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Relationships between hypotheses and diagnoses in psychological assessments of children and adolescents: an empirical study

Relações entre hipóteses e diagnósticos em avaliações psicológicas de crianças e adolescentes: um estudo empírico

Relaciones entre hipótesis y diagnósticos en evaluaciones psicológicas de niños y adolescentes: un estudio empírico

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This is a documentary, survey and correlational research, developed between the years 2013 to 2014 at the Psychological Assessment Center of the Federal University of Rio Grande do Sul (UFRGS), RS, Brazil, with the objective of examining the relationship between the initial diagnostic hypotheses and the diagnosis end of children and adolescents who underwent psychological evaluation. Psychological reports and the Child Behavior Checklist/6-18 (CBCL6/18) were used, and two independent judges codified the demands and conclusions described in the reports according to psychopathological categories described in the fifth edition of the diagnostic and statistical manual of mental disorders. The results showed that there is little agreement between the semi-structured (report) and standardized (Child Behavior Checklist/6-18) methods for the formulation of initial diagnostic hypotheses (Kappa≤0.253). There is also little agreement between the initial diagnostic hypotheses (Child Behavior Checklist/6-18) and the diagnostic conclusions (report) (Kappa≤0,250). There was greater agreement between the initial hypothesis (report) and diagnostic conclusion (report) when dealing with very specific problems, such as eating disorder (Kappa = 0.662) and sleep-wake (Kappa = 1,000). It is concluded that the methods used to raise complaints presented advantages and disadvantages, with relatively low or moderate associations between independent evaluation methods being expected.
Descriptors: Symptom assessment; Diagnosis; Child; Adolescent

Esta é uma pesquisa documental, de levantamento e correlacional, desenvolvida entre os anos de 2013 a 2014 no Centro de Avaliação Psicológica da Universidade Federal do Rio Grande do Sul (UFRGS), tendo como objetivo examinar a relação entre as hipóteses diagnósticas iniciais e o diagnóstico final de crianças e adolescentes que realizaram avaliação psicológica. Foram utilizados os laudos psicológicos e o Child Behavior Checklist/6-18 (CBCL6/18) e, dois juízes independentes codificaram as demandas e conclusões descritas nos laudos de acordo com categorias psicopatológicas descritas na quinta edição do manual diagnóstico e estatístico de transtornos mentais. Os resultados mostraram que há pouca concordância entre os métodos semiestruturado (laudo) e padronizado (Child Behavior Checklist/6-18) para a formulação de hipóteses diagnósticas iniciais (Kappa≤0,253). Há também pouca concordância entre as hipóteses diagnósticas iniciais (Child Behavior Checklist/6-18) e as conclusões diagnósticas (laudo) (Kappa≤0,250). Houve maior concordância entre hipótese inicial (laudo) e conclusão diagnóstica (laudo) quando se tratavam de problemas muito específicos, como o transtorno alimentar (Kappa=0,662) e do sono-Vigília (Kappa=1.000). Conclui-se que os métodos utilizados para o levantamento das queixas apresentaram vantagens e desvantagens, sendo esperadas associações relativamente baixas ou moderadas entre métodos independentes de avaliação.
Descritores: Avaliação de sintomas; Diagnóstico; Criança; Adolescente.

Esta es una investigación documental, de análisis y correlacional, desarrollada entre los años 2013 a 2014 en el Centro de Evaluación Psicológica de la Universidade Federal do Rio Grande do Sul (UFRGS), RS, Brasil, con el objetivo de examinar la relación entre las hipótesis diagnósticas iniciales y el diagnóstico final de niños y adolescentes que se sometieron a evaluación psicológica. Se utilizaron informes psicológicos y el Child Behavior Checklist/6-18 (CBCL6/18), y dos jueces independientes codificaron las demandas y conclusiones descritas en los informes según las categorías psicopatológicas descritas en la quinta edición del Manual diagnóstico y estadístico de trastornos mentales. Los resultados mostraron que hay poca concordancia entre los métodos semiestructurado (informe) y estandarizado (Child Behavior Checklist/6-18) para la formulación de hipótesis diagnósticas iniciales (Kappa≤0,253). También hay poca concordancia entre las hipótesis diagnósticas iniciales (Child Behavior Checklist/6-18) y las conclusiones diagnósticas (informe) (Kappa≤0,250). Hubo más concordancia entre la hipótesis inicial (informe) y la conclusión diagnóstica (informe) cuando se trataba de problemas muy específicos, como el trastorno de alimentación (Kappa=0,662) y de sueño-vigilia (Kappa=1.000). Se concluye que los métodos utilizados para el estudio de las quejas presentan ventajas y desventajas, y se esperan asociaciones relativamente bajas o moderadas entre los métodos independientes de evaluación.
Descriptores: Evaluación de sintomas; Diagnóstico; Niño; Adolescente

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INTRODUCTION

Psychodiagnosis is defined as a scientific investigation and clinical intervention procedure, limited in time, which uses techniques and/or tests with the purpose of assessing one or more psychological characteristics, aiming at a diagnosis (nosological or not)[1]. In general, eight procedures organized hierarchically in the psychodiagnostic diagnosis are fundamental: 1) determine the reasons for the assessment and collect data from the patient's personal history; 2) define the hypotheses and objectives of the assessment process; 3) structure an assessment plan; 4) administer the strategies and assessment tools; 5) correct or survey strategies and/or instruments; 6) integrate the collected data, relating to the hypotheses and objectives; 7) formulate the conclusions; and, 8) communicate the results through a return interview and a psychological report[2].

