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RESEARCH ARTICLE

Concurrent Validity of the Computer-assisted Structured Diagnostic Interview (CASDI) for Children and Adolescents Aged 8-18 Years Old

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Abstract:

Background:

Making a diagnosis of a particular mental disorder in children and adolescents can be a challenging or overwhelming task for clinicians and researchers, with each step of a DSM-5 based diagnostic procedure necessitating a practical use of time to gather appropriate information.

Objective:

To assess concurrent validity of the Computer-Assisted Structured Diagnostic Interview (CASDI), a newly devised, fully structured interview which encompasses categorical and dimensional approaches and automatically navigates the interviewer, through computerized decision trees (algorithms), in a specified probing system.

Method:

A total of 258 children and adolescents (46.51% boys) aged 8-18 years (Mean±SD: 12.66±2.73) and their parents were recruited from a community sample. For each pair of child-parent, the child and one parent were interviewed separately by an interviewer using the CASDI and by a second blind interviewer using the DSM-5 Pediatric Diagnostic Interview one week after the CASDI administration. Validity indicators (sensitivity, specificity, positive and negative likelihood ratios, and positive and negative predictive values for 12-month diagnoses were calculated.

Results:

The CASDI had sensitivity above 70% for Neurodevelopmental Disorders, Schizophrenia Spectrum and Other Psychotic Disorders, Depressive Disorders, Anxiety Disorders, Obsessive-Compulsive and Related Disorders, Trauma- and Stressor-Related Disorders, Somatic Symptom and Related Disorders, Feeding and Eating Disorders, Elimination Disorders, Sleep-Wake Disorders, Gender Dysphoria, Disruptive, Impulse-Control, and Conduct Disorders, Substance-Related and Addictive Disorders and below 50% for Bipolar and Related Disorders and Dissociative Disorders.

Conclusion:

The observed validity indicators suggest that the CASDI can be potentially used to accurately diagnose child and adolescent mental health disorders for research and clinical purposes. Its use in special populations, such as hospitalized or institutionalized children and adolescents, deserves further study.

Keywords: Adolescents, Children, DSM-5, Sensitivity, Specificity, Structured Interviews, Validity.

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INTRODUCTION

Making a diagnosis of a particular mental disorder in children and adolescents can be a challenging or overwhelming task for clinicians or researchers who are less experienced or have to complete their assessment within a limited time frame. Such an evaluation can seem impossible, especially if a clinician intends to make a well-supported DSM-5 [1] diagnosis. Each step of a DSM-5 based diagnostic procedure with a child and his or her caregivers (*i.e.*, examining if a child's clinical presentation fulfills the specific symptom-based diagnostic criteria, judging if the symptoms are not caused by other diagnoses or stressors and evaluating the impairment caused by these symptoms on a child's functioning) necessitates a practical use of time to gather appropriate information [2].

The categorical model of mental illness preserved by DSM-5, in which a person does or does not have a mental illness, is widely recognized for its diagnostic reliability (*i.e.*, the ability of different clinicians to agree on the diagnosis of a particular mental disorder for a particular person) [3]. However, diagnostic validity of the categorical model (*i.e.* the ability of clinicians to make an accurate diagnosis) is considered limited [3, 4]. The dimensional model aims to improve the variability and validity of psychiatric diagnoses through measures that quantify and personalize the diagnostic criteria for a particular person according to his or her own subjective experience of core symptoms and with reference to normative data of clinical or community samples. These measures include short symptom statements that a child or his/her caregiver assesses, often with a five-point scale of symptom levels. Beyond identification of presenting problems, these measures have the potential benefit of assessing treatment response and progress toward recovery through measurable outcomes. However, these measures are not designed to indicate the presence or absence of a specific diagnosis since they assess dimensions of symptomatology rather than fulfillment of diagnostic criteria [5, 6].

