)

CAADID is a semi-structured mixed interview consisting of two parts. Part one collects information from the following areas: demographic history, psychomotor development, ADHD risk factors, and comorbidity. Part

two assesses the patient's condition in conjunction with the DSM-IV symptoms of ADHD. The first part can be filled out by the patient alone; the second part should be performed by a clinician familiar with the diagnostic criteria of attention deficit hyperactivity disorder [40]. A study by Epstein and Kollins [41] confirmed the satisfactory psychometric indicators of this tool.

The version of the test available in Poland (CONNERS 3, Questionnaire Set for the Diagnosis of ADHD and Comorbidity), based on DSM 5 guidelines, allows for the diagnosis of children and adolescents between the ages of 6 and 18 [42]. The test can be used both for screening and for preparing treatment recommendations. It can also be utilized by people without psychological training (teachers, psychiatric doctors, nurses, educators). However, it is important to keep in mind that this tool only allows the probability of ADHD in the subjects to be determined.

Diagnostic Interview for ADHD in Adults (DIVA-5)

The DIVA-5 structured interview is one of the most well-known tools used by specialists in Poland when diagnosing symptoms of attention deficit hyperactivity disorder. The current third edition is adapted to the DSM-5 diagnostic criteria [43].

Pettersson *et al.* [25] demonstrated 90% sensitivity and 73% specificity of the DIVA-5 scale in a group of adult outpatients presenting for ADHD evaluation. Similar values for validating the Korean version of the scale were obtained by Hong *et al.* [44], diagnostic accuracy was estimated at 92%, sensitivity at 91.30%, and specificity at 93.62%. However, at the same time, in the conclusion of the paper the authors state that significant clinical and demographic differences were found in the study groups (ADHD group – control group), which may be a serious limitation of the research conducted.

C. Selected tools for assessing cognitive functioning

Marshall *et al.* [32] recommend performing a battery of tests to assess various aspects of subjects' cognitive functioning rather than tests that assess individual cognitive functions. This recommendation is dictated by the significant variability in the level of performance of individual tasks depending on the duration of the test (patients can effectively focus their attention on specific content for a short time). In addition, the symptoms of ADHD are most likely overlapping multiple cognitive deficits of moderate severity, none of which are necessary or sufficient for a diagnosis of the disorder [32]. Unfortunately, the diagnostic batteries recommended by the authors do not have a Polish translation and Polish adaptation.

Of the difficulties in the cognitive sphere, reduced efficiency of attention processes and executive func-

tion deficits are most characteristic of people with ADHD symptoms [9]. In the case of ADHD, they persist from childhood and are pronounced in adulthood [45], including in people whose other core symptoms of the disorder have significantly quieted in older age [46]. Executive function deficits are considered the primary cause of dysfunction in various areas of life for adults diagnosed with ADHD [47]. Difficulties centre around planning, working memory, and response inhibition [48, 49].

The tests recommended by the aforementioned authors [32], and available in Poland to assess individual cognitive functions, include the tools listed in Table 3 (with particular emphasis on the tests that assess the efficiency of attention processes and the efficiency of so-called frontal functions – executive functions and working memory).

D. Selected tools for assessing personality structure and emotional functioning

Research in recent years indicates that important, and previously underappreciated, symptoms of ADHD include difficulties in processing emotional information [50] and in adequate emotional regulation [51]. These deficits largely explain the impact of ADHD on the education, social and professional lives of those affected [52, 53].

A meta-analysis conducted by Soler-Gutiérrez *et al.* [54] revealed that adults with ADHD are significantly more likely to use maladaptive emotion regulation strategies compared to those without any symptoms. In addition, emotional dysregulation is associated with increased symptoms, poorer executive function, increased risk of comorbidity, interpersonal conflicts and conflicts with the law. According to Shaw *et al.* [55], the percentage of adults with ADHD who have difficulties in the area in question can be as high as 70%, with negative consequences that exceed those of hyperactivity [56].

