STUDY PROTOCOL AND METHODS ADVANCEMENT AGGRESSIVE BEHAVIOR

Research Agenda in Childhood Impairing Emotional Outbursts: A Report of the AACAP Presidential Taskforce on Emotional Dysregulation

Robert R. Althoff, MD, PhD, Manpreet K. Singh, MD, MS, Argyris Stringaris, MD, PhD, John N. Constantino, MD, Lisa Amaya-Jackson, MD, MPH, Tami D. Benton, MD, Christopher Bellonci, MD, Jeff Q. Bostic, MD, EdD, Jaclyn Datar Chua, DO, Robert L. Findling, MD, MBA, Cathryn A. Galanter, MD, Ruth S. Gerson, MD, Jon M. McClellan, MD, Michael T. Sorter, MD, James G. Waxmonsky, MD, Gabrielle A. Carlson, MD

Objective: As part of the 2019-2021 presidential term of the American Academy of Child and Adolescent Psychiatry (AACAP), the AACAP Presidential Initiative on Emotion Dysregulation in Youth Taskforce was established. The aim was to address emotion dysregulation in children and adolescents, focusing on developing methods for clinicians to identify, characterize, and treat impairing emotional outbursts along with development of a research agenda that would guide relevant researchers and research funders. One method to characterize emotion dysregulation was accomplished by recommendations for use of a diagnostic code that is available in the *DSM*. The research agenda is presented here.

Method: The Taskforce specifically focused on aggressive behaviors and emotions associated with outbursts. The development of a research agenda took place over 2 years of examination of the current needs in the literature, with contributions from experts in the field. This work dovetailed with the efforts from the Congress on Pediatric Irritability and Dysregulation, which had been meeting since 2015 to advance research into the measurement, pathophysiology, and treatment of emotion regulation problems in youth. We concentrated on the central questions concerning the measurement of outbursts, key questions linking outbursts to other psychopathologies, and how behavior in outbursts is separable from typical behavior.

Results: A description of the qualitative data gathering process is provided here, along with the following: recommendations in the research areas of measurement; pathophysiology; delineating outbursts from other psychopathologies; exploring the cultural, social, and interpersonal aspects of outbursts; understanding the prevention and treatment of outbursts; and exploring how outbursts manifest and are treated based on setting. Specific examples of research opportunities and future directions are provided.

Conclusion: A call is made to funding agencies to examine the spaces within their strategic plans that will allow for engagement in critical efforts to improve the lives of children and adolescents with severe emotional outbursts—some of the most impaired individuals presenting for care in child and adolescent psychiatry.

Plain language summary: The 2019 to 2021 AACAP Presidential Initiative on Emotion Regulation in Youth Taskforce was created by Dr. Gabrielle A. Carlson and aimed to address the field of treatment and research of youth with impairing emotional outbursts. The taskforce was made up of clinicians and researchers, including experts from the Congress on Pediatric Irritability and Dysregulation, and focused on developing methods for clinicians to identify, characterize, and treat impairing emotional outbursts. The 2-year taskforce led to the development of a research agenda to guide next steps for researchers and research funders. Diverse input from junior and senior investigators, clinical psychologists, graduate, and post-graduate students was encouraged. This report details the qualitative data gathering process and recommendations for the field.

Key words: irritability; outbursts; emotion regulation; research; RDoC

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Impairing emotional outbursts continue to be a primary reason for emergency department visits and hospitalization among youth.[1,2] The impact of these outbursts is felt by youth, their families, and the healthcare team, but research into the cause and treatment of outbursts occur remains relatively nascent.[3] As part of the 2019-2021 presidential initiative for the American Academy of Child and Adolescent Psychiatry (AACAP), the AACAP Presidential Initiative on Emotion Dysregulation in Youth Taskforce (authors of this manuscript) was established to address emotion dysregulation in children and adolescents; focusing on developing methods for clinicians to identify, characterize, and treat impairing emotional outbursts. In addition, the Taskforce was charged with the development of a research agenda that would guide the field. The following research agenda

builds directly on the narrative review of the Taskforce, published in 2023.[3]

There have been entire volumes written about facets of emotional regulation, emotional dysregulation, self-regulation, and irritability.[4-6] For the purposes of this Taskforce and research agenda, we specifically focused on the emotional and behavioral symptoms of *outbursts*—which have also been called "temper outbursts," "affective storms," "severe irritable mood," "rage attacks," "severe mood dysregulation," and "tantrums," among others,[7] to inform advancement in measurement and subsequent treatment. Throughout this report, we are focused on the discussion that occurred on the research and treatment of emotion regulation problems and irritability, and subsequent measurement and research related to outbursts. This research agenda examined the current unmet clinical needs as reflected in the literature and reported by experts in the field. This work dovetailed with the work from the Congress on Pediatric Irritability and Dysregulation (CPID; see attendees from previous meetings at: http://www.childemotionregulationlab.org/congress-on-pediatric-irritability-and-dysregulation.html), which has been meeting since 2015 to advance research into the measurement, pathophysiology, and treatment of emotion regulation problems for youth. The work of the Taskforce centered around the following questions:

- How might research on outbursts contribute to our understanding of irritability and emotion dysregulation?
- There are many measures of emotion (dys)regulation and aggression and some of irritability. Are there good measures of outbursts? If not, what do we need?
- What are the key outstanding research questions involving emotion dysregulation and irritability right now?
- How do outbursts, emotion dysregulation, and irritability change with development, and how do we conceptualize and measure what is age-appropriate behavior and mark the boundaries between typical and atypical behaviors?

The combination of the research interests at CPID with the clinical, educational, and research areas being considered by the AACAP taskforce[3] proceeded through a qualitative data gathering process and generated a series of questions that remain to be answered and studied. The Taskforce modified and developed these questions further into a draft research agenda, which again was shared with the clinical and basic science researchers at CPID. Over the course of the congress, questions were further modified, and research areas were identified and discussed via general group discussion and smaller breakout discussions. Together, therefore, the questions presented in Table 1[8-10] comprise the collective opinions of more than 170 clinicians and researchers about the role of outbursts in youth. Research questions were categorized under general topics, including specificity to particular settings.

A series of underlying themes emerged from this stepwise review of salient research topics. Overall, the groups were clear that there is no commonly used, current measure universally agreed upon in the field to measure all relevant aspects of outbursts. There was also agreement that a major research gap remains to focus on the measurement of outbursts, and then to determine the relations between measurement and other components of emotion dysregulation. From there, subsequent data about the context of outbursts within specific psychopathologies and in other settings can be examined.

Based on these questions, comments, and ensuing discussion, the Taskforce specifically concerned itself with creating clear, measurable, and achievable research goals that, with the appropriate energy and resources, could be addressed in the relative near term (1-5 years). Taken overall, the Taskforce recommends methodological advancements in research on emotion dysregulation and irritability across the 6 domains discussed below.

Measurement of Outbursts

There is a need for a consistent and well-accepted measure(s) of outbursts to be used in conjunction with other measurements of emotion regulation, stress responsivity, irritability, and reactive aggression[11,12] to better understand overlapping constructs (ie, how they differ, and where they overlap). A suitable outburst measure[7,13] could consider duration, frequency, severity, context (including precipitating factors), impairment, and recovery time to baseline. If there are existing datasets that can be reconfigured to describe outbursts, an attempt should be made to mine these datasets for information on outbursts. For example, the Taskforce asks, "Can natural language processing of existing clinical datasets be utilized, or do researchers need to first develop consensus about how to consistently describe outbursts in clinical datasets? How can community partners, families, and those with lived experience participate in the development of a measure?"

Following its development, a measure for outbursts should be tested in a large, representative, normative sample, with clinical oversampling to determine age, sex/gender, and cultural norms across informants. This measure should then be collected in a conjunction with existing measures of emotion regulation, irritability, cognition, and psychopathology to gather an understanding of the relations among these constructs. There should be an examination of whether this measure can be modified or another measure developed that is sensitive enough to change that it can be used as an outcome measure in clinical trials. Successful studies could use wearables and/or ecological momentary assessment in the real-time measurement of outbursts.

TABLE 1 Research Questions That Arose From the American Academy of Child and Adolescent Psychiatry Presidential Taskforce on Emotion Dysregulation and the Congress on Pediatric Irritability and Dysregulation Meetings