As far as child and adolescent mental health assessment is concerned, an additional debate is whether children provide reliable or valid clinical information during diagnostic interviews, even though researchers and clinicians generally agree that it is beneficial to hear a child's account of his or her presenting problems. In fact, latest research has documented that children can contribute relevant, clinically useful, valid information during clinical psychological assessments [7].

In the context of these challenges and limitations, we developed a fully structured interview in the Greek language, the Computer-Assisted Structured Diagnostic Interview (CASDI), which encompasses categorical and dimensional approaches and automatically navigates the interviewer, through computerized decision trees (algorithms), in a specified probing system including: (a) screening questions regarding severity of most common symptoms during the last 12 months, (b) follow-up questions measuring impairment due to reported common symptoms of at least mild severity and, when appropriate, (c) symptom questions regarding severity and duration in the diagnostic criteria of child and adolescent mental health disorders. A self-response interview (CASDI 8-18) for children and adolescents aged 8-18 years and a proxy interview (CASDI 6-18) for caregivers of youths aged 6-18 years are available. The duration of the interview with each informant (child or caregiver) can vary from 30 minutes (subject with no psychiatric diagnosis) to 180 minutes (subject with three comorbid diagnoses).

After an initial five-minute phase of introducing interviewer to the informant and listening to the informant's uninterrupted speech about reason of referral, the interview proceeds to 15 open-ended questions about the history of the current illness, with a focus on the "why now?" of the presentation and precipitating events, psychiatric history of the child, past medical history, family history, developmental and social history. Beyond valuable qualitative information that is yielded in the above phases of the interview, this time builds the alliance and allows the interviewer to understand much of the mental status of the child. Also, 12 questions regarding child's functional impairment elicit a response from the informant in a five-point rating scale of impairment level (*None-Slight-Mild-Moderate-Severe*). Additionally, in the proxy interview, a total of 21 questions assessing symptoms of specific learning disorders is also included. This section is expected to be completed in 10-15 minutes.

A total of 343 screening questions, follow-up impairment questions and severity/duration symptom questions for each of the DSM-5 categories of mental disorders-experienced by children and adolescents and reported by themselves or their caregivers-follow next. This set of questions constitutes the core diagnostic section of the CASDI. All questions intend to elicit a response from the informant in a five-point rating scale of symptom severity or impairment levels (*None-Slight-Mild-Moderate-Severe*), with the exception of responses to questions measuring symptom duration that are coded categorically. Information about diagnostic criteria that are observed rather than elicited, as in the case of disorganized speech, is categorically coded based on interviewer's responses (*Yes-No*). Additionally, the interviewer reports (*Yes-No-Unsure*) if any symptoms are attributable to another medical condition or to the physiological effects of

a substance/medication. Diagnostic categories and specific diagnoses reviewed through the CASDI questions are presented in Table **1** with reference to DSM-5 and respective ICD-10 codes. In case that criteria for the abovementioned diagnoses are not fully met, the CASDI prompts the interviewer to consider alternative diagnoses, mainly either unspecified/provisional disorders that need to be excluded or reassessed in a later time or diagnoses that require more systematic assessment, such as individualized, standardized intelligence testing or laboratory tests. These alternative diagnoses are presented in Table **2**.

The interview with the child or the caregiver ended with a two-minute set of follow-up open-ended questions asking whether the CASDI questions addressed informant's major concerns, if there is anything important the CASDI missed or anything that the interviewer should know about to better understand what the informant is going through.

The last section of the CASDI includes a set of questions for interviewer-rating only to be made after the completion of interviewing the child or the caregiver. Findings from the mental status examination regarding child's appearance, behavior, speech, emotion, thought process, thought content, cognition and intellectual resources, and judgement and insight are categorically (*Yes-No*) coded here. Last, the interviewer is asked to mark, if appropriate, the presence of any conditions and problems from a selected list provided by the DSM-5 [1]. These conditions include mainly psychosocial and environmental problems that may be a focus of clinical attention or that may otherwise affect the diagnosis, course, prognosis, or treatment of a child's mental disorder. Coding these conditions and problems aims to draw attention to additional issues that are encountered in clinical practice and it is useful to be documented by clinicians.