Krieger *et al.* [48], on the other hand, report that scores on scales assessing negative emotionality and so-called surgency (talkative, energetic, assertive) are characteristic of people with ADHD.

Young Schema Questionnaire (YSQ-S3-PL) is noteworthy among the commonly used diagnostic tools. The Polish adaptation was prepared by Oettingen *et al.* [57]. This questionnaire is a fairly new tool and was created to assess the severity of early maladaptive schemas according to J. Young's concept, and is not directly used to assess the presence of ADHD symptoms in adults. However, there are emerging scientific reports indicating that schemas in the domains of Impaired Limits (Insufficient Self-Control/Self-Discipline [58]), Disconnection and Rejection (Defectiveness/Shame [59], Social Isolation [58]), Impaired Autonomy and Performance (Failure [58]), Other-Directedness (Subjugation [59]), Overvigilance

and Inhibition (Emotional Inhibition [58]) are characteristic of adult patients with symptoms of ADHD.

E. Differential diagnosis

A complete diagnosis of an adult with suspected ADHD should also include an evaluation of comorbid psychiatric disorders and somatic conditions. Lack of diagnosis during childhood and the resulting school and relationship difficulties often contribute to secondary symptoms of depressive and anxiety disorders.

In a study by Schein *et al.* [60] ($n = 337,034$), the mental disorders significantly more frequently diagnosed in adults with ADHD symptoms included (values for adults respectively with and without an ADHD diagnosis are given in parentheses): anxiety disorders (34.4% and 11.1%, respectively), depressive disorders (27.9% and 7.8%), sleep/vigilance disorders (13.2% and 7.7%), trauma- and stress-related disorders (12.4% and 3.4%), and substance- and addiction-related disorders (9.4% and 5.0%).

Among personality disorders, dependent personality traits are significantly more frequently diagnosed in adults diagnosed with ADHD than in the general population [61]. When ADHD subtypes were analysed, symptoms of ADHD with predominantly inattentive presentation were more often associated with the mentioned personality trait, while the combined subtype was more often accompanied by antisocial and passive-aggressive personality traits [61].

The literature is also increasingly paying attention to the sleep disorders that accompany ADHD symptoms in adults [62]. They have been observed since childhood [63], and are significantly more troublesome in the combined presentation of ADHD and in patients with a severe course of the disorder [64]. Adequate therapeutic and pharmacological care of this sphere of patient functioning can significantly reduce the symptoms [65].

Table 4 shows the diagnoses from the DSM-5 and ICD-11 classifications that should be considered when making a diagnosis of ADHD [6, 66].

Among the tools listed in Table 3, the following are noteworthy at this point: The Borderline Personality Disorder checklist (BPD checklist) and the Personality Inventory for ICD-11 (PiCD).

The BPD checklist is a DSM-IV-based self-report questionnaire designed to measure the intensity of complaints experienced in relation to certain borderline personality symptoms over the past month. The scale consists of 47 items, formulated on the basis of the BPD criteria according to DSM-IV, literature describing the manifestations of borderline personality, and clinical observations. The translated scale can be found in the article by Bloo *et al.* [67].

The PiCD is a 60-item questionnaire designed to measure the five dysfunctional trait domains of personality disorders included in the ICD-11 classifica-

Table 4. Differential diagnosis of ADHD [6, 66]

DSM-5
– Normal behaviour of an active child – Insufficient stimulation in the environment – Oppositional defiant disorder – Intermittent explosive disorder – Behavioural disorders – Stereotypic movement disorder – Specific learning disorder – Intellectual developmental disorder (intellectual disability) – Autism spectrum disorder – Disorders involving excessive ease of social relations – Disruptive mood dysregulation disorder – Anxiety disorders – Major depressive disorders – Type I and type II bipolar disorders – Borderline, antisocial and narcissistic personality disorders – Medication-induced symptoms of ADHD – Neurocognitive disorders
ICD-11
– Disorders of intellectual development – Autism spectrum disorders – Developmental learning disorder – Developmental motor coordination disorder – Mood disorders, anxiety disorders – Explosive disorders – Oppositional defiant disorder – Dissocial disorders – Personality disorders – Disorders associated with use of psychoactive substance or medication – Attention deficit disorder caused by other medical conditions

tion [68]. The inventory has adequate reliability, structural and differential validity, and convergent validity with respect to the Big Five model, i.e. the five dysfunctional trait domains from the DSM-5 Alternative Model for Personality Disorders, and other models of personality pathology [69]. The Polish adaptation of the scale was prepared by Ciecuch *et al.* [69].

