

From Zero to a Hundred in a Split Second: Understanding Aggression in an Eight-Year-Old Child

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CASE REPORT

Xavier is an eight-year-old American boy of Italian ancestry in a second-grade inclusion classroom at a public elementary school. He carries diagnoses of a severe language-based learning disorder (LD) and attention-deficit/hyperactivity disorder (ADHD). He lives with his mother, twin sister, and older teenage brother; his parents are in the process of divorcing. The Office of Special Education referred Xavier to a child psychiatrist (NR) for evaluation due to its increasing concerns about both his academic progress and his level of impulsivity and aggressive behavior (biting, head butting, kicking, throwing chairs, and running unsupervised down the street outside the school). Although many of these behaviors are not new, this referral was prompted by increasing concerns about safety. The evaluation included record reviews, interviews with parents and school personnel, and a classroom observation of Xavier.

Several examples will illustrate the behavioral challenges that Xavier presents. During recess, Xavier was trying to explain to a teacher that his ball had gone over the

playground fence. Deciding to show the teacher, he quickly climbed the fence and jumped ten feet to the ground. The teacher was alarmed by Xavier's inability to respond to her verbal directions to stop, and concerned that Xavier was at risk of hurting himself. A related incident occurred when, in response to being asked to go to the reading specialist, Xavier ran to the school bathroom, kicked the pipes, and screamed that he was going to break something. The principal, who worries that even minimal performance demands "can put [Xavier] over the edge," describes him as going from "0 to 100" in a split second, his frustration climbing with accelerating speed.

According to his parents and teachers, Xavier's aggressive behaviors, specifically punching and kicking, are typically precipitated by his being asked to end a favorite activity or engage in an activity that he dislikes (e.g., reading). He is often remorseful and feels bad after he has hit another child or family member. Nevertheless, his parents and teachers agree that their attempts to use rewards and punishments to modify these behaviors have been, at best, inconsistently successful.

Xavier's father describes other situations where Xavier behaves aggressively—though not in frustration or in response to external demands. For example, during a recent summer picnic, Xavier began throwing stones at birds. When Xavier's father talked with him (knowing that Xavier does not eat meat, because of his love for animals), Xavier explained that he was trying to get the birds' attention in hopes that he could bring one home with him.

Xavier's parents describe him as a "sticky" kid who gets fixated on an activity and consequently has a hard time changing gears. He has trouble following the rules of simple games, like kickball. He is sensitive to loud noises. Unlike his twin sister, Xavier is not asked on play dates, and his teacher has noted that he sometime seems despondent that his sister is more popular. His diet is idiosyncratic, as he

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avoids meat, vegetables, and most fruit, and prefers bland foods such as white bread, peanut butter, and macaroni and cheese.

In contrast to Xavier, his two siblings perform well academically (though reportedly have trouble focusing), and both parents are successful scientists. Since they work full time, the children have had several different child-care providers, who are required due to the demands of managing Xavier's behavior (including, but not limited to, his need for constant supervision). There is no family history of psychosis or language disorder; his maternal grandmother has a history of mood disorder.

Past Medical and Psychiatric History

Xavier is a fraternal twin, the product of a full-term pregnancy with no fetal distress. His milestones were normal until 24 months, when the pediatrician referred him for evaluation with early intervention because of his speech and language difficulties. He began speech and language therapy, as well as occupational therapy, at home, and once in preschool he received the same services there. When Xavier was four years old, he was seen by a child psychiatrist for evaluation, play therapy, and parent-guidance work. At the age of five, he was evaluated for ADHD: his symptoms included impulsivity, difficulty focusing, and behavioral disinhibition. A brief, two-week trial of methylphenidate (Ritalin) was initiated but then discontinued due to sleep difficulties. He began weekly private treatment with a psychiatrist.

When Xavier was six years old, he developed streptococcus and had emerging symptoms of obsessive-compulsive disorder (OCD), which included persistent licking of his fingers, "slurping," licking his hands five or six times a minute, and tics with coughing. Impulsive and some aggressive behaviors continued. A workup included negative MRI and EEG. He also received psychological and neuropsychological testing, during which he displayed impulsive behavior and aggression, at one point biting his father and attempting to turn over the table. He had recurrent difficulties in articulation but was not echolalic and did not use idiosyncratic words or phrases. Xavier displayed some appropriate eye contact, though not when he was initiating or terminating social interaction. He had difficulty engaging in open-ended, structured play. In his cognitive testing, he showed a full-scale IQ in the low average range (90), with considerable subtest scatter. On the language tests, he scored well below his age level on phonological testing and had difficulty in comprehending instructions and in design copying. He had difficulty accessing familiar words quickly and displaying verbal semantic fluency (generating lists of words on demand). Tasks involving visuospatial processing, such as judging line orientation and copying two-dimensional geometric figures, were especially difficult for him. Xavier re-

sponded better when verbal demands were brief and when there was less visual distraction. He had difficulty accessing familiar words quickly and had significantly reduced ability to remember names. He did better with basic memory skills when given in a concrete, organized context (e.g., a spelling list) than when he was asked to formulate language to respond to even a simple question (e.g., what he had for breakfast that day). This example points out the difficulty he has in *creating* the language that he needs to use in order to communicate effectively, even though the words that he needs may be in his lexicon. Xavier did show "high matrix reasoning"—demonstrating his strength in processing visually rather than through language.