Separate scores and diagnoses by child and parental reports are generated. The CASDI automatically informs interviewer during online completion about the mental disorders (coded according to ICD-10) for which the DSM-5 diagnostic criteria are fulfilled, based on children's and parents' reports. If a diagnosis is reported as being present by either the child or the parent, then it is counted as being present for the purpose of making a joint diagnosis.

The present study aimed to assess concurrent validity of the CASDI, using as a gold standard the clinical diagnoses formulated using the DSM-5 diagnostic criteria and based on the DSM-5 Pediatric Diagnostic Interview [8].

METHODS

Participants and Procedure

This study was conducted in 2016. The sampling was performed to take into account distribution of the target population by age. The target population was children and adolescents aged 8 to18. A sample size of 200 subjects was considered necessary to detect at least one case of diagnostic categories that are relatively rare (prevalence below 1%) in community samples. A recruitment rate of approximately 70% was expected, so the initial sample size was set at 285 children and adolescents. Children and their parents were recruited from municipal extracurricular educational and athletic activities facilities in Athens, Greece. Inclusion criteria were adequate knowledge of the Greek language. Written informed consent from parents and oral assent from children and adolescents were obtained.

For each pair of child-parent, the child and one parent were interviewed separately by an interviewer using the CASDI and by a second blind interviewer using the DSM-5 Pediatric Diagnostic Interview one week after the CASDI administration. A team of four interviewers with varied experience in clinical interviews with children and adolescents carried out the project. Most interviews (84.88%) where completed in one session.

The average duration of the CASDI was 90 minutes, varying from 30 minutes (child with no psychiatric diagnosis) to 180 minutes (subject with Neurodevelopmental Disorder and Trauma- and Stressor-Related Disorder diagnoses). Most interviews (80%) where completed in one session. Separate and joint diagnoses by child and parental report were generated. For the purpose of the present analysis, joint diagnoses were used.

Data Analysis

Analyses were conducted concerning full data without missing values. The concurrent validity was studied for 12-month diagnoses in terms of DSM-5 diagnostic categories. Validity indicators and the formulas by which they were calculated were as follows (Table **3**):

Sensitivity

Probability that a CASDI result will be positive when the DSM-5 Pediatric Interview diagnosis is present.

$$Sensitivity = \frac{a}{a+b}$$

Specificity

Probability that a CASDI result will be negative when the DSM-5 Pediatric Interview diagnosis is not present.

$$Specificity = \frac{d}{c+d}$$

Positive Likelihood Ratio

Ratio between the probability of a positive CASDI result given the presence of the DSM-5 Pediatric Interview diagnosis and the probability of a positive CASDI result given the absence of the DSM-5 Pediatric Interview diagnosis.

$$Positive\ likelihood\ ratio = \frac{Sensitivity}{100 - Specificity}$$

Negative Likelihood Ratio

Ratio between the probability of a negative CASDI result given the *presence* of the DSM-5 Pediatric Interview diagnosis and the probability of a negative CASDI result given the *absence* of the DSM-5 Pediatric Interview diagnosis.

$$Positive\ likelihood\ ratio = \frac{100 - Sensitivity}{Specificity}$$

Positive Predictive Value

Probability that the DSM-5 Pediatric Interview diagnosis is present when the CASDI result is positive.

$$Positive\ predictive\ value = \frac{a}{a+c}$$

Negative Predictive Value

Probability that the DSM-5 Pediatric Interview diagnosis is not present when the CASDI result is negative.

$$Negative\ predictive\ value = \frac{d}{b+d}$$

Sensitivity, specificity, positive and negative predictive value were expressed as percentages for ease of interpretation. Their confidence intervals were "exact" Clopper-Pearson confidence intervals. Confidence intervals for the likelihood ratios were calculated using the "Log method" [9]. Also, the Cohen's unweighted Kappa coefficient [10] was calculated to allow comparisons with other studies. All responses from the diagnostic section of the CASDI were automatically coded and analyzed as numerical data using SPSS statistical software (version 17.0).