Summary

An accurate psychological diagnosis of attention deficit hyperactivity disorder is not an easy task. It requires not only specialized knowledge based on the latest classifications of disorders, but also the expertise and ability to adequately apply a range of diagnostic tools that allow a holistic assessment of the subject's functioning (not just cognitive). As the presented literature review shows, we also do not have diagnostic tools to make a confident diagnosis of attention deficit hyperactivity disorder. Ongoing research only indicates that the disorder is more or less likely to be present. Therefore, a holistic psychological diagnosis

that includes the areas of patients' mental functioning covered in this paper seems to be a necessity. Relying only on a single screening scale or diagnostic interview in the diagnostic process is fraught with the risk of false-positive or false-negative results.

It needs to be emphasized that this review of the available tools should not be considered an algorithm for diagnostic management. It is intended to assist in the selection of appropriate treatment procedures, and each psychologist/diagnostician can be as flexible as possible in the choice made. The only recommendation may be to use the tools that cover all of the five areas of diagnosis.

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References

1. Sedgwick-Müller JA, Müller-Sedgwick U, Adamou M, Catani M, Champ R, Gudjonsson G, Hank D, Pitts M, Young S, Asherson P. University students with attention deficit hyperactivity disorder (ADHD): a consensus statement from the UK Adult ADHD Network (UKAAN). *BMC Psychiatry*. 2022; 22: 292.
2. Thomas R, Sanders S, Doust J, Beller E, Glasziou P. Prevalence of attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *Pediatrics*. 2015; 135: e994-e1001.
3. Kessler RC, Adler LA, Barkley R, Biederman J, Conners CK, Faraone SV, Greenhill LL, Jaeger S, Secnik K, Spencer T, Bedirhan Üstün T, Zaslavsky AM. Patterns and predictors of attention-deficit/hyperactivity disorder persistence into adulthood: results from the National Comorbidity Survey Replication. *Biol Psychiatry*. 2005; 57: 1442-1451.
4. Song P, Zha M, Yang Q, Zhang Y, Li X, Rudan I. The prevalence of adult attention-deficit hyperactivity disorder: a global systematic review and meta-analysis. *J Global Health*. 2021; 11: 04009.
5. Prakash J, Chatterjee K, Guha S, Srivastava K, Chauhan VS. Adult attention-deficit hyperactivity disorder: from clinical reality toward conceptual clarity. *Ind Psychiatry J*. 2021; 30: 23-28.
6. World Health Organization. International Classification of Diseases 11th Revision. The global standard for diagnostic health information. Available at: <https://icd.who.int/en> (9.07.2024).
7. Wallin K, Alehagen S, Hanberger L, Lundell IW, Hultsjö S. Sexual and reproductive health in young women with ADHD from the view of health care professionals. *BMC Womens Health*. 2024; 24: 389.
8. Sobanski E, Brüggemann D, Alm B, Kern S, Philipsen A, Schmalzried H, Heblinger B, Waschkowski H, Rietschel M. Subtype differences in adults with attention-deficit/hyperactivity disorder (ADHD) with regard to ADHD-symptoms, psychiatric comorbidity and psychosocial adjustment. *Eur Psychiatry*. 2008; 23: 142-149.