He was treated with sertraline 50 mg daily. He simultaneously received antibiotics for pediatric autoimmune neuropsychiatric disorder associated with streptococcal infections (PANDAS), and the symptoms receded. Six months later the symptoms reappeared; he was again positive for PANDAS and treated with another round of antibiotics. He continued on the sertraline, with unclear benefits: some improvement was noted in anxiety, transitions, and perseveration, but there was concern that it might be increasing his agitation. He was then treated with atomoxetine 18.5 mg daily, with some improvement of focus but little change in aggressive symptoms (kicking, biting, fighting with peers). The atomoxetine was discontinued, and when Xavier was seven years old, he began a trial of aripiprazole (Abilify) 5 mg daily. In the first three months there was marked improvement in concentration and episodes of anger. However, he also doubled his weight (47 pounds to 88 pounds) and was incontinent of urine. The dosage was decreased to 2.5 mg daily. Other medication options are under consideration.

For the past two years, Xavier has been meeting weekly with a psychiatrist, whose goal has been to "maximize interventions that are effective." The psychiatrist is concerned that Xavier is often overstimulated (e.g., by family trips) and is vulnerable to provocation from his older brother. During his weekly play therapy, Xavier has often been wrapped up in his own world, playing endlessly with his superhero and becoming agitated if he had trouble being understood. The psychiatrist worries that in view of Xavier's language-based disorder, the family's expectations concerning his academic future are unrealistic; for example, his mother is disappointed that she had not seen much improvement in Xavier's performance at school.

Classroom Observation

During classroom observation Xavier averted his gaze when people talked to him. At meeting time, he appeared distracted—rubbing his hands, lying on the ground and rocking. He spoke loudly and did not modulate his voice. In order

to be sure that she knew what Xavier was saying, the teacher often repeated what he said; both his articulation and the logic of his sentences were difficult to understand. He had rapid and inappropriate changes of topic, with no transitional cues for the listener. There was no looseness of associations, yet his communications could be experienced as tangential and confusing. For example, when the teacher asked him what he had for breakfast, he began an animated discussion about the *Incredibles*; when the teacher tried to redirect him to the original question, he persistently tried to explain the characters in *Incredibles*. His mother later explained that Xavier had eaten the *Incredibles* cereal for breakfast that morning. Xavier was anxious when he could not explain himself. He climbed under the table, stared into space, and wandered from his desk.

In response to his teacher's instructions about a writing activity, Xavier lay on the ground. The instruction was multi-stepped, and Xavier did not seem able to comprehend it. The teacher made a special effort to engage Xavier. He did not appear distressed initially, but when flooded with too many verbal demands, he would stare into space and freeze as he was seemingly processing the question. He took an excessively long time (about two minutes) before answering. He failed to give significant information, and spoke in shorter sentences than the other children. He had difficulty telling a story in a logical, meaningful, and complete manner. After waiting a few seconds, Xavier's teacher often would start to ask another question—an attempt at an alternative strategy. Xavier still seemed to need more time to generate responses. For example, when Xavier responded with a truncated phrase about eating different food for breakfast, the teacher asked him to provide a fuller sentence. This task was extremely difficult for Xavier. When the teacher instructed him to draw a picture, he industriously drew a fairly primitive stick figure, holding his pencil with a clenched hand; his scribbling seemed more self-soothing than an effort to construct an image. At one point Xavier took his pencil and placed it against another classmate's scar. He was curious about the scar, although he struggled to explain his actions. The other student was not reactively aggressive but could have been. The student moved away, rebuffing Xavier's overture; Xavier returned to his seat.

Summary

The record reviews, interviews, and classroom observations suggest that Xavier has a language-based LD. He is struggling to acquire the ability to express himself and to acquire the academic skills that allow him to read fluently and write stories. He is often impulsive and has trouble staying on task, behavior that is consistent with a diagnosis of ADHD. Xavier often does not understand social nuances; this lack of understanding can leave him feeling anxious and is also

associated with aggressive behavior, which is a way of communicating his needs. He has the added stress that his twin sister does not have the same developmental challenges. He is also adapting to the changes in his family secondary to the pending divorce; the transition may be especially problematic for Xavier since he needs predictable routines to increase his sense of security.

The team—Xavier's psychiatrist, his classroom teacher, occupational and speech/language therapists, school psychologist and principal, consulting school psychiatrist, and parents—considered various options to support Xavier educationally. One alternative was a small, structured, language-based classroom, where modifications are imbedded in the curriculum and where all the students have language-based LDs. This setting would have the benefit of providing Xavier with more intensive instructional support, although he would have less exposure to students who are verbally fluent and able to provide varied social-learning opportunities. His parents were conflicted about the advantages of staying in regular education but nevertheless advocated for his remaining in an inclusion classroom supplemented by appropriate services to support his progress. Xavier's teacher noted, however, that Xavier did best with one-on-one instruction, where he would be prompted and cued, and there would be time for repetition. The struggle revolved around accommodating Xavier's need to be in control and his perseveration, while providing the opportunity for him to acquire necessary skills in communication and literacy. The consulting school psychiatrist emphasized that if Xavier was to remain in the inclusion classroom, he would need significant modifications of the assignments (e.g., extended time to generate an answer). The consulting psychiatrist recognized the admirable "take-charge" attitude of the parents but also tried to moderate their challenging, potentially impossible demands—for example, pressing the school to provide resources such as a skilled one-on-one classroom aide. A major concern was that Xavier would be isolated in an inclusive setting.

