

Toward Greater Specificity in the Nonspecific: Estimating the Prevalence of Diagnostic Irritability and Sleep Symptoms in Adolescents

Ashley R. Karlovich, Shannon Shaughnessy, Kate Simmons, and Spencer C. Evans
Department of Psychology, University of Miami

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM) descriptive criterial approach to diagnosis has been criticized for contributing to comorbidity, heterogeneity within conditions, and nonspecificity across conditions. Much research has examined comorbidity and heterogeneity, but less is known about nonspecificity. Here, we examined two nonspecific symptoms: irritability and sleep disturbance. Both are common, clinically significant, and appear in several DSM disorder criteria sets, but their transdiagnostic prevalence is unknown. Leveraging a nationally representative epidemiological study of adolescents ($n = 10,148$; ages = 13–18), we first identified all instances where irritability or sleep disturbance appears in DSM-5-TR criteria for bipolar, depressive, anxiety, traumatic stress, or disruptive/impulse-control disorders; then found their DSM-IV equivalents in study variables; and finally estimated their prevalence individually and cumulatively across categories. Weighted lifetime prevalence estimates were 79.5% (95% CI [77.8, 81.2]) for irritability and 60.8% [58.7, 62.9] for sleep disturbance. Associations with age and gender were significant but small. Most youth reported multiple symptoms of irritability (weighted $M = 3.04$, $Mdn = 2$) and at least one symptom of sleep disturbance (weighted $M = 1.61$, $Mdn = 1$). Both problems were extremely common among individuals with specific disorders but were underestimated by the criteria for those conditions. Results suggest that the high prevalence of DSM-defined irritability and sleep problems may be obfuscated by these symptoms being scattered across diagnostic entities. There is a need for more research on assessing, treating, and understanding problems related to irritability and sleep in their own right, cutting across, rather than confined to, particular diagnoses.

General Scientific Summary

Irritability and sleep disturbance are important mental health symptoms that are extremely common in adolescents and part of the diagnostic criteria for anxiety, mood, stress-related, and behavioral disorders. Because these symptoms are transdiagnostic or nonspecific (i.e., they are part of the symptoms for many different conditions), it is difficult to understand how many individuals are truly affected by them. In this study, we analyzed data from a large national sample and found that most adolescents report a history of clinically significant irritability (79.5%) or sleep disturbance (60.8%), underscoring the public health significance of these nonspecific symptoms.

Keywords: irritability, sleep disturbance, *Diagnostic and Statistical Manual of Mental Disorders*, prevalence, National Comorbidity Survey—Adolescent Supplement

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Ashley R. Karlovich  <https://orcid.org/0000-0003-3166-5390>

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papers have been published, but nothing to date on these particular research questions. Procedures were approved by Harvard Medical School and the University of Michigan Human Subjects Committees.

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Correspondence concerning this article should be addressed to Ashley R. Karlovich, Department of Psychology, University of Miami, 5665 Ponce De Leon Boulevard, Coral Gables, FL 33146, United States. Email: akarlovich@miami.edu

The primary function of a diagnostic classification system is to organize and operationalize mental health conditions in a manner that is useful for treatment and other clinical applications. Indeed, this is the stated primary aim of both the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM; American Psychiatric Association, 2022) and the World Health Organization's (WHO) *International Classification of Diseases* (ICD) Mental, Behavioral, and Neurodevelopmental Disorders.¹ These diagnostic systems are intended to be useful for accurately determining the presence or absence of specific mental health conditions in relation to an individual patient. In the United States and many other countries, the DSM has long been the dominant diagnostic classification system but is often subjected to certain criticisms. In the present study, we focus on three general criticisms: heterogeneity, comorbidity, and nonspecificity.

Heterogeneity refers to the degree to which individuals with different clinical presentations and combinations of symptoms could all be classified as having the same diagnosis. For instance, Galatzer-Levy and Bryant (2013) point out that there are "636,120 ways to have post-traumatic stress disorder" (PTSD) based on all the different ways PTSD symptoms in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (DSM-5) diagnostic criteria could be combined as present or absent to meet diagnostic requirements. *Comorbidity*, or the co-occurrence of mental health conditions, is widely understood to be the "rule rather than the exception;" more than half of individuals with one mental disorder meet criteria for a second, of which about half meet criteria for a third, etc. (Caspi & Moffitt, 2018). In addition to the problematic degree of symptom overlap supposedly nosologically distinct conditions, this also compounds the problem of heterogeneity. Young et al. (2014) later calculated that there are more than one *quintillion* ways to have PTSD comorbidity, considering its symptoms plus those of common comorbidities including depression, substance use, and other disorders. Concerns have also been raised about whether supposedly different presentations may actually represent the same underlying condition, and whether the same condition could really manifest so differently in two different cases that it could still be viewed as unitary (Reed, 2010). With each revision, the DSM has introduced new disorders, now containing hundreds of conditions, compounding the problems of heterogeneity and comorbidity even further.

Prior research has examined common comorbidities across conditions, but little work has been done to investigate the third concern: *nonspecificity*, or the extent to which the same symptom or clinical feature appears across different disorders. For example, symptoms like difficulty concentrating, low mood, avoidance, restlessness, and muscle tension all appear in two or more heterotypic diagnostic categories in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed., Text Revision (DSM-5-TR). Here, we focus on two fine-grained, nonspecific symptoms—irritability and sleep disturbance—which are highly prevalent in mental health and collectively appear in the diagnostic criteria for more than a dozen conditions. Although DSM treats these nonspecific symptoms as indicators of other disorders, irritability, and sleep problems can be clinically significant, persistent, and impairing problems in their own right, and their pathogenesis is not singular or well understood. Unfortunately, the true prevalence and impact of these symptoms are obfuscated when they are only considered as indicators of various other problems, underscoring the importance of adopting a fine-grained, transdiagnostic approach. For these reasons, understanding the prevalence of nonspecific problems of DSM-defined

irritability and sleep disturbances may be beneficial to advance the field of clinical science and public health.

The conventional approach to the measurement of psychopathology can be described as "top-down," focusing on diagnostic category entities as the unit of analysis, and then defining each entity by virtue of a discrete set of symptom indicators. This is critical for understanding prevalence rates of mental health disorders as entities. However, as noted above, a person can meet criteria for a single disorder in a multitude of ways (e.g., any combination of at least five of nine symptoms of major depressive disorder [MDD]). These symptoms can present in heterogeneous ways, underscoring the need to understand the fine-grained clinical phenomena occurring *within* the disorder—a "bottom-up" approach. This is essential for an understanding of nonspecific or transdiagnostic symptoms across varying disorders, including irritability and sleep disturbance.

Irritability, or increased proneness to anger relative to peers, is a symptom of numerous psychological disorders, including oppositional defiant disorder (ODD), generalized anxiety disorder (GAD), PTSD, and MDD (American Psychiatric Association, 2022). Irritability encompasses temper outbursts and irritable mood components that are each associated with concurrent and subsequent psychopathology (Cardinale et al., 2021; Silver et al., 2021). Irritability is also incredibly common, with a representative study of children and adolescents reporting prevalence rates of 51.4% for temper outbursts (i.e., phasic irritability), 28.3% for irritable mood (i.e., tonic irritability), and 22.8% for both (Brotman et al., 2017; Copeland et al., 2015). In clinical settings, as many as 57.8% of treatment-seeking families report irritability as one of their top problems for treatment (Evans, Corteselli, et al., 2023).

Disruptive mood dysregulation disorder (DMDD) was introduced in the DSM-5 as a way to characterize youths with the most severe forms of irritability, but this diagnosis only captures about 1%–3% of adolescents in the population (Copeland et al., 2013; Laporte et al., 2021). Even with the inclusion of DMDD in the DSM-5, irritability remains largely nonspecific, appearing in the diagnostic criteria for more than a dozen different disorders and associated with many more (Evans, Corteselli, et al., 2023). More research is also needed that examines irritability in transdiagnostic samples, as the majority of work has been in children with ODD, bipolar disorder (BD), MDD, or attention-deficit/hyperactivity disorder (ADHD; Cornacchio et al., 2016; Drabick & Gadow, 2012). Given irritability's high prevalence rates across samples of youth and in multiple DSM-5 disorders, there is a need for more work elucidating its transdiagnostic presence to lend more specificity to the symptom.

Sleep disturbance is a psychiatric symptom that can be characterized by impairments in sleep quality (i.e., unsatisfying sleep), difficulty falling asleep (i.e., insomnia), difficulty staying awake (i.e., hypersomnia), or decreased need for sleep, and is often associated with co-occurring mental health conditions in both children and adults (e.g., Freeman et al., 2020; Geoffroy et al., 2018; Ivanenko & Johnson, 2008). For the purposes of the present study, we focus the discussion of sleep disturbance as a transdiagnostic symptom of mood and behavioral disorders, and apart from DSM-defined sleep disorders, given that such sleep disorders often include other

¹ The general terms DSM and ICD are used throughout to refer to each of the diagnostic classification systems generally, except where specified to indicate a specific edition.

health-related conditions above and beyond mental health (e.g., restless leg syndrome, breathing-related sleep disorders). In adolescent populations specifically, prevalence rates for insomnia and hypersomnolence have been found to be 23.8% and 11.7%, respectively (Hysing et al., 2013; Kolla et al., 2019). During adolescence, both pubertal and socioemotional development are associated with significant changes in sleep regulatory processes, making this developmental phase a particularly salient research target (Lucien et al., 2021; Palmer et al., 2022).

