Chapter 10
When Autism Spectrum Disorder Masks ADHD in Adolescents

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Case Examples

1. AJ is a 13-year-old male with Autism Spectrum Disorder (ASD). He had been doing well in school but over the past year has been experiencing increased difficulty paying attention in class, with homework completion and with school projects. He has a few friends but struggles to read social cues. Transitioning into new situations remains hard for him. Explicit teaching has helped him develop strategies for social understanding and emotional regulation, but he still becomes overwhelmed by transitions and new situations. This past year, he has started to argue more frequently with family members, often because of his rigid thinking. He often insists activities occur at a specific time and in a particular way, and that family members behave as expected.
2. Caren is a 14-year-old ninth-grade girl previously diagnosed with ASD. She is not on an Individualized Educational Plan (IEP). She has an above average IQ, always earned good grades, and never had behavioral concerns at home or school. Caren has always kept to herself, satisfied to be alone, and focused on her specific area of interest (which is currently Anime). However, she is more emotional as of late and resists going to school, saying she feels overwhelmed by the noise, work, pace, and expectations for group work. Her grades are dropping, as she is having difficulty completing homework and handing in assignments.

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Background

It is well understood tht Autism Spectrum Disorder (ASD) is a neurobiological disorder characterized by social, communication and behavioral challenges based on the Diagnositic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5). Individuals with ASD often present with executive functioning and attentional issues related to the diagnosis. However, sometimes these attentional issues reach a threshold beyond the diagnosis and warrant an additional diagnosis of Attention-deficit/hyperactivity disorder (ADHD). Current statistics estimate that up to 40% or more individuals with ASD **also** meet DSM 5 diagnostic criteria for Attention-Deficit/Hyperactivity Disorder (ADHD) [1–3].

However, prior to 2013, ADHD was often unrecognized or undiagnosed in individuals with ASD. The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV), which provides diagnostic criteria for psychiatric and neurodevelopmental disorders and was in use until 2013, specifically stated that ADHD and ASD could not be diagnosed together [4]. In other words, until 2013, an individual diagnosed with one of these disorders could not be diagnosed with the second simultaneously. This resulted in suboptimal treatment of many individuals, and research on the population with both disorders was limited; what research existed was not always clincially relevant.

Published in 2013, the DSM-5 allowed for both ADHD and ASD to be diagnosed in the same individual [5]. However, even as these diagnoses have become recognized as co-occurring, many individuals are not diagnosed appropriately. This is concerning as individuals who present with co-occurring diagnoses have a higher level of need and a higher level of impairment than those with a single diagnosis. Additionally, as these individuals move into adolescence and young adulthood, and face increased executive functioning and social demands, the impairment and level of need increases resulting in poorer outcomes emotionally and cognitively compared to individuals with just one of these diagnoses, further stressing the importance of accurate diagnosis. Moreover, the diagnosis remains a clinical one, as we are yet to fully understand the neural basis of overlaps and differences between these two disorders [6].

Difficulties in Recognizing a Co-occurring ADHD and ASD Diagnoses

1. We lack the range of empiric studies of children and adolescents with co-occurring ADHD and ASD to guide care. This means clinicians, teachers, and providers have less evidence on which to base diagnosis, treatment, and prognosis. There was no uniformity in diagnosing until 2013, making long-term studies simply unavailable.

2. Severity and intensity of symptoms can be a factor. Individuals with severe symptomology of either ASD or ADHD are more likely to be diagnosed early, but those with subtler symptoms or those with other compensatory skills (higher cognition, better regulation) may not. It is easy to miss or misattribute less problematic symptoms.
3. The two diagnoses can share overlapping symptoms, making distinction difficult. Individuals with ASD are often distracted by their own thoughts or stimuli related to perseverative interests so may look distractible. Observation alone may be insufficient to clarify whether such distractibility stems from autism or a separate attention deficit. Alternately, an individual with ADHD may present with social difficulties, the primary deficit in individuals with ASD. However, the impulsivity and inattention of ADHD can interfere with response to social cues and social situations. This makes it particularly challenging to disentangle attentional and social difficulties in individuals with ASD and/or ADHD.
4. Both disorders also present with executive functioning deficits. Executive functioning describes the ability to organize information mentally and to control one's emotions. Isolated neuropsychological measures of executive function do not clarify the cause of the deficit, just its presence or absence. Although comprehensive neuropsychological testing can be used to diagnose ASD and ADHD, it cannot clarify diagnoses based on executive function profiles alone.
5. Risk factors for both of these diagnoses overlap, including being male, a history of prematurity, and other perinatal factors (such as use of medications, exposures, and illnesses). The contribution of these risk factors does not aide in the clarification of ADHD versus ASD.
6. Finally, even if an individual with ASD presents with symptoms of inattention, at what point does this meet the threshold for a secondary diagnosis? The cutoff is subjective, based on observations and report of impact.

