Childhood ADHD and Comorbidity: An Evaluation of the Diagnostic Suitability of Parent Rating Scales

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Introduction

The psychological study of Attention Deficit Hyperactivity Disorder (ADHD) has produced continually changing standards. Like any science, constant research redefines the existing pool of knowledge on the subject, and this effect is further complicated by the level of difficulty found in studying psychological disorders.

The *Diagnostic and Statistical Manual for Mental Disorders* (*DSM*) is a product of the American Psychological Association (APA) in collaboration with hundreds of distinguished psychological experts. According to its website, APA is the largest organization of psychologists in the United States, and it is accepted as the leading psychological authority by most clinicians. The most recent version of its manual, *DSM-5*, offers an updated version of traditional diagnostic guidelines since its publication of the 1994 *DSM-IV*. *DSM-5* states that it provides generalized information on symptoms and patterns in various psychological disorders, but it concedes that it's impossible for its criteria to "constitute comprehensive definitions of underlying disorders."

Sources in the discipline have reported widely varying rates of ADHD (Smith and Adams, 2006). Multiple experts have investigated this issue by looking into the implications of the diagnosis process and attempting to identify potential ways in which it could be further improved. However, the complications of mental disorders pose innumerable difficulties in effectively understanding and treating them. Subtypes of psychological disorders are defined as "mutually exclusive and jointly exhaustive phenomenological subgroupings within a diagnosis" (APA, 2013). ADHD subtypes have been greatly debated throughout recent decades and have

seen changes in name and an increase from two (Jensen et al, 1997) to three (Smith & Adams, 2006). Despite already being complex and obscure as singular units, psychological disorders like ADHD often exist in multiple combinations of co-occurrence, known as comorbidity. *DSM-5* defines comorbidity as "co-occurring mental, neurodevelopmental, medical, and physical conditions." The potential combinations for mental disorders are extensive, and comorbid disorders range in levels of severity and symptoms. Psychologists' understanding of comorbidity is limited by the often drastic differences in the reported definitions and prevalence rates for different mental disorders and comorbid conditions.

External scales have become a uniquely subjective and particularly vulnerable portion of the standard diagnostic procedures for ADHD. These are completed by patients, their parents, or their teachers, and they serve as a factor in a clinician's ultimate diagnostic decision. Rating scales give individuals the opportunity to report symptoms as they witness them in everyday interactions with patients, which helps evaluators better understand how symptoms appear outside of clinical settings.

It's known that comorbidity can drastically alter the symptoms exhibited by individuals with ADHD due to the presence of two unique disorders at once, and this can lead to potential behavioral differences observed by doctors during the diagnostic process (APA, 2013). If disorders comorbid with ADHD present symptoms less notable or insignificantly different from those produced by ADHD in its singular form, there is a chance that these would not be reported and could lead to a subsequent misdiagnosis. The importance of rating scales is further escalated in light of the cruciality of accurately recording noticeable symptoms.

Through this study, I will be analyzing the effectiveness of parent rating scales in appropriately addressing ADHD characteristics, such as comorbidities and subtypes as outlined

by the *DSM-5*. *DSM* is considered the main diagnostic authority within the psychological community, and its published definitions and symptoms of various mental disorders have become standard. Consequently, it is referenced in the vast majority of scholarly sources in this field. This report will rely on the same assumptions, since the *DSM* is a highly credible and cited source and provides the most comprehensive and informed account of mental disorders. As the focus of my investigative method, I will be analyzing versions of the Conners and the National Institute for Children's Health Quality (NICHQ) parent rating scales produced since the publication of the *DSM-5,* since this edition of the manual includes several crucial updates.

Rating scales, if they present unsatisfactory levels of accuracy, have the potential to inhibit the effectiveness of current diagnostic procedures. Several factors make ADHD misdiagnoses especially risky; the issue of psychological misdiagnosis raises concerns over subsequent errors in the treatments patients may receive. There is a chance of patients receiving incorrectly prescribed medicines or incomprehensive treatment for comorbid patients, whose conditions went undetected by current tools for diagnosing mental disorders. Individuals with ADHD are also much more likely to face negative developments, such as substance use disorders, later in their lives (APA, 2013). Assurance that diagnostic protocol is producing accurate results will be imperative in remedying over-allocation of prescriptions, and achieving this will undoubtedly entail reliable and specific rating scales.