Topic area	Questions
General	**How do we develop a common language for characterizing outbursts?** • Can there be a common language for the various constructs and how they are measured? What is the degree of overlap among these constructs? • What defines what the appropriate outcomes will be? Can we validate an outcome measure of outbursts that can be a definitive treatment target with functional and quality of life implications (not just symptom reduction)? **How do we measure outbursts?** • What are the appropriate dimensions of measurement? Severity, duration, frequency, context, specific behaviors, impairment, provocation/precipitating factors, level of remorse? • What is the role of informants in the measurement of outbursts? • Is there a role for real-time assessment of an outburst using something like wearables or electronic monitors? How does it relate to behavioral observations? • Are the dimensions of outbursts orthogonal to each other? To other measures of emotion regulation? Is there a role for multimodal integration of measures or some other kinds of clustering? • Does the context of measurement matter? Are there different measures that are necessary for the emergency department, the outpatient office, and the inpatient unit? How are the reactions of the family or adults managing the patient considered? Are race and cultural differences meaningfully incorporated? Are there differences in research measures vs clinically useful measures? Will any of them be sensitive enough to change to allow for use in outcomes measurement? • Can we create norms for a measure that will allow for some determination of appropriate developmental and clinically meaningful cut points? Much of the work in outbursts has been done in younger children. What about adolescents? Adults? Older adults? • Is there a role for a large consortium of researchers/clinicians with access to children and families in different settings to pilot these questions? **What kinds of outcomes are important?** • What are the relative differences between the observed acute and the long-term outcomes for youth with and without an outburst assessment? • Can predictive models be built that incorporate the various aspects of emotion dysregulation, including similarities and differences between outbursts and irritability? **Where are the boundaries between outbursts and other constructs?** • How do we describe the relations between clinical outbursts, emotion dysregulation, and underlying temperament? Are outbursts equal to or the same as emotion dysregulation? Are they an extreme manifestation of emotion dysregulation? • There are many children with various *DSM-5* diagnoses who also have outbursts (ADHD, ASD, ODD, DMDD, IED, mood disorders, anxiety disorders, PTSD, personality disorders)[3,4,8-10] Are outbursts the same in all of these in terms of their description, treatment, and pathophysiology? • What are the relations between the expression of an outburst and the inner subjective experience of anger, particularly across age, sex, and gender groups? Are the experience of emotion and the tendency to express emotion the same or separable? • How are outbursts distinct from tantrums? **How do we incorporate issues of diversity, equity, and inclusion?**[a,b] • How do we describe the cultural/social/clinical/racial/gender biases in reports and manifestations? • Most instruments developed for behavioral science research have not included diverse populations in sufficient numbers for validation. How does the field intentionally include investigators and research participant from minoritized populations that have traditionally been excluded?

(continued)

TABLE 1 Continued

Topic area	Questions
	What do we know about the pathophysiology of outbursts?
	• Are there thresholds for when someone who is prone to an outburst has one? What determines that threshold? • What is the role of self-soothing and loss of that ability/failure to gain it? • What are the relations between outbursts and cognitive control and/or executive function? • What are the relations between outburst and positive and negative affectivity? • What are the relations between set shifting, frustration, and attention paradigms? • What are the relations between emotion dysregulation/outbursts and emotion recognition? • What are the relations between adverse childhood experiences, trauma, and vulnerability to outbursts? • Are there issues that promote outbursts (sleep issues, for example)? • Are there early signs that an outburst is coming? Can we leverage heart rate or skin conductance to assist? • Can we use the phenotypes that are developed to help guide animal models? • Is the circuitry underlying an outburst the same across all diagnoses? • What is the role of social media in outbursts and irritability? • What is the family history of outbursts?
	What questions remain about prevention and treatments for outbursts?
	• Are there preventive steps that can be taken to decrease the likelihood of developing an outburst or reduce the frequency/severity of the outbursts that have started to occur? • Do certain genetic and environmental factors predispose someone for outbursts, and might we adapt interventions for this high-risk population? • How much are we spending on outbursts, and is it getting us where we need to go? What is the cost–benefit ratio? • What treatment approaches for management of outbursts decrease outbursts vs reduce our (clinician/parent) reaction to them? • Comparative effectiveness trials are desperately needed within and across settings. • Once there is a reliable measure of outbursts, will it have enough variance and be sensitive enough to change to allow it to be used in a clinical trial? • With an outburst measure validated and shown to respond to intervention in pilot acute studies, can we evaluate longer-term outcomes of acute treatments and consider which interventions are better suited for acute, chronic, and preventive management? • Can we compare treatments that are specific to outbursts vs those that may have broader effects (eg, aggression reduction vs mania or depression symptom reduction)? • What factors that can be assessed inform the treatment of outbursts? That is, do behaviors exhibited before, during, or after the actual outburst inform treatment in any meaningful way? Or does it come down to factors relating to baseline function (family stress, IQ, executive function, parent–child bond)? Do the types of comorbidities, disorder context, or the intensity of the comorbid symptoms impact treatment? • Regarding the specificity of treatment response, is the treatment specific to outbursts or to underlying mood or both? Is there a transdiagnostic treatment? For example, are the effects of stimulants and antidepressants on outbursts separable from mood states? Are the effects of antipsychotics specific to mood? Do strong behavioral modification protocols reduce PRN psychopharmacologic use, and if so, in which settings? • Is there a way to leverage manualized treatments developed for specific syndromes (eg, depression) to focally treat emotion dysregulation or components (tonic/phasic) of irritability? • Presuming that treatment for both outbursts and underlying mood is separable, how should one order treatments? What should be treated first?

