# Irritability in Pediatric Patients: Normal or Not?

Usman Hameed, MD, FAPA[a,*] and Cheryl A. Dellasega, PhD, CRNP[b]

**ABSTRACT**

The goal of this article is to describe the concept of irritability in children and youth, which has been revisited in the *DSM-5*. Traditionally, this behavior has been more commonly associated with mood disorders, which may account for the rising incidence of bipolar disorder diagnosis and overuse of mood-stabilizing medications in pediatric patients. While not predictive of mania, persistent nonepisodic irritability, if undetected, may escalate to violent behavior with potentially serious outcomes. It is therefore important to educate clinicians about how to accurately assess irritability in pediatric patients.

*Prim Care Companion CNS Disord*
*2016;18(2):doi:10.4088/PCC.15br01893*


[a]Department of Psychiatry, Pennsylvania State University, Hershey
[b]Department of Humanities, Pennsylvania State University, Hershey
**Corresponding author:* Usman Hameed, MD, FAPA, Pennsylvania State University, College of Medicine, 22 Northeast Dr, Hershey, PA 17033 (uhameed@hmc.psu.edu).

The concept of irritability in children and youth has been revisited in the *DSM-5*. Traditionally, this behavior has been more commonly associated with mood disorders, which may account for the rising incidence of bipolar disorder diagnosis and overuse of mood-stabilizing medications in pediatric patients. While not predictive of mania, persistent nonepisodic irritability, if undetected, may escalate to violent behavior with potentially serious outcomes. It is therefore important to educate clinicians about how to accurately assess irritability in pediatric patients.

## IRRITABILITY

### Definition

Irritability exists on a continuum from normal developmental tantrums to extremely aggressive behaviors,[1] which can vary with chronological and developmental age, physical and emotional status, environment, and support. However, clinicians are more likely to rely on a simple explanation of irritability as frustration in response to not getting what one wants or reactive aggression.[2] One method used to define irritability is use of rating scales that look at level of hypersensitivity, duration, and intensity. Another approach is to consider adding items such as "gets angry or annoyed easily" and "loses temper and has tantrums" on psychometric scales addressing behavioral symptoms.[3] A more in-depth method would involve description of antecedents, frequency, and severity of tantrums, as well as severity and persistence of interval mood. Irritability is not well defined as an independent construct in the clinical literature. However, some scholarly articles attempt to describe this concept and its implications.

For example, Judd and colleagues[4] found that overt irritability or anger during an episode of major depression is a clinical marker of a more severe, chronic, and complex disease. Tseng et al[5] examined preschoolers with high versus low familial risk for bipolar disorder and found high-risk preschoolers to demonstrate clinically significant issues with anger modulation and behavior dysregulation. In a clinically oriented report, Keel[6] describes how irritability and fatigue associated with chronic stress can clinically present with fear of somatic illness or decreased productivity. Mayes et al[3] describe the trajectory of irritability throughout childhood and adolescence. Their study population of 376 children indicated instability of irritable behaviors—angry mood symptoms over an 8-year period—suggesting that these symptoms are a feature of multiple disorders and do not occur in isolation. Also, the flux of irritable behaviors can create challenges for clinicians who seek to rule out or include specific diagnoses. Since disruptive mood dysregulation disorder is conceptualized as a chronic persistent disorder, the validity of the disorder as an independent diagnosis is in question.[3]

### Components

A National Institute of Mental Health workshop on childhood irritability described 2 components: (1) tonic component described as a persistently angry, grumpy, or grouchy mood and (2) phasic component described as behavioral outbursts of intense anger.[7]

**Clinical Points**

- Irritability is a common behavior seen in the pediatric health setting.
- Accurate assessment of normal versus the range of abnormal irritability in pediatric patients is a necessary first step in management.
- Primary care providers are usually on the forefront in the assessment of irritable behaviors in pediatric patients.