The family was forthcoming about the likely difficulties that they anticipated would occur with their pending divorce, and about how such new turbulence—family disruption, disrupted routines—could heighten Xavier's already high anxiety. The team agreed that multiple transitions to multiple caretakers during the school day and at home would be especially challenging. The team began tapering the sertraline because of a suspicion that it was contributing to Xavier's agitation; as this process proceeded, he seemed to become less explosive. Finally, the team reviewed the potential risks and benefits of a mood stabilizing or antipsychotic medication.

The school consultation process outlined above served as a vehicle for defining the problem and exploring viable solutions. In this case, defining the problem meant determining

the multiple etiologies for Xavier's difficulties, including specific psychiatric disorders, mood lability, task aversion, frustration due to inability to express himself, and anxiety. Exploring viable solutions meant determining the best "next steps" for Xavier, while keeping in mind the social, psychological, and educational factors influencing his situation. This delicate balance required compassionate listening to the teacher's anguish and frustrations; support for grief-stricken parents who realized that they were unable to provide the tools critical to their child's progress; pharmacologic intervention; and recognition of the particular environment in which special education professionals work, with its continuous battles to obtain the resources they need. It is when these forces work in concert that we—the educational "team," consulting psychiatrist, and parents—are able to have a positive impact on the challenging psychological and behavioral situations that affect children in school.

QUESTIONS TO THE CONSULTANTS

1. Given the range and complexity of Xavier's problems, how would you approach arriving at a diagnostic formulation?
2. What pharmacologic approach would you recommend to ensure that medications are optimizing his ability to concentrate and decreasing his aggressive outbursts?
3. What is the best educational approach and setting for Xavier—one that will both address his language-based learning disorder and maintain safety for everyone?

RESPONSES OF THE CONSULTANTS

Jean A. Frazier, MD

I will address this complicated case from a diagnostic perspective. In a child like Xavier, it is most helpful to systematically review the symptom complex in order to arrive at a comprehensive diagnostic formulation. This process leads, in turn, to the development of a multimodal treatment plan, in which interventions, including pharmacotherapy, can be appropriately implemented. In parallel, once Xavier's diagnoses are clearly defined, a hierarchy of impairing domains of dysfunction can be constructed.

Xavier is a boy with a complex set of behaviors and symptoms that contribute to a lack of clarity regarding diagnosis, and that have hampered appropriate interventions and treatment. His constellation of symptoms has resulted in significant impairment both at school and at home. Current interventions have not resulted in significant change.

Xavier presents with DSM-IV diagnoses of attention-deficit/hyperactivity disorder (ADHD) and a severe language-based learning disorder (LD). As the picture

unfolds, however, the situation is much more complex. Parents and teachers describe the following notable symptoms: inattention, impulsivity, emotional lability and reactivity, and aggression (biting, head butting, kicking, throwing chairs, and running down the street outside of school). Additionally, he is described as anxious and as a worrier and a "sticky" kid who gets fixated on an activity and consequently has a hard time changing gears."

In an effort to divide his symptoms into diagnostic constructs, I will review information from both Xavier's history and from the observations made during the evaluation. With regard to overall development and behaviors, Xavier had a number of areas of impairment. He had speech and language difficulties noted at 24 months of age; "he struggles to express himself" without notable echolalic or idiosyncratic speech, although he had a tendency to perseverate on topics. Xavier had only fair eye contact when initiating or terminating social interactions and was noted to have gaze aversion. He had difficulty engaging in open-ended structured play and exhibited a tendency to rub his hands and rock. Xavier spoke loudly and had poor voice modulation. He also had difficulty with visuospatial processing. He was sensitive to loud sounds and had a narrow diet, avoiding meat, vegetables, and most fruit. He had a tendency to be wrapped up in his own world, and would sit and play with his superhero during his weekly play therapy. He was described as having inappropriate social interactions, as noted when he touched a fellow student's scar with his pencil. He is described as "not understanding social nuances." He has always had difficulties with changes in routines. He had poor fine motor skills as evidenced by poor pencil grasp. All of the above suggested that he might have a pervasive developmental disorder (PDD) in the autistic spectrum.

With respect to mood regulation and symptoms, the history and observations revealed that Xavier became more agitated while on sertraline. On and off sertraline, he had rapid and inappropriate changes of topic. His communications were tangential. He was easily upset and acted aggressively when frustrated, particularly when he could not communicate his ideas or needs. The above symptoms suggest that Xavier might also suffer from a comorbid mood disorder.

Regarding anxiety symptoms, Xavier is described as a worrier and as being especially anxious around changes in routine, although these symptoms are not further detailed in the history. Additionally, he is described as having emerging obsessive-compulsive or tic-like symptoms following a streptococcal infection—which consisted of persistently licking his finger and "slurping." With the information that is available, it is not easy to discern if Xavier would meet criteria for an anxiety disorder.

Finally, Xavier already carries the diagnosis of ADHD, and there are numerous examples by history and

observation that he continues to be inattentive, impulsive, and hyperactive. He was prescribed atomoxetine for these symptoms, with fair to good results.