(continued)

TABLE 1 Continued

Topic area	Questions
Related to specific settings	
	School
	• How do we respond to outbursts when parents are unavailable?
	• What are the characteristics of an outburst that should lead to a higher-level intervention? Under what circumstances must a child leave school?
	• What interventions are effective in the school setting? What kinds of interventions are more optimal for school vs other settings?
	Home
	• What is the role of the parent emotion regulation to the initiation and the continuation of outbursts in the child? Is there a role of co-regulation therapies?
	Emergency department
	• What is the role of PRNs or emergency medications for outbursts? Are they effective? Are they safe?
	• How are etiology and management of outbursts in the emergency department distinct for youth presenting with psychiatric compared to medical complaints?
	Psychiatric inpatient/residential
	• What are the best models of care for both inpatient and residential? Most studies are actually examining our response to aggression (ie, high-level interventions such as seclusion and restraint) rather than frequency and severity of explosive outbursts.
	• What structures are necessary to ensure that staff can maintain skill and apply them in a reliable manner?
	• Are there testable models of treating dysregulation in out-of-home clinical settings that could be developed as an evidence-based practice with fidelity (eg Parent–Child Interactive Therapy for younger outpatient children)?
	• What is the role of working with families to address dysregulation during inpatient and residential stays?
	• How does trauma impact dysregulation during inpatient and residential stays, and does that alter treatment approaches? If so, how?
	• How does length of stay or length and intensity of treatment impact outcomes?
	• How are we using technology to help us predict explosive outbursts?
	• Staff injury is a major concern, with inpatient psychiatry being a very dangerous profession. What systems protect staff best?
	• PRNs: What kinds of medications are used, and how are they given? Is there a role for the preemptive use of medications, or should they be used in emergencies only, and how? What is the role of PRN or emergency medications for outbursts in youth hospitalized for a nonpsychiatric medical illness?
	Outpatient
	• What treatment approaches translate from inpatient/emergency department settings to outpatient settings?

Note: ADHD = attention-deficit/hyperactivity disorder; ASD = autism spectrum disorder; DMDD = disruptive mood dysregulation disorder; IED = intermittent explosive disorder; ODD = oppositional defiant disorder; PRN(s) = pro re nata medication(s); PTSD = post-traumatic stress disorder.
[a]*OSF Preregistration: Cross-Cultural Examination of Irritability and Associated Symptoms: Findings and Inferences. https://doi.org/10.17605/OSF.IO/GW7JB*
[b]*OSF Preregistration: Measurement Invariance of the Affective Reactivity Index Across Various Countries. https://osf.io/d2zfp/*

Describing the Association Between Outbursts and Other Conditions

There is a need to study the relations among psychiatric diagnoses that may include outbursts and addressing the question of whether outbursts are truly transdiagnostic[14] (in that they occur with the same pathophysiology regardless of etiology) or whether there are qualitative or quantitative differences in outbursts that arise as a function of a particular diagnosis or a particular underlying neurobiology. Although youth who have had adverse or traumatic

experiences crowd psychiatric emergency departments and residential treatment settings because of behavioral outbursts and emotional dysregulation, there is a dearth of trauma research literature focused on outbursts or emotional regulation problems in children and adolescents with posttraumatic stress disorder.[3,15-19] Despite considerable research in these areas,[17,20] there remains little understanding of the relations between outbursts and Research Domain Criteria (RDoC) constructs of frustrative non-reward, attention, cognitive control, social communication, sleep, and wakefulness. To supplement the call for research regarding emotion regulation, irritability, and outbursts, these additional areas may be prime for investigation and validation both in humans and in animal models. Gaps remain in the literature between the phenotypic substrates of outbursts observed in humans and their translation into and from animal models, as there are relatively few animal models that relate to outbursts. There may be good reasons for cross-species modeling, as outbursts are relatively common in the animal world and sex differentiated.[21-23]

Understanding the Pathophysiology and Natural History of Outbursts

Individual variation in the propensity for outbursts can be operationalized by (a) the frequency, severity, and duration of the behaviors themselves; (b) the level of stress or provocation required to elicit a dysregulated behavioral response (this varies markedly across individuals) and the time that it takes to return to baseline emotional regulation; or (c) the level of emotional arousal that occurs in response to a stressor of a given stimulus intensity.[24] Although the characterization of the behaviors themselves may be useful for categorizing patients for clinical purposes such as deciding on appropriate levels of care, for other clinical purposes, categories defined by the phenomenological commonality of outbursts can also be scientifically misleading. Specifically, agitated behavior seen in Tourette syndrome, psychotic disorder, posttraumatic stress disorder, oppositional defiant disorder, mood disorders, attention-deficit/hyperactivity disorder, or in response to other provocation may be within the phenocopies[25] rather than representing the same phenomenon. Any feasible measure would need to standardize the level of emotional arousal along with the level of stimulus intensity of a given stressor. The relation between emotional arousal and stimulus intensity will determine how outbursts are associated with impulse control, emotional arousal, and the magnitude of intensity of a given stressor. Outbursts may occur only when a stressor leads to emotional arousal exceeding the threshold for controlling the impulse to act in a maladaptive/dysregulated manner. Outbursts must be contextualized with verbal, cognitive, developmental, and adaptive skills in mind to determine capacity for learning and skill development for treatment planning.[26] Moreover, an understanding of how these thresholds may differ in youth with an experience of trauma is also necessary.