RESULTS

A total of 258 (*i.e.* 90.53% recruitment rate) children and adolescents (46.51% boys) aged 8-18 years (Mean±SD: 12.66±2.73) and their parents completed the CASDI. Close to half the sample had an intermediate level of family affluence (45.35%), while 36.43% had low level and 18.22% had high level of family affluence.

The CASDI generated in average 1.5 diagnoses per participating child, while the member of the team (an experienced child and adolescent psychiatrist) who conducted DSM-5 Pediatric Diagnostic Interview formulated 1.2 diagnoses per subject.

The validity indicators of the CASDI in diagnosing specific 12-month DSM-5 diagnostic categories are shown in Table **3**. The CASDI had sensitivity above 70% for Neurodevelopmental Disorders, Schizophrenia Spectrum and Other Psychotic Disorders, Depressive Disorders, Anxiety Disorders, Obsessive-Compulsive and Related Disorders, Trauma-

and Stressor-Related Disorders, Somatic Symptom and Related Disorders, Feeding and Eating Disorders, Elimination Disorders, Sleep-Wake Disorders, Gender Dysphoria, Disruptive, Impulse-Control, and Conduct Disorders, Substance-Related and Addictive Disorders and below 50% for Bipolar and Related Disorders and Dissociative Disorders.

DISCUSSION

The CASDI was well accepted by both children and parents and there were no refusals to participate. More diagnoses per patient were formulated according to the DSM-5 Pediatric Interview than the CASDI, which is in agreement with the literature on fully structured diagnostic interviews [11].

In consistency with previous research [12 - 18], sensitivity of the CASDI was high (above 70%) for the great majority of the diagnostic categories. The low sensitivity rates (below 50%) of bipolar and related disorders have been also reported in other studies [16 - 18]. The lack of mechanisms to verify the veracity of the information regarding manic symptoms and the need of clinical judgment have been suggested as possible reasons for low sensitivity in diagnosing bipolar disorders through structured interviews [17]. Moreover, the CASDI showed low sensitivity in diagnosing dissociative disorders. The nature of dissociative symptoms and the limited capability of children and parents to provide this type of information based on Likert scale responses to structured questions may explain this low sensitivity rate.

It should be noted here that the CASDI required impairment of at least mild severity in order to diagnose a specific mental health disorder in children who attained symptom thresholds for this specific disorder. Although this requirement may decrease diagnostic thresholds, there is some evidence that a requirement of severe impairment criteria miss about half of the clinically referred cases of children who eventually remain undiagnosed and possibly untreated [19].

Standardization of data collection, widening and deepening the investigation field of the interviewer, standardization of the communication between different professionals, and reducing clinician bias are some of the advantages found in the CASDI as well as previously reported fully structured diagnostic interviews. Moreover, the additive value of the CASDI compared with other structured interviews is the integration of dimensional model of mental illness into the long-standing categorical model of psychiatric diagnostic interviews. By quantifying and personalizing the diagnostic criteria for a particular child and his or her caregiver according to their own subjective experience of core symptoms and the clinical judgment, when needed, and by employing computerized decision trees (algorithms), the CASDI seem to offer a convenient, easy to use and developmentally acceptable diagnostic procedure yielding a valid diagnosis.

Table 1. DSM-5 diagnostic categories and diagnoses reviewed in the CASDI.