More specifically, sleep disturbance is linked to an increased risk for anxiety and depressive disorders (Chorney et al., 2007; Freeman et al., 2020; Kearns et al., 2020), trauma and stressor-related disorders (Maher et al., 2006), and disruptive behavior disorders (Aronen et al., 2014). In the DSM, sleep disturbance is a broad term and allows for patients to meet criteria for different diagnoses while exhibiting different symptoms. For example, to qualify for MDD, patients can exhibit either insomnia or hypersomnia, sleep problems that are direct opposites of each other. Further, to meet criteria for sleep disturbance under GAD, patients can exhibit difficulty falling, difficulty staying asleep, or restless, unsatisfying sleep. Although each of these problems falls under sleep disturbance category, the physical manifestation of each presents differently. Sleep disturbance is also theorized to be related to irritability, although very little work has examined these potential associations (e.g., Poznanski et al., 2018).

To some extent, the public health burden of irritability and sleep disturbance in adolescence may be reflected in the prevalence rates for mental health conditions associated with these nonspecific symptoms. Although mental disorders are quite common in childhood and adolescence, there is considerable variability in reported prevalence rates (Costello et al., 2003; Kessler et al., 2012; Merikangas et al., 2009; Polanczyk et al., 2015). A recent longitudinal study found lifetime prevalence rates of mental health disorders to be as high as 86%, with the majority of these disorders (59%) first onset before age 18 (Caspi et al., 2020). When considering specific disorder categories, prevalence rates vary, with an estimated 33% lifetime prevalence of anxiety disorders, 23% for disruptive behavior disorders, 14% for mood disorders, and up to 8% for PTSD (Bandelow & Michaelis, 2022; Merikangas et al., 2010, 2022; Roberts et al., 2011). Prevalence rates for individual disorders were reported as the following: 12.6% for ODD, 11.7% for MDD, 7.8% for intermittent explosive disorder (IED), 2.9% for BD, and 2.2% for GAD (McLaughlin et al., 2012; Merikangas et al., 2010). However, the extent to which irritability and sleep disturbance occur within and across these conditions is unknown.

Finally, it is important to consider gender and adolescent development in relation to mental health conditions (Zahn-Waxler et al., 2008). Some studies have examined gender differences in prevalence rates for mental health disorders (Costello et al., 2003; Kessler et al., 2012), finding that girls report higher rates of mood and anxiety disorders while boys report higher rates of disruptive behavior disorders. There has also been an investigation into gender differences at the symptom level, although evidence is more nuanced. For sleep disturbance, these differences start emerging in childhood (Krishnan & Collop, 2006; Lewien et al., 2021), with girls eventually reporting longer total sleep times but more sleep-related complaints and disorders than boys (Krishnan & Collop, 2006; Lewien et al., 2021; Lindberg et al., 1997; Sadeh et al., 2000). For irritability, there has been little research on gender differences, although there is preliminary evidence that irritability is particularly linked to disruptive behaviors in boys and during childhood, but linked more to mood problems in girls

and during adolescence (Caprara et al., 2007; Humphreys et al., 2019; Leibenluft et al., 2006).

The literature reviewed above suggests that irritability, sleep disturbance, and DSM conditions related to these symptoms are significant public health concerns for adolescents; however, there is little precision to this picture. Accordingly, the present aim was to investigate these two nonspecific mental health symptoms—irritability and sleep disturbance—in terms of their overall prevalence in the context of DSM-based emotional and behavioral disorders in a large representative sample of adolescents, the National Comorbidity Survey—Adolescent Supplement (NCS-A). Drawing from DSM diagnostic criteria, we analyzed NCS-A data for the prevalence of specific irritability and sleep disturbance symptoms, overall and across disorders. Although the novel and exploratory approach of this study restricted the hypotheses we could make, we anticipated that a large portion of the sample (possibly a majority) would endorse irritability and sleep problems, and that these problems would exceed estimates for irritability- and sleep-related DSM conditions obtained from the literature and these data.

Method

Study Design and Procedure

The NCS-A study was a nationally representative survey of U.S. adolescents carried out between 2001 and 2004. The full sample consisted of $N = 10,148$ adolescents ages 13–18 (see Table 1 for demographics). It was designed to be the first study to provide data for the prevalence, correlates, and patterns of service for mental health disorders among American youth (Merikangas et al., 2009). For full details on the background, measures, and procedures, see Kessler et al. (2009; Kessler, Avenevoli, Green, et al., 2009) and Merikangas et al. (2009).

The NCS-A was a nationwide dual-frame survey that drew from household and school sources with an overall response rate of 75.6% (Kessler, Avenevoli, Green, et al., 2009). The school sample ($N = 9,244$) was randomly selected adolescents within a representative sample of middle, junior high, and high schools. The smaller household sample ($N = 904$) was adolescents residing in the households chosen in the National Comorbidity Survey Replication (Kessler et al., 2004), a similar prior study with adults. In the NCS-A, there were 25 youths (0.2%) identified as *nonstudent* participants in the household component of the study. Because this group

Table 1
Participant Demographics

Demographic	<i>N</i>	Estimate
Age, <i>M (SD)</i>	10,148	15.18 (1.51)
Race/ethnicity, % (<i>SE</i>)		
White/Caucasian	5,648	55.7 (0.5)
Black/African American	1,955	19.3 (0.4)
Hispanic/Latinx	1,922	18.9 (0.4)
Gender, % (<i>SE</i>)		
Male	4,965	48.9 (0.5)
Female	5,183	51.1 (0.5)
U.S. region, % (<i>SE</i>)		
South	3,442	33.9 (0.5)
Midwest	2,785	27.4 (0.4)
West	2,051	20.2 (0.4)
Northeast	1,870	18.4 (0.4)

Note. Estimates are unweighted.

was not large enough for generalizability, survey weights were not calculated for them and they were consequently omitted from weighted analyses leaving a sample size of $N = 10,123$ (Kessler, Avenevoli, Green, et al., 2009), implying that weighted results are generalizable to the U.S. population at that time that were enrolled in school. Additional data were collected covering such variables as emotional functioning, personality, demographics, background, health services, and (for a subset of the sample) parent-rated symptom data on selected emotional and behavioral disorders (Kessler, Avenevoli, Green, et al., 2009; Merikangas et al., 2009). Parent-report data largely did not cover conditions of interest, items related to irritability and sleep, and were only completed for 64.0% of the full sample; therefore, only adolescent self-report data were used for analyses.

The survey was administered by professional interviewers from the Institute for Social Research at the University of Michigan. To minimize respondent burden, adolescents were first asked a set of screening items, which determined whether they would be asked follow-up questions corresponding to symptom criteria for *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (DSM-IV) disorders. Within each disorder block, once adolescents endorsed sufficient symptom criteria to meet that disorder, they were not asked to report on the remaining symptom criteria. However, some subthreshold information was still collected and “balanced” with the desire to use skips in certain instances (Merikangas et al., 2009). At times, longer interviews were also broken up into multiple sections. Due to the nature of skipping out of certain disorder blocks and items, certain sleep and irritability items were asked to subsets of the full sample. Written informed consent or assent was obtained from all participants, and each was compensated. The Human Subjects Committees of Harvard Medical School and the University of Michigan approved all study procedures.

Measures

Sociodemographic Variables

The NCS-A collected data on several risk factors and correlates for mental health at the individual, family, and environmental levels. For the present analysis, only items related to irritability, sleep disturbance, or demographics were considered.

Adolescent Diagnostic Assessment

Adolescents were administered the WHO Composite International Diagnostic Interview (CIDI) Version 3.0, which had been modified for use in adolescents, by trained interviewers (Merikangas et al., 2009). The CIDI maps onto DSM-IV diagnostic criteria, and the data collected from this interview were used to determine diagnoses. The NCS-A data collected by the modified CIDI have been found to have good consistency with blind clinical reappraisals of NCS-A respondents using the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) as a standard (Kessler, Avenevoli, Costello, et al., 2009). The CIDI collects symptom- and category-level data on several classes of disorders, including diagnostic entities related to *mood* (e.g., MDD, dysthymic disorder, BDs I and II, and mood episodes contributing to these diagnoses), *anxiety/stress* (e.g., separation anxiety disorder, social phobia, panic disorder, GAD, and PTSD), and *disruptive behavior* (ADHD, conduct disorder [CD], ODD, and IED). The original DSM-IV diagnoses in the data set were used. Of note, there are variations in the measurement and

recording of diagnostic variables in the NCS-A data set; most results emphasized lifetime prevalence (Merikangas et al., 2010) while others included 30-day and 12-month windows as well as lifetime with formulations and results varying across disorders (e.g., social phobia showed a much higher 12-month to lifetime ratio than separation anxiety disorder; Kessler et al., 2012). These variations partly reflect differing temporal windows that are built into the definitions of each disorder per DSM (e.g., symptoms for 12 months for CD vs. 2 weeks for MDD). When multiple variations of diagnostic variables were available, we selected the one emphasizing lifetime prevalence and application of hierarchical exclusionary rules where applicable.