In addition to mining other large datasets, longitudinal datasets that describe components of outbursts should be examined to determine the outcome of outbursts across childhood and into adulthood. A well-defined measure of outbursts may advance understanding of relations among emotion dysregulation, irritability, and other facets of psychopathology over time. Do they uniquely predict differential outcomes, or do they uniformly predict similarly poor outcomes based on severity? The taskforce also discussed the need for outburst measures within the adult psychiatric population. At this time, these are only ascertained in the context of intermittent explosive disorder, so it is unclear what outburst behavior looks like across development into adulthood. It is possible that children categorized with experiencing outbursts will outgrow the outburst behavior, or that such behaviors will continue in the form of domestic violence, road rage, or other aggressive acts. As mentioned above, there is a further outstanding question as to whether wearables or psychophysiological measurement can be used to predict whether an outburst will occur or will help the patient manage an outburst, as measurement and management of outbursts can be challenging after they begin or at the peak of their severity.

Exploring the Cultural, Social, and Interpersonal Aspects of Outbursts

Little is known about the cultural, clinical, racial, and sex/gender biases in reporting and treatment of outbursts. Relatedly, it is imperative to understand the role of parental emotion regulation and interactions with the youth in the initiation, prolongation, and termination of their outbursts. Here, again, an adult measure of outbursts may also be useful. Similarly, we do not have a full understanding of which outbursts are pathological and what the utility of outbursts are for the particular family and their interaction.[27] From a social and environmental standpoint, there should be efforts made to understand what constitutes outbursts and the effects of discrimination on youth with outbursts across cultures.[28] For example, the experience of an outburst in specific cultures, especially as it relates to the experience of the individual and family in that culture, is poorly understood. Little is known, for instance, about the role that a history of discrimination has on the expression and the perception of an outburst, as well as the effects of social media on emotion regulation generally and on

outbursts specifically. A careful accounting of the economic costs of managing outbursts in various settings should be undertaken. From a workforce perspective, it would be prudent to gain an understanding of how exposure to youth with impairing outbursts might affect recruitment into the fields of child and adolescent psychiatry, psychology, and social work.[29]

Understanding the Prevention and Treatment of Outbursts Through Research

There is a paucity of research on the family history of outbursts or other characteristics such as traumatic exposures or adverse childhood experiences that make them more likely in a particular child that might be targets of primary prevention.[30] Similarly, there is little known for secondary prevention of worsening outbursts once they occur. There is a critical need for clinical trial research of the management of acute outbursts, including more pharmacological trials,[31] psychotherapeutic trials, and comparative effectiveness trials. There is a further need to examine premorbid and escalation patterns of outbursts, related dysregulated behaviors, and potential intervening variables to reduce youth needing to move to higher levels of care because of them. It is important to understand the role of debrief after outbursts, and how that should inform clinical interventions with the youth and family.

Differential effects of therapeutics on the components of emotion regulation, irritability, and outbursts have not been well studied. Little is known about whether treatment of each of these aspects should be done separately or the validity of a common treatment.[32] Similarly, investigation of the characteristics of the patient or the outbursts themselves that may determine the efficacy of treatments has not been well studied. As treatments are developed and studied, there will be a need to characterize the duration of treatment. Outbursts may be persistent and chronic, yet most psychiatric interventions for outbursts target only acute symptoms. Will short-term interventions lead to long-term reduction in outbursts? If an adequate measure of outbursts can be obtained, there is a need to develop evidence-based interventions and to review the consequences of treatment (or lack) of outbursts.

Exploring Outbursts and Their Management Based on Setting

Schools are desperate for help in the management of outbursts.[33] There is a need for a concise and an easy-to-implement approach for the characterization and management of outbursts in schools, as well as a guideline for referral to the emergency department/crisis services. Clear circumstances might lead a child to require leaving the school for help, but there are striking gaps in recommendations when the circumstances are unclear. Understanding the relation of time to recovery from an outburst may be particularly salient in this situation. Residential and inpatient programs need to know what systems will protect staff from injury associated with outbursts. They also need to know whether length of stay, staffing patterns or training, or intensity of treatment affect the various components of emotion regulation. Connecting the domains, understanding how disparities in health care impact youth of color who present in emergency departments with outbursts and emotional dysregulation is important.[2,34,35] There is a need for outpatient, emergency department, residential, and inpatient/intensive outpatient programs to know whether there is an effectiveness of pro re nata (PRN) medications[36-38] to manage an outburst. PRN medication is frequently given, but there is scant evidence that this use reduces the frequency, severity, or duration of an outburst. Similar to the treatment questions above, are the components of emotion dysregulation and outbursts differentially affected by PRN usage?