Diagnostic Category	Screening Questions	Follow-up Questions	Symptom Questions	Diagnosis	DSM-5 Code	ICD-10 Code
Neurodevelopmental Disorders	2	2	17	Autism Spectrum Disorder	299.00	F84.0
		1	18	Attention-Deficit/Hyperactivity Disorder, presentation:		
				Combined	314.01	F90.2
				Predominantly inattentive	314.00	F90.0
				Predominantly hyperactive/impulsive	314.01	F90.1
Schizophrenia Spectrum and Other Psychotic Disorders	4	2	5	Schizophrenia	295.90	F20.9
Bipolar and Related Disorders	1	4	13	Bipolar I Disorder	296.x	F31.x
			13	Bipolar II Disorder	296.89	F31.81
Depressive Disorders	3	2	10	Major Depressive Disorder	296.x	F3x.xx
	1	2	8	Disruptive Mood Dysregulation Disorder	296.99	F34.8
Anxiety Disorders	7	1	3	Specific Phobia	300.29	F40.2xx
			16	Panic Disorder	300.01	F41.0
			6	Generalized Anxiety Disorder	300.02	F41.1
Obsessive-Compulsive and Related Disorders	2	1	4	Obsessive-Compulsive Disorder	300.03	F42
			4	Body-Focused Repetitive Behaviors		
				Trichotillomania (Hair-Pulling Disorder)	312.39	F63.3
				Excoriation (Skin-Picking) Disorder	698.4	L98.1

(Table 1) contd.....

Diagnostic Category	Screening Questions	Follow-up Questions	Symptom Questions	Diagnosis	DSM-5 Code	ICD-10 Code
Trauma- and Stressor-Related Disorders	3	2	20	Posttraumatic Stress Disorder	309.81	F43.10
				Acute Stress Disorder	308.3	F43.0
			5	Reactive Attachment Disorder	318.89	F94.1
Dissociative Disorders	2	1	2	Dissociative Amnesia	300.12	F44.0
			3	Depersonalization/Derealization Disorder	300.6	F48.1
Somatic Symptom and Related Disorders	2	2	5	Somatic Symptom Disorder	300.82	F45.1
			4	Illness Anxiety Disorder	300.7	F45.21
Feeding and Eating Disorders	2	1	7	Anorexia Nervosa	307.1	F50.0x
			5	Avoidant/Restrictive Food Intake Disorder	307.59	F50.8
Elimination Disorders	1		2	Enuresis	307.6	F98.0
			2	Encopresis	307.7	F98.1
Sleep-Wake Disorders	4		3	Insomnia Disorder	307.42	F51.01
			4	Hypersomnolence Disorder	307.44	F51.11
			5	Restless Legs Syndrome	333.94	G25.81
Gender Dysphoria	1	2	9	Gender Dysphoria in Children	302.6	F64.2
			6	Gender Dysphoria in Adolescents	302.85	F64.1
Disruptive, Impulse-Control, and Conduct Disorders	2	1	9	Oppositional Defiant Disorder	313.81	F91.3
			10	Intermittent Explosive Disorder	312.34	F63.81
			17	Conduct Disorder	312.8x	F91.x
Substance-Related and Addictive Disorders	4	1	14	Alcohol Use Disorder	305.00, 303.90	F10.x0
			14	Cannabis Use Disorder	305.20, 304.30	F12.x0
			14	Tobacco Use Disorder	305.1	Z72.0. F17.200

Table 2. Alternative diagnoses considered in the CASDI.

Diagnostic Category	Diagnosis	DSM-5 Code	ICD-10 Code
Neurodevelopmental Disorders	Intellectual Disability (Intellectual Developmental Disorder), current severity:		
	Mild	317	F70
	Moderate	318.0	F71
	Severe	318.1	F72
	Profound	318.2	F73
	Global Developmental Delay	315.8	F88
	Unspecified Intellectual Disability (Intellectual Developmental Disorder)	319	F79
	Speech Sound Disorder	315.39	F80.0
	Childhood-Onset Fluency Disorder (Stuttering)	315.35	F80.81
	Social (Pragmatic) Communication Disorder	315.39	F80.89
	Unspecified Communication Disorder	307.9	F80.9
	Specific Learning Disorder		
	With impairment in reading	315.00	F81.0
	With impairment in written expression	315.2	F81.81
	With impairment in mathematics	315.1	F81.2
	Other Specified Attention-Deficit/Hyperactive Disorder	314.01	F90.8
	Unspecified Attention-Deficit/Hyperactivity Disorder	314.01	F90.9
	Developmental Coordination Disorder	315.4	F82
	Stereotypic Movement Disorder	307.3	F98.4
	Tic Disorders		
	Tourette's disorder	307.23	F95.2
	Persistent (Chronic) Motor or Vocal Tic Disorder	307.22	F95.1
	Provisional Tic Disorder	307.21	F95.0
	Other Specified Tic Disorder	307.20	F95.8
	Unspecified Tic Disorder	307.20	F95.9