As Dr. Mattison will discuss later, a significant percentage of children with LDs has emotional problems, and there is some evidence to suggest that students with comorbid psychiatric and LDs disorders show improvement of their psychopathology with *only* LD intervention. Since Xavier's history and presentation suggest more global and complex psychopathology, however, a broader diagnostic approach is warranted.

A thorough psychiatric assessment in such a complicated child must include an extensive developmental history that describes the clear evolution of symptoms over time. Information from the parents, prior and current treaters, teachers, prior evaluations, and the child himself is crucial in order to obtain a clear understanding of the child. The clinical interview might also be aided by the administration of rating scales to assess symptoms, such as the Aberrant Behavior Checklist, Childhood Autism Rating Scale, and Autism Screening Questionnaire.¹⁻³ Additionally, a diagnostic semistructured instrument such as the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Episode (K-SADS-PL) can be helpful in diagnosing comorbid psychiatric disorders,⁴ as can syndromic rating scales like the ADHD Rating Scale, the Children's Depression Rating Scale, the Young Mania Rating Scale, and the Modified Overt Aggression Scale.⁵⁻⁸

In Xavier's case, he appears to meet criteria at least for PDD NOS, and should be more thoroughly evaluated for an autistic spectrum disorder; his delayed social interaction, delayed and unusual communication, and repetitive and restricted interests likely place him in that spectrum. There are several well-validated instruments that can be used in the clinical setting to assist the evaluation. Examples include the Childhood Autism Rating Scale or the Autism Screening Questionnaire (ASQ). The ASQ can be added to the K-SADS-PL since the latter does not contain PDD-relevant items. The ASQ is a brief, parent-rated behavior scale derived from, and highly correlated with ($r = 0.71$), the Autism Diagnostic Interview—Revised (ADI-R),⁹ considered the "generally accepted standardized diagnostic parental interview." The ADI-R is a more extensive instrument often used in research studies and, at times, in clinical settings. Although the ADI-R is considered the "gold standard" for diagnosing autism and provides a thorough assessment of the spectrum disorders, the length of time required to administer the interview can be somewhat prohibitive in clinical settings.

Xavier seems not only to suffer from an autistic spectrum disorder, but to have comorbid psychiatric illnesses. This combination is not uncommon, and numerous recent studies and case reports indicate that children in the autism

spectrum frequently suffer from maladaptive behaviors or comorbid conditions that further contribute to their overall impairment.¹⁰⁻²⁰ The Aberrant Behavior Checklist, which was constructed to rate inappropriate and maladaptive behavior in developmentally disabled populations, could be employed to more fully evaluate Xavier's behaviors. A clearer sense of his comorbid conditions could be obtained via several diagnostic approaches, including the use of the K-SADS-PL.

Xavier already carries a diagnosis of ADHD. This diagnosis, per DSM-IV guidelines, should not be given within the context of PDD. Yet a significant number of these children have ADHD-like symptoms that lead to further impairment in their lives and that require pharmacological intervention. For example, in one study, 85% of children with either Asperger's syndrome or PDD NOS also met criteria for ADHD, while 57.6% of those with autistic disorder met criteria for both disorders.¹⁴ Other investigators have found a similarly high rate of co-occurrence of the disorders.^{12,15} The ADHD Rating Scale—IV can aid in assessing these symptoms.

Xavier has difficulties with mood regulation. Many children with LD and PDD have a sense of frustration or irritability when they cannot express themselves or if asked to shift set. This happens to Xavier, but his mood reactivity and aggression are enduring and of sufficient severity to cause impairment in a number of settings. There is insufficient information in the case report to make a diagnosis of a mood disorder, but his tangential communications, mood lability, and aggression (which occur in both the presence and absence of external cues) warrant further assessment for an underlying mood disorder.

It is not uncommon for children in the autistic spectrum to have comorbid mood disorders.^{11,13,16} For example, Wing¹⁷ reported that nearly half of the Asperger's children whom she followed into adolescence developed mood disorders. In another study, Wozniak and colleagues¹³ looked at a group of children with pervasive developmental disorders referred to a specialized pediatric psychopharmacology program. They reported that out of 727 children, 52 (7.2%) met criteria for PDD and 114 (15.7%) met criteria for mania. Of the 52 PDD children, 14 (26.9%) met criteria for both PDD and mania. These data suggest that there may be an overrepresentation of PDD children in the overall pediatric bipolar disorder (BPD) population, as well as an overrepresentation of BPD children in the PDD group.

Despite the relative frequency of a comorbid BPD in the PDD/autism spectrum population, these mood symptoms may be masked by other symptoms or behaviors associated with autistic spectrum disorders (e.g., hyperactivity, inattention, social intrusiveness, social withdrawal, obsessiveness, stereotypies, and self-injurious behavior).¹¹ In fact, such associated features may change or become more exaggerated during manic or depressed episodes, and may

appear episodic in nature. BPD should be considered when there is a clear pattern of cyclicity or fluctuation in activity, interests, or behaviors, and when there are symptoms indicating the presence of a mood disorder. For example, behaviors such as persistent crying, self-injury, sleep disturbance, social withdrawal, decreased activity, and loss of interest may suggest a depressive disorder. Alternatively, silliness, distractibility, poor judgment, intrusiveness, aggression, agitation, giggleness, pressured speech, and non-compliance may be symptoms of mania.^{18–20}