Operational Definitions of Irritability and Sleep Problems

The items contained in the NCS-A CIDI modules for disorders noted above (mood, anxiety, stress, and disruptive behavior) were inspected in relation to DSM-IV and DSM-5-TR diagnostic criteria with particular attention to features of irritability and sleep problems. These items appeared in different portions of the survey but were only included in this analysis if they clearly mapped onto DSM criteria with 1:1 correspondence. To achieve this goal, we developed operational definitions for both symptoms, as follows. The description of mapping items onto these definitions across DSM and NCS-A data is provided in the Results and the Supplement.

Irritability was defined as increased reactivity or proneness to anger, irritable outbursts, temper loss, outbursts, touchiness, feeling irritable, grouchy, and easily annoyed (Brotman, Kircanski, & Leibenluft, 2017). Broader emotional (e.g., mood lability) and behavioral (e.g., aggression) symptoms were not considered as representing irritability unless they were also defined by the other features noted above (e.g., explosive outbursts in IED were included, whereas fighting in CD was not included). Two composite irritability items were formed: ANY_IRR = whether at least one irritability symptom was endorsed as present (0, 1); SUM_IRR = absolute number of irritability symptoms endorsed by participant (0–15).

Sleep disturbance was defined as problems specifically *with, during, or related to* sleep. These include impairments in sleep quality, difficulty falling asleep, sleeping more than usual (i.e., hypersomnia), or decreased need for sleep (i.e., hyposomnia; Petit et al., 2007). Although this definition includes problems of sleep *duration*, it excludes symptoms defined solely according to sleep *timing*, such as sleep onset and offset. Likewise, symptom criteria generally related to fatigue, restlessness, and the like were also not considered unless they were explicitly tied to sleep. Note that the DSM-5 does contain a chapter on sleep disorders, but we did not consider these disorders given that our focus was on sleep as a nonspecific transdiagnostic mental health concern, and not as a core sleep concern. Aggregate sleep items, ANY_SLP and SUM_SLP, were formed using the same approach as for irritability variables.

Data Preparation and Analysis

First, DSM-5 bipolar, depressive, anxiety, traumatic stress, or disruptive/impulse-control disorders were identified as candidate disorder blocks with which to carry out the current review. They were selected because they capture the large majority of instances of irritability as a diagnostic criterion (Evans, Shaughnessy, & Karlovich, 2023) as well as for sleep (Krystal, 2012), with the exception of sleep disorders (excluded from this analysis, as noted above).

Disorders within these blocks were then searched for individual symptom criteria related to sleep and irritability, which produced a table of candidate diagnostic categories for inclusion, as well as candidate irritability and sleep criteria within each one. From there, NCS-A item-level data used to screen or assess these symptoms were examined, and Ashley R. Karlovich and Spencer C. Evans collectively located items with 1:1 correspondence, following the DSM-5 and the NCS-A codebook (Kessler, 2001–2004). Analyses drew from all available data in the NCS-A adolescent household and school data set.

Most of the NCS-A variables were originally recorded as binary (1 = *symptom present*, 0 = *symptom absent*, or 999 = *not collected*). A few sleep items (variable codes D64A-D64D, M30D) were originally rated on 4- or 5-point ordinal scales; these were dichotomized for analysis, with the two lowest response bins coded as 0 and the higher bins as 1. By virtue of the study design, some variables were available from everyone or nearly everyone in the sample (valid *N*s = 10,135–10,148 or 99.87%–100.00% of the sample; see Tables 2 and 3), whereas other items were only presented to some participants as necessary to confirm or rule out a diagnosis based on the screening/skip format, yielding much smaller sample sizes on these variables (valid *N*s = 32–957, or 0.32%–9.43%). As such, prevalence rates for individual items should be interpreted with caution and with attention to the item's valid *N*. Our primary focus, however, was on the four aggregate variables—any irritability, any sleep, sum of irritability, and sum of sleep—each of which was formed as a composite of all available items in the irritability or sleep domains.

We accounted for the complex sampling design in our primary analyses and results (i.e., weighted symptom prevalence estimates) by incorporating NCS-A's final survey weights and design features to produce more generalizable estimates, standard errors, and confidence intervals (CIs). At the same time, analyses involving item-level data, typically collected from subsamples that vary drastically in size (as noted above), were kept unweighted for a more transparent reporting and straightforward interpretation of the present results—that is, as

drawn from the present sample, not necessarily projected to the population. This is appropriate for analyses involving subsamples of adolescents from the NCS-A data because those subsamples are not nationally representative of the U.S. adolescent population and the final survey weights are inappropriate and not applied (Bynion et al., 2018). That said, the multistage sampling design and observed demographics of the obtained sample (as described above) were consistent with census estimates suggesting the generalizability of these findings.

Adolescent gender (1 = *male*, 0 = *female*) and age (1 = *older* [16–18], 0 = *younger* [13–15]) were examined as predictors of overall irritability and sleep disturbance using prevalence ratios (PRs) and 95% CIs estimated from Poisson regression models using weighted data. This approach is recommended over alternatives (e.g., logistic regression odds ratios) as being a more appropriate and accurate measure of association in the context of cross-sectional prevalence data (Barros & Hirakata, 2003; Tamhane et al., 2016). Lastly, we examined the prevalence estimates of major mental health conditions along with specific indicators of irritability and sleep problems, as well as the extent to which each symptom occurred among individuals who meet criteria for the given diagnosis. Weighted analyses were carried out in R Version 4.3.0 (R Core Team, 2022) using the *survey* package (Lumley, 2023) and the *svydesign* function to incorporate the final weights, clusters, and strata from the NCS-A data set. Variable coding and unweighted analyses were carried out in SPSS Version 27 (IBM Corp., 2020).

Analyses drew from all available data in the main household + school NCS-A data set. Most NCS-A symptom and disorder variables were used as originally coded, mostly binary (present or not) except where noted otherwise. Prevalence estimates (*N* and %, with standard error and/or CIs) were computed to report the estimated prevalence of each indicator in the population individually, and the percentage of the sample and population with irritability and sleep disturbance endorsed on any of these indicators. We adopted a 0.05 significance level in analyses and correspondingly

Table 2
Prevalence of DSM Irritability Symptoms in the NCS-A Sample

Disorder	NCS-A Variable	Content	Endorsed	Valid <i>N</i>	Percent	<i>SE</i>
ODD	SC33	Frequency in trouble with adults in child/adolescent	3,577	10,135	35.3	0.5
ODD	OD1A	In childhood or adolescent—often lose temper	2,359	3,563	66.2	0.8
ODD	OD1K	In childhood or adolescent—easily annoyed by others	2,062	3,565	57.8	0.8
ODD	OD1E	In childhood or adolescent—angry a lot of the time	1,779	3,562	49.9	0.8
IED	SC20_1	Anger attack—breaking item of some value	3,168	10,146	31.2	0.5
IED	SC20_2	Anger attack—hitting/attempt hitting person	4,008	10,140	39.5	0.5
IED	SC20_3	Anger attack—threat of harm to person	1,762	6,137	28.7	0.6
IED	DSM_IEDH	Intermittent explosive disorder	1,306	10,148	12.9	0.3
PTSD	PT103	Irritable—most affected time, worst event	486	957	50.8	1.6
GAD	G9C	Worst worried month—more irritable	1,008	1,431	70.4	1.2
DEP ^a	SC25	Irritable/grumpy/bad mood for several days	5,075	10,146	50.0	0.5
DEP ^a	SC25A	Irritation led to shout/argue/hit several days	2,266	5,071	44.7	0.7
DEP ^a	D26X	Depressive episode—irritable/grouchy/moody most days	1,288	1,725	74.7	1.0
MAN ^a	M7P	Irritable episode—lost control or broke valuables	680	2,930	23.2	0.8
MAN ^a	M30E_binary	Manic episode—big increase in irritability	21	44	47.7	7.5
—	ANY_IRR	Any of the above	8,055	10,148	79.4	0.4
—	ANY_IRR weighted	Any of the above—weighted population estimate	8,031	10,123	79.5	0.9

Note. DSM = Diagnostic and Statistical Manual; NCS-A = National Comorbidity Survey—Adolescent Supplement; ODD = oppositional defiant disorder; IED = intermittent explosive disorder; PTSD = posttraumatic stress disorder; GAD = generalized anxiety disorder; DEP = depressive episode; MAN = manic or hypomanic episode. Bolded text denotes the aggregate estimates as well as weighted population estimates.

^aRelates to disorders including major depressive disorder, persistent depressive disorder, bipolar disorders I and II, and cyclothymic disorder.