### Clinical Implications

Irritability in children is a common behavior that prompts parents, teachers, and others to seek primary care or mental health input from professionals. It is essential to establish the presence or absence of abnormal irritability because it can place the individual at risk of functional impairment.[7] Even more important is the process of screening for behaviors associated with irritability, such as physical aggression involving the use of a weapon, animal cruelty, fire setting, breaking and entering, and confrontational stealing, which might require immediate attention or referral to mental health services.[8]

## DISRUPTIVE MOOD DYSREGULATION DISORDER

Disruptive mood dysregulation disorder is a new addition to the depressive disorder category in the *DSM*-5.[9] This diagnosis evolved from 2 conditions identified previously: severe mood dysregulation[10] and temper dysregulation disorder with dysphoria.[11] Severe mood dysregulation is a syndrome defined to capture symptoms that do not meet criteria for bipolar disorder in children and, yet, lead to significant functional impairment.

Disruptive mood dysregulation disorder was intended to capture temper outbursts and define nonepisodic irritability in children beyond what may be considered normal. The importance of identifying normal versus abnormal irritability is that the incidence of bipolar disorder diagnosis and treatment with mood-stabilizing medication in the pediatric population is increasing dramatically.[12,13] The increased incidence of pediatric bipolar disorder in the United States is controversial.[14] This diagnosis has been used by default in pediatric patients who presented to primary care and specialty clinics with irritable or angry mood and functional impairment.[15] Incorrect diagnosis and limited availability or lack of appropriate psychoeducational and behavioral management support services to these children may contribute to such an increase. Nonepisodic irritability does not predict bipolar disorder,[10] but disruptive mood dysregulation disorder has a high co-occurrence with depressive and oppositional defiant disorders.[16]

Even though validity of disruptive mood dysregulation disorder as an independent diagnosis is controversial,[3] this diagnosis may offer an alternative approach for providers who assess irritable mood in children.[17–19] In addition, due to growing concerns about violent behaviors, which are often connected with irritability among youth, recognition of irritable mood and episodes of rage has become increasingly important at the primary care level.[20]

## OVERVIEW OF THE *DSM*

The *DSM* is a classification of mental disorders with associated criteria so as to facilitate more reliable diagnoses of these disorders. The fifth edition of the *DSM* was released in May 2013.

The *DSM-5* uses a more dimensional approach, as the rigid categorical system in the previous edition does not capture clinical experience or important scientific observations.[21] Over the past 60 years, the successive editions of the manual have become a standard reference for clinical practice in the mental health field.

## USE OF THE *DSM* IN CLINICAL SETTINGS

While the *DSM* serves as an authoritative resource for psychiatric providers, it is less often consulted by primary care providers who care for children such as family practitioners and pediatricians. A literature search for use of the *DSM* in primary care and pediatrics suggested use of certain screening tools based on *DSM* criteria, such as the Modified Checklist for Autism.[22]

However, the extent to which the *DSM* is used in primary care settings is unknown. These practitioners are most often the "gatekeepers" who will identify and diagnose psychiatric problems that warrant treatment in their patients, so an understanding of resources they can use to establish a diagnosis is critical.

We conducted 4 preliminary interviews with pediatric primary care providers and discovered that very few consult or understand the *DSM* to identify problems in the clinical setting. The review of scholarly literature on irritability indicates limited data on this subject. Anecdotally, colleagues have affirmed the importance of separating normal from abnormal irritability in children. Table 1 describes several psychiatric diagnoses that have a component of irritability.

## APPLICATION

Accurate identification of abnormal irritability is a necessary first step in establishing a diagnosis and then implementing a treatment plan. A lack of awareness about normal irritability can lead clinicians to believe a pediatric patient has a mental health diagnosis when, in fact, less invasive behavioral methods can be used to address the situation. For example, irritability associated with substance withdrawal would be treated differently than irritability from premenstrual dysphoric disorder, and both would be treated differently from abnormal irritability.