The demand delimitation stage is considered fundamental in psychodiagnosis, since it guides the formulation of the initial hypotheses and the planning of the assessment[3]. This question will guide the assessment and allow the construction of hypotheses to be verified during the process. The demand survey can be done through the use of standardized or non-standardized techniques. Screening and anamnesis interviews are the main non-standard demand-delimitation techniques. Tools for screening behavioral problems and mental disorders are examples of standardized techniques for surveying demand. The interpretation of results of these instruments is performed by comparing the frequency and intensity of the behaviors reported by patients or their guardians with data from normative samples[4].

Non-standard techniques are considered less objective and open to the emergence of unexpected content[5]. Their ability to capture more relevant information seems to be related to rapport skills and the interviewer's experience, as well as the psychologist's prior knowledge about human development and psychopathology. Standardized techniques, although more directive, have as a positive point the possibility of reminding/explaining to the interviewee behaviors that they may have overlooked. In addition, they provide the comparison with normative samples, which allow to infer how frequent or not the expression of a certain behavior or symptom is.

Based on the collection of information on demand, either through standardized instruments or non-standardized techniques, diagnostic hypotheses are formulated, which will be tested through an assessment plan[2]. The initial hypotheses may or may not coincide with the findings of the assessment, due to new data collected from other sources of information and according to the progress of the case.

However, the existence of an association between screening instruments for behavioral problems and mental disorders and non-standardized interviews, as well as between the initial demands and the final diagnosis, is theoretically advocated. The importance of using multiple assessment methods to comprehensively understand an individual's complexity is discussed[1].

Each method allows a partial or incomplete view of the approached phenomenon and the associations between the results obtained through different methods or multiple informants tend to be of low to moderate intensities. Studies that assess information with multiple informants, show some divergences between the perceptions of each party, showing the importance of considering multiple contexts in the assessment process[6,7].

The relationship between the different methods of investigating demand has a special peculiarity in the psychodiagnosis of children and adolescents, since the search for care is carried out by adults (school or guardians), who will also be the respondents of the instruments for collecting information. initial data (interviews and standardized instruments). In this sense, it is important to emphasize that the demands may vary according to the informant. Responses to a

screening instrument on behaviors and indicators of mental disorders can be influenced according to the quality of the relationship and the amount of time the respondent devotes to the child or adolescent. These variables can interfere in the way in which the subject is perceived and, consequently, in the responses about his behavior[6].

There are many variables involved in the process of delimiting demands that support the formulation of hypotheses and the construction of the assessment plan in a psychodiagnosis. Thus, the present study aims to examine the relationship between the initial diagnostic hypotheses and the final diagnosis of children and adolescents who underwent psychological assessment.

METHOD

This is a documentary, survey and correlational research, carried out based on 100 psychological records of children and adolescents who underwent psychological assessment between the years 2013 to 2014 at the Psychological assessment Center of the Universidade Federal do Rio Grande do Sul (UFRGS). All assessments had the complete Child Behavior Checklist/6-18 (CBCL/6-18)[8], filed with the medical records, as well as the psychological reports. Reports, according to Resolution 06/2019 of the Federal Council of Psychology[10]:

> *It is the result of a psychological assessment process, with the purpose of supporting decisions related to the context in which the demand arose. Presents technical and scientific information on psychological phenomena, considering the historical and social conditions of the person, group or institution served.*

This resolution stipulates that the report be structured in at least six sections, namely: 1) identification; 2) description of demand; 3) procedure; 4) analysis; 5) conclusion; and 6) references. To answer the objectives of this study, the information described in the description of demand and conclusion sections was analyzed. In the description of the demand section, there is a summary of the complaints collected with those responsible in the first two visits that make up the initial interviews (screening and anamnesis). In the conclusion section, descriptions of psychopathological symptoms or nosological diagnoses are made, the latter based on the DSM-IV-TR11 criteria[11].

In turn, the Child Behavior Checklist/6-18 (CBCL/6-18): it is an instrument answered by the guardians of children and adolescents between 6 and 18 years old and is part of the questionnaires of the ASEBA system (Achenbach System of Empirically Based Assessment)[8,12]. In the psychological assessment service at UFRGS, it is applied in the initial interview (screening).

The ASEBA questionnaires were adapted for more than 23 countries, in which confirmatory factor analyzes showed satisfactory adjustment results for the model of eight latent variables correlated with each other[13]. In Brazil, CBCL questionnaires underwent an analysis of their structure that obtained, in total, results of RMSEA (Root Mean Square Error of Approximation) = 0.023, CFI (Comparative Fix Index) = 0.903 and TLI (Tucker-Lewis Index) = 0.900. The factorial loads of the scales ranged from 0.51 for Anxiety/Depression to 0.65 for Aggressive Behavior. The factorial loads of the items ranged from 0.21 to 0.85. The results of the analyzes carried out indicated that the CBCL factorial model, with eight syndromic scales, can be used for the Brazilian child population[14].