As a whole, difficulties with emotion regulation that manifest as outbursts appear to be among the most common reasons for referral of youth to psychiatric care, including the most intensive settings such as emergency department and inpatient/residential units. It is also apparent to the field that there are numerous unanswered and unstudied questions related to each of these domains. If these questions remain among the most experienced physicians and researchers in this direct field, it is not surprising that there is little guidance to the field in general, and to the leaders of the aforementioned youth settings. Despite the rising prevalence of this problem, there are clear gaps in the knowledge about how to measure and treat outbursts. Finally, as a taskforce, we recommend that funding agencies responsible for enhancing systems of care for the medically vulnerable (Health Resources & Services Administration [HRSA]), for the reduction of mental illness in America's communities (Substance Abuse and Mental Health Services Administration [SAMHSA]), for leading research on mental disorders (National Institute of Mental Health [NIMH]), for improving health care delivery and outcomes (Patient-Centered Outcomes Research Institute [PCORI]), for setting the standards for child welfare in the United States (Children's Bureau), and the Office of Juvenile Justice and Delinquency Prevention (OJJDP), examine the spaces within their strategic plans that will allow for engaging in these kinds of critical efforts to improve the lives of the most troubled youth in the nation—those with impairing emotional outbursts—and their families.

CRediT authorship contribution statement

Robert R. Althoff: Writing – review & editing, Writing – original draft, Funding acquisition, Conceptualization. **Manpreet K. Singh:** Writing – review & editing, Writing – original draft, Conceptualization. **Argyris Stringaris:** Writing – review & editing, Writing – original draft, Conceptualization. **John N. Constantino:** Writing – review & editing, Writing – original draft, Conceptualization. **Lisa Amaya-Jackson:** Writing – review & editing. **Tami D. Benton:** Writing – review & editing. **Christopher Bellonci:** Writing – review & editing. **Jeff Q. Bostic:** Writing – review & editing. **Jaclyn Datar Chua:** Writing – review & editing. **Robert L. Findling:** Writing – review & editing. **Cathryn A. Galanter:** Writing – review & editing. **Ruth S. Gerson:** Writing – review & editing. **Jon M. McClellan:** Writing – review & editing. **Michael T. Sorter:** Writing – review & editing. **James G. Waxmonsky:** Writing – review & editing. **Gabrielle A. Carlson:** Writing – review & editing, Writing – original draft, Funding acquisition, Conceptualization.

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Robert R. Althoff is with the Larner College of Medicine at the University of Vermont, Burlington, Vermont. Manpreet K. Singh is with the University of California, Davis but was with Stanford University, Stanford, California, at the time of this work. Argyris Stringaris is with University College London, London, United Kingdom. John N. Constantino is with Children's Healthcare of Atlanta and Emory University School of Medicine, Atlanta, Georgia. Lisa Amaya-Jackson is with the Duke University School of Medicine, Durham, North Carolina. Tami D. Benton is with Children's Hospital of Philadelphia and the Perelman School of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania. Christopher Bellonci is with Harvard Medical School, Boston, Massachusetts. Jeff Q. Bostic is with the Maryland State Department of Education, Baltimore, Maryland. Jaclyn Datar Chua is with Children's Hospital of Philadelphia, Philadelphia, Pennsylvania. Robert L. Findling is with Virginia Commonwealth University, Richmond, Virginia. Cathryn A. Galanter is with State University of New York Downstate and Kings County Hospital Center, Brooklyn, New York. Ruth Gerson is with NYU Langone Health, New York, New York. Jon M. McClellan is with the University of Washington, Seattle, Washington. Michael T. Sorter is with Cincinnati Children's Hospital and the University of Cincinnati, Cincinnati, Ohio. James G. Waxmonsky is with the Penn State College of Medicine, Hershey, Pennsylvania. Gabrielle A. Carlson is with the Renaissance School of Medicine at Stony Brook University, Stony Brook, New York.