Literature Review

Review of *DSM-5*

The *DSM-5* specifically states that its information should only be used as diagnostic guidelines, and that clinical interpretation and knowledge is crucial to appropriately determine a

diagnosis. The disorders it includes have been determined to meet established *DSM* criteria for a "mental disorder," which is defined as "a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior." *DSM-5* also defines ADHD as "a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by . . . [inattention] and/or . . . [hyperactivity and impulsivity]." *DSM-5* lists a number of symptoms typical of the disorder, each of which fall into one of two subtypes of ADHD, "Inattention" or "Hyperactivity and Impulsivity," and patients who receive a diagnosis for a particular subtype must clearly display a particular number of its symptoms.

DSM-5 Changes

Since the previous edition's publication, the *DSM-5* has made several modifications in response to current research conditions and limitations; for example, APA has improved its examples of ADHD manifestation at various ages. The adult ADHD symptom threshold was reduced from six to five prevalent symptoms in response to an improved understanding of the age variance among ADHD patients. Another change involves the addition of specifiers, which are designed to create "more homogeneous" groups of patients by further dividing subtypes and better address treating individual disorders. For ADHD, these specifiers address presentation of subtypes (combined or exclusive), partial remission, and severity level of symptoms.

Factors for Diagnostic Complication

DSM-5 classifications of single disorders do not constitute the existence of a "homogeneous" patient population (thus creating the need for subtypes and specifiers). The *DSM-5* lists no known specific causes for the development of ADHD in diagnosed individuals,

and it also emphasizes a need for a "more dimensional approach" to incorporate specific symptom features in individuals that may overstep current criteria.

Although the issue of comorbidity is a relatively new element in psychology, it affects the majority of individuals diagnosed with ADHD (Jensen, Martin, & Cantwell 1997). Most sources say these patients are more likely to have a combination of disorders rather than ADHD alone (Larson, Russ, Kahn, & Halfon, 2007). The *DSM-5* lists several examples of symptom overlap between ADHD and associated disorders, making it difficult to distinguish their separate effects. The ADHD Institute (n.d.) states that patients with a comorbid combination of mental disorders often experience greater challenges in dealing with a larger amount of symptoms, which can serve to complicate diagnosis and treatment.

DSM-5 provides additional ADHD symptom specification based on gender and age discrepancies. Aside from its new required symptom numbers, it specifies that symptoms are unlikely to be detected before a patient reaches four years of age, and certain symptoms decline in prevalence as patients age. ADHD is listed as more prevalent in males than females, and different genders are more likely to manifest various symptoms (APA, 2013). This trend has been confirmed by other sources, which mention the decline in hyperactivity symptoms as children mature (Nierenberg et al, 2005).

Rating Scales

Rating scales are intended to satisfy a specific diagnostic criterion of the *DSM-5;* the manual states that symptoms must "[persist] for at least 6 months" in order for a patient to receive a positive diagnosis. Unless they have been monitoring patients for the full extent of this amount of time, this condition prevents clinicians from fully understanding the extent and duration of a patient's symptoms. External rating scales can aid in identifying these factors,

especially in the case of small children. Chronological data, according to *DSM-5* edits, can help clinicians determine how the remission specifier applies to patients.

Likewise, APA (2013) discusses the possibility of symptom differences between various settings, such as work, school, or home. According to Kollins and Sparrow (2010), rating scales can help identify whether patients deviate significantly from other people within their specific gender and age cohort as opposed to the general population. Standardized scales may help eliminate geographical discrepancies in reported ADHD rates by helping psychologists universalize diagnostic methodology (Polanczyk, Silva de Lima, Lessa Horta, Biederman, & Rhode, 2007). The same applies for achieving symptom thresholds for disorder classification, which may be affected by the outside input of patients or their acquaintances (APA, 2013).