Table 3
Prevalence of DSM Sleep Disturbance Symptoms in the NCS-A Sample

Disorder	NCS-A Variable	Content	Endorsed	Valid <i>N</i>	Percent	<i>SE</i>
PTSD	PT102	Trouble sleeping after worst event	646	956	67.6	1.5
PTSD	PT273	Worst month past year-trouble sleeping	203	276	73.6	2.7
SEP	SA1J	Sep anxiety after 5-refuse sleep away from home	214	1,359	15.7	1.0
SEP	SA1K	Sep anxiety after 5-dream person harmed	478	1,813	26.4	1.0
GAD	G9F	Worst worried month-sleep problems	896	1,430	62.7	1.3
DEP ^a	D26G	Depressive episode-trouble sleeping most nights	1,299	1,725	75.3	1.0
DEP ^a	D26H	Depressive episode-slept more than usual most nights	238	428	55.6	2.4
DEP ^a	D64A_binary	Took at least 30 min to fall asleep most nights	23	33	69.7	8.0
DEP ^a	D64B_binary	Woke up at least once a night most nights	22	33	66.7	8.2
DEP ^a	D64C_binary	Woke up at least 1hr before intended most nights	16	32	50.0	8.8
DEP ^a	D64D_binary	Slept 12 hr or longer in 24 hr periods	10	33	30.3	8.0
DEP ^a	IR8E	In worst episode-have trouble sleeping	201	278	72.3	2.7
DEP ^a	IR8F	Worst episode-sleep too much nearly every night	34	77	44.2	5.7
DEP ^a	D26I	Depressive episode-slept much less but not tired	759	1,487	51.0	1.3
DEP ^a	M7J	Irritable episode-sleep less but not tired	1,776	2,924	60.7	0.9
DEP ^a	M30D_binary	Slept less than usual by 1 hr or more	20	44	45.5	7.5
DEP ^a	CC20A	Took long time to fall asleep for 2+ weeks	2,317	10,141	22.8	0.4
MAN ^a	CC20B	Long time to get back to sleep for 2+weeks	1,407	10,144	13.9	0.3
MAN ^a	CC20C	Woke up too early for 2+ weeks in past year	1,760	10,143	17.4	0.4
MAN ^a	CC20D	Problems feeling sleepy during day for 2+ weeks	3,878	10,143	38.2	0.5
—	ANY_SLP	Any of the above	6,097	10,148	60.1	0.5
—	ANY_SLP weighted	Any of the above—weighted population estimate	6,077	10,123	60.8	1.1

Note. NCS-A = National Comorbidity Survey—Adolescent Supplement; PTSD = posttraumatic stress disorder; SEP = separation anxiety disorder; GAD = generalized anxiety disorder; DEP = depressive episode; MAN = manic or hypomanic episode. Bolded text denotes the aggregate estimates as well as weighted population estimates.

^aRelates to disorders including major depressive disorder, persistent depressive disorder, bipolar disorders I and II, and cyclothymic disorder.

used 95% CIs to characterize the sampling variability around the weighted prevalence estimates and the weighted PRs.

Transparency and Openness

We report how we determined our sample size, all manipulations, and all measures in the study, and we follow Journal Article Reporting Standards (JARS) (Kazak, 2018). Analysis code for the study is available by emailing the corresponding author; data are available through formal requests to the NCS-A: <https://www.icpsr.umich.edu/web/HMCA/studies/28581>. Variable names are mentioned in the present study, and NCS-A codebook is publicly available. The current study’s analysis was not preregistered.

Results

As shown in Table S1 in the online supplemental materials, there were 6+ diagnostic entities related to irritability, which were all identified and matched to 15 corresponding items in the NCS-A data set. Similarly, Table S2 in the online supplemental materials shows 5+ diagnostic entities related to sleep disturbance, which were mapped onto 20 items in the NCS-A data. Although our approach largely focuses on symptom criteria, there was one diagnostic category, IED, which captures irritability with 100% sensitivity given its focus on explosive angry outbursts (i.e., everyone with IED has irritability, but not everyone who has irritability has IED); and the screener and criteria items could not identify it as accurately or efficiently as the IED code. For this reason, we retained the diagnostic code for IED (lifetime, with DSM hierarchical rules applied) as an additional indicator by which irritability could be found to be present.

Symptom Prevalence and Distribution

The overall rates of endorsement for all identified irritability symptoms and sleep symptoms are reported in Tables 2 and 3, respectively. Individual estimates should be interpreted with caution given the large variability in how and to whom particular items were administered. Specifically, due to the nature of skip logic used in the study, some estimates at the item level refer to the full sample, while others refer to smaller subsets of the sample to whom the question was asked.² We therefore emphasize that the most valid estimates can be found in the aggregate “any” and “sum” estimates for irritability and sleep problems prevalence, as these pool across all indicators and are calculated based on the total sample in the denominator. Figure 1 presents histograms showing the weighted count for number of irritability and sleep disturbance symptoms. As shown, both types of symptoms followed a right-skewed count distribution.

Irritability

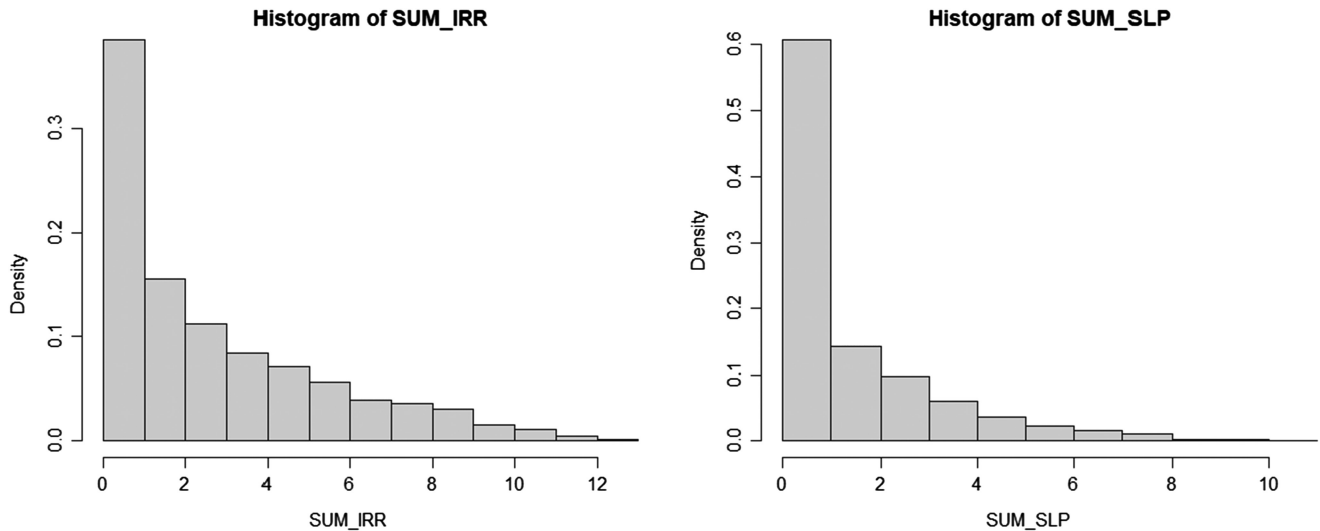
As shown in Table 2, some 8,055 youths endorsed at least one of the DSM symptoms of irritability, resulting in an overall weighted prevalence for lifetime irritability of 79.5% (95% CI [77.8, 81.2]). Although the modal response was zero symptoms, participants endorsed a

² This design may lead to biased percentage estimates for individual items, calculated as $N_{\text{endorsed}}/N_{\text{asked}}$. Importantly, Merikangas et al. (2009) note that the design was not solely based on screeners but rather involved “skipping respondents out of sections as soon as we had the information needed ... that they either met criteria or failed to meet any symptom required for a diagnosis” (p. 376). Consequently, individual symptom estimates calculated from subsamples could be inflated or deflated. For this reason, we report both the absolute values and valid percentages in tables for transparency, but pooling all these items together provides a more reliable picture.

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Figure 1

Distribution of Irritability (Left) and Sleep Problem (Right) Symptom Counts in NCS-A Data



Note. NCS-A = National Comorbidity Survey—Adolescent Supplement; SUM_IRR = sum of irritability; SUM_SLP = sum of sleep.

weighted median of two (Interquartile Range [IQR] = 1–5) irritability symptoms ($M = 3.04$, range = 0–13). Male gender (PR = 1.04, 95% CI [1.001, 1.07], $p = .043$) and older age (PR = 1.04, [1.004, 1.07], $p = .028$) were both slightly associated with increased risk for any irritability.

Within particular diagnostic categories, the rates of any irritability were high. As shown in Table 4, virtually everyone (96.8%–100.0%)³ with any irritability-related diagnoses endorsed some history of clinically significant irritability; however, rates were lower when considering only those within a particular category and its symptoms. For example, 4.8% of the entire sample (denominator $N = 10,148$) and 99.0% of individuals with lifetime PTSD (denominator $N = 388$) reported having any PTSD-related irritability; but if only PTSD-related irritability items (irritable during most affected time after worst traumatic event) were considered, this number drops to 68.0% of those with PTSD having endorsed that item. It is also notable that rates of irritability symptoms in the overall sample were often relatively high, but irritability was uniformly high for all those who meet criteria for any diagnosed mental health condition, irrespective of which condition (Table 4). For example, even in those conditions not expressly defined by irritability (e.g., ADHD, $N = 432$; panic disorder, $N = 238$; substance use disorders, $N = 1,434$), lifetime rates of irritability ranged from 92.4% to 98.4%, confirming that irritability is both pervasive in normative samples and even more ubiquitous among those with any mental health condition.

Sleep Disturbance

Some 6,097 participants reported at least one of the DSM-defined symptoms of sleep disturbance, for an overall weighted prevalence of 60.8% (95% CI [58.7, 62.9]), constituting a majority of the overall sample and even larger portions of those within specific groups (described below). Participants endorsed a weighted median of one (IQR = 0–3) sleep symptom ($M = 1.61$, range = 0–11, mode =

0). Male gender was associated with decreased risk (PR = 0.85, 95% CI [0.81, 0.88], $p < .001$) and older age with increased risk (PR = 1.09, [1.02, 1.16], $p = .012$) for any sleep problems.