Clinicians in the medical and nursing professions provide care for children in a variety of settings: inpatient facilities, outpatient clinics, schools, and within the home. To assist with differentiating normal from abnormal irritability, we





Prim Care Companion CNS Disord
2016;18(2):doi:10.4088/PCC.15br01893

**Table 1. Disorders That Commonly Present With Irritability**

| Diagnosis | Age at Incidence | Typical Presentation (*DSM* symptoms) |
|---|---|---|
| Intellectual disability | Preschool age | Onset of intellectual and adaptive deficits during phase of development |
| Adjustment disorder | Preschool, school age | Irritability in response to a known stressor with onset of symptoms within 3 months of the stressor |
| Neurocognitive disorder due to secondary general medical condition | Preschool, school age | Based on cognitive domains affected by the medical condition |
| Attention-deficit/hyperactivity disorder | Preschool, school age | Inattention or hyperactivity and impulsivity |
| Autism spectrum disorder | Preschool, school age | Deficits in social communication and interaction with restricted and repetitive patterns of behavior, interest, or activities |
| Oppositional defiant disorder | Preschool, school age | Angry, irritable mood, argumentative and defiant behaviors or vindictiveness. |
| Disruptive mood dysregulation disorder | School age, adolescence | Episodes of temper outbursts with interepisode irritability |
| Conduct disorder | School age, adolescence | Violation of basic rights of others and major age-appropriate societal norms or rules |
| Posttraumatic stress disorder | School age, adolescence | Exposure to traumatic event (death, serious injury, sexual violence), associated re-experiencing, avoidance, negative cognitions, and arousal |
| Persistent/major depressive disorder | School age, adolescence | Depressed and irritable mood in absence of manic and hypomanic symptoms |
| Premenstrual dysphoric disorder | Adolescence | Symptoms in week before onset of and improvement within a few days after onset of menses |
| Cyclothymic/bipolar disorder | Adolescence | Hypomanic and manic symptoms—abnormally and persistently elevated, expansive, irritable mood and goal-directed activity |
| Substance/medication–induced disorders | Adolescence | Problematic behavioral or psychological changes associated with intoxication or withdrawal from substances |
| Schizophrenia spectrum disorders | Late adolescence | Delusions, hallucinations, disorganized speech and behaviors |

suggest use of the following guidelines, which will help determine whether irritability is within normal limits (Figure 1).

An assessment should begin with introductions and a brief overview of the process. Children may prefer to be seen with his or her parent(s) and adolescents may prefer independent interview. The first part of the assessment should include an accurate history from parents, the patient, and caregivers focusing on features of irritability and externalizing symptoms or acting-out behaviors. The history should include the following:

1. Age at onset
2. Progression and pattern—frequency, duration, severity
3. Associated problem behaviors and consequences
4. Possible stressors—recent change in life events
5. Concurrent mental or physical illness
6. Prenatal or postnatal exposure to substances
7. Functional abilities.

A more thorough interview of the patient will help differentiate internalizing symptoms such as depression or anxiety and others that may require attention. Through direct observation of parent-child interaction, clinicians can observe the following:

1. Interpersonal skills
2. Communication skills
3. Coping mechanisms.

Depending on the information obtained in the initial history, collateral information from teachers and other care providers (services in the home, school, or community) and their longitudinal