The instrument consists of 138 items that investigate aspects related to social skills ('Activity', 'School' and 'Social' scales) and the behavioral problems of children and adolescents. The items of behavior problems are distributed in the CBCL in eight scales-syndromes that correspond to different behavior problems of the child[8].

These same items make up three other major scales: Internalizing Issues (Anxiety/Depression Syndromes Scales, Withdrawal/Depression, Somatic Complaints),

Externalizing Issues (Oppositional Behavior Scales and Aggressive Behavior) and Total Behavior (includes items from all syndromes). In addition, the 138 items can be classified into categories according to the DSM-IV15 criteria, resulting in six more scales. On all CBCL scales, the score related to the child or adolescent is classified as Clinical, Borderline or Non-Clinical, according to the normative sample of peers[8].

The data coding process was carried out by a group of evaluators composed of four psychologists (one with a master's degree and three with a complete doctorate) and three undergraduate students in Psychology from the 8th semester onwards. Initially, categories and operational definitions of each of them were constructed for coding the sections describing the demand and concluding the reports. The categories were based on DSM-5[16]: (A) Neurodevelopmental Issues; (B) Psychotic Issues; (C) Mood Issues; (D) Anxiety Issues; (E) Eating Issues; (F) Elimination Issues; (G) Sleep-Wake Issues; (H) Conduct, Impulse Control and Disruptive Issues; (I) Personality Issues and (J) Somatoform Issues. After the categories were built, training was carried out for the group of evaluators, followed by a pilot study, in which 10 reports were analyzed by seven evaluators independently.

The coding of the demand description section was performed as follows: each evaluator, when reading the text describing the reasons for the assessment , indicated the initial diagnostic hypotheses that could explain the complaints described. Thus, after reading, each evaluator recorded the absence (registering zero "0") or presence (registering a "1") for each of the 10 categories. For example, an evaluator should code “1” for Neurodevelopmental Issues and “0” for the other categories considering the following description: patient has difficulties at school, low grades, low reading and writing skills and restless behavior. This is because complaints could lead to the formulation of hypotheses such as Intellectual Disability, Attention Deficit/Hyperactivity Disorder (ADHD) or Specific Learning Disorder.

The *conclusion* section was coded in a similar way, however the codes were: zero “0” for when the category was not described in the conclusions; a “1” for when the nosological diagnosis was given for the indicated category; and two "2" for when psychopathological symptoms typical of the category were described, although a diagnostic conclusion has not been made. To give an example, the following illustrative description of a conclusion should be coded with “1” for Neurodevelopmental Issues, “2” for Somatoform Issues and “0” for the other categories: *the patient's symptoms are typical of an Attention Deficit Disorder/Hyperactivity... still, important complaints of headaches and stomach pain were observed, which tend to appear before the time to go to school.*

This study sought to answer some specific questions: 1) *What are the most common initial hypotheses and diagnostic conclusions in children and adolescents who have undergone psychological assessment?*; 1.1) *Are there differences between genders regarding frequency of initial hypotheses and diagnoses?*; 2) *Do the semi-structured and standardized methods of delimiting hypotheses correspond to each other?*; and 3) *Is there a correspondence between the initial diagnostic hypotheses, formulated using semi-structured and standardized methods, and the final diagnoses?*

For the classification of the socioeconomic class of the respondents, the classification used by the Brazilian Association of Research Companies of 2013[9] was used.

The categorization discrepancy between reports were discussed in groups and generated a new training, for which a brief written manual was created, which the evaluators consulted in case of doubt. After the pilot study, each of the other reports was always evaluated by two evaluators (judges) and the disagreements were resolved by a third independent judge.

The categories were also compared to the scales presented by CBCL/6-18[12] as follows: category (A) Neurodevelopmental Issues corresponded to the scales School, Attention Problems,

DSM-IV ADHD Problems and CBCL/6-18 Slow Cognitive Development. Category (B) Psychotic Issues corresponded to the CBCL/6-18 Thought Issues scale. The category (C) Mood Issues corresponded to the Internalizing Issues, Anxiety/Depression, Isolation and Depression and DSM-IV Affective Issues of CBCL / 6-18[12].

The category (D) Anxiety Issues corresponded to the Anxiety/Depression Scales, DSM-IV Anxiety Issues, Other OCD and Other PTSD of CBCL/6-18. The category (H) Conduct Issues, Impulse and Disruptive Control corresponded to the Oppositional Issues, Aggressive Issues, DSM-IV Scales of Oppositional Behavior and DSM-IV Conduct Issues of the CBCL/6-18. Category (I) Personality Issues corresponded to the Externalizing, Social and Social Issues scales of CBCL/6-18. The category (J) Somatoform Problems corresponded to the scale DSM-IV Somatic Issues of CBCL/6-18. The categories (E) Eating Problems, (F) Elimination Problems and (G) Sleep-wake Issues do not have corresponding symptoms in the CBCL, but there were cases with these complaints and/or diagnoses[12].