(Table 2) contd.....

Diagnostic Category	Diagnosis	DSM-5 Code	ICD-10 Code
Schizophrenia Spectrum and Other Psychotic Disorders	Delusional Disorder	297.1	F22
	Brief Psychotic Disorder	298.8	F23
	Schizophreniform Disorder	295.40	F20.81
	Schizoaffective Disorder		
	Bipolar type	295.70	F25.0
	Depressive type	295.70	F25.1
	Unspecified Schizophrenia Spectrum and Other Psychotic Disorder	298.9	F29
	Other Specified Schizophrenia Spectrum and Other Psychotic Disorder	298.8	F28
Bipolar and Related Disorders	Cyclothymic Disorder	301.13	F34.0
	Unspecified Bipolar and Related Disorder	296.80	F31.9
	Other Specified Bipolar and Related Disorder	298.8	F31.89
Depressive Disorders	Persistent Depressive Disorder (Dysthymia)	300.4	F34.1
	Premenstrual Dysphoric Disorder	625.4	N94.3
	Unspecified Depressive Disorder	311	F32.9
	Other Specified Depressive Disorder	311	F32.8
Anxiety Disorders	Selective Mutism	313.23	F94.0
	Unspecified Anxiety Disorder	300.00	F41.9
	Other Specified Anxiety Disorder	300.09	F41.8
Obsessive-Compulsive and Related Disorders	Body Dysmorphic Disorder	300.7	F45.22
	Hoarding Disorder	300.3	F42
	Unspecified Obsessive-Compulsive and Related Disorder	300.3	F42
Trauma- and Stressor-Related Disorders	Adjustment Disorder	309.x	F43.2x
	Unspecified Trauma- and Stressor-Related Disorder	309.9	F43.9
	Other Specified Trauma- and Stressor-Related Disorder	309.89	F43.8
	Disinhibited Social Engagement Disorder	313.89	F94.2
Dissociative Disorders	Dissociative Identity Disorder	300.14	F44.81
	Unspecified Dissociative Disorder	300.15	F44.9
	Other Specified Dissociative Disorder	300.15	F44.89
Somatic Symptom and Related Disorders	Conversion Disorder (Functional Neurological Symptom Disorder)	300.11	F44.x
	Psychological Factors Affecting Other Medical Conditions	316	F54
	Factitious Disorder Imposed on Self	300.19	F68.10
	Factitious Disorder Imposed on Another	300.19	F68.10
	Unspecified Somatic Symptom and Related Disorder	300.82	F45.9
	Other Specified Somatic Symptom and Related Disorder	300.89	F45.8
Feeding and Eating Disorders	Bulimia Nervosa	307.51	F50.2
	Pica	307.52	F98.3
	Rumination Disorder	307.53	F98.21
	Unspecified Feeding or Eating Disorder	307.50	F50.9
	Other Specified Feeding or Eating Disorder	307.59	F50.8
Elimination Disorders	Unspecified Elimination Disorder with Urinary Symptoms	788.30	R32
	Other Specified Elimination Disorder with Urinary Symptoms	788.39	N39.498
	Unspecified Elimination Disorder with Fecal Symptoms	787.60	R15.9
	Other Specified Elimination Disorder with Fecal Symptoms	787.60	R15.9

(Table 2) contd.....