Within particular diagnostic categories, results for sleep followed a pattern similar to those of irritability. As shown in Table 5, rates of any sleep problems ranged from 79.6% (substance use) to 91.2% (panic disorder) for those with mental health conditions that were not explicitly defined by sleep, and 92.1%–100.0% for conditions in which sleep disturbance was a diagnostic criterion (see Table 5 for valid N s for each diagnosis). Again, rates of disorder-specific sleep problems paled in comparison to total estimated sleep problems overall. For example, among those with a lifetime history of separation anxiety disorder ($N = 772$), 92.1% had clinically significant sleep problems of some kind; but only 22.2% had the central feature of refusing to sleep away from home, only 39.9% had nightmares about harm befalling a caregiver, and 49.5% had either of these (in the whole sample, $N = 10,138$, these estimates were 2.1%, 4.7%, and 6.3%, respectively). Thus, when looking across the entire diagnostic landscape of sleep-related mental health conditions, clinically significant histories of sleep disturbance are nearly universal among youth with various mental health conditions including mood, anxiety, and stress-related disorders.

Discussion

The epidemiological literature describes the prevalence of major mental health disorders; however, these broad estimates fail to provide a clear picture of the rates at which nonspecific symptoms affect

³ The estimates of 96.8%–100.0% were calculated as the number endorsing any irritability items divided by the valid N with the given irritability-defined diagnosis, which ranged from $N = 95$ with Bipolar Disorder II to $N = 1360$ with Any Depressive Disorder (see Table 4). Estimates for rates of sleep disturbance within diagnostic categories were calculated in a similar fashion, with details reported in Table 5.

Table 4
Rates of Irritability in Adolescents Overall and by Mental Health Disorder

Diagnostic category/Indicators of irritability	Within the overall sample		Among those with the diagnosis (%)	% With any irritability
	N	%		
Oppositional defiant disorder	1,047	10.3	—	100.0
OD1A. Lose temper	2,359	23.2	85.1	—
OD1K. Easily annoyed	2,062	20.3	78.2	—
OD1E. Angry a lot	1,779	17.5	74.7	—
Any of the above	2,994	29.5	97.8	—
Intermittent explosive disorder	1,306	12.9	100.0	100.0
SC20_1. Anger attack—breaking	3,168	31.2	69.9	—
SC20_2. Anger attack—hitting	4,008	39.5	76.6	—
SC20_3. Anger attack—threatening	1,762	17.4	75.2	—
Any of the above	6,355	62.6	100.0	—
Posttraumatic stress disorder	388	3.8	—	99.0
PT103. Irritable after event	486	4.8	68.0	—
Generalized anxiety disorder	212	2.1	—	98.6
G9C. More irritable	423	4.2	73.0	—
Major depressive episode	1,341	13.2	—	98.7
Major depressive disorder	1,123	11.1	—	98.5
Dysthymia	155	1.5	—	96.8
Any depression	1,360	13.4	—	98.6
SC25. Irritable/grumpy mood	5,075	50.0	81.9	—
SC25A. Irritation—shout/hit/argue	2,266	22.3	62.8	—
D26X. Irritable/grouchy/moody	1,288	12.7	78.6	—
Any of the above	5,260	51.2	91.8	—
Mania	136	1.3	—	99.3
Hypomania	380	3.7	—	99.7
Bipolar disorder I	136	1.3	—	99.3
Bipolar disorder II	95	0.9	—	100.0
Any bipolar	516	5.1	—	99.6
M7P. Irritable episode—lost control	680	6.7	41.3	—
M30E. Manic—increased irritability	21	6.9	57.9	—
Any of the above	700	6.9	42.4	—
Other disorders and problems	—	—	—	—
ADHD (DSM_ADD)	432	4.3	—	98.4
Conduct disorder (DSM_CD)	586	5.8	—	96.8
Eating disorders	557	5.5	—	94.8
Panic disorder (DSM_PDS)	238	2.3	—	98.3
Separation anxiety disorder (DSM_SAD)	772	7.6	—	95.1
Social phobia (DSM_SO)	1,434	14.1	—	93.0
Specific phobia (DSM_SP)	1,994	19.6	—	92.4
Substance use disorders	1,434	14.1	—	94.8

Note. Estimates are unweighted. Variable names and labels from the National Comorbidity Survey—Adolescent Supplement data set are included where applicable.

individuals. Indeed, irritability and sleep problems are among the most nosologically ubiquitous, developmentally important, and clinically significant nonspecific symptoms. Focusing on these two symptoms as exemplars, we leveraged a large, nationally representative data set to examine their prevalence rates across DSM diagnostic boundaries. The main finding of the present study is that both symptoms were remarkably common: Lifetime prevalence of these clinical symptoms was 79.5% for any irritability and 60.8% for sleep disturbance. Although these rates should not be interpreted as capturing pathological levels or disease entities, it is important to recognize that these symptoms were measured within a DSM framework that was specifically developed to assess mental health conditions. As such, these irritability and sleep symptoms, reported by the majority of youth, can be considered mental health symptoms that could at least partially satisfy their diagnostic requirements for a mood, anxiety, stress, or disruptive behavior disorder.

The prevalence of irritability and sleep problems is even more remarkable when focusing on those who meet criteria for DSM disorders. Results shown in Tables 4 and 5 demonstrate that generally 80%–100% of the population that met criteria for any diagnosis tended to endorse at least one symptom of irritability and at least one symptom of sleep disturbance. This is true irrespective of whether the diagnostic category in question was one with or without irritability or sleep disturbance as a part of the diagnostic criteria (e.g., ADHD, CD, and panic disorder). This suggests that irritability and sleep disturbance are extremely commonly associated with a variety of emotional and behavioral disorders, not just those they help to define. Further, with respect to gender, male gender was associated with slightly greater risk for irritability, but decreased risk for sleep problems, consistent with prior research suggesting gender differences in psychopathology (e.g., Zahn-Waxler et al., 2008) and girls' worsening sleep patterns in adolescence (e.g., Labege et al., 2001).

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Table 5
Rates of Sleep Problems in Adolescents Overall and by Mental Health Disorder

Diagnostic category/Indicators of sleep problems	Within the overall sample		Among those with the diagnosis (%)	% with any sleep problems
	<i>N</i>	%		
Posttraumatic stress disorder	388	3.8	—	97.7
PT102. Trouble sleeping after	646	6.4	81.4	—
PT273. Trouble sleeping year	203	2.0	79.9	—
Any of the above	657	6.5	83.8	—
Separation anxiety disorder	772	7.6	—	92.1
SA1J. Refuse to sleep away	214	2.1	22.2	—
SA1K. Nightmares of harm	478	4.7	39.9	—
Any of the above	638	6.3	49.5	—
Generalized anxiety disorder	212	2.1	—	95.8
G9F. Worried–sleep problems	423	4.2	73.0	—
Major depressive episode	1,341	13.2	—	99.0
Major depressive disorder	1,123	11.1	—	98.8
Dysthymia	155	1.5	—	98.7
Any depression	1,360	13.4	—	99.0
D26G. Trouble sleeping	1,299	12.8	79.1	—
D26H. Slept more	238	2.3	62.6	—
D64A. Delayed sleep onset	23	0.2	71.9	—
D64B. Woke up night	22	0.2	65.6	—
D64C. Woke early	16	0.2	51.6	—
D64D. Slept long	10	0.1	31.3	—
IR8E. Trouble sleeping	201	2.0	80.0	—
IR8F. Slept too much	34	0.3	46.7	—
CC20A. Too long fall asleep	2,317	22.8	46.2	—
CC20B. Long-time back to sleep	1,407	13.9	35.4	—
CC20C. Woke too early	1,760	17.3	33.5	—
CC20D. Problems feeling sleepy	3,878	38.2	64.2	—
Any of the above	5,371	52.9	97.3	—
Mania	136	1.3	—	99.3
Hypomania	380	3.7	—	96.1
Bipolar disorder I	136	1.3	—	99.3
Bipolar disorder II	95	0.9	—	100.0
Any bipolar	516	5.1	—	96.9
D26I. Slept less not tired	759	7.5	60.7	—
M7J. Slept less not tired	1,776	17.5	69.6	—
M30D. Slept less by 1+ hr	20	0.2	36.8	—
Any of the above	2,216	21.8	74.4	—
Other disorders and problems	—	—	—	—
ADHD	432	4.3	—	89.1
Conduct disorder	586	5.8	—	82.1
Eating disorders	557	5.5	—	90.5
Intermittent explosive disorder	1,306	12.9	—	82.0
Oppositional defiant disorder	1,047	10.3	—	86.0
Panic disorder	238	2.3	—	91.2
Social phobia	1,434	14.1	—	84.9
Specific phobia	1,994	19.6	—	83.1
Substance use disorders	1,434	14.1	—	79.6

Note. Estimates are unweighted. ADHD = attention-deficit/hyperactivity disorder. Variable names and labels from the National Comorbidity Survey—Adolescent Supplement data set are included where applicable.