Despite gradual improvements of rating scales since the publication of *DSM-IV*, many notable limitations still exist for many of these models. A study by Wilcutt, Hartung, Lahey, Pelham, and Loney found limited utility of parent ratings in furthering a clinician's analysis (1999). *DSM-5* addresses the difficulty in accounting for relational troubles between parents and children and their potential implications for a diagnosis, and certain parent rating scales could be especially vulnerable to this issue. Most parents lack extensive psychological knowledge, so respondents may not go into the rating process with potential complications such as comorbidity in mind, which may limit the effectiveness of their input.

Methods

In an effort to better understand the utility of ADHD rating scales in light of their correspondence with *DSM* diagnostic descriptions, I will be using a systematic content analysis to compare two of these scales to the *DSM-5*. I have chosen to analyze the Conners 3rd Edition Parent Short Form (Conners 3) and NICHQ Vanderbilt Assessment Scale. Each of these scales

originated before the publication of the *DSM-5*, but both have been updated in response to the manual's new version.

The NICHQ, a notable biomedical research facility, has released two ADHD rating scales, each with varieties for parent, teacher, and self-informants ("Resources," n.d.). NICHQ states that these were developed through the ADHD Learning Collaborative and PPOC Improvement Initiative ("Resources," n.d.). The parent scale is adapted from the Mark L. Wolraich Vanderbilt Rating Scales, both of which are extremely similar and widely used models. According to the scoring instructions provided by NICHQ, the scale accounts for ADHD, Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), and "Anxiety/Depression" symptoms (NICHQ, 2013b). Similarly, the Conners 3 scale is "a revision" of its original version, which was created by C. K. Conners and published by Multi-Health Systems in 1997 (Conners, 2013a). MHS claims that the parent report is designed to measure "behaviors, emotions, academic, and social problems" in children with the potential for an ADHD diagnosis ("Conners CBRS," n.d.). The Conners 3rd Edition scale was revised recently in 2014 and includes updated scoring instructions for *DSM-5* changes. Additionally, Keith Conners has stated that the Conners 3 model also contains symptom criteria for ADHD, CD, and ODD (Conners, 2013a).

My analysis will include comparisons between the two rating scales and *DSM-5*. I will base each of these on the inclusion of *DSM-5* symptoms within each scale's questions, the instructions provided for respondents, and correlation to the APA's information on subtypes, ADHD presentation, and differential diagnoses. Both scales have been designed to cater to ADHD, CD and ODD, so I will be comparing the scales to the *DSM-5* diagnostic criteria for all three of these disorders, with the addition of "Anxiety/Depression" disorders for the NICHQ model. I will subsequently compare each scale's questions, scoring criteria, and scoring methods.

Observed discrepancies from the *DSM-5* could be a source of potential inaccuracy and will help indicate potential changes for improvement.

Limitations and Defense of Methods

As mentioned by Faraone and Biederman (2005), it is essentially impossible to determine the true clinical utility of any rating scale in the diagnosis process, but the purpose of this investigation is to determine the comparative advantages of the NICHQ and Conners rating scales according to *DSM-5* material. My evaluation will be completed in consideration of each of the previously outlined diagnostic complications and specific components of the *DSM-5* ADHD chapter.

DSM-5 was released in 2013, so little research exists that attempts to qualify the effectiveness of the Conners and NICHQ scales. Some studies have previously investigated the clinical accuracy of these scales by comparing their parent responses with diagnoses made by psychologists. This type of study was out of the question for this investigation, since I have no means of accessing medical data or screening patients independently. The majority of these have determined that the Conners and NICHQ, as well as most other ADHD rating scales, are able to produce relatively accurate results (Kollins & Sparrow, 2010), (Becker, Langberg, Vaughn, & Epstein, 2012). I have encountered no sources, however, that compare the content of scales with that of the *DSM* in light of symptoms and other factors of diagnosis, and only a few have even evaluated rating scales.

Due to their vast array and irregularity, this paper will not explore differences in definitions of ADHD, ODD, and other mental disorders across the available body of psychological sources. However, accepted definitions should certainly be more inclusive and standardized, since they are absolutely crucial for producing accurate diagnoses.