**Figure 1. Guidelines for the Assessment of Irritability in Pediatric Patients**

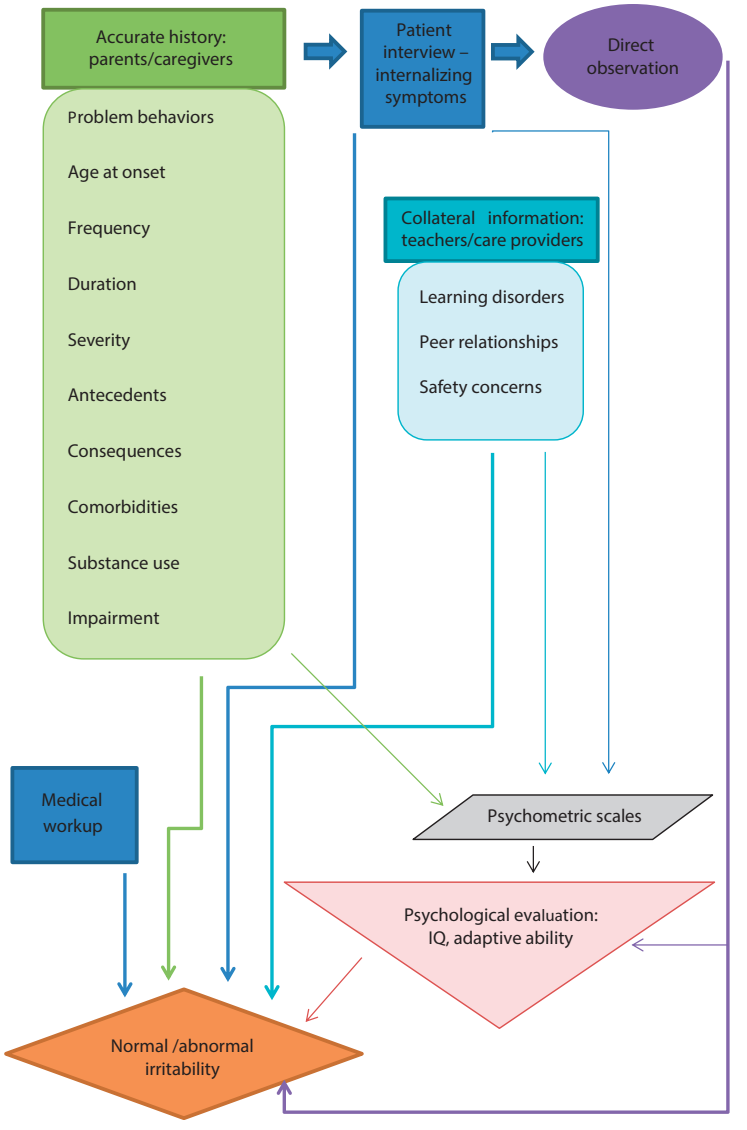

**Table 2. Comparison of Rating Scales That Address Irritability With Regard to Ease of Use in the Primary Care Setting**

| Psychometric Scale | Vanderbilt ADHD Diagnostic Parent Rating Scale | Conners Third Edition | Children's Depression Inventory–2 Short | 9-Item Patient Health Questionnaire | 7-Item Generalized Anxiety Disorder Screener |
|---|---|---|---|---|---|
| Used for | ADHD, ODD, conduct disorder, anxiety, depression | ADHD, ODD, conduct disorder | Depression | Depression | Anxiety |
| Versions | Parent, teacher | Parent, teacher, self-report | Self-report | Self-report | Self-report |
| Time to complete | ~5–10 min | ~15–20 min | ~2–3 min | ~2–3 min | ~2 min |
| Use as baseline assessment | Yes | Yes | Yes | Yes | Yes |
| Used to monitor progress | Yes | Yes | Yes | Yes | Yes |
| Validity/reliability | Yes[23] | Parent scale sensitivity: 92.3%, specificity: 94.5[27]<br>Teacher scale sensitivity: 78.1%, specificity: 91.1%[28] | Yes[24] | Yes[25] | Yes[26] |
| Inconsistency index | No | Yes[8] | No | No | No |
| Positive/negative impression | No | Yes[8] | No | No | No |

Abbreviations: ADHD = attention-deficit/hyperactivity disorder, ODD = oppositional defiant disorder.

observation may be very helpful. This information could include the following:

1. Learning disorders
2. Peer relationships
3. Violent behaviors.

The use of standardized psychometric scales also may be indicated if clinicians need further information. Those that may address irritability are described as follows:

1. The Vanderbilt ADHD Diagnostic Parent Rating Scale[23] may be used to screen for associated attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder, and conduct disorder. It also provides a broad screen for anxiety and low mood.
2. The Conners Third Edition[8] also may be used to screen for associated ADHD, oppositional defiant disorder, and conduct disorder. Advantages include the inconsistency index and positive/negative impression scale, which addresses possible inconsistent positive or negative response style.
3. The Children's Depression Inventory–2 Short[24] may be used to screen for depression.
4. The 9-item Patient Health Questionnaire[25] modified for children and teens may be used to screen for depression.
5. The 7-item Generalized Anxiety Disorder Screener[26] may be used to screen for anxiety.

Table 2 compares these rating scales in terms of ease of use in the primary care setting.

Referral for a more in-depth psychological evaluation to consider IQ or achievement deficits may be indicated. Irritability due to inability to complete school work presented to the child can be screened using the following tests:

1. Wechsler Intelligence Scale for Children—Fourth Edition[29]
2. Wechsler Individual Achievement Test[30]
3. Vineland Adaptive Behavior Scales.[31]

The physical component of the examination would include the following:

1. Neurologic assessment for history of seizures or head injury
2. Toxicology screen, thyroid function tests, complete blood count
3. Endocrine assessment if indicated
4. Vision and hearing
5. Growth and development.