9. Orm S, Andersen PN, Teicher MH, Fossum IN, Øie MG, Skogli EW. Childhood executive functions and ADHD symptoms predict psychopathology symptoms in emerging adults with and without ADHD: a 10-year longitudinal study. *Res Child Adolesc Psychopathol*. 2023; 51: 261-271.
10. Cadman T, Findon J, Eklund H, Hayward H, Howley D, Cheung C, Kuntsi J, Glaser K, Murphy D, Asherson P. Six-year follow-up study of combined type ADHD from childhood to young adulthood: predictors of functional impairment and comorbid symptoms. *Eur Psychiatry*. 2016; 35: 47-54.
11. London AS, Landes SD. Attention deficit hyperactivity disorder and adult mortality. *Prev Med*. 2016; 90: 8-10.
12. Pawaskar M, Fridman M, Grebla R, Madhoo M. Comparison of quality of life, productivity, functioning and self-esteem in adults diagnosed with ADHD and with symptomatic ADHD. *J Atten Disord*. 2020; 24(1): 136-144.
13. Adamis D, West S, Singh J, Hanley L, Coad I, McCarthy G, Langan N, Gavin B, McNicholas F. Functional impairment and quality of life in newly diagnosed adults attending a tertiary ADHD clinic in Ireland. *Ir J Med Sci*. 2024; 193(5): 2433-2441.
14. Pedersen AB, Edvardsen BV, Messina SM, Volden MR, Weyandt LL, Lundervold AJ. Self-esteem in adults with ADHD using the Rosenberg Self-Esteem Scale: a systematic review. *J Atten Disord*. 2024; 28(7): 1124-1138.
15. DSM-5-TR Desk reference to the Diagnostic criteria from DSM-5-TR. APA, 2022.
16. ICD-10. Klasyfikacja zaburzeń psychicznych i zaburzeń zachowania w ICD-10. Badawcze kryteria diagnostyczne. IPIN: Warszawa; 1998.
17. Weisler RH, Goodman DW. Ocena i rozpoznawanie ADHD u dorosłych: wyzwania kliniczne i możliwości poprawy opieki nad chorymi. *Psych po Dypl*. 2009; 2(6): 31-41.
18. Vidal-Estrada R, Bosch-Munso R, Nogueira-Morais M, Casas-Brugue M, Ramos-Quiroga JA. Psychological treatment of attention deficit hyperactivity disorder in adults: a systematic review. *Actas Esp Psiquiatr*. 2012; 40(3): 147-154.
19. Kessler RC, Adler L, Ames M, Delmer O, Faraone S, Hiripi E, Howes MJ, Jin R, Boye KS, Spencer T, Ustun TB, Walters EE. The World Health Organization Adult ADHD Self-Report Scale (ASRS): a short screening scale for use in the general population. *Psychol Med*. 2005; 35: 245-256.
20. Kessler RC, Green JG, Adler LA, Barkley RA, Chatterji S, Faraone SV, Finkelman M, Greenhill LL, Gruber MJ, Jewell M, Russo LJ, Sampson NA, Van Brunt DL. Structure and diagnosis of adult attention-deficit/hyperactivity disorder: analysis of expanded symptom criteria from the Adult ADHD Clinical Diagnostic Scale. *Arch Gen Psychiatry*. 2010; 67(11): 1168-1178.
21. Adler LA, Faraone SV, Sarocco P, Atkins N, Khachatryan A. Establishing US norms for the Adult ADHD Self-Report Scale (ASRS-v1.1) and characterising symptom burden among adults with self-reported ADHD. *Int J Clin Pract*. 2019; 73(1): e13260.
22. Green JG, DeYoung G, Wogan ME, Wolf EJ, Lane KL, Adler LA. Evidence for the reliability and preliminary validity