All analyzes were performed in the Statistical Package for Social Sciences (SPSS version 19.0). Descriptive statistics were used to analyze the frequencies in presentation of demands and conclusions of the psychodiagnostics in the researched group. Chi-square statistics were also used to verify gender differences at these frequencies. In order to assess concordance between a semi-structured method (information described in the report) and a standardized method (CBCL/6-18) for surveying demands in the psychodiagnosis of children and adolescents, the Kappa coefficient was used. The same type of statistical analysis was used to examine the third objective of this study, namely, the agreement of these methods with the conclusions (nosological diagnoses and psychopathological symptoms) presented in the psychological reports.

Kappa's analysis aimed to assess the dimension of agreement of results applied to the same subject/phenomenon by different instruments, which exceed the occurrence at random[17]. All the concordances between the variables in this study (CBCL/6-18 scales, categories of demands and categories of conclusions of the assessments) were calculated, but only the significant results ($p < 0.05$). The interpretation of the magnitude of the coefficients of agreement (Kappa) used in this study is agreed as <0 (poor), 0-0.20 (weak), 0.21-0.40 (reasonable), 0.41-0.60 (moderate), 0.61-0.80 (substantial), and ≥ 0.81 (almost complete)[18].

All participants in this research were in agreement with the use of the data obtained from their assessment, with the Informed Consent Form being presented in the initial interview and duly signed by the patients' guardians. This project is approved and duly registered on Plataforma Brasil by the Certificate of Presentation for Ethical Appreciation (CAAE) nº 06289912.9.0000.5334.

RESULTS

100 reports were evaluated, of which 70 were related to males. The reports used were from patients aged between 6 and 17 years (M = 10.52 and SD = 2.66), most of them attending Elementary School I (n = 80), residing in the city of Porto Alegre (n = 80) and has socioeconomic levels corresponding to C1 (n = 33), C2 (n = 23) and B1 (n = 21). CBCL respondents were mostly mothers (n = 88), with a mean age of 38.80 years (SD = 7.92) and with an educational level equivalent to complete high school degree (n = 30).

Frequency of initial hypotheses and final diagnoses of children and adolescents

The frequencies of demands collected in the first two visits and in the corresponding scales in CBCL/6-18 are shown in Table 1. The most frequent initial hypotheses formulated from the initial interviews were the categories *Neurodevelopmental Issues*, followed by *Personality Issues* and *Conduct, Impulse Control and Disruptive Issues*.

In the CBCL, the largest number of complaints was on the School scale, later on Internalizing Issues and Attention Issues. The only significant difference in frequency between genders in both collection methods was Neurodevelopmental Issues in the corresponding scales of CBCL/6-18, in the initial hypotheses, symptoms and clinical diagnoses, with p <0.05 in all analyzes. The frequencies of Neurodevelopmental Issues in both methods (CBCL and clinical) were higher in males.

Regarding the diagnostic conclusions found in the reports, the most frequent nosological diagnoses were *Neurodevelopmental Issues*, *Mood Issues* and *Anxiety Issues* (see Table 2). In the group of psychopathological symptoms, the most frequent were *Neurodevelopmental Issues* along with *Personality Issues*, *Anxiety Issues* and *Mood Issues*. When the differences in frequencies between genders were evaluated, there was no statistically significant result.

Table 1. Frequency of initial hypotheses based on a semi-structured method and through CBCL/6-18 * in the years 2013 and 2014, in Porto Alegre.

Categories	*f*	CBCL/6-18 Scale	*f*
Neurodevelopmentalissues	96	School	77
		Attention issues	72
		DSM-IV ADHD	57
		Slow cognitive development	43
Psychotic issues	0	Thought issues	50
Mood issues	8	Internalizing issues	74
		Anxiety/Depression	58
		Isolation and depression	52
		DSM-IV Affective issues	58
Anxiety Issues	10	Anxiety/Depression	58
		DSM-IV Anxiety	68
		Others OCD	40
		Others PTSD	63
Conduct, impulse control and disruptive issues	13	Opposition issues	33
		Aggressive issues	57
		DSM-IV Oppositional behavior	47
		DSM-IV Conduct	38
Personality Issues	28	Externalizing issues	64
		Social	43
		Social issues	62
Somatoform issues	0	DSM-IV Somatic issues	19
Eating issues	1	-	
Elimination issues	1	-	
Sleep-wake Issues	2	-	

Key: * $p < 0,05$. As the total sample was 100, frequencies correspond ot percentages.

Table 2. Prominent diagnoses and symptoms described in the conclusions of the reports in the years 2013 and 2014, in Porto Alegre.

Categories	Diagnosis (*f*)	Symptoms (*f*)
Neurodevelopmental issues	49	35
Psychotic issues	0	2
Mood issues	7	11
Anxiety issues	6	15
Conduct, impulse control and disruptive issues	2	3
Personality issues	1	35
Somatoform issues	0	0
Eating issues	0	0

Agreement between the semi-structured and standardized methods of formulating the initial hypotheses

The statistically significant concordances between the initial hypotheses considering the semi-structured (via anamnesis interview) and standardized (CBCL/6-18) classification methods, are reported in Table 3. In general, it is observed that concordances happened predominantly because of negative cases (the average of the positive predictive values - PPV - was 33%, while the average of the negative predictive values - NPV - was 83%). Higher concordances were found (at a reasonable level) in the Personality Issues category observed in the initial hypotheses and the Isolation and Depression scales, Opposing Issues, Affective and Conduct Issues of CBCL/6-18. There were statistically significant associations with low effect size between the Personality Problems categories of the initial hypotheses and the scales provided for in CBCL/6-18 (Externalizing Issues and Social Issues), with the exception of the Social Scale, of the social competence section, that did not show statistically significant associations.