This study has several strengths. First, it is the first known study to examine the prevalence of nonspecific symptoms of mood, anxiety, trauma, and disruptive/impulse-control disorders in the DSM, an important step in better understanding symptom heterogeneity and diagnostic overlap. In addition, we used what may be the most appropriate data set through which to test these questions—a large, nationally representative sample of more than 10,000 adolescents from across the United States. We also used a systematic approach to reviewing the DSM and identified all disorders in

which sleep disturbance and irritability appear as symptom criteria, including most of those disorders in the current review. Finally, we employed a quantitative, data-driven approach to answer these questions. In the literature, it is common to see authors refer to irritability or sleep problems as something like a “transdiagnostic symptom that cuts across a number of diagnostic categories” while making a point about the ubiquity and clinical importance of such a symptom. However, turning this rational argument into an empirical finding requires data, which the present study provides.

There are also limitations in the present study. First, there were several disorders that could not be examined or assessed, which also include irritability and sleep disturbance as symptom criteria, including substance use disorders and personality disorders. Although some studies (e.g., Blank et al., 2015; Wong et al., 2016) have looked at sleep problems in the NCS-A using item-level data, they also note that the NCS-A measured symptoms of insomnia, rather than the DSM-IV criteria for insomnia as a sleep disorder. For a more comprehensive nosology of sleep disorders, the DSM-5 refers readers instead to the *International Classification of Sleep Disorders* (Sateia, 2014), which may provide a more appropriate theoretical orientation for future work in this area. Second, data were collected in the early 2000s and in relation to DSM-IV, raising questions about the extent to which they apply to present-day adolescents and the DSM-5-TR. Of note, the diagnostic criteria of interest largely remain the same across versions, and even can be used to approximate DSM-5 entities not in DSM-IV, such as DMDD (Althoff et al., 2016), meaning that all those who would have met criteria for DMDD would be captured via our analysis as well. We chose to stay with DSM-IV as that was the basis of the NCS-A instrumentation but at the same time mapped symptoms onto DSM-5-TR to promote applicability of findings.

Third, the current analyses establish prevalence estimates for experiences of irritability and sleep disturbances in adolescents, but symptoms are considered across different modules and timeframes, and the present analysis cannot make any epistemic claims about irritability or sleep as causes, correlates, manifestation, or consequences of psychopathology. Rather, we emphasize that these symptoms are already ubiquitously used in DSM criteria and as such bear direct relevance to psychopathology. Only subsets of the sample were asked certain irritability or sleep disturbance questions, suggesting the current estimations may be an underestimation of the true prevalence in the sample. Thus, caution is warranted particularly at the level of individual symptom estimates, whereas the overall estimates of any irritability or any sleep disturbance are much more reliable. Fourth, the current study relied on youth self-report measures. Although youth are considered reliable reporters of their own mental health symptoms (e.g., Ebesutani et al., 2011), future should consider irritability and sleep disturbances using multiple informants (e.g., parent/caregiver and teacher report) or multimethod approaches, including objective or physiological measurements. This may be particularly important for sleep variables, as some literature has found poor agreement between subjective sleep ratings and objective actigraphy measurements (Girschik et al., 2012; Goelema et al., 2019); however, youth self-report measures of sleep have still been implemented in clinical research settings and are thought to be feasible alternatives to objective measurement of sleep in youth when physiological measurement is not possible (Van Meter & Anderson, 2020).

Finally, our approach was descriptive, transdiagnostic, and non-specific, and therefore, not optimized to a particular disorder. As such, estimates at the individual item level may come with biased estimations given the nature of the skip logic, described in more detail in the Method section. For example, an estimated 11% of adolescents in the NCS-A data set met criteria for lifetime MDD (Avenevoli et al., 2015), suggesting that only a subset of the sample would have been queried for symptoms of sleep disturbance or increased irritability, contingent on their endorsement of prior queries related to sadness and anhedonia. Therefore, it would not be

accurate to estimate individual symptoms (i.e., “66.7% of adolescents woke up at least once a night most nights”); rather, we pooled such items together to reflect the global experience of irritability and sleep disturbance, above and beyond symptom experiences within the context of a particular disorder. In future research, rather than relying on a system such as DSM, it will be important for studies to draw from theoretical perspectives to test theory-driven hypotheses regarding such questions as whether (or to what extent), when (or for whom), and how (or through what mechanisms) do irritability and sleep problems affect youths’ functioning and mental health.

Several implications are worth noting. First, nonspecific symptoms of irritability and sleep disturbance appear to be highly prevalent across diagnostic categories in U.S. adolescents, which may have implications for both evidence-based assessment and treatment planning. Specifically, findings that males are at slightly greater risk for irritability, and females at slightly greater risk for sleep disturbances, may also be important to consider in future clinical decision making. Similarly, older age was slightly associated with a greater risk of irritability and sleep disturbances. Additionally, future iterations of diagnostic nosologies may consider incorporating dimensional models of psychopathology, including subtypes of irritability (i.e., phasic and tonic) and sleep problems (e.g., insomnia, hypersomnia) to account for such prevalent symptoms. However, this need not be a problem to wait for nosologists to address. Clinicians and researchers are encouraged to give due consideration to the assessment of sleep functioning and irritability and related problems, as these are critical for health and mental health generally irrespective of DSM diagnoses.

Future work could consider a more comprehensive review to include other disorders in the DSM not included here (e.g., substance use disorders and personality disorders) and their associated symptom criteria. Additionally, sleep disorders were not examined within the current data set, highlighting a direction for future research as well. Given findings regarding prevalence of irritability and sleep disturbances in this adolescent population, future work should continue investigating the degree to which youth experience symptom-level distress and impairment that cut across modules and timeframes of the experience of psychopathology, apart from diagnostic labels themselves.

Developmentally, adolescence is a crucial period in which youth are exposed to biological and social/structural changes, potential increases in mood lability as well as increased risk for circadian dysfunction, making this population particularly susceptible to sleep disturbances and irritable mood (e.g., Arns et al., 2021; Martínez et al., 2011; Stringaris & Goodman, 2009). Future work should consider examining these processes longitudinally across development from childhood to adulthood. Findings also suggest the promise of a transdiagnostic perspective. For instance, interventions could be transdiagnostic in the sense of universally applied therapeutic principles, or empirically based modular strategies, or focus on shared mechanisms—all of which are posited to treat a range of disorders (Sauer-Zavala et al., 2017). When a youth is referred for treatment presenting with nonspecific symptoms of irritability or sleep disturbance, it is likely that they would be routed to receive one of many problem-specific treatments. Based on these findings, however, a treatment focused on irritability (or sleep) may be more appropriate than choosing whether to address irritability (or sleep) in the context of this or that disorder and this or that linear treatment. Rather, irritability and sleep disturbances are highly prevalent in the context of youth mental

health and warrant greater assessment and treatment consideration in their own right. Adolescents with such concerns may benefit from transdiagnostic interventions to target these nonspecific symptoms cutting across, rather than confined to, particular diagnoses.