The selection of rating scales for this investigation was based on a number of necessary similarities between them in order to ensure a valid comparison. Conners 3 and NICHQ parent scales are designed to evaluate specific patient populations, with the former being suitable for children ages 6-18 and the latter catering to ages 6-12 ("Resources," n.d.), ("Conners 3," n.d.). However, this slight age discrepancy should not greatly influence the structure of the rating scales and their respective differences; the *DSM-5* categorizes children 6-16 as requiring six symptoms (versus five for 17-year-olds) to receive an ADHD diagnosis, but the same set of symptoms apply to all ages. The manual also states that there may be different patterns of ADHD manifestation based on a patient's age, so comprehensive scales should be able to adequately account for these. Despite the different varieties of scales available, I have chosen to look at the parent versions of the Conners 3 and NICHQ due to the symptom timeline established by *DSM-5*. A student in primary or secondary school typically has new teachers after every average nine- or ten-month school year, but a teacher needs to have taught a student for the past six months to meet diagnostic requirements. This narrows the time frame in which they can submit valid responses to three or four months out of the whole year. Parents or guardians, on the other hand, may not spend as much daily time with school-age children, but they have usually been present throughout their lives. Also, since "ADHD is most often identified during elementary school years," parents still have crucial perspectives in analyzing children's behavior at the time of most diagnoses (APA, 2013).

MHS is an international publisher of scientific assessments, and NICHQ is a nonprofit organization that addresses children's health issues; it can be assumed that both of these organizations are reliable sources for rating scales, especially since their models are widely used. This could also explain why very few researchers have taken efforts to measure the validity of

rating scale results. When deciding which Conners scale version to use, I selected the Short Form because it has a closer number of questions to the NICHQ scale (with a difference of seven items). It is important to recognize, however, that if the short form presents limited utility, results would likely be improved with the more comprehensive version of the Conners scale.

Results

The *DSM-5* lists a total of eighteen symptom criteria between the two subtypes for ADHD. In conducting this review, I looked for questions that matched the exact definitions of the *DSM-5* symptom criteria nearly verbatim. For example, in order to match a symptom such as "often has difficulty organizing tasks and activities," a scale question would need to specifically list "tasks and activities" in describing "difficulty organizing." After reading through both scales, I found that the NICHQ scale's questions included all nine of the ADHD symptoms under the Inattention category, and the Conners 3 model only precisely matched three. The same result occurs for the Hyperactivity-Impulsivity symptoms: NICHQ listed all nine symptoms exactly, but Conners 3 only satisfied the definitions for three. Additionally, Conners 3 and NICHQ were supposedly redesigned to include symptoms for ODD and CD. The NICHQ scale had eight questions designated for ODD, each of which match an exact definition one of the eight *DSM-5* symptoms. It also includes fourteen questions addressing the fifteen CD symptoms, but only thirteen of these were specific enough to satisfy conditions outlined by the APA, and one symptom was missing entirely. Conners 3 had questions that matched three of the fifteen CD symptoms and only one of eight ODD symptoms. Within the designated "Anxiety/Depression" questions of the NICHQ scale, none of the items matched any specific symptoms of the disorders listed within the "Anxiety Disorders" or "Depressive Disorders" chapters of *DSM-5*. Ultimately,

thirty-nine of the fifty-five NICHQ questions met ADHD symptom definitions, while only ten out of forty-six on the Conners 3 scale did the same.

Conners 3/*DSM-5* ADHD Symptom Matches

Question:	*DSM-5* symptom*
3. Fidgets or squirms in seat	H (a)
7. Runs or climbs when he/she is not supposed to	H (c)
13. Acts as if driven by a motor	H (e)
17. Does not pay attention to details; makes careless mistakes	I (a)
20. Loses things (for example schoolwork, pencils, books, tools or toys)	I (g)
32. Has trouble organizing tasks or activities	I (e)
*I = Inattention subtype, H = Hyperactivity-Impulsivity subtype, (_) = identifier letter of *DSM-5* symptom	

Regarding parent and evaluator instructions, the NICHQ scale meets the chronological condition of ADHD diagnoses. It advises parents to "think about your child's behaviors in the past six months." Conners 3 only states that parents need to report what their child "has been like in the past month." Additionally, the new remission specifier requires that clinicians identify whether patients have met fewer criteria in the past six months than previously. Neither scale caters to this condition, since the most comprehensive time range is only six months and has no questions on previous symptoms.