ASD and ADHD and Adolescence: A Confusing Complex

Problems with executive functioning may first become apparent in adolescence. Through elementary school, students are learning self-restraint, management of multistep tasks, study skills, and navigation of group work. However, as individuals move into adolescence, school success requires real mastery of these skills and workload intensifies. Additionally, executive functioning demands and expectations simultaneously, students are given more social and academic independence by both parents and teachers.

Beyond academics, social demands escalate for most adolescents. They face increased social pressure, more complex social relationships, and more abstract social information to interpret. Adolescence can be hard for the typically developing teen, harder for the teen with either ASD or ADHD, and particularly taxing for the individual with both ASD and ADHD.

Not surprisingly, individuals with both ASD and ADHD are more likely to present with comorbid mental health disorders such as anxiety or depression. These diagnoses can be either primary or secondary, further complicating the presentation and diagnosis [8, 9].

Diagnosis

How can we differentiate these as individual or co-occurring diagnoses? Although neuropsychological testing can assist in this process, it requires consequent careful interpretation by a skilled clinician along with correlation to the clinical presentation.

Some patterns can be helpful in discriminating ASD from ADHD. As described above, both patients with ASD and ADHD can demonstrate difficulties with executive functioning which includes planning, organizing, fluency, cognitive flexibility, working memory, and inhibition. On direct testing, there can be subtle differences between these populations.

- Whereas individuals with ADHD are more likely to demonstrate executive functioning deficits related to impulsivity, sustained attention, working memory, and the ability to inhibit (to stop doing something when they are supposed to), those with ASD are more likely to demonstrate a wider range of difficulties with lower performance in all areas of executive functioning.
- Both groups can have difficulties shifting set. That is to say, when individuals are completing a task, they can have difficulty moving to the next task or have difficulty transitioning to a different type of task. It appears that the brain is fixed in the pattern of the previous task. Clinicians, parents, and teachers sometimes describe this as "sticky thinking." You can imagine how this could impact functioning at school, where students are required to move quickly from one classroom activity to another and from class to class. We don't currently have a lot of information about what executive functioning testing looks like for individuals with both disorders to help us with diagnostic clarification at an individual level with consistency and accuracy.
- Externally both ADHD and ASD can cause a person to appear distractible, so the next step is to find out where and why the distractibility occurs. Is the distractibility worse in social settings, with high sensory loads, or when higher order language is expected? This can be explained by the social challenges of the teen with ASD. On the other hand, is the distractibility worse when tasks are less interesting or engaging or have no social context or during periods when sustained attention is expected? This can be explained by the common symptoms of ADHD in a teen. Clinicians need to hone in on the details of the symptoms. Teachers, therapists and other providers can be an essential resource in describing when and how the student appears distracted in class, while parents and students themselves can give details about extracurricular time.

- Theory of mind tasks (those which ask an individual to understand the perspective of another individual) are more likely to be difficult for individuals with ASD than ADHD. Sometimes a person with ASD starts talking "in the middle," as if the listener knows the story from beginning without clarifying the context. Sometimes, the person with ASD seems to think that the listener knows about a person or television show or character without asking first. Teaching these skills is often central to educating a person with ASD. In contrast, a person with ADHD may also speak as if the listener knows more, but due to inattention or impulsivity rather than reduced social perception.

> Theory of mind requires a person to understand that what I think is not what you think and that what I know is different from what you know.