References

- Althoff, R. R., Crehan, E. T., He, J.-P., Burstein, M., Hudziak, J. J., & Merikangas, K. R. (2016). Disruptive mood dysregulation disorder at ages 13–18: Results from the National Comorbidity Survey—Adolescent supplement. *Journal of Child and Adolescent Psychopharmacology*, *26*(2), 107–113. <https://doi.org/10.1089/cap.2015.0038>
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th-TR ed.).
- Arms, M., Kooij, J. S., & Coogan, A. N. (2021). Identification and management of circadian rhythm sleep disorders as a transdiagnostic feature in child and adolescent psychiatry. *Journal of the American Academy of Child and Adolescent Psychiatry*, *60*(9), 1085–1095. <https://doi.org/10.1016/j.jaac.2020.12.035>
- Aronen, E. T., Lampenius, T., Fontell, T., & Simola, P. (2014). Sleep in children with disruptive behavioral disorders. *Behavioral Sleep Medicine*, *12*(5), 373–388. <https://doi.org/10.1080/15402002.2013.821653>
- Avenevoli, S., Swendsen, J., He, J.-P., Burstein, M., & Merikangas, K. R. (2015). Major depression in the National Comorbidity Survey—Adolescent Supplement: Prevalence, correlates, and treatment. *Journal of the American Academy of Child and Adolescent Psychiatry*, *54*(1), 37–44.e2. <https://doi.org/10.1016/j.jaac.2014.10.010>
- Bandelow, B., & Michaelis, S. (2022). Epidemiology of anxiety disorders in the 21st century. *Dialogues in Clinical Neuroscience*, *17*(3), 327–335. <https://doi.org/10.31887/DCNS.2015.17.3/bbandelow>
- Barros, A. J., & Hirakata, V. N. (2003). Alternatives for logistic regression in cross-sectional studies: An empirical comparison of models that directly estimate the prevalence ratio. *BMC Medical Research Methodology*, *3*(1), Article 21. <https://doi.org/10.1186/1471-2288-3-21>
- Blank, M., Zhang, J., Lamers, F., Taylor, A. D., Hickie, I. B., & Merikangas, K. R. (2015). Health correlates of insomnia symptoms and comorbid mental disorders in a nationally representative sample of US adolescents. *Sleep*, *38*(2), 197–204. <https://doi.org/10.5665/sleep.4396>
- Brotman, M. A., Kircanski, K., & Leibenluft, E. (2017). Irritability in children and adolescents. *Annual Review of Clinical Psychology*, *13*(1), 317–341. <https://doi.org/10.1146/annurev-clinpsy-032816-044941>
- Brotman, M. A., Kircanski, K., Stringaris, A., Pine, D. S., & Leibenluft, E. (2017). Irritability in youths: A translational model. *American Journal of Psychiatry*, *174*(6), 520–532. <https://doi.org/10.1176/appi.ajp.2016.16070839>
- Bynion, T.-M., Cloutier, R., Blumenthal, H., Mischel, E. R., Rojas, S. M., & Leen-Feldner, E. W. (2018). Violent interpersonal trauma predicts aggressive thoughts and behaviors towards self and others: Findings from the National Comorbidity Survey—Adolescent Supplement. *Social Psychiatry and Psychiatric Epidemiology*, *53*(12), 1361–1370. <https://doi.org/10.1007/s00127-018-1607-x>
- Caprara, G. V., Paciello, M., Gerbino, M., & Cugini, C. (2007). Individual differences conducive to aggression and violence: Trajectories and correlates of irritability and hostile rumination through adolescence. *Aggressive Behavior*, *33*(4), 359–374. <https://doi.org/10.1002/ab.20192>
- Cardinale, E. M., Freitag, G. F., Brotman, M. A., Pine, D. S., Leibenluft, E., & Kircanski, K. (2021). Phasic versus tonic irritability: Differential associations with attention-deficit/hyperactivity disorder symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry*, *60*(12), 1513–1523. <https://doi.org/10.1016/j.jaac.2020.11.022>
- Caspi, A., Houts, R. M., Ambler, A., Danese, A., Elliott, M. L., Hariri, A., Harrington, H., Hogan, S., Poulton, R., Ramrakha, S., Rasmussen, L. J. H., Reuben, A., Richmond-Rakerd, L., Sugden, K., Wertz, J., Williams, B. S., & Moffitt, T. E. (2020). Longitudinal assessment of mental health disorders and comorbidities across 4 decades among participants in the Dunedin birth cohort study. *JAMA Network Open*, *3*(4), Article e203221. <https://doi.org/10.1001/jamanetworkopen.2020.3221>
- Caspi, A., & Moffitt, T. E. (2018). All for one and one for all: Mental disorders in one dimension. *American Journal of Psychiatry*, *175*(9), 831–844. <https://doi.org/10.1176/appi.ajp.2018.17121383>
- Chorney, D. B., Detweiler, M. F., Morris, T. L., & Kuhn, B. R. (2007). The interplay of sleep disturbance, anxiety, and depression in children. *Journal of Pediatric Psychology*, *33*(4), 339–348. <https://doi.org/10.1093/jpepsy/jsm105>
- Copeland, W. E., Angold, A., Costello, E. J., & Egger, H. (2013). Prevalence, comorbidity, and correlates of DSM-5 proposed disruptive mood dysregulation disorder. *American Journal of Psychiatry*, *170*(2), 173–179. <https://doi.org/10.1176/appi.ajp.2012.12010132>
- Copeland, W. E., Brotman, M. A., & Costello, E. J. (2015). Normative irritability in youth: Developmental findings from the Great Smoky Mountains study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *54*(8), 635–642. <https://doi.org/10.1016/j.jaac.2015.05.008>
- Cornacchio, D., Crum, K. I., Cox, S., Pincus, D. B., & Comer, J. S. (2016). Irritability and anxiety severity among youth with anxiety. *Journal of the American Academy of Child and Adolescent Psychiatry*, *55*(1), 54–61. <https://doi.org/10.1016/j.jaac.2015.10.007>
- Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry*, *60*(8), 837–844. <https://doi.org/10.1001/archpsyc.60.8.837>
- Drabick, D. A. G., & Gadow, K. D. (2012). Deconstructing oppositional defiant disorder: Clinic-based evidence for an anger/irritability phenotype. *Journal of the American Academy of Child and Adolescent Psychiatry*, *51*(4), 384–393. <https://doi.org/10.1016/j.jaac.2012.01.010>
- Ebesutani, C., Bernstein, A., Martinez, J. I., Chorpita, B. F., & Weisz, J. R. (2011). The youth self report: Applicability and validity across younger and older youths. *Journal of Clinical Child and Adolescent Psychology*, *40*(2), 338–346. <https://doi.org/10.1080/15374416.2011.546041>
- Evans, S. C., Corteselli, K. A., Edelman, A., Scott, H., & Weisz, J. R. (2023). Is irritability a top problem in youth mental health care? A multi-informant, multi-method investigation. *Child Psychiatry and Human Development*, *54*(4), 1027–1041. <https://doi.org/10.1007/s10578-021-01301-8>
- Evans, S. C., Shaughnessy, S., & Karlovich, A. R. (2023). Future directions in youth irritability research. *Journal of Clinical Child and Adolescent Psychology*, *52*(5), 716–734. <https://doi.org/10.1080/15374416.2023.2209180>
- Freeman, D., Sheaves, B., Waite, F., Harvey, A. G., & Harrison, P. J. (2020). Sleep disturbance and psychiatric disorders. *The Lancet Psychiatry*, *7*(7), 628–637. [https://doi.org/10.1016/S2215-0366\(20\)30136-X](https://doi.org/10.1016/S2215-0366(20)30136-X)
- Galatzer-Levy, I. R., & Bryant, R. A. (2013). 636,120 Ways to have posttraumatic stress disorder. *Perspectives on Psychological Science*, *8*(6), 651–662. <https://doi.org/10.1177/1745691613504115>
- Geoffroy, P. A., Hoertel, N., Etain, B., Bellivier, F., Delorme, R., Limosin, F., & Peyre, H. (2018). Insomnia and hypersomnia in major depressive episode: Prevalence, sociodemographic characteristics and psychiatric comorbidity in a population-based study. *Journal of Affective Disorders*, *226*, 132–141. <https://doi.org/10.1016/j.jad.2017.09.032>
- Girschik, J., Fritschi, L., Heyworth, J., & Waters, F. (2012). Validation of self-reported sleep against actigraphy. *Journal of Epidemiology*, *22*(5), 462–468. <https://doi.org/10.2188/jea.JE20120012>
- Goelema, M., Regis, M., Haakma, R., Van Den Heuvel, E., Markopoulos, P., & Overeem, S. (2019). Determinants of perceived sleep quality in normal sleepers. *Behavioral Sleep Medicine*, *17*(4), 388–397. <https://doi.org/10.1080/15402002.2017.1376205>
- Humphreys, K. L., Schouboe, S. N. F., Kircanski, K., Leibenluft, E., Stringaris, A., & Gotlib, I. H. (2019). Irritability, externalizing, and internalizing psychopathology in adolescence: Cross-sectional and longitudinal associations and moderation by sex. *Journal of Clinical Child and Adolescent Psychology*, *48*(5), 781–789. <https://doi.org/10.1080/15374416.2018.1460847>