## CONCLUSION

The accurate assessment of irritability is an important first step in the medical decision-making process for this commonly presenting symptom in the primary care setting. Although beyond the scope of this review article, appropriate management options such as reassurance, periodic monitoring, psychoeducation or therapy for the patient and family, intervention with medications or referral to metal health services, or specialized school services may be helpful strategies on the basis of such an assessment.

Although there are few diagnostic aides for specialized or primary care providers, it is extremely important to accurately identify the underlying cause of irritability. Among the pediatric population, there are numerous causes of irritability, ranging from normal developmental irritability to bipolar and psychotic disorders. Irritability in this age group should be carefully approached, as misdiagnosis can trigger a lifelong trajectory that involves inappropriate or unnecessary medications, therapy, and institutionalizations. On the other hand, pediatric patients with significant unresolved irritability can progress to acting-out behaviors with significant social, interpersonal, and academic difficulties or violent ways that bring harm to self and others.[32] In either situation, a better understanding of normal versus abnormal irritability and clinical strategies for diagnosis are needed to assure the health and well-being of children, their families, and the community. We have attempted to describe the concept of irritability as documented in the literature, how





Prim Care Companion CNS Disord
2016;18(2):doi:10.4088/PCC.15br01893

neurobehavioral issues include irritability, and how organic and nonorganic disorders may present with this symptom. Since primary care providers are at the forefront in the treatment of pediatric patients, an understanding of how to accurately assess irritability is essential.

***Submitted:*** October 12, 2015; accepted January 19, 2016.
***Published online:*** March 24, 2016.
***Potential conflicts of interest:*** None reported.
***Funding/support:*** None reported.