Likewise, *DSM-5* establishes that several of the symptoms from either ADHD subtype must have been present before age 12, that these are present in at least two settings (e.g. home, school, etc.), that the symptoms clearly "interfere with, or reduce the quality of" functioning, and that they "do not occur exclusively during the course of . . . another psychotic disorder and are not better explained by another mental disorder." Both Conners 3 and NICHQ fail to make

parents aware of these possibilities. However, both scales include questions to gauge performance in various environments based on the potential presence of psychological disorders-NICHQ having eight and Conners 3 having seven.

The scales' performance in identifying the presentation specifier in patients (combined, predominantly inattentive, or predominantly hyperactive/impulsive) is based entirely on their questions' grasp of the symptoms. The same applies to the conditions of mild, moderate, or severe symptoms. These groups are differentiated by the number and types of symptoms patients present. For comprehensive scales such as the NICHQ, this is not a problem, because every ADHD symptom is included in the questions, which enlist a Likert scale system and require parents to rank each on a range of 0 (never) to 3 (very often). This specific scoring condition is true of Conners 3 as well. Variations are present, but the overall categories, ranging from "not true at all" to "very much true" remain the same for each question (Conners, 2013b). The questions to address different environments previously referenced also follow this same 0-3 ranking scale, with the exception of two of the seven Conners 3 questions that are open-ended.

As a method for scoring responses, each scale necessitates a certain number of questions being met to satisfy an adequate number of *DSM-5* symptoms for a diagnosis. To receive an ADHD diagnosis, NICHQ requires a score of 2 or 3 (often or very often) on six or more of the nine ADHD questions for either subtype (both for a combined presentation), which coincides with the APA's condition of six out of nine ADHD subtype symptoms. Parents must also rank at least two of the eight "performance questions" at a score of 4 (somewhat of a problem) or one at a 5 (problematic) (NICHQ, 2013b). To receive a comorbid diagnosis for CD or ODD, parents must respond with a 2 or 3 on three of fourteen or four of eight questions respectively, all of which comply with *DSM-5* symptom benchmarks. NICHQ requires a 2 or 3 on three of seven

Anxiety/Depression questions, but as stated earlier, these criteria do not match any specific *DSM-5* disorder; these comorbid diagnoses are also all dependent on the same conditions for performance questions being met. Conners 3 enlists a different strategy for determining ADHD and comorbidity diagnoses; it ranks question responses (0-3) as "indicated," "maybe indicated," or "not indicated" (Conners, 2013a). MHS states that the same number of *DSM-5* symptom based questions must be met for ADHD subtypes (six of nine), CD (three of fourteen), and ODD (four of eight) (Conners, 2013a).

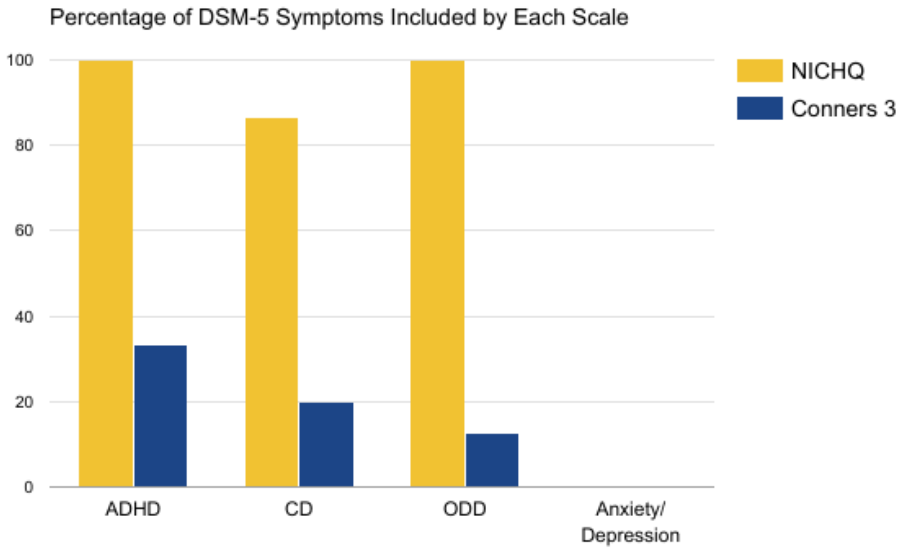
Form	Item	Item #	Indicated	May be Indicated	Not Indicated
P	Doesn't pay attention to details; makes careless mistakes.	47	3, 2	–	1, 0
T	Doesn't pay attention to details; makes careless mistakes.	37	3, 2	–	1, 0
SR	It is hard for me to pay attention to details.	31 -or- 39	3, 2 -or- 3	–	1, 0 -and- 1, 0
	I make mistakes by accident.			2	
P	Has trouble keeping his/her mind on work or on play for long.	95	3, 2	–	1, 0
T	Has trouble keeping his/her mind on work or play for long.	111	3, 2	–	1, 0
SR	I have trouble keeping my mind on what I am doing.	63	3, 2	–	1, 0
P	Does not seem to listen to what is being said to him/her.	35	3, 2	–	1, 0