Diagnostic Category	Diagnosis	DSM-5 Code	ICD-10 Code
Sleep-Wake Disorders	Circadian Rhythm Sleep-Wake Disorder	307.45	G47.2x
	Unspecified Insomnia Disorder	780.52	G47.00
	Other Specified Insomnia Disorder	780.52	G47.09
	Unspecified Hypersomnolence Disorder	780.54	G47.10
	Narcolepsy	347.xx	G47.4xx
	Breathing-Related Sleep-Wake Disorders		
	Obstructive Sleep Apnea Hypopnea	327.23	G47.33
	Central Sleep Apnea	327.21	G47.31
	Sleep-Related Hypoventilation	327.2x	G47.3x
	Parasomnias		
	Rapid Eye Movement Sleep Arousal Disorders,		
	Sleepwalking type	307.46	F51.3
	Sleep terror type	307.46	F51.4
	Nightmare Disorder	307.47	F51.5
	Rapid Eye Movement Sleep Behavior Disorder	327.42	G47.52
Gender Dysphoria	Unspecified Gender Dysphoria	302.6	F64.9
	Other Specified Gender Dysphoria	302.6	F64.8
Disruptive, Impulse-Control, and Conduct Disorders	Pyromania	312.33	F63.1
	Kleptomania	312.32	F63.2
	Unspecified Disruptive, Impulse-Control, and Conduct Disorder	312.9	F91.9
	Other Specified Disruptive, Impulse-Control, and Conduct Disorder	312.89	F91.8
Substance-Related and Addictive Disorders	Unspecified Alcohol-Related Disorder	291.9	F10.99
	Unspecified Cannabis-Related Disorder	292.9	F12.99
	Unspecified Tobacco-Related Disorder	292.9	F17.209

Table 3. Validity indicators of diagnosing DSM-5 diagnostic categories using the CASDI.

CASDI	DSM-5 Pediatric Interview		Kappa (SE)	Sensitivity 95%CI (%)	Specificity 95%CI (%)	Positive Likelihood Ratio 95%CI	Negative Likelihood Ratio 95%CI	Positive Predictive Value 95%CI (%)	Negative Predictive Value 95%CI (%)
	-	+							
-	a	b							
+	c	d							
Neurodevelopmental Disorders	260	2	.88 (.053)	90.91 70.84-98.88	98.86 96.70-99.76	79.70 25.67-247.42	.09 .02-.34	86.96 66.41-97.22	99.24 97.27-99.91
	3	20							
Schizophrenia Spectrum and Other Psychotic Disorders	282	0	.80 (.197)	100.00 15.81-100.00	99.65 98.05-99.99	283.00 40.00-2002.16	.00	66.67 9.43-99.16	100.00 98.70-100.00
	1	2							
Bipolar and Related Disorders	276	2	.19 (.170)	33.33 .84-90.57	97.87 95.43-99.22	15.67 2.63-93.41	.68 .31-1.52	14.29 0.36-57.87	99.28 97.43-99.91
	6	1							
Depressive Disorders	264	2	.67 (.098)	84.62 54.55-98.08	97.06 94.29-98.72	28.77 13.99-59.16	.16 .04-.57	57.89 33.50-79.75	99.25 97.31-99.91
	8	11							
Anxiety Disorders	265	4	.73 (.090)	75.00 47.62-92.73	98.51 96.24-99.59	50.44 18.32-138.90	.25 .11-.59	75.00 47.62-92.73	98.51 96.24-99.59
	4	12							
Obsessive-Compulsive and Related Disorders	277	0	.54 (.182)	100.00 29.24-100.00	98.23 95.91-99.42	56.40 23.66-134.45	.00	37.50 8.52-75.51	100.00 98.68-100.00
	5	3							
Trauma- and Stressor-Related Disorders	277	1	.76 (.132)	83.33 35.88-99.58	99.28 97.43-99.91	116.25 27.92-484.11	.17 .03-1.00	71.43 29.04-96.33	99.64 98.01-99.99
	2	5							
Dissociative Disorders	278	2	.24 (.204)	33.33 .84-90.57	98.58 96.41-99.61	23.50 3.61-152.92	.68 .30-1.51	20.00 .51-71.64	99.29 97.44-99.91
	4	1							
Somatic Symptom and Related Disorders	275	1	.45 (.173)	75.00 19.41-99.37	97.86 95.41-99.21	35.12 13.28-92.94	.26 .05-1.39	33.33 7.49-70.07	99.64 98.00-99.99
	6	3							

(Table 5) contd.....