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Correspondence to Robert R. Althoff, MD, PhD, Department of Psychiatry, University of Vermont, Arnold 6, UHC Building, 1 South Prospect Street, Burlington, VT 05401; e-mail: Robert.Althoff@uvmhealth.org

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REFERENCES

1. Gerson R, Malas N, Feuer V, Silver GH, Prasad R, Mroczkowski MM. Best Practices for Evaluation and Treatment of Agitated Children and Adolescents (BETA) in the emergency department: consensus statement of the American Association for Emergency Psychiatry. West J Emerg Med. 2019;20(2):409-418. https://doi.org/10.5811/westjem.2019.1.41344
2. Carlson GA, Chua J, Pan K, *et al*. Behavior modification is associated with reduced psychotropic medication use in children with aggression in inpatient treatment: a retrospective cohort study. J Am Acad Child Adolesc Psychiatry. 2020;59(5):632-641. https://doi.org/10.1016/j.jaac.2019.07.940
3. Carlson GA, Singh MK, Amaya-Jackson L, *et al*. Narrative review: impairing emotional outbursts: what they are and what we should do about them. J Am Acad Child Adolesc Psychiatry. 2023;62(2):135-150. https://doi.org/10.1016/j.jaac.2022.03.014
4. Leibenluft E, Allen LE, Althoff RR, *et al*. Irritability in youths: a critical integrative review. Am J Psychiatry. 2024;181(4):275-290. https://doi.org/10.1176/appi.ajp.20230256
5. Roy AK, Brotman MA, Leibenluft E. Irritability in Pediatric Psychopathology. Oxford University Press; 2019.
6. Baumeister RF, Vohs KD. Handbook of Self-Regulation. Guilford Press; 2004.
7. Spring L, Carlson GA. The phenomenology of outbursts. Child Adolesc Psychiatr Clin N Am. 2021;30(2):307-319. https://doi.org/10.1016/j.chc.2020.10.003
8. Althoff RR, Crehan ET, He JP, Burstein M, Hudziak JJ, Merikangas KR. Disruptive mood dysregulation disorder at ages 13-18: results from the National Comorbidity Survey—Adolescent Supplement. J Child Adolesc Psychopharmacol. 2016;26(2):107-113. https://doi.org/10.1089/cap.2015.0038
9. Mürner-Lavanchy I, Kaess M, Koenig J. Diagnostic instruments for the assessment of disruptive mood dysregulation disorder: a systematic review of the literature. Eur Child Adolesc Psychiatry. 2023;32(1):17-39. https://doi.org/10.1007/s00787-021-01840-4
10. Carlson GA, Althoff RR, Singh MK. Future directions: the phenomenology of irritable mood and outbursts: hang together or hang separately. J Clin Child Adolesc Psychol. 2024;53(2):309-327. https://doi.org/10.1080/15374416.2024.2332999
11. Freitag GF, Grassie HL, Jeong A, *et al*. Systematic review: questionnaire-based measurement of emotion dysregulation in children and adolescents. J Am Acad Child Adolesc Psychiatry. 2023;62(7):728-763. https://doi.org/10.1016/j.jaac.2022.07.866