*A portion of the instructional scoring table for different versions of the Conners 3 ADHD scale as seen in *Conners 3rd Edition (Conners 3) DSM-5 Update*. A "P" under the "Form" column header designates questions that are included on the parent form.

Analysis

Based on the conditions of the symptom comparison, NICHQ was automatically set up to present a more comprehensive tool for psychological evaluation, being that it offered symptoms of ADHD and three other disorders. However, after reviewing the *DSM-5* and attempting to match the /Depression questions to symptoms of any disorder under these broad categories, it became clear that this portion of the scale was not based on any specifically listed criteria; the designated questions were more generalized statements that only truly summarized disorder characteristics and attempted to encompass more than one differential diagnosis. None of the

precise symptom definitions were satisfied, so NICHQ only truly caters to ADHD and two comorbid disorders. This should have equalized it with the Conners 3 model, but out of all three disorders (ADHD, CD, & ODD), NICHQ greatly outperformed Conners 3. It included six more ADHD symptoms for each subtype, seven more ODD symptoms, and ten more CD symptoms. These basic comparisons reveal substantial issues with the validity of Conners 3 in terms of the APA's established methods and criteria.



*NICHQ and Conners 3 adherence to DSM-5 symptoms, as depicted by percentages of total symptom counts.

Differential diagnosis is still crucial in achieving a diagnosis that accounts for potential comorbidities, and their ultimate conclusions are left up clinicians. The process of eliminating comorbidities could be simplified by including additional questions with symptoms unique to commonly associated disorders. NICHQ's content suggests that it would be more effective at identifying these comorbidities than Conners 3, since it only failed to include two symptoms out of all three disorders. Likewise, the presence of additional performance questions similar to the other diagnostic criteria for ADHD may enhance a rating scale's ability to accurately capture

real-world effects of mental disorders. The NICHQ model better achieves this effect based on the fact that the questions of both scales discuss similar topics, and NICHQ includes a greater number. The fact that these symptom-based questions utilize consistent numerical scales likely helps to eliminate their potential subjectivity, but the presence of the open-ended Conners 3 questions could also complicate the scale's scoring methods, leaving these susceptible to the interpretation of clinicians.

The Conners 3 model largely failed to provide questions designated to each symptom of ADHD, ODD, and CD that match in definition. Its scoring instructions include a conversion chart of sorts that assigns various questions to specific symptoms, but the utility of this is limited based on the fact that no parallels can be drawn with the *DSM-5*. MHS's choice of material is clearly either not based on APA criteria or only loosely and inaccurately tied to its information.

The NICHQ model also outperforms Conners 3 in following specific *DSM-5* age conditions for particular symptoms. Since NICHQ can only be used for children ages 6-12, it does not have to concede for certain age differences laid out by the APA as far as the number of symptoms required for a diagnosis or any specific age conditions for symptoms. For example, two CD symptoms specify the necessity of "beginning before age 13 years" (APA, 2013). Conners 3 does not include these to begin with, but if they were present, this age qualification would need to be explicitly stated, since this scale can be used for ages 6-18. Aside from this, the Conners 3 and NICHQ scoring instructions do specify the requirement of accurate symptom numbers for diagnoses of different disorders for ages 6-17 and 17-18.