Agreement between the semi-structured and standardized methods of formulating the initial hypotheses with the final diagnosis

No significant agreement was found between the Neurodevelopmental Issues category, as coded in the description section of the demand for the reports, and the corresponding scales of CBCL/6-18. However, the data showed that there is a disagreement that exceeds the expected chances of occurrence of this category with the CBCL/6-18 Somatic Complaints scale, not initially foreseen. There was no correspondence between the categories Sleep-Wake Issues and Eating Issues and the corresponding scales of CBCL/6-18, but statistically significant and weak results were found in these categories with the scales of Somatic Complaints and DSM-IV Somatic Issues of CBCL/6-18, respectively.

The classification of the Conduct, Impulse Control and Disruptive Issues category showed a weak level of agreement with the clinical classification obtained by CBCL/6-18 for two corresponding scales, namely: DSM-IV Conduct Issues and Aggressive Issues. CBCL/6-18 Thought Issues also obtained statistically significant and weak agreement with this category.

Table 3. Statistically significant agreement using the Kappa statistic between clinical classifications by CBCL/6-18 and the initial hypotheses formulated through semi-structured interviews in the years 2013 and 2014, in Porto Alegre.

CBCL/6-18		Interview		Predictive Values		Kappa
		Yes	No	Positivo	Negativo	
Personality issues						
Internalizing issues	Yes	25	49	34%	88%	0.141*
	No	3	23			
Externalizing issues	Yes	22	42	34%	86%	0.152*
	No	4	25			
Isolation and depression	Yes	21	31	40%	85%	0.253*
	No	7	41			
Social issues	Yes	22	40	35%	84%	0.168*
	No	6	32			
Oppositional issues	Yes	14	19	42%	79%	0.224*
	No	14	53			
DSM-IV Affective issues	Yes	23	35	40%	88%	0.253*
	No	5	37			
DSM-IV Conduct	Yes	17	21	45%	82%	0.284*
	No	11	51			
Neurodevelopmental issues						
Somatic complaints	Yes	22	3	88%	1%	-0.055*
	No	74	1			
Sleep-wake issues						
Somatic complaints	Yes	2	23	8%	100%	0.115*
	No	0	75			
Conduct, impulse control and disruptive issues						
Thought issues	Yes	10	40	20%	94%	0.140*
	No	3	47			
Aggressive issues	Yes	11	46	19%	95%	0.130*
	No	2	41			
DSM-IV Conduct issues	Yes	9	29	24%	94%	0.197*
	No	4	58			
Eating issues						
DSM-IV Somatic issues	Sim	1	18	5%	100%	0.083*
	Não	0	81			

Key: * $p < 0,0$

Agreement between the semi-structured and standardized methods of formulating the initial hypotheses with the final diagnosis

This analysis examined whether or not there is a correspondence between the initial hypotheses, formulated by means of a standardized procedure, and the final diagnoses resulting from a psychological assessment. The statistically significant concordances between the final diagnoses (coded from the conclusion of the reports section) and the clinical classifications made using the CBCL/6-18 scales (at the beginning of the assessment) are shown in Table 4. Again, there was a trend of agreement highly influenced by negative cases (PPV M = 27%; NPV M = 82%).

There was no prediction of agreement between the CBCL/6-18 scales and Elimination Issues and Sleep-Wake Issues. However, there were statistically significant results, of low magnitude, between Elimination Issues and the scales of the CBCL/6-18 of Somatic Complaints and DSM-IV Somatic Issues. Still, a level of disagreement was observed beyond coincidence between the category of Elimination Issues and School. The classifications of the Sleep-Wake Issues category showed a degree of statistically significant and weak agreement with Somatic Complaints by CBCL/6-18.

The diagnoses related to the Personality Issues category also showed unexpected, statistically significant and reasonable effect sizes agreement with the CBCL/6-18 scales of Somatic Complaints and DSM-IV Somatic Issues. The diagnosis of the Conduct, Impulse Control and Disruptive Issues category also showed agreement with the initial complaints established by CBCL/6-18 for the Oppositional Issues and DSM-IV Conduct Issues scales. Regarding the diagnoses of the Neurodevelopment Issues category, a statistically significant degree of disagreement was found, statistically significant, with the CBCL/6-18 DSM-IV Conduct Issues scale.

Table 4. Statistically significant agreement using the Kappa statistic between clinical classifications by CBCL/6-18 and the final diagnoses described in the reports in the years 2013 and 2014, in Porto Alegre.