CASDI	DSM-5 Pediatric Interview		Kappa (SE)	Sensitivity 95%CI (%)	Specificity 95%CI (%)	Positive Likelihood Ratio 95%CI	Negative Likelihood Ratio 95%CI	Positive Predictive Value 95%CI (%)	Negative Predictive Value 95%CI (%)
	-	+							
-	*a*	*b*							
+	*c*	*d*							
Feeding and Eating Disorders	281	0	.86 (.143)	100.00 29.24-100.00	99.65 98.04-99.99	282.00 39.86-1995.06	.00	75.00 19.41-99.37	100.00 98.70-100.00
	1	3							
Elimination Disorders	283	0	1.00 (.00)	100.00 15.81-100.00	100.00 98.70-100.00		.00	100.00 15.81-100.00	100.00 98.70-100.00
	0	2							
Sleep-Wake Disorders	273	2	.66 (.131)	75.00 34.91-96.81	98.56 96.34-99.61	51.94 18.14-148.71	.25 .08-.84	60.00 26.24-87.84	99.27 97.40-99.91
	4	6							
Gender Dysphoria	284	0	1.00 (.00)	100.00 2.50-100.00	100.00 98.71-100.00		.00	100.00 2.50-100.00	100.00 98.71-100.00
	0	1							
Disruptive, Impulse-Control, and Conduct Disorders	266	3	.87 (.062)	83.33 58.58-96.42	99.63 97.93-99.99	222.50 31.12-1591.02	.17 .06-.47	93.75 69.77-99.84	98.88 96.78-99.77
	1	15							
Substance-Related and Addictive Disorders	280	0	.75 (.173)	100.00 29.24-100.00	99.29 97.46-99.91	141.00 35.44-561.03	.00	60.00 14.66-94.73	100.00 98.69-100.00
	2	3							

95% CI, 95% Confidence Intervals.

However, the rigidity of the CASDI rules and the inflexibility of the diagnostic algorithms hamper the detection of symptom hierarchical importance that can only be detected in unstructured interviews that are mostly based on clinical judgement. Another possible limitation is that the interviewer is obliged to rely on the respondent's assessment of whether a symptom is present or not, and each respondent may be using a scale of symptom severity that is different from that employed in clinical practice. For instance, it has been shown that children tend to overestimate the occurrence of rare phenomena that lie outside the realm of normal experience, such as manic or psychotic symptoms [20]. The possible child and adolescent interviewees' difficulty of understanding some items, and the lack of mechanisms to exclude misunderstanding and intentional or unintentional denial of symptoms as well as to verify the accuracy of recall of symptoms are also some of the CASDI limitations that the joint interview of both children and parents attempt to address to some extent. Finally, the need for some knowledge or clinical judgment capacity to identify some mental symptoms does not permit the administration of the CASDI by totally lay interviewers, even after strong training in the interview administration.

Overall, the CASDI has high validity (above 70%) in diagnosing the great majority of child and adolescent mental health disorders in Greek population. However, we should be cautious when using it for bipolar disorders and dissociative disorders. The observed validity indicators suggest that the CASDI can potentially be used to accurately diagnose child and adolescent mental health disorders for research and clinical purposes. Its use in clinical samples and special populations, such as hospitalized or institutionalized children and adolescents, deserves further study.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONFLICT OF INTEREST

The author confirms that this article content has no conflict of interest.

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