- Hysing, M., Pallesen, S., Stormark, K. M., Lundervold, A. J., & Sivertsen, B. (2013). Sleep patterns and insomnia among adolescents: A population-based study. *Journal of Sleep Research, 22*(5), 549–556. <https://doi.org/10.1111/jsr.12055>
- IBM Corp. (2020). *IBM SPSS statistics for Windows* (Version 27.0) [Computer software].
- Ivanenko, A., & Johnson, K. (2008). Sleep disturbances in children with psychiatric disorders. *Seminars in Pediatric Neurology, 15*(2), 70–78. <https://doi.org/10.1016/j.spen.2008.03.008>
- Kazak, A. E. (2018). Editorial: Journal article reporting standards. *American Psychologist, 73*(1), 1–2. <https://doi.org/10.1037/amp0000263>
- Kearns, J. C., Coppersmith, D. D. L., Santee, A. C., Insel, C., Pigeon, W. R., & Glenn, C. R. (2020). Sleep problems and suicide risk in youth: A systematic review, developmental framework, and implications for hospital treatment. *General Hospital Psychiatry, 63*, 141–151. <https://doi.org/10.1016/j.genhosppsych.2018.09.011>
- Kessler, R. C. (2001–2004). *National comorbidity survey: Adolescent supplement (NCS-A), 2001–2004*. Inter-University Consortium for Political and Social Research [distributor].
- Kessler, R. C., Avenevoli, S., Costello, E. J., Georgiades, K., Green, J. G., Gruber, M. J., He, J., Koretz, D., McLaughlin, K. A., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Merikangas, K. R. (2012). Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication—Adolescent Supplement. *Archives of General Psychiatry, 69*(4), 372–380. <https://doi.org/10.1001/archgenpsychiatry.2011.160>
- Kessler, R. C., Avenevoli, S., Costello, E. J., Green, J. G., Gruber, M. J., Heeringa, S., Merikangas, K. R., Pennell, B.-E., Sampson, N. A., & Zaslavsky, A. M. (2009). Design and field procedures in the US National Comorbidity Survey Replication—Adolescent Supplement (NCS-A). *International Journal of Methods in Psychiatric Research, 18*(2), 69–83. <https://doi.org/10.1002/mpr.279>
- Kessler, R. C., Avenevoli, S., Green, J., Gruber, M. J., Guyer, M., He, Y., Jin, R., Kaufman, J., Sampson, N. A., Zaslavsky, A. M., & Merikangas, K. R. (2009). National Comorbidity Survey Replication Adolescent Supplement (NCS-A): III. Concordance of DSM-IV/CIDI diagnoses with clinical reassessments. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*(4), 386–399. <https://doi.org/10.1097/CHI.0b013e31819a1cbc>
- Kessler, R. C., Berglund, P., Chiu, W. T., Demler, O., Heeringa, S., Hiripi, E., Jin, R., Pennell, B.-E., Walters, E. E., Zaslavsky, A., & Zheng, H. (2004). The US National Comorbidity Survey Replication (NCS-R): Design and field procedures. *International Journal of Methods in Psychiatric Research, 13*(2), 69–92. <https://doi.org/10.1002/mpr.167>
- Kolla, B. P., He, J.-P., Mansukhani, M. P., Kotagal, S., Frye, M. A., & Merikangas, K. R. (2019). Prevalence and correlates of hypersomnolence symptoms in US teens. *Journal of the American Academy of Child and Adolescent Psychiatry, 58*(7), 712–720. <https://doi.org/10.1016/j.jaac.2018.09.435>
- Krishnan, V., & Collop, N. A. (2006). Gender differences in sleep disorders. *Current Opinion in Pulmonary Medicine, 12*(6), 383–389. <https://doi.org/10.1097/01.mcp.0000245705.69440.6a>
- Krystal, A. D. (2012). Psychiatric disorders and sleep. *Neurologic Clinics, 30*(4), 1389–1413. <https://doi.org/10.1016/j.ncl.2012.08.018>
- Laberge, L., Petit, D., Simard, C., Vitaro, F., Tremblay, R. E., & Montplaisir, J. (2001). Development of sleep patterns in early adolescence. *Journal of Sleep Research, 10*(1), 59–67. <https://doi.org/10.1046/j.1365-2869.2001.00242.x>
- Laporte, P. P., Matijasevich, A., Munhoz, T. N., Santos, I. S., Barros, A. J. D., Pine, D. S., Rohde, L. A., Leibenluft, E., & Salum, G. A. (2021). Disruptive mood dysregulation disorder: Symptomatic and syndromic thresholds and diagnostic operationalization. *Journal of the American Academy of Child and Adolescent Psychiatry, 60*(2), 286–295. <https://doi.org/10.1016/j.jaac.2019.12.008>
- Leibenluft, E., Cohen, P., Gorrindo, T., Brook, J. S., & Pine, D. S. (2006). Chronic versus episodic irritability in youth: A community-based, longitudinal study of clinical and diagnostic associations. *Journal of Child and Adolescent Psychopharmacology, 16*(4), 456–466. <https://doi.org/10.1089/cap.2006.16.456>
- Lewien, C., Genuneit, J., Meigen, C., Kiess, W., & Poulain, T. (2021). Sleep-related difficulties in healthy children and adolescents. *BMC Pediatrics, 21*(1), Article 82. <https://doi.org/10.1186/s12887-021-02529-y>
- Lindberg, E., Janson, C., Gislason, T., Björnsson, E., Hetta, J., & Boman, G. (1997). Sleep disturbances in a young adult population: Can gender differences be explained by differences in psychological status? *Sleep, 20*(6), 381–387. <https://doi.org/10.1093/sleep/20.6.381>
- Lucien, J. N., Ortega, M. T., & Shaw, N. D. (2021). Sleep and puberty. *Current Opinion in Endocrine and Metabolic Research, 17*, 1–7. <https://doi.org/10.1016/j.coemr.2020.09.009>
- Lumley, T. (2023). *Analysis of complex survey samples* (R package Version 4.2) [Computer software]. <https://cran.r-project.org/web/packages/survey/survey.pdf>
- Maher, M. J., Rego, S. A., & Asnis, G. M. (2006). Sleep disturbances in patients with post-traumatic stress disorder: Epidemiology, impact and approaches to management. *CNS Drugs, 20*(7), 567–590. <https://doi.org/10.2165/00023210-200620070-00003>
- Martínez, R. S., Aricak, O. T., Graves, M. N., Peters-Myszak, J., & Nellis, L. (2011). Changes in perceived social support and socioemotional adjustment across the elementary to junior high school transition. *Journal of Youth and Adolescence, 40*(5), 519–530. <https://doi.org/10.1007/s10964-010-9572-z>
- McLaughlin, K. A., Green, J. G., Hwang, I., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2012). Intermittent explosive disorder in the National Comorbidity Survey Replication Adolescent Supplement. *Archives of General Psychiatry, 69*(11), 1131–1139. <https://doi.org/10.1001/archgenpsychiatry.2012.592>
- Merikangas, K. R., Avenevoli, S., Costello, E. J., Koretz, D., & Kessler, R. C. (2009). National Comorbidity Survey Replication Adolescent Supplement (NCS-A): I. Background and measures. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*(4), 367–379. <https://doi.org/10.1097/CHI.0b013e31819996f1>
- Merikangas, K. R., He, J., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Survey Replication—Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry, 49*(10), 980–989. <https://doi.org/10.1016/j.jaac.2010.05.017>
- Merikangas, K. R., Nakamura, E. F., & Kessler, R. C. (2022). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience, 11*(1), 7–20. <https://doi.org/10.31887/DCNS.2009.11.1/krmerikangas>
- Palmer, C. A., Oosterhoff, B., Massey, A., & Bawden, H. (2022). Daily associations between adolescent sleep and socioemotional experiences during an ongoing stressor. *Journal of Adolescent Health, 70*(6), 970–977. <https://doi.org/10.1016/j.jadohealth.2022.01.127>
- Petit, D., Touchette, E., Tremblay, R. E., Boivin, M., & Montplaisir, J. (2007). Dyssomnias and parasomnias in early childhood. *Pediatrics, 119*(5), e1016–e1025. <https://doi.org/10.1542/peds.2006-2132>
- Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry, 56*(3), 345–365. <https://doi.org/10.1111/jcpp.12381>
- Poznanski, B., Cornacchio, D., Coxe, S., Pincus, D. B., McMakin, D. L., & Comer, J. S. (2018). The link between anxiety severity and irritability among anxious youth: Evaluating the mediating role of sleep problems. *Child Psychiatry and Human Development, 49*(3), 352–359. <https://doi.org/10.1007/s10578-017-0769-1>

- R Core Team. (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>
- Reed, G. M. (2010). Toward ICD-11: Improving the clinical utility of WHO's International Classification of mental disorders. *Professional Psychology: Research and Practice, 41*(6), 457–464. <https://doi.org/10.1037/a0021701>
- Roberts, A. L., Gilman, S. E., Breslau, J., Breslau, N., & Koenen, K. C. (2011). Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment-seeking for post-traumatic stress disorder in the United States. *Psychological Medicine, 41*(1), 71–83. <https://doi.org/10.1017/S0033291710000401>
- Sadeh, A., Raviv, A., & Gruber, R. (2000). Sleep patterns and sleep disruptions in school-age children. *Developmental Psychology, 36*(3), 291–301. <https://doi.org/10.1037/0012-1649.36.3.291>
- Sateia, M. J. (2014). International classification of sleep disorders. *Chest, 146*(5), 1387–1394. <https://doi.org/10.1378/chest.14-0970>
- Sauer-Zavala, S., Gutner, C. A., Farchione, T. J., Boettcher, H. T., Bullis, J. R., & Barlow, D. H. (2017). Current definitions of “transdiagnostic” in treatment development: A search for consensus. *Behavior Therapy, 48*(1), 128–138. <https://doi.org/10.1016/j.beth.2016.09.004>
- Silver, J., Carlson, G. A., Olin, T. M., Perlman, G., Mackin, D., Kotov, R., & Klein, D. N. (2021). Differential outcomes of tonic and phasic irritability in adolescent girls. *Journal of Child Psychology and Psychiatry, 62*(10), 1220–1227. <https://doi.org/10.1111/jcpp.13402>
- Stringaris, A., & Goodman, R. (2009). Mood lability and psychopathology in youth. *Psychological Medicine, 39*(8), 1237–1245. <https://doi.org/10.1017/S0033291708004662>
- Tamhane, A. R., Westfall, A. O., Burkholder, G. A., & Cutter, G. R. (2016). Prevalence odds ratio versus prevalence ratio: Choice comes with consequences. *Statistics in Medicine, 35*(30), 5730–5735. <https://doi.org/10.1002/sim.7059>
- Van Meter, A. R., & Anderson, E. A. (2020). Evidence base update on assessing sleep in youth. *Journal of Clinical Child and Adolescent Psychology, 49*(6), 701–736. <https://doi.org/10.1080/15374416.2020.1802735>
- Wong, M. M., Brower, K. J., & Craun, E. A. (2016). Insomnia symptoms and suicidality in the National Comorbidity Survey—Adolescent Supplement. *Journal of Psychiatric Research, 81*, 1–8. <https://doi.org/10.1016/j.jpsychires.2016.06.004>
- Young, G., Lareau, C., & Pierre, B. (2014). One quintillion ways to have PTSD comorbidity: Recommendations for the disordered DSM-5. *Psychological Injury and Law, 7*(1), 61–74. <https://doi.org/10.1007/s12207-014-9186-y>
- Zahn-Waxler, C., Shirtcliff, E. A., & Marceau, K. (2008). Disorders of childhood and adolescence: Gender and psychopathology. *Annual Review of Clinical Psychology, 4*(1), 275–303. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091358>

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