CBCL/6-18		Diagnosis		Predictive Values		Kappa
		Yes	No	Positive	Negative	
Elimination issues						
School	Yes	0	77	0%	90%	-0.042*
	No	2	18			
Somatic complaints	Yes	2	23	8%	100%	0.115*
	No	0	75			
DSM-IV Somatic issues	Yes	2	17	11%	100%	0.160*
	No	0	81			
Sleep-wake issues						
Somatic complaints	Yes	2	23	8%	100%	0.115*
	No	0	75			
Personality issues						
Somatic complaints	Yes	14	11	56%	71%	0.233*
	No	22	53			
DSM-IV Somatic complaints	Yes	12	7	63%	70%	0.250*
	No	24	57			
Conduct, impulse control and disruptive issues						
Oppositional issues	Yes	4	29	12%	99%	0.135*
	No	1	66			
DSM-IV Conduct issues	Yes	4	34	11%	98%	0.107*
	No	1	61			
Neurodevelopmenta issues						
DSM-IV Conduct	Yes	28	10	74%	10%	-0.135*
	No	56	6			

Key: * $p < 0,05$.

Table 5 presents the results of the Kappa statistics when considering the semi-structured method of formulating initial hypotheses and the final diagnosis. The equivalence between the initial hypotheses and the final diagnosis derived from the analysis of the reports proved to be relevant. On average, PPV was 70% and NPV was 81%. The categories of Neurodevelopment Issues, Mood Issues, Anxiety Issues, Sleep-Wake Issues, Conduct, Impulse Control and Disruptive Issues and Personality Issues showed reasonable degrees of agreement between the initial hypotheses and the final diagnoses.

Unexpectedly, a degree of disagreement was observed beyond coincidence between the diagnosis of Neurodevelopment Issues and the initial hypotheses of Conduct, Impulse Control and Disruptive Issues. Also unexpectedly, a correspondence was observed between the diagnosis of Mood Issues and the initial hypothesis of Elimination Issues. The diagnosis of Anxiety Issues also corresponded with the initial hypothesis of Eating Issues. The diagnosis of Sleep-Wake Issues also showed agreement with the initial hypotheses of Anxiety Issues and Eating Issues.

Table 5. Significant agreement through the Kappa statistic between categories of demands collected in the initial hypotheses and the conclusions of the reports in the years 2013 and 2014, in Porto Alegre.

Initial Hypothesis		Diagnosis		Predictive values		Kappa
		Yes	No	Positive	Negative	
Neurodevelopmental issues						
Neurodevelopmental issues	Yes	83	13	86%	75%	0.252*
	No	1	3			
Conduct, impulse control and disruptive issues	Yes	8	5	62%	13%	-0.078*
	No	76	11			
Mood issues						
Mood issues	Yes	5	3	63%	86%	0.308*
	No	13	79			
Elimination issues	Yes	1	0	100%	83%	0.088*
	No	17	82			
Anxiety issues						
Anxiety issues	Yes	6	4	60%	83%	0.291*
	No	15	75			
Eating issues	Yes	1	0	100%	80%	0.073*
	No	20	79			
Sleep-wake issues						
Anxiety issues	Yes	2	8	20%	100%	0.310*
	No	0	90			
Eating issues	Yes	1	0	100%	99%	0.662*
	No	1	98			
Sleep-wake issues	Yes	2	0	100%	100%	1.000*
	No	0	98			
Conduct, impulse control and disruptive issues						
	Yes	3	10	23%	98%	0.281*
	No	2	85			
Personality issues						
	Yes	16	12	57%	72%	0.270*
	No	20	52			

Key: * $p < 0,05$.

DISCUSSION

Initial hypotheses and most common diagnostic conclusions in children and adolescents

Among the main complaints and hypotheses found at the beginning of the assessment process, the category of Neurodevelopmental Issues stood out, and in the CBCL/6-18, the School and Internalizing Issues scales.

These broad categories often involve symptoms such as learning disabilities and inattention. In fact, these results coincide with literature, which points to learning difficulties as one of the most frequent demands for psychological assessment for children and adolescents. The main complaints of children in psychological care in psychology school services involve school difficulties[19].

This complaint may be related to a diagnosis of emotional difficulties[20] or behavioral problems[21,22], but it can also be indicative of some global limitation, such as intellectual disability, or some specific learning disorder. Complaints of internalizing behaviors were also frequent in this study, which manifest as withdrawal, shyness, insecurity, fears[22] and may be associated with mental disorders such as depression and anxiety and learning difficulties.

The only result in relation to gender differences occurred in the CBCL/6-18 scales corresponding to the Neurodevelopmental Issues category, in the initial hypotheses, in the

psychopathological symptoms and diagnoses of the conclusions of the reports, with more frequent presentation in males. According to DSM-5[16], neurodevelopmental disorders present an increased frequency in males, varying in proportion between genders depending on the specific diagnosis.

The second category most observed in the demands for psychological assessment in the present study was that of Personality Issues. This category was considered whenever the complaints identified in the demand were related to the presentation of behaviors of shame, guilt and shyness, difficulties in socializing, aggressive behaviors between peers or unspecified ones, in addition to affective or emotional problems. This category generally encompassed emotional and behavioral problems that differed from challenging opposition, conduct, disruptive mood disorders, depressive, bipolar and anxious disorders. It is worth mentioning that it is not a suspected diagnosis of personality disorder, given the children's age group, but rather clinically significant symptoms in their emotional and behavioral experiences and expressions, which differ from specific behavioral and affective disorders. Studies have found that the second largest complaint of children seen in mental health services was emotional and behavioral problems[19,23].