In an effort to more accurately capture symptoms on mania in children and adolescents, even in those with developmental disorders, many investigators and clinicians have begun to use a variety of structured instruments and rating scales. For example, some investigators add sections derived from the WASH-U K-SADS^{21,22} to the K-SADS-PL in order to more fully assess mood onset and offset items; the combined instrument is referred to as K-SADS-PL-W. Additionally, there are rating scales that can aid in the assessment of depression (e.g., the Children Depression Rating Scale-Revised), BPD (e.g., the Young Mania Rating Scale), and of both depression and mania (e.g., the General Behavior Inventory-Parent Report Mania and Depression Short Form).²³

Anxiety disorders co-occur in children with PDD to a greater degree than non-PDD samples.¹⁰ For example, in a very large sample of children, Weisbrot and colleagues¹⁰ found that in children ages 6 to 12 years old, those with PDD were significantly more anxious than non-PDD clinic referrals. In fact, the severity of anxiety symptoms varied with subtype of PDD (Asperger's syndrome > PDD, NOS > autistic disorder), with those of higher IQ having more pronounced anxiety. The possibility that Xavier has a comorbid anxiety disorder should be assessed more fully by using a semistructured diagnostic instrument such as the K-SADS-PL; although he is described as anxious, the symptoms of anxiety are unclear from the case report.

According to his history, Xavier experienced emerging obsessive-compulsive symptoms following a streptococcal infection, and the question of possible pediatric autoimmune neuropsychiatric disorder associated with streptococcal infections (PANDAS) was raised. There are essentially five clinical characteristics that define this syndrome: presence of obsessive-compulsive disorder (OCD) or tic disorder; prepubertal symptom onset; sudden onset or abrupt exacerbations of symptoms; association with neurological abnormalities (presence of adventitious movements or motoric hyperactivity during exacerbations); and temporal association between symptom exacerbations and the strep infection (established by a positive throat culture or elevated titer of anti-streptococcal antibodies [anti-streptolysin O titer and anti-streptococcal DNase B titer]). Xavier's symptoms as described may, in fact, represent tic phenomena,

although the distinction between complex tics and compulsions is not always easily made. Instruments such as the Yale Obsessive Compulsive Disorder Rating Scale can be helpful clinically.²⁴

Children with PANDAS represent a small subgroup of those with OCD and tic disorders.²⁵ Patients with this disorder must have a dramatic exacerbation of symptoms following group A beta-hemolytic streptococcal infection. In fact, a recent epidemiologic study demonstrated that patients with OCD, Tourette's syndrome, or tic disorder were more likely than controls to have had strep infection in the 3 months before symptom onset.²⁶ The risk was even higher among children with multiple strep infections within 12 months. In Xavier's case, more information is needed regarding his baseline behaviors and the timing of onset of his OCD symptoms relative to the strep infection. Nonetheless, in Xavier's case or in others in which PANDAS is being considered, obtaining a complete history is the first step.

Reviewing the symptom complex of a child like Xavier is of utmost importance. Only after the completion of a careful diagnostic formulation can a multimodal treatment plan be developed and implemented.

Daniel F. Connor, MD

Since other discussants are addressing diagnostic assessment and school consultation, I will focus on the case from the perspective of a pediatric psychopharmacologist and clinical researcher on aggression. Xavier presents for child psychiatry consultation with a significant history of impulsive, aggressive behaviors in response to frustration, negative emotions, and difficulties in appropriate affect regulation, all within the context of language-based learning disabilities, academic underachievement, an impending parental divorce, and symptoms of attention-deficit/hyperactivity disorder (ADHD) and high anxiety. He has an early history of possible obsessive-compulsive symptoms in response to a streptococcus infection, but apparently without recurrence. Psychological testing reveals low normal IQ; difficulty with language, comprehension, and verbal fluency; difficulty with memory; difficulty with effective and age-appropriate verbal communication; and impulsive and aggressive behaviors. His impulsive, aggressive symptoms had an early age of onset, have been persistent and chronic since the age of two years, and appear to be precipitated by limit setting, changing set, and negative affect (e.g., being upset, anxious, or frustrated when not understood). His family psychiatric history is significant for possible ADHD symptoms in siblings and a second-degree maternal relative with a history of mood disorder. He appears to have a degree of sensation-seeking behaviors and a high threshold for danger, which places him at risk and causes much parental and teacher concern. Therapies with a psychiatrist, behavioral

treatments, close parental supervision of his behaviors, and special educational interventions have not produced the desired benefits. Psychopharmacology interventions with stimulants and atomoxetine for ADHD and with a selective serotonin reuptake inhibitor for high anxiety have been either ineffective or discontinued because of side effects. From a psychopharmacological perspective, the question is how to decrease his excessive, maladaptive aggression, thereby allowing psychoeducational treatment in a less restrictive setting.

In the clinical evaluation and treatment of disorders of early-onset aggression, it is important to define the aggressive behavior carefully. Although clinicians speak of delinquency, antisocial behaviors, conduct symptoms, oppositional defiance, violence, and aggression as largely interchangeable concepts, they are not equivalent. The ability to distinguish between adaptive and maladaptive aggression is important for the practicing clinician.