- ty of the Adult ADHD Self-Report Scale v1.1 (ASRS v1.1) Screener in an adolescent community sample. *Int J Methods Psychiatr Res.* 2019; 28(1): e1751.
23. Ustun B, Adler LA, Rudin C, Faraone SV, Spencer TJ, Berglund P, Gruber MJ, Kessler RC. The World Health Organization Adult Attention-Deficit/Hyperactivity Disorder Self-Report Screening Scale for DSM-5. *JAMA Psychiatry.* 2017; 74(5): 520-527.
 24. Todd RD, Huang H, Henderson CA. Poor utility of the age of onset criterion for DSM-IV attention deficit/hyperactivity disorder: recommendations for DSM-V and ICD-11. *J Child Psychol Psychiatry.* 2008; 49(9): 942-949.
 25. Pettersson R, Soderstrom S, Nilsson K. Diagnosing ADHD in adults: an examination of the discriminative validity of neuropsychological tests and diagnostic assessment instruments. *J Atten Disord.* 2018; 22(11): 1019-1031.
 26. Lundervold AJ, Vartiainen H, Jensen D, Haavik J. Test-Retest Reliability of the 25-item version of Wender Utah Rating Scale. Impact of current ADHD severity on retrospectively assessed childhood symptoms. *J Atten Disord.* 2021; 25(7): 1001-1009.
 27. Ward ME, Wender PH, Reimherr FW. The Wender Utah Rating Scale: an aid in the retrospective diagnosis of childhood attention deficit hyperactivity disorder. *Am J Psychiatry.* 1993; 150(6): 885-890.
 28. Gift TE, Reimherr ML, Marchant BK, Steans TA, Reimherr FW. Wender Utah Rating Scale: psychometrics, clinical utility and implications regarding the elements of ADHD. *J Psychiatr Res.* 2021; 135: 181-188.
 29. Hanley C, Saleem F, Graffeo I, McCarthy G, Gavin B, McNicholas F, Adamis D. Association of Wender Utah Rating Scale (WURS)-61 items with clinical psychiatric diagnosis in adulthood. *Ir J Med Sci.* 2022; 191(1): 327-335.
 30. Reimherr FW, Marchant BK, Gift TE, Steans TA, Reimherr ML. Psychometric data and versions of the Wender Utah Rating Scale including the WURS-25 & WURS-45. *Data Brief.* 2021; 37: 107232.
 31. Das D, Vélez JI, Acosta MT, Muenke M, Arcos-Burgos M, Easteal S. Retrospective assessment of childhood ADHD symptoms for diagnosis in adults: validity of a short 8-item version of the Wender-Utah Rating Scale. *Atten Defic Hyperact Disord.* 2016; 8(4): 215-223.
 32. Marshall P, Hoelzle J, Nikolas M. Diagnosing Attention-Deficit/Hyperactivity Disorder (ADHD) in young adults: a qualitative review of the utility of assessment measures and recommendations for improving the diagnostic process. *Clin Neuropsychol.* 2021; 35(1): 165-198.
 33. Smyth AC, Meier ST. Evaluating the psychometric properties of the conners adult ADHD Rating Scales. *J Atten Disord.* 2019; 23(10): 1111-1118.
 34. Kwan D, Davin N, Harrison AG, Gillie S. Determining cutoff scores on the Conners' adult ADHD rating scales that can definitively rule out the presence of ADHD in a clinical sample. *Appl Neuropsychol Adult.* 2024; 3: 1-11.
 35. Harrison AG, Nay S, Armstrong IT. Diagnostic accuracy of the Conners' Adult ADHD Rating Scale in a postsecondary population. *J Atten Disord.* 2019; 23(14): 1829-1837.
 36. Alexander L, Liljequist L. Determining the accuracy of self-report versus informant-report using the Conners' Adult ADHD Rating Scale. *J Atten Disord.* 2016; 20(4): 346-352.