## REFERENCES

1. Snaith RP, Taylor CM. Irritability: definition, assessment, and associated factors. *Br J Psychiatry*. 1985;147(2):127–136.
2. Leibenluft E, Blair RJ, Charney DS, et al. Irritability in pediatric mania and other childhood psychopathology. *Ann N Y Acad Sci*. 2003;1008(1): 201–218.
3. Mayes SD, Mathiowetz C, Kokotovich C, et al. Stability of disruptive mood dysregulation disorder symptoms (irritable-angry mood and temper outbursts) throughout childhood and adolescence in a general population sample. *J Abnorm Child Psychol*. 2015;43(8):1543–1549.
4. Judd LL, Schettler PJ, Coryell W, et al. Overt irritability/anger in unipolar major depressive episodes: past and current characteristics and implications for long-term course. *JAMA Psychiatry*. 2013;70(11):1171–1180.
5. Tseng WL, Guyer AE, Briggs-Gowan MJ, et al. Behavior and emotion modulation deficits in preschoolers at risk for bipolar disorder. *Depress Anxiety*. 2015;32(5):325–334.
6. Keel P. Unexplained fatigue and irritability: differential diagnosis and practical procedures for signs of exhaustion [in German]. *Praxis (Bern 1994)*. 2014;103(19):1117-1122.
7. Copeland WE, Brotman MA, Costello EJ. Normative irritability in youth: developmental findings from the Great Smoky Mountains Study. *J Am Acad Child Adolesc Psychiatry*. 2015;54(8):635–642.
8. Conners CK. *The Conners 3rd Edition (Conners 3)*. North Tonawanda, NJ: Multi-Health System; 2008.
9. Rao U. *DSM-5*: disruptive mood dysregulation disorder. *Asian J Psychiatr*. 2014;11:119–123.
10. Leibenluft E. Severe mood dysregulation, irritability, and the diagnostic boundaries of bipolar disorder in youths. *Am J Psychiatry*. 2011;168(2):129–142.
11. Stringaris A. Irritability in children and adolescents: a challenge for *DSM-5*. *Eur Child Adolesc Psychiatry*. 2011;20(2):61–66.
12. Roy AK, Lopes V, Klein RG. Disruptive mood dysregulation disorder: a new diagnostic approach to chronic irritability in youth. *Am J Psychiatry*. 2014;171(9):918–924.
13. Olfson M, Blanco C, Liu S-M, et al. National trends in the office-based treatment of children, adolescents, and adults with antipsychotics. *Arch Gen Psychiatry*. 2012;69(12):1247–1256.
14. Post RM, Luckenbaugh DA, Leverich GS, et al. Incidence of childhood-onset bipolar illness in the USA and Europe. *Br J Psychiatry*. 2008;192(2):150–151.
15. Johnson K, McGuinness TM. Disruptive mood dysregulation disorder: a new diagnosis in the *DSM-5*. *J Psychosoc Nurs Ment Health Serv*. 2014;52(2):17–20.
16. Copeland WE, Angold A, Costello EJ, et al. Prevalence, comorbidity, and correlates of *DSM-5* proposed disruptive mood dysregulation disorder. *Am J Psychiatry*. 2013;170(2):173–179.
17. Margulies DM, Weintraub S, Basile J, et al. Will disruptive mood dysregulation disorder reduce false diagnosis of bipolar disorder in children? *Bipolar Disord*. 2012;14(5):488–496.
18. Krieger FV, Leibenluft E, Stringaris A, et al. Irritability in children and adolescents: past concepts, current debates, and future opportunities. *Rev Bras Psiquiatr*. 2013;35(suppl 1):S32–S39.
19. Krieger FV, Stringaris A. Bipolar disorder and disruptive mood dysregulation in children and adolescents: assessment, diagnosis and treatment. *Evid Based Ment Health*. 2013;16(4):93–94.
20. Hsu MC, Huang CY, Tu CH. Violence and mood disorder: views and experiences of adult patients with mood disorders using violence toward their parents. *Perspect Psychiatr Care*. 2014;50(2):111–121.
21. Krueger RF, Hopwood CJ, Wright AG, et al. Challenges and strategies in helping the *DSM* become more dimensional and empirically based. *Curr Psychiatry Rep*. 2014;16(12):515.
22. Robins DL, Dumont-Mathieu TM. Early screening for autism spectrum disorders: update on the Modified Checklist for Autism in toddlers and other measures. *J Dev Behav Pediatr*. 2006;27(suppl 2):S111–S119.
23. Wolraich ML, Lambert W, Doffing MA, et al. Psychometric properties of the Vanderbilt ADHD Diagnostic Parent Rating Scale in a referred population. *J Pediatr Psychol*. 2003;28(8):559–567.
24. Carey MP, Faulstich ME, Gresham FM, et al. Children's Depression Inventory: construct and discriminant validity across clinical and nonreferred (control) populations. *J Consult Clin Psychol*. 1987;55(5):755–761.
25. Martin A, Rief W, Klaiberg A, et al. Validity of the brief Patient Health Questionnaire mood scale (PHQ-9) in the general population. *Gen Hosp Psychiatry*. 2006;28(1):71–77.
26. Löwe B, Decker O, Müller S, et al. Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. *Med Care*. 2008;46(3):266–274.
27. Conners CK, Sitarenios G, Parker JD, et al. The revised Conners' Parent Rating Scale (CPRS-R): factor structure, reliability, and criterion validity. *J Abnorm Child Psychol*. 1998;26(4):257–268.
28. Conners CK, Sitarenios G, Parker JD, et al. Revision and restandardization of the Conners Teacher Rating Scale (CTRS-R): factor structure, reliability, and criterion validity. *J Abnorm Child Psychol*. 1998;26(4):279–291.
29. Wechsler D. *Wechsler Intelligence Scale for Children. WISC-IV*. San Antonio, TX: Psychological Corporation; 2003.
30. Mayes SD, Calhoun SL. WISC-IV and WIAT-II profiles in children with high-functioning autism. *J Autism Dev Disord*. 2008;38(3):428–439.
31. Sparrow SS, Balla DA, Cicchetti DV, et al. *Vineland Adaptive Behavior Scales*. Circle Pines, MN: American Guidance Service, Inc; 1984.
32. Leibenluft E, Stoddard J. The developmental psychopathology of irritability. *Dev Psychopathol*. 2013;25(4 pt 2):1473–1487.