Using these concepts, a comprehensive neuropsychological assessment can be helpful in finding diagnostic clarity. Looking at measures of attention, executive functioning, working memory, and social cognition helps understand the nature of an individual's struggle. However, as stated, no single test or result is definitive.

That being said, most individuals don't undergo comprehensive neuropsychological testing to aid in this diagnosis. Testing can be hard to access and harder to afford. When clinicians and families consider both of these diagnoses, a combination of careful history and familiar measures (such as Vanderbilt Attention Scales or Conners' Rating Scales) can be helpful. Information about functioning should be gathered from a multitude of sources including parents, teachers, therapists, and in adolescents or those where developmentally appropriate, the student directly. The results of this investigation might not suggest that the individual has reached a diagnostic threshold, but still can provide evidence to inform a therapeutic treatment plan. In fact, in some cases, clinicians use medication to treat the ADHD symptoms in those with ASD even when the full ADHD criteria are not met. Likewise, social skills training is often recommended for those with ADHD who fail to meet full ASD criteria.

Treatment

For individuals with ASD and suspected or confirmed ADHD, treatment aims to support behavioral, academic, social, and executive functioning skills [10]. If symptoms are sufficiently problematic or persist after introduction of behavioral educational and other therapeutic interventions, a medication trial is often warranted.

Behavioral interventions are paramount to supporting individuals with both ASD and ADHD and may look similar across these disorders. Interventions and

accomodations need to be appropriate to the students cogntive and developmental level. The goals of intervention in all settings are promoting attention to task, increasing compliance, improving study skills, addressing social skills and improving emotional regulation. This should include supports at home and school. At home, students likely will benefit from utilizing postive behavioral support plans and accomodations around homework. At school this includes interventions as part of an IEP or 504 plans which addresses the students needs (see table 10.2).

Having the support at home and school of a behavioral specialist with experience in both disorders can be very helpful. Optimally, school teams should include participation of a consultant familiar with ADHD and ASD. That provider should participate in IEP meetings, consult to the school team at scheduled intervals, and be available to consult to the family so that skills are generalized to the home setting Table 10.1.

Academic accommodations should also match the learner's individual profile. Some examples are listed in Table 10.2.

Direct support for executive functioning deficits can include organizational tutors or study skills sessions in school, when a student meets with a teacher to work on organizational and other executive function competencies.

Most students with ASD will need social supports through high school and sometimes beyond. This can be in the form of a structured group where individuals are coached systematically on areas of deficit or as part of individual social coaching.

In addition, as is the need for treatment of ASD alone, parents should be involved in the treatment plan. Parent education around dual diagnoses and successful behavioral strategies along with direct parental support is recommended.

Although medication can be a useful part of comprehensive treatment program, those with both ASD and ADHD may respond less robustly to standard ADHD medication and tend to experience more side effects compared to those with ADHD alone [10]. This underscores the importance of additional therapeutic supports in the home and school along with a good monitoring system. If medication is used, the same treatment algorithm is followed as for those with ADHD alone. Stimulants are used first line, more commonly starting with methylphenidate preparations, and adjustments are made as needed. Individuals with ASD and ADHD need to be monitored closely for side effects and response to medication.

Given the risk for more medication side effects, start treatment of ADHD in those with ASD with a low dose of medication, and increase slowly until you reach a meaningful therapeutic effect with minimal or tolerable side effects.

Table 10.1 Sample IEP goals for a student with ADHD and ASD

Sample IEP goals for a student with ADHD and ASD
Prolonged attention to task
Increased compliance
Improved emotional regulation
Use of organizational strategies