 37. Adler L, Cohen J. Diagnosis and evaluation of adults with attention-deficit/hyperactivity disorder. *Psychiatr Clin North Am.* 2004; 27(2): 187-201.
 38. First MB, Williams JBW, Karg RS, Spitzer RL. User's Guide for the Structured Clinical Interview for DSM-5 Disorders, Research Version (SCID-5-RV). Arlington, VA, American Psychiatric Association; 2015.
 39. Gorlin EI, Dalrymple K, Chelminski I, Zimmerman M. Reliability and validity of a semi-structured DSM-based diagnostic interview module for the assessment of Attention Deficit Hyperactivity Disorder in adult psychiatric outpatients. *Psychiatry Res.* 2016; 242: 46-53.
 40. Epstein JN, Johnson DE, Conners CK. Conners Adult ADHD Diagnostic Interview for DSM-IV. Multi-Health Systems, 1999.
 41. Epstein JN, Kollins SH. Psychometric properties of an adult ADHD diagnostic interview. *J Atten Disord.* 2006; 9(3): 504-514.
 42. Wujcik R, Wrocławska-Warchala E. CONNERS 3, Zestaw Kwestionariuszy do Diagnozy ADHD i zaburzeń współwystępujących. PTP, Warszawa 2018.
 43. Kooij JJS, Francken MH, Bron TI, Wynchank D. Diagnostisch Interview Voor ADHD bij volwassenen. DIVA Foundation, Haga 2019.
 44. Hong M, Kooij JJS, Kim B, Joung YS, Yoo HK, Kim EJ, Lee SI, Bhang SY, SY, Han DH, Lee YS, Bahn GH. Validity of the Korean Version of DIVA-5: a semi-structured diagnostic interview for adult ADHD. *Neuropsychiatr Dis Treat.* 2020; 16: 2371-2376.
 45. Li C, Delgado-Gómez D, Sujar A, Wang P, Martin-Moratinos M, Bella-Fernández M, Masó-Besga AE, Peñuelas-Calvo I, Ardoy-Cuadros J, Hernández-Liebo P, Blasco-Fontecilla H. Assessment of ADHD subtypes using motion tracking recognition based on Stroop Color-Word Tests. *Sensors (Basel).* 2024; 24(2): 323.
 46. Miller M, Ho J, Hinshaw SP. Executive functions in girls with ADHD followed prospectively into young adulthood. *Neuropsychology.* 2012; 26(3): 278-287.
 47. Yang Y, Shields GS, Zhang Y, Wu H, Chen H, Romer AL. Child executive function and future externalizing and internalizing problems: a meta-analysis of prospective longitudinal studies. *Clin Psychol Rev.* 2022; 97: 102194.
 48. Krieger V, Amador-Campos JA, Gallardo-Pujol D. Temperament, executive function, and attention-deficit/hyperactivity disorder (ADHD) in adolescents: the mediating role of effortful control. *J Clin Exp Neuropsychol.* 2019; 41(6): 615-633.
 49. Kostyrka-Allchorne K, Wass SV, Yusuf H, Rao V, Bertini C, Sonuga-Barke EJS. Inhibitory deficits and symptoms of attention-deficit hyperactivity disorder: how are they related to effortful control? *Br J Dev Psychol.* 2023; 41(1): 50-65.
 50. Christiansen H, Hirsch O, Albrecht B, Chavanon ML. Attention-Deficit/Hyperactivity Disorder (ADHD) and emotion regulation over the life span. *Curr Psychiatry Rep.* 2019; 21(3): 17.
 51. Hirsch O, Chavanon M, Riechmann E, Christiansen H. Emotional dysregulation is a primary symptom in adult Attention-Deficit/Hyperactivity Disorder (ADHD). *J Affect Disord.* 2018; 232: 41-47.
 52. Hwang S, White SE, Nolan ZT, Craig Williams W, Sinclair S, Blair RJ. Executive attention control and emotional responding in attention-deficit/hyperactivity disorder—a functional MRI study. *Neuroimage Clin.* 2015; 9: 545-554.
 53. Lundervold AJ, Halmøy A, Nordby ES, Haavik J, Meza JI. Current and retrospective childhood ratings of emotional