12. Haller SP, Kircanski K, Stringaris A, *et al*. The Clinician Affective Reactivity Index: validity and reliability of a clinician-rated assessment of irritability. Behav Ther. 2020; 51(2):283-293. https://doi.org/10.1016/j.beth.2019.10.005
13. Althoff RR, Ametti M. Measurement of dysregulation in children and adolescents. Child Adolesc Psychiatr Clin N Am. 2021;30(2):321-333. https://doi.org/10.1016/j.chc.2020.10.004
14. Chung JCY, Mevorach C, Woodcock KA. Establishing the transdiagnostic contextual pathways of emotional outbursts. Sci Rep. 2022;12(1):7414. https://doi.org/10.1038/s41598-022-11474-4
15. Villalta L, Khadr S, Chua K-C, *et al*. Complex post-traumatic stress symptoms in female adolescents: the role of emotion dysregulation in impairment and trauma exposure after an acute sexual assault. Eur J Psychotraumatol. 2020;11(1). https://doi.org/10.1080/20008198.2019.1710400
16. Villalta L, Smith P, Hickin N, Stringaris A. Emotion regulation difficulties in traumatized youth: a meta-analysis and conceptual review. Eur Child Adolesc Psychiatry. 2018; 27(4):527-544. https://doi.org/10.1007/s00787-018-1105-4
17. Brotman MA, Kircanski K, Stringaris A, Pine DS, Leibenluft E. Irritability in youths: a translational model. Am J Psychiatry. 2017;174(6):520-532. https://doi.org/10.1176/appi.ajp.2016.16070839
18. Wolf RC, Herringa RJ. Prefrontal-amygdala dysregulation to threat in pediatric posttraumatic stress disorder. Neuropsychopharmacology. 2016;41(3):822-831. https://doi.org/10.1038/npp.2015.209
19. Keding TJ, Herringa RJ. Paradoxical prefrontal-amygdala recruitment to angry and happy expressions in pediatric posttraumatic stress disorder. Neuropsychopharmacology. 2016;41(12):2903-2912. https://doi.org/10.1038/npp.2016.104
20. Ametti MR, Crehan ET, O'Loughlin K, *et al*. Frustration, cognition, and psychophysiology in dysregulated children: a Research Domain Criteria approach. J Am Acad Child Adolesc Psychiatry. 2022;61(6):796-808. https://doi.org/10.1016/j.jaac.2021.11.033
21. Oliveira VEM, Lukas M, Wolf HN, *et al*. Oxytocin and vasopressin within the ventral and dorsal lateral septum modulate aggression in female rats. Nat Commun. 2021;12(1): 2900. https://doi.org/10.1038/s41467-021-23064-5
22. Falkner AL, Grosenick L, Davidson TJ, Deisseroth K, Lin D. Hypothalamic control of male aggression-seeking behavior. Nat Neurosci. 2016;19(4):596-604. https://doi.org/10.1038/nn.4264
23. Mei L, Yan R, Yin L, Sullivan RM, Lin D. Antagonistic circuits mediating infanticide and maternal care in female mice. Nature. 2023;618(7967):1006-1016. https://doi.org/10.1038/s41586-023-06147-9
24. Zhang Y, Silver JI, Perlman G, Kotov R, Klein DN, Eaton NR. Longitudinal stability and interrelations of tonic and phasic irritability in adolescent girls. Res Child Adolesc Psychopathol. 2023;51(9):1343-1355. https://doi.org/10.1007/s10802-023-01072-x
25. Beauchaine TP, Constantino JN. Redefining the endophenotype concept to accommodate transdiagnostic vulnerabilities and etiological complexity. Biomark Med. 2017; 11(9):769-780. https://doi.org/10.2217/bmm-2017-0002
26. Northrup JB, Goodwin M, Montrenes J, *et al*. Observed emotional reactivity in response to frustration tasks in psychiatrically hospitalized youth with autism spectrum disorder. Autism. 2020;24(4):968-982. https://doi.org/10.1177/1362361320908108
27. Qi S, Nielson D, Marcotulli D, Pine D, Stringaris A. Subjective affective experience under threat is shaped by environmental affordances. 2023. https://doi.org/10.31234/osf.io/vaq3k
28. Farquharson Wt, Schwartz JE, Klein DN, Carlson GA. Factors associated with police bringing children to a psychiatric emergency room. Psychiatr Serv. 2023;74(5):488-496. https://doi.org/10.1176/appi.ps.202200028
29. Lakeman R, Foster K, Hazelton M, Roper C, Hurley J. Helpful encounters with mental health nurses in Australia: a survey of service users and their supporters. J Psychiatr Ment Health Nurs. 2023;30(3):515-525. https://doi.org/10.1111/jpm.12887
30. Singh MK, Hu R, Miklowitz DJ. Preventing irritability and temper outbursts in youth by building resilience. Child Adolesc Psychiatr Clin N Am. 2021;30(3):595-610. https://doi.org/10.1016/j.chc.2021.04.009
31. Fung LK, Mahajan R, Nozzolillo A, *et al*. Pharmacologic treatment of severe irritability and problem behaviors in autism: a systematic review and meta-analysis. Pediatrics. 2016; 137(Suppl 2):S124-S135. https://doi.org/10.1542/peds.2015-2851K
32. McClellan JM, Berliner L, Carlson GA. Strategies for managing impairing emotional outbursts. JAMA Pediatr. 2023;177(6):559-560. https://doi.org/10.1001/jamapediatrics.2023.0787
33. Bostic JQ, Mattison R, Cunningham D. Explosive outbursts at school. Child Adolesc Psychiatr Clin N Am. 2021;30(3):491-503. https://doi.org/10.1016/j.chc.2021.04.003
34. Roach EL, Haft SL, Huang J, Zhou Q. Systematic review: the association between race-related stress and trauma and emotion dysregulation in youth of color. J Am Acad Child Adolesc Psychiatry. 2023;62(2):190-207. https://doi.org/10.1016/j.jaac.2022.04.013
35. Mekawi Y, Watson-Singleton NN, Kuzyk E, *et al*. Racial discrimination and posttraumatic stress: examining emotion dysregulation as a mediator in an African American community sample. Eur J Psychotraumatol. 2020;11(1):1824398. https://doi.org/10.1080/20008198.2020.1824398
36. Carlson GA, Spring L, Schwartz JE. Does pro re nata oral medication shorten outburst duration in children? J Am Acad Child Adolesc Psychiatry. 2022;61(2):111-114. https://doi.org/10.1016/j.jaac.2021.09.415
37. Saito E, Eng S, Grosso C, Ozinci Z, Van Meter A. Pro re nata medication use in acute care adolescent psychiatric unit. J Child Adolesc Psychopharmacol. 2020;30(4):250-260. https://doi.org/10.1089/cap.2019.0131
38. Hoffmann JA, Pergjika A, Liu L, *et al*. Standardizing and improving care for pediatric agitation management in the emergency department. Pediatrics. 2023;152(1). https://doi.org/10.1542/peds.2022-059586