Regarding the frequency of diagnoses or assessment results, there was also a higher frequency in diagnostic reports related to the categories of Neurodevelopmental Issues, Mood Issues and Anxiety Issues. Neurodevelopmental disorders are characterized by deficits in one or more domains of human development such as cognition, language, motor skills and socioemotional skills[16].

These deficits must be clinically significant to the point of generating school, social and family losses for children. Mood and anxiety disorders are highly prevalent in childhood and adolescence and are frequently associated. Both disorders usually start in childhood and their consequences persist throughout life if not treated, being risk factors for the manifestation of the same disorder or another mental disorder in adulthood[24].

In the psychopathological symptoms reported in the conclusions of the reports, the category Personality Issues had a higher occurrence than the diagnoses related to categories of mood issues and anxiety issues. Such occurrence denotes the relevant role of the emotional issues involved in cases seeking psychological assessment, despite the main initial demand being related to neurodevelopmental problems.

Agreement between the procedures for evaluating the initial hypotheses

The reasonable associations observed between the Personality Issues category in the initial hypotheses and the Isolation and Depression, Opposing Issues, Affective and Conduct Issues of the CBCL/6-18 apparently contradict the definition of this category, since it encompasses problems emotional and behavioral issues that differed from defiant, conductive, disruptive mood disorders, depressive, bipolar and anxious disorders.

However, such agreement may be associated with affective aspects underlying behavior problems identified by the CBCL scales. In this sense, a study points to the need to consider covariations related to psychopathological traits when evaluating associations between clinical-diagnostic approaches (such as analysis of reports) and empirical-quantitative approaches (such as the ASEBA battery instruments), and not only associations with target diagnoses[25]. In terms of the clinical use of CBCL/6-18 data, this means that the psychologist needs to be aware of CBCL items and scales that may be related to similar conclusions/diagnoses, but not just to the target diagnoses.

The lack of association between the Neurodevelopmental Issues category and the corresponding CBCL/6-18 scales may be related to the poor precision of the items in relation to hypotheses that suggest neurodevelopmental symptoms and disorders. The CBCL/6-18 scales that correspond to this category are: School, Attention Issues, DSM-IV ADHD Issues and Slow

Cognitive Development. Although they comprise items that describe problems characteristic of neurodevelopmental symptoms, they can be manifested by children and adolescents with a wide range of symptoms and underlying disorders.

The CBCL/6-18 scales have been shown to be useful to identify neurodevelopmental disorders such as ADHD[26], for example, but have less specificity to identify others, such as Autistic Spectrum Disorder[27]. Such variability in the identification of symptoms characteristic of common disorders in childhood and adolescence suggests the need for revisions of the scale in future editions, considering that it is one of the most used behavioral assessment scales in the world for this age group,

The weak correspondence between the Sleep-wake Issues and Eating Issues categories in the initial hypotheses of the reports with the scales DSM-IV Somatic Complaints and Somatic Issues of CBCL/6-18, respectively, are likely to be related to the items related to the presence of nightmares on the Somatic Complaints scale and the items on stomach pain and nausea on the CBCL/6-18 DSM-IV Somatic Issues Scale. It is important to remember that somatic symptoms are sometimes related to anxiety symptoms, a possible component associated with sleep-wake problems and eating problems.

Regarding the agreement between the initial hypotheses of the different assessment procedures, the results showed that the initial hypotheses formulated through semi-structured interviews and those determined through standardized procedures, in this case, the CBCL/6-18 presented a low level of correspondence (as, for example, in the relationship between the category of Conduct, Impulse Control and Disruptive Issues and the DSM-IV scales of Conduct Issues and Aggressive Issues of CBCL). Thus, depending on the procedure adopted, the professional will tend to make different initial hypotheses. It is noteworthy that the standardized procedure used in this study is an assessment by the report of the informant (responsible). It is known that the correspondence between assessments based on reports from different informants is usually low[28], as well as the correspondence between the report (self or hetero) and performance[29].

The highest concordances obtained between the two methods of collecting information for the initial hypotheses were those related to the Personality Issues category, which comprised emotional and behavioral problems. This fact may be related to the scope of CBCL/6-18, aimed at identifying behavioral problems and with a wide list of items describing affective and/or behavioral symptoms. In addition, emotional and behavioral problems are common in several clinical conditions, including when they are learning or cognitive problems. For example, it is common for children with Specific Learning Disorder or ADHD to experience suffering both because of their results in school assessments and because of other people's complaints about their performance or behavior.

Regarding the methods used to raise complaints, both have advantages and disadvantages. Semi-structured interviews make it possible to collect relevant information from the subject's life, although they are often limited by the bias of the informant's memory, as well as by the amount of information considered. In addition, there may be ambiguities or misrepresentations when interpreting the information provided.

On the other hand, hetero-report instruments, such as the CBCL, have the advantage of greater direction in the collection of information, with the checking of target behaviors, including symptoms that may or may not have been experienced, increasing the safety of the evaluator in the comprehensive mapping and exclusion of diagnostic hypotheses not confirmed by the informant. Despite this, they are also limited by the respondents' motivation and memory, as well as their ability to make accurate judgments. Thus, both methods have potential and limits.