- fluctuations in adults with ADHD. *Front Psychol.* 2020; 11: 571101.
54. Soler-Gutiérrez AM, Pérez-González JC, Mayas J. Evidence of emotion dysregulation as a core symptom of adult ADHD: a systematic review. *PLoS One.* 2023; 18(1): e0280131.
 55. Shaw P, Stringaris A, Nigg J, Leibenluft E. Emotion dysregulation in attention deficit hyperactivity disorder. *Am J Psychiatry.* 2014; 171(3): 276-293.
 56. Riley AW, Spiel G, Coghil D, Döpfner M, Falissard B, Lorenzo MJ, Preuss U, Ralston SJ, ADORE Study Group. Factors related to health-related quality of life (HRQoL) among children with ADHD in Europe at entry into treatment. *Eur Child Adolesc Psychiatry.* 2006; 15 (Suppl 1): I38-I45.
 57. Oettingen J, Chodkiewicz J, Mącik D, Gruszczyńska E. Polish adaptation of the Young Schema Questionnaire 3 Short Form (YSQ-S3-PL). *Psych Pol.* 2018; 52(4): 707-718.
 58. Kiraz S, Sertçelik S. Adult attention deficit hyperactivity disorder and early maladaptive schemas. *Clin Psychol Psychother.* 2021; 28(5): 1055-1064.
 59. Philipsen A, Lam AP, Breit S, Lücke C, Müller HH, Matthies S. Early maladaptive schemas in adult patients with attention deficit hyperactivity disorder. *Atten Defic Hyperact Disord.* 2017; 9(2): 101-111.
 60. Schein J, Cloutier M, Gauthier-Loiselle M, Bungay R, Arpin E, Guerin A, Childress A. Risk factors associated with newly diagnosed attention-deficit/hyperactivity disorder in adults: a retrospective case-control study. *BMC Psychiatry.* 2023; 23(1): 870.
 61. Adamis D, Kasianenko D, Usman M, Saleem F, Wrigley M, Gavin B, McNichols F. Prevalence of personality disorders in adults with attention deficit hyperactivity disorder (ADHD). *J Atten Disord.* 2023; 27(7): 658-668.
 62. Brevik EJ, Lundervold AJ, Halmøy A, Posserud MB, Instanes JT, Bjorvatn B, Haavik J. Prevalence and clinical correlates of insomnia in adults with attention-deficit hyperactivity disorder. *Acta Psychiatr Scand.* 2017; 136(2): 220-227.
 63. Leman TY, Barden S, Swisher VS, Joyce DS, Kaplan KA, Zeitzer JM, Loo SK, Ricketts EJ. Sleep insufficiency and bedtime irregularity in children with ADHD: a population-based analysis. *Sleep Med.* 2024; 121: 117-126.
 64. Gammoh O, Alqudah A, Qnais E, Aljabali AAA, Binsaleh AY, Shilbayeh SAR. Are sleep aids associated with the severity of attention deficit hyperactivity disorder symptoms in adults screened for insomnia? A Cross-Sectional Study. *J Clin Med.* 2024; 13(6): 1682.
 65. Fadeuilhe C, Daigre C, Grau-López L, Richarte V, Palma-Álvarez RF, Corrales M, Saez B, Baz m, Ramos-Quiroga JA. The impact of insomnia disorder on adult attention-deficit/hyperactivity disorder severity: a six-month follow-up study. *Psychiatry Res.* 2022; 308: 114349.
 66. First MB. *DSM-5-TR Handbook of Differential Diagnosis.* New York 2014.
 67. Bloo J, Arntz A, Schouten E. Lista kontrolna zaburzeń osobowości z pogranicza (BPD): ocena psychometryczna i struktura czynnikowa w próbie klinicznej i nieklinicznej. *Rocz Psychol.* 2017; XX(2): 281-309.
 68. Oltmanns JR, Widiger TA. A self-report measure for the ICD-11 dimensional trait model proposal: the personality inventory for ICD-11. *Psychol. Assess.* 2018; 30(2): 154-169.
 69. Ciecuch J, Łakuta P, Strus W, Oltmanns JR, Widiger T. Assessment of personality disorder in the ICD-11 diagnostic system: Polish validation of the Personality Inventory for ICD-11. *Psychiatr Pol.* 2022; 56(6): 1185-1202.

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