Adaptive aggression involves the ability to respond aggressively to threats to individual safety, or to obtain scarce, but needed, resources necessary for survival, or to establish dominance hierarchies in social groups. It is a fundamental neurobiological ability of higher organisms. Much human violence and aggression in the world today concerns adaptive aggression, as people struggle over threats to survival, the defense/acquisition of resources on an individual, local, or national level, or establish power and dominance relationships in social groups. This type of aggression may frequently occur in children and adolescents. Adaptive aggression has clear, understandable individual or social goals, pursued by individuals with a biologically intact central nervous system. In essence, adaptive aggression has an evolutionary function and, instead of psychiatric interventions, requires parental, political, economic, legal, educational, and sociological evaluation and intervention.²⁷

Maladaptive aggression differs from adaptive aggression in two important ways. First, maladaptive aggression is not in the service of individual or group competition for resources, or individual or group defense, within the context of the rules of a given society. Second, maladaptive aggression is an expression of a disordered internal mechanism, such as a neuropsychiatric illness.^{27,28} Maladaptive aggression is distinct from adaptive aggression and is the type of aggression that is of most concern for physicians in clinical settings.

What, then, are the characteristics of maladaptive aggression? It is aggression that appears independent of a usual, definable social context or goal; that occurs in the absence of antecedent social cues; that is out of proportion in intensity, frequency, duration, or severity; that is impulsive; and that does not terminate appropriately.²⁹ Maladaptive aggression appears to be unregulated, disinhibited aggres-

sion that occurs within the context of a neuropsychiatric illness. When this type of aggression occurs, it has negative consequences for the individual and appears to result from the inability of internal mechanisms (usually of the central nervous system) to function properly across the range of environments in which, by natural selection, they were designed to function. Xavier's aggressive behavior appears to meet many of these characteristics, had an early age of onset, was persistent and consistent (despite growth and development) across different environmental settings, and was unresponsive to many different psychosocial and special education interventions.

In clinically referred children and adolescents, adaptive aggression generally requires case management, parent training, parental monitoring of offspring behaviors and activities, and educational, community, social service, or legal intervention.^{30–33} Maladaptive aggression may require neuropsychiatric evaluation and intervention, including psychopharmacology.^{34–37} Xavier's behavior has many characteristics of maladaptive aggression and requires the addition of a psychopharmacological intervention adjunctive to his ongoing psychoeducational treatment plan.

When considering a psychopharmacology intervention for aggressive behavior, there are many clinical considerations. An important distinction occurs between a primary-illness approach to the treatment of aggressive behavior and a target-symptom approach. The primary-illness approach considers aggressive behavior as a co-occurring symptom of a more fundamental underlying neuropsychiatric illness. Treatment of the primary illness should alleviate aggression in much the same way that treatment of an infectious illness alleviates fever. Xavier appears to suffer from several possible psychiatric disorders, including ADHD and an anxiety disorder, and possibly a mood disorder or a PDD spectrum disorder. On the basis of evidence-based practice and the published scientific literature (with special attention to randomized clinical trials), only the diagnoses of ADHD and PDD as primary illnesses predict a robust psychiatric medication response (to stimulants and risperidone, respectively) for co-occurring aggressive behaviors.^{36,38,39} Xavier has been treated unsuccessfully for ADHD with a stimulant and with atomoxetine. It is unclear from the case report why the treatment failed, though it may have to do with underdosing. Recent studies demonstrate that in children with ADHD and significant oppositional defiant behaviors, higher doses of medication—whether atomoxetine⁴⁰ or mixed amphetamine salts extended release⁴¹—are needed before the oppositional symptoms improve.

Psychopharmacological treatment of maladaptive aggressive behavior using a target-symptom approach entails many clinical considerations and should be considered only after a thorough psychiatric assessment has been

completed. Comprehensive assessment should cover psychiatric diagnoses, ongoing symptoms, previous response to treatment, and contextual (psychosocial, educational, and community) aspects of aggression. Medication specifically aimed at aggressive symptoms should be used as an adjunct to ongoing psychosocial and psychoeducational interventions.

Considering a target-symptom approach, neuroleptics and atypical antipsychotics, stimulants, antidepressants, mood stabilizers, and anti-adrenergic agents all have some scientific support for their possible effectiveness for maladaptive aggression in psychiatrically referred children and adolescents within the context of diverse psychiatric diagnoses.^{27,34,36,37} Atypical antipsychotics, mood stabilizers such as divalproex, and stimulants in combination with alpha-adrenergic agents might be helpful for Xavier as adjunctive to his ongoing treatment plan.

To date, risperidone has the best support for empirically treating maladaptive aggression across a variety of diagnoses (including PDD, autism, and conduct disorder) and in youngsters with subaverage intelligence.^{27,34,35,37–39} When initiating risperidone the clinician should ascertain whether the child has any risk (including familial) for diabetes or obesity. If risk is present, glucose and cholesterol tests and a lipid panel (all fasting), weight, and body mass index should be ascertained at baseline. Especially in postpubertal females, a baseline prolactin level should also be considered. Risperidone should be initiated at 0.25 mg at bedtime for younger children and 0.25 mg to 0.5 mg at bedtime for adolescents. Depending on effectiveness and tolerability, the dose can be increased by 0.25 mg every three days until a maximum daily dose of around 4 mg is reached. Higher doses confer risk of side effects without much additional clinical benefit. Risperidone should be given in two or three divided daily doses to minimize the chance of interdose withdrawal effects in young children with high drug metabolism rates and to lessen the chance of potentially impairing side effects such as sedation. Weight can be followed monthly, and repeat blood chemistries and prolactin can be obtained at the time of the final dose.