DSM-5 requires the presence of an adequate number of ADHD symptoms for six months, ODD for six months, and CD for twelve months to receive a diagnosis. Conners 3 only requires symptom presentation for one month prior to a diagnosis, so it fails to meet any of these

conditions, but NICHQ only falls short on the CD range. This likely does not impair the overall effectiveness of the model, but it could influence the validity of an ADHD/CD comorbid diagnosis, and it is certainly a feature that could be improved. Just as they fall short of satisfying the remission specifer, both models have the ability to specify whether ADHD patients have mild, moderate, or severe presentations based on symptom counts, but each set of scoring instructions lacks this guideline. They each have some ability to determine the *presence* of ADHD and other disorders, but not the extent to which the associated symptoms manifest themselves. This discrepancy leaves yet another crucial responsibility entirely up to the evaluator making a diagnosis.

Conclusions

Ultimately, NICHQ more accurately conforms to *DSM-5* symptom definitions and specific diagnostic conditions than Conners 3. So many necessary features of these scales and an ADHD diagnosis in general rely on patients meeting initial symptom requirements, and without the presence of these symptoms to begin with, other significant factors cannot be determined by parent rating scales. NICHQ presents the potential for greater utility in diagnosing comorbidities based on its superior symptom inclusion, and this subsequently enables it to meet more conditions of an accurate and valid diagnosis.

It's important to acknowledge that the NICHQ parent rating scale is published in cooperation with the APA, so it may automatically have more capability to precisely match the *DSM-5*. For the third party Conners 3 model, copyrights may prevent the scale from fully including *DSM-5* material. Even in spite of this condition, however, this investigation suggests that the scale cannot be assumed more effective than that of NICHQ based on any grounds.

Likewise, the Conners 3 scale does meet the specific definitions of a select few symptoms, so this limitation may be unlikely.

NICHQ and Conners 3 both have several areas for potential improvement. Each has a need for greater specificity regarding temporal conditions, symptom definitions, and presentation severity. Conners 3 in particular falls short in these areas, and it also lacks age specifications within its questionnaire. The NICHQ scale could be made more effective with only a few minor alterations; for example, diagnosing comorbid CD could be made more accurate by the inclusion of the 12-month symptom stipulation and the addition of the two symptoms it overlooks. It already presents the full symptom counts for ADHD and comorbid ODD. The model is also closest to being able to classify mild, moderate, or severe presentations (if it compensated for its few missing symptoms), but it includes no instructions for doing so. NICHQ also fails to diagnose "Anxiety/Depression" due to its lack of accurate symptoms, which limits the validity of its claim to utility in diagnosing comorbidities. The same goes for Conners 3: its questions matched the numbers of symptoms for ADHD, CD, and ODD, but this was irrelevant in light of the symptoms being mostly excluded to begin with.

The NICHQ parent rating scale and Conners 3 Parent Short Form represent an idealistic and ambitious goal for ADHD diagnoses, and their use is necessary to achieve an accurate diagnosis. However, there a need to re-evaluate updated scales if these models do not truly conform to the *DSM-5* changes which their publishers claim to have accounted for. Simple yet necessary criteria such as remission status are entirely overlooked, and the majority of these scales' limitations could be easily remedied by minor changes on the part of their authoring institutions. Things such as instruction for clinicians on the classification for ADHD severity

could equalize diagnostic methods across the country and play a role in eliminating regional discrepancies in disorder prevalence.

This evaluation suggests that may be unsafe to assume the reliability of these scales in providing a clear, unbiased ADHD diagnosis and in detecting potential comorbidities. The failure of both models to meet numerous *DSM-5* conditions sheds light on the reality of the risk of misdiagnosis, especially considering symptom severity. Overlooking the difference between a mild and severe presentation could prove a great mistake in responsibly managing a patient's mental and physical health. Until necessary changes take place, both scales will have undeniable limitations. Further investigation is needed to determine the clinical utility of these and similar rating scales, but without an initial correspondence to typical diagnostic conditions, there is a question of whether these tools can ever achieve maximal competence.

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