Given these differences, relatively low or moderate associations between independent assessment methods are expected, even when assessing similar constructs. However, given the

complexity of human behavior, each assessment method can identify useful data that is not available from other sources1. These findings show the importance of using different sources of information and the concept of psychological assessment. According to the current definitions of the Federal Council of Psychology[10], psychological assessment must use fundamental and complementary sources of information, aiming at a thorough investigation of the complaint. Such a process must be carried out based on data collection, study and interpretation of psychological phenomena and processes.

Agreement between methods for assessing initial hypotheses with diagnoses and conclusions

The low magnitude correspondences between the CBCL/6-18 Somatic Complaints and DSM-IV Somatic Issues scales with the Elimination Issues conclusions are possibly due to items related to constipation and pain from the standardized instrument. Likewise, the weak correspondences between the Somatic Complaints scale by CBCL/6-18 and the findings of Sleep-Wake Issues in the reports are likely to be associated with the item on CBCL nightmares. In other words, the low agreement can possibly be explained by the fact that the two methods use and give importance to different items to assess these categories of problems.

Unexpected matches of reasonable effect size between the CBCL/6-18 scales of Somatic Complaints and DSM-IV Somatic Issues with the diagnosis of Personality Issues in the reports are possibly associated with factors related to affective symptoms that present physiological manifestations (such as nausea, headaches, stomach pains, and others). The low magnitude agreement between the initial complaints established by CBCL/6-18 for the Oppositional Issues and DSM-IV Scales of Conduct scales and the diagnoses and conclusions of Conduct, Impulse Control and Disruptive Issues, again demonstrates that associations between clinical-diagnostic conclusions and target diagnoses in empirical-quantitative approaches are very restricted[25]. The correspondences between the initial hypotheses of Eating Issues and Sleep-Wake Issues and diagnoses and conclusions of Anxiety Issues are likely to be related to physiological symptoms of anxiety.

Low correspondences were observed between the initial hypotheses formulated through CBCL/6-18 and the final diagnoses of the psychological assessment. On the other hand, a higher correspondence was found between the formulation of initial hypotheses, based on the clinical assessment of complaints and demands for psychodiagnosis, and the final diagnoses.

The best correspondences obtained (at reasonable levels) between the initial hypotheses and the final target diagnoses of the reports were Neurodevelopment Issues, Mood Issues, Anxiety Issues, Sleep-Wake Issues, Conduct, Impulse Control and Disruptive Issues and Personality Issues. Such information was collected and reported by the psychologist or professional who performed the assessment and, therefore, comes from the same source of information, which increases the chance of agreement. These results reinforce the phenomenon identified by the literature that the same respondent or the same condition or context has greater agreement with each other than with other respondents or with other conditions[30].

CONCLUSION

The search for empirically validated guidelines aims to promote a scientifically based professional practice and to offer services whose results have been tested and proven. Thus, the present research can contribute to the area by proposing to test models of information collection in psychodiagnosis and to verify the adequacy, potential and limits of these models in the diagnostic conclusions.

The most frequent initial hypotheses and diagnostic conclusions were those related to Neurodevelopmental Issues. This category was also the only one in which there was a difference in frequency between genders, with a predominance of cases in males.

The semi-structured and standardized methods of delimiting hypotheses corresponded in a low to reasonable degree among themselves. Likewise, the concordances between the initial diagnostic hypotheses, formulated using semi-structured and standardized methods and the final diagnoses occurred in a low to reasonable magnitude. Such results represent a problem observed in the multimethod approach - the most recommended for psychological assessments - in which the methods used hardly converge in moderate to high magnitude.

Such findings reinforce the importance of clinical judgment as the gold standard of psychological assessment - it is up to the psychologist to consider the hypotheses broadly, investigate the most likely ones and discard those that are not valid. So far, there is no other mechanism that can replace this process with the same security.

Recent research highlights the importance of seeking to relate the results of clinical-diagnostic and empirical-quantitative approaches in a broad way (considering the covariations of symptoms with different diagnoses and symptoms, and not just the target diagnoses). In this sense, one of the limitations of this study is the focus of analysis on target diagnoses.

Even so, the interpretation of the results allowed to expand the understanding about unexpected matches. Finally, another limitation of the study was due to the fact that the reports used in the study are mostly of patients with symptoms of neurodevelopmental disorders, with low frequency of some of the hypotheses and conclusions analyzed, which led in some analyzes to inflated results agreement due to the large number of negative cases.

It is recommended that future studies check the covariations between initial hypotheses, conclusions and diagnoses of clinical-diagnostic (semi-structured) and empirical-quantitative (standardized) approaches. Another way forward for future research is to seek to differentiate the contribution and relevance of each type of measure used in multimethod assessment protocols.

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Denise Balem Yates, **Mônia Aparecida da Silva**, **Daiane Silva de Souza**, **Renata Gruner** and **Sérgio Eduardo Silva de Oliveira** contributed to the conception, data collection and design of the method. **Denise Balem Yates, Mônia Aparecida da Silva**, **Kaena Garcia Henz**, **Daiane Silva de Souza**, **Renata Gruner** and **Sérgio Eduardo Silva de Oliveira** participated in the analysis, data interpretation, writing and review.

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