Clinical trials of medications for maladaptive aggression should be conducted carefully and systematically. Written informed consent from each child's parent or legal guardian and verbal assent of the child or adolescent are necessary before any medication trial may begin. Target-symptom approaches to the medication treatment of aggression need to be explained. An empirical approach to treatment is required. Objective behaviors and quality-of-life measures (to be tracked over time) need to be defined. Prior to drug treatment, data for a baseline period should be collected, for later comparison to on-drug data—using reliable and valid rating scales or observational strategies for the target behaviors. If possible, single-patient, treatment-reversal, medication

trial designs are recommended. These are on-off-on or off-on-off designs in which medication is periodically removed and restarted, in order to test its safety and efficacy in relation to the targeted aggressive behaviors.

Medications should be introduced as a single variable into treatment, rather than with a variety of other simultaneous changes in the treatment plan. When medications are introduced as a single variable, their effects on target behaviors and their treatment-emergent side effects are more clearly discernible. The full dose range of a single drug should be explored (e.g., low, medium, and high ranges) for an adequate length of time at each level (generally several weeks) before clinically abandoning the medication and starting another or adding additional medications. Ineffective polypharmacy, in which multiple drugs each given at subtherapeutic doses for indeterminate lengths of time, is very real in the pharmacological treatment of aggressive youth. Finally, medications should be introduced into treatment for preplanned periods of time with a clear beginning and end.

Medication treatment for aggressive youngsters should not occur for long, indeterminate periods without periodically reassessing the clinical risks and benefits of ongoing treatment plan. If medications are utilized for the empirical treatment of aggression in children and adolescents using a careful, systematic approach (as described above), there is an increased probability of establishing efficacy and minimizing adverse side effects.²⁷

Richard Mattison, MD

I will approach this case primarily as a school consultation. The main question posed by the educational team is whether Xavier needs more intensive services—which appears to be the case. However, in order to advise how restrictive his school environment should be, we first need to know if his current level of functioning is as stable as can be achieved on an outpatient basis. We also need to be as clear as possible about his diagnoses so that we can advise on specific programming (behavioral modification, self-management, social skills, and curriculum). In Xavier's case, neither of these parameters has been well established. Indeed, at the outset, he likely needs to have more intensive treatment than his current outpatient intervention—for example, a short-term day-treatment program. Such a therapeutic step could clarify his diagnoses and better stabilize his currently serious symptoms, at which point it would become clearer what to advise the school.

His diagnostic picture appears more complicated than his current diagnoses of attention-deficit/hyperactivity disorder (ADHD) with accompanying learning disorder (LD) and language disorder. Other possibilities include the pervasive developmental disorder spectrum and bipolar disorder. His psychopathology appears serious at both school

and home (i.e., dangerous for both himself and others), and has not responded to outpatient psychopharmacologic treatment. Therefore, referral to a day hospital/program could now prove beneficial for several reasons. The intensive observations of an experienced day-program staff would clarify his diagnostic picture, and additional test results, as necessary, could be obtained. More thorough assessment of the family and home environment (with feedback given, in turn, to the parents) would then be possible. A closely monitored repeat trial with a stimulant, or the addition of an atypical antipsychotic, could expeditiously be accomplished in a day program, resulting in an improved level of functioning.

If such a program is not readily available, then more aggressive outpatient intervention would be necessary to accomplish these basic goals. In order to assist the treatment process, the parents could give the consulting psychiatrist permission to share her school observations and thinking with the current treating psychiatrist. Alternatively, a second opinion from another community child psychiatrist might be helpful.

Xavier apparently is being taught in a regular class with various support services. If we focus exclusively on his working diagnoses of ADHD and learning/language disorder, and in view of his recent history and the additional classroom observation, this school setting is inadequate. Even if his outbursts become more stable, his social, language, and learning problems will likely remain considerable. Thus, as may be indicated by his recent response to increased support services, he would benefit from a self-contained classroom that can more vigorously address his problems and also provide, by design, more successful social and academic experiences—in particular, a classroom designed for children with serious language disorders (a second choice would be a classroom for children with serious psychiatric disorders, one in which the staff has experience in simultaneously addressing language and learning disorders). In such a setting, with his academic problems better addressed, and in the presence only of children having similar academic and social challenges, his frustration—and his outbursts—will likely decrease. Moreover, in such settings a speech pathologist is not only a member of the staff, but serves as a model for all staff on how to work with language-disordered children both in and out of the classroom. These specialists also typically have time to interface with parents. And because children with language disorders are vulnerable for LDs in reading and in written expression, the staff in such settings will also be trained to recognize and remediate those common sequelae. Finally, the staff—in particular, well-trained special education teachers—are usually skilled at correcting the behavioral problems frequently shown by language-disordered students with accompanying psychiatric disorders.

Xavier's case demonstrates that students with serious behavioral or emotional problems in school are especially prone to language and learning disorders. Indeed, students classified by the federal category of having an "emotional disturbance" have been found to have an LD rate of 53%,⁴² which is persistent even with emotional disturbance programming.⁴³ Educators and mental health professionals tend to overfocus on the psychopathology of such students to the exclusion of the language/learning disorders, believing that the former must be improved before the latter can respond.⁴⁴ Both problem areas must be addressed simultaneously, however, and there is actually evidence that students with comorbid psychiatric and learning disorders will show some improvement of their psychopathology with only LD intervention.⁴⁵ Xavier is a clear example of a student with both psychiatric and learning disorders who requires a sophisticated and intensive educational approach.