Table 10.2 Sample IEP accommodations for students with ADHD and ASD

Sample IEP accommodations for students with ADHD and ASD
Allow extra time on all academic exercises.
Reduce the volume work and focus on quality rather than quantity. For students with ADHD, time and reduced volume can be the most beneficial (and easiest to implement) accommodations to promoting their learning success.
Use preferential seating to help reduce distractibility.
Keep oral directions clear and simple and demonstrate (i.e., model) an instruction or skill whenever possible.
The teacher should check in with the student after giving instructions, to make sure that they have understood.
Tasks should be broken down into smaller, easy-to-complete units, with positive feedback at the completion of each.
Attempt to use multi-sensory presentations of new concepts: combine oral, visual, and tactile activities whenever possible. Also, continue to encourage discovery, demonstration, and practice of new concepts within a meaningful context by using manipulatives (e.g., blocks, tiles, pie charts).
Allow the student "down time" or short breaks on a fairly regular basis to ensure retention and improve their productivity.
The teacher may want to check in frequently as the student does independent work, so that they are getting attention and feedback for being on-task rather than only when they go off-task.
Extra time on tests
Explicit language when teaching and explaining assignments
Immediate feedback to course correct misunderstandings
Limited quantity of classwork and homework
Increased support around academics with high executive functioning demands (such as projects and writing)
Provision of notes, note-taking support for lectures
Minimized environmental sensory stimuli

Use of interval standardized measures (Vanderbilt's, Conners', etc.) and/or other regular data collection (through ABA or other behavioral methodologies) can be helpful in monitoring response to both therapeutic and medication interventions.

Individuals should be closely monitored for other mental health comorbidities, especially anxiety and depression.

Cases Revisited

Plan for AJ: Remember, there can be many reasons that students experience difficulties sustaining attention. His increasing distress in managing expectations at school may be fueling his rigidity at home. Next steps are to gather information that will help distinguish the potential causes of his deteriorating attention and increasing rigidity.

- Parents and teachers should be given attention rating scales for more objective data collection. Clarify whether inattention is only in the school setting or whether there are issues elsewhere.
- Investigate for comorbid mental health diagnoses as well; screening tools for anxiety and depression might be appropriate.
- A meeting with school providers can be helpful, as can Individualized Education Program (IEP) testing (or updated testing) to determine the current needs in school.
- Due to the potential contribution of rigid thinking, he may benefit from individual sessions with a behavioral health clinician, using various strategies to improve his social cognition.
- If in the context of school and home supports, AJ is still struggling, a medication trial could be initiated, targeting the diagnosis identified.

Plan for Caren: Again, remember there can be many reasons that students experience difficulties with mood and school function. As students transition to high school, the expectations are increased. Individuals who were previously compensating for their difficulties may no longer have capacity. This can sometimes manifest behaviorally, emotionally, as well as academically. Next steps are to gather information that will help distinguish the potential causes of their deteriorating attention.

- Although, at first glance, one would consider many other issues besides a comorbid diagnosis of ADHD for Caren, this should be considered in the differential. Collection of attention scales contributes to comprehensive history. ADHD in girls with fewer externalizing symptoms may be missed.
- Specifically evaluate for mood issues and substance use, again with focused history and diagnosis-specific screening tools.
- Puberty onset can align with increase of moodiness. Investigate any temporal relationship with menses that could be clarifying.
- Ask about potential bullying. Involving school personnel and educating parents about interventions might be appropriate.

Interestingly, some characteristics inherent to the diagnosis of ASD may have helped an individual compensate to this point: preference for routines, rigidity, and a preference for following rules could have supported on task behavior. In high school, new skills might be needed to support task completion when the demands become overwhelming.

Conclusions

When pateints with ASD or ADHD present with challenges in the teen years, it may be appropriate to consider an additional diagnosis. Adolescents with dual diagnoses of ASD and ADHD are particularly vulnerable to the challenges of their academic and social worlds. Although difficult, identification and treatment in this population is essential to success. Use screening tools to gather information from

teachers, parents, therapist and the student themselves. Involve outside specialists when you need. Generally, a comprehensive intervention includes social skills training, behavioral interventions, classroom accomodations, executive functioning supports and consideration for medication. It is essential that interventions are integrated into both home and school environments for an optimal outcome.

Tips

- Look for possible ASD in adolescents with ADHD who are struggling socially. Strong language and cognitive skills could have masked this diagnosis earlier.
- In adolescents with ASD who are struggling with attention consider evaluation for co-occurring ADHD. Use ADHD monitorning instruments to assisist in assessing for ADHD symptoms in those with ASD.
- Treatment for ADHD and ASD will require a comprehensive treatment plan both medically and behaviorally in the home and school settings.
- ADHD medications may cause more side effects in those with ASD than those without. A good rule of thumb is to start low and go slow.

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