Finally, a self-contained classroom would provide Xavier with a stable staff (over time)—which would especially benefit him. By contrast, when support services are provided to a student in an inclusive classroom setting, the student is typically confronted by a confusing array of "too many cooks" and too many disruptive pullouts from class. Each specialist focuses on a particular part of the student's presentation, without really understanding his whole clinical picture. Moreover, with no single consultant or specialist in charge (who fully understands the child), the coordination of services is often weak or nonexistent. In Xavier's case, his home is already like that because of his busy parents and multiple sitters, so school can provide a type of stabilizing counterbalance. Increased consistency in one major part of his life—school and, to some degree, his immediate peer group—would undoubtedly be beneficial.

Such a step would also likely reduce the confused signals that Xavier currently receives at times in his inclusive classroom setting. In some cases his teacher asks him to expand his thoughts and then simply moves on when he cannot respond. At other times she poses multistep questions, one of his weaknesses. The behavioral specialist noted that Xavier needs more direct teaching of learning-readiness skills—that is, more basic skills than his current classroom setting provides. It would be revealing to ask the teacher (as well as the other staff who provide him with his various services) what her "diagnosis" of him is. She appears to be getting a lot of advice from several specialists and to be attempting to coordinate the efforts of the several staff who work with Xavier. Since the suggestions from the neuropsychological testing and from the behavioral specialist are quite technical, it would be interesting to know how well the teacher feels that she is coping with the situation and integrating the information from all the different sources. Most regular teachers are not trained for interventions at this level

of complexity and intensity. There is no evidence that the inclusive programming that Xavier receives is effective, and to me, his case is one where such an approach will likely not succeed: he does not appear to be progressing sufficiently in any developmental sense.

Refinement of his pharmacotherapy will require teacher feedback regarding his debilitating symptoms in school—a task with which special education teachers are especially familiar. In my experience, physicians, including child psychiatrists, are not aggressive enough in getting objective feedback from teachers about the impact of medication in the classroom. Instead, they depend more on information about school functioning from parents, who are often not sufficiently knowledgeable or up-to-date. Newer instruments, however—such as the teacher version of the Child Symptom Inventory⁴⁶—provide objective surveys of the criteria for each major childhood disorder in DSM-IV, thereby supplying checklists that are easy for teachers to complete and that are also helpful to clinicians.

Although the emphasis of my remarks concerns the school consultation, two points concerning Xavier's parents should especially be raised. First, they must develop a good understanding of their son's language and learning disorders. Often a child's LD is well addressed in school, though the parents themselves receive no help. Special education teachers do not typically have sufficient time to teach parents about their children's LDs. Thus, if it has not already been done, these parents should be referred to a private speech pathologist or school psychologist to understand the nature of Xavier's learning and language disorders, as well as to learn how, at home, they can specifically complement what the staff is doing at school. They also need to develop a plan for coaching his multiple caretakers. For example, Xavier appears to need a long time to compose what he wishes to say. If the parents understand this problem as a language dysfunction rather than as a form of refusal or opposition, they could calmly encourage him to take his time so that he can say exactly what he means, rather than precipitously getting upset with him.

Second, the acceptance of Xavier's language and learning disorders by these parents may be especially difficult because they are both well-educated scientists (and there have already been some indications to that effect). To have a son who will likely not function at or anywhere near their educational level could be very trying and affect their interaction with him. A skilled private speech pathologist or educational psychologist could be helpful here, too. And though insurance plans typically would not pay for such services, only a small number of sessions would likely be required—making this intervention both affordable and well worth the investment.

Such concerns about their son's level of achievement may also affect how readily parents will accept their son's being

classified as having a learning or language disorder and his being taught in a self-contained classroom. Those with increased understanding and acceptance would conclude that despite the school's current best efforts at including Xavier, his progress is not good. In lieu of a piecemeal approach, more intensive intervention is now required in a specifically designed, controlled setting.

For a variety of reasons, the referring school district or educational agency might hesitate to move Xavier to a self-contained classroom. If so, the consulting psychiatrist should review Xavier's past trajectory with them in order to see whether there has actually been meaningful progress in terms of objective measures of social, language, and academic functioning. Or, alternatively, an assessment of this type can be planned over the next one or two marking periods. Such an evidence-based approach can complement the usual goals of individual educational plans—which are too frequently defined in terms of imprecise, subjective judgments. This approach can, in particular, clarify whether actual progress is being made or whether more intensive intervention is necessary (which seems likely in Xavier's case).

Finally, two prognostic points regarding the intensification of Xavier's programming should be made to both the school staff and his parents. First, some research has found that more intensive special education programming is likely to increase the chances of stabilizing, if not improving, Xavier's language and learning disorders⁴³—which would be, in his case, a significant result, since he appears to be at risk for further deterioration. Second, Xavier is already displaying two characteristics that appear to predict poor educational outcome for special education students like him: language dysfunction and oppositional behaviors.⁴⁷ On the positive side, however, he is young; increased interventions, from both the school and the parents, are especially likely to make a difference at this time.

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