



# Case Study 1: JJ

## **Positive** for autism



canvas Dx  
by cognoa

Know Now. Act Sooner. Because knowing is the earliest intervention.

**Integrating Canvas Dx into practice:** The following case studies are for illustrative purposes only and are not based on real patients or events. They are not intended to influence clinical decision-making or suggest any particular diagnosis or course of treatment for any particular set of symptoms. They are only intended to illustrate how Canvas Dx can be incorporated into your practice.

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# Clinical Case Study 1: JJ

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**JJ is a 2 year 3 month old boy being seen by his primary care pediatrician due to caregiver concerns regarding his development and behaviors.**

- His mother reports that JJ was seen by an occupational therapist at 14 months because of his oral aversions.
- He has poor eye contact and rarely responds to others.
- He rarely points to things of interest and doesn't smile or use gestures to communicate.
- Mother reports delays in speech and language.
- His first words were delayed at 2 years of age, and he currently speaks 1–2 word phrases with a expressive vocabulary of 50–60 words.
- JJ failed his Ages & Stages questionnaire at his last well-check-up.
- During the consultation the pediatrician observes JJ avoids eye contact and is hyperfocused while he plays repetitively with the spinning the wheels of the train in the waiting room.



*Based on reported caregiver concerns, observed behavior and history of a failed Ages & Stages questionnaire, the pediatrician prescribes Canvas Dx.*

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Canvas Dx returns a **POSITIVE FOR AUTISM** output for JJ

The pediatrician uses this output, in conjunction with her observations of JJ, and the family's report of JJ's behavioral difficulties and developmental delays to determine that JJ meets DSM-5 criteria for autism. The pediatrician discusses the findings and next steps with JJ's family.

Given the nature of his delays the pediatrician decides that JJ would benefit most from a combination of ABA, speech and language therapy and OT for his sensory sensitivities.

The pediatrician forwards the Canvas Dx result, together with the Detailed Report and an assessment summary he created within his portal, to relevant providers to access needed therapies.

The pediatrician schedules a future meeting with JJ and his caregivers in 6 weeks time to discuss progress and any arising concerns.

[Read JJ's Detailed Report on the next page >](#)

# Detailed Report

NAME Jayden Jackson	DATE OF ASSESSMENT 2023-07-28	SEX Male	DOB 2021-01-01
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## Autism Specific Testing

Canvas Dx was completed on 2023-06-15 when Jayden Jackson was 2 years, 5 months old.

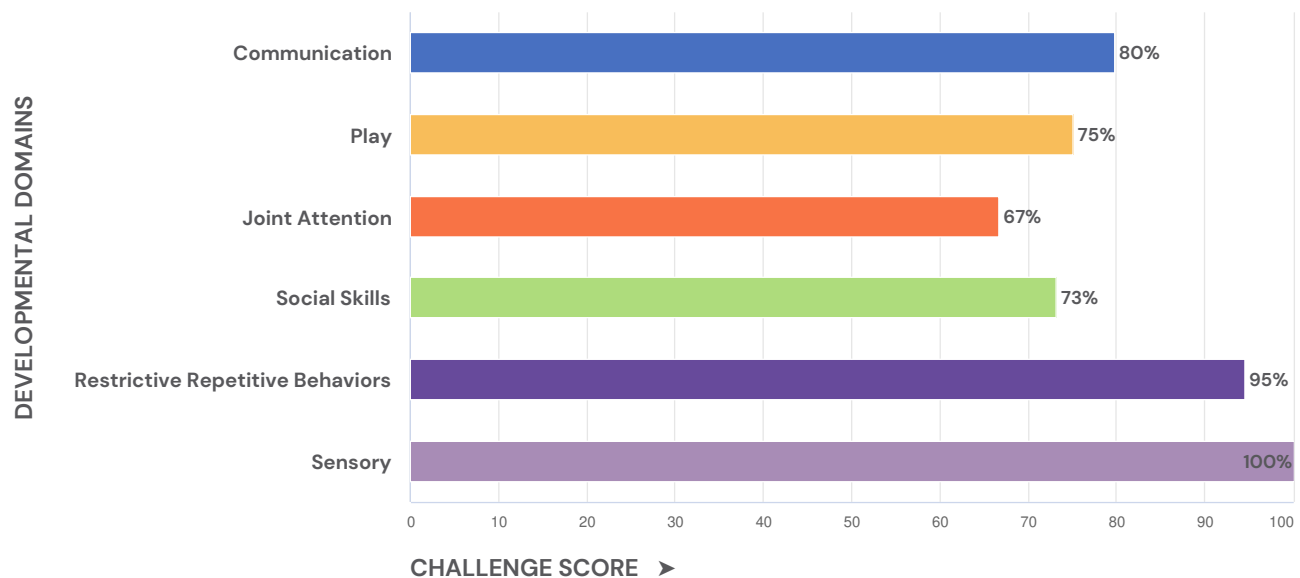
Canvas Dx is an FDA authorized Diagnostic device for autism that has been clinically validated for use in children with developmental delay concerns, aged 18 through 72 months. Canvas Dx captures input from a parent/caregiver questionnaire, a healthcare provider questionnaire, and behavioral observations of the child (made by trained video analysts who view home videos of the child that are uploaded by the parent/caregiver). Inputs are combined in a trained machine learning algorithm to produce an output of 'Positive for autism', 'Negative for autism' or 'Indeterminate'.

The Canvas Dx output was: **Positive for autism.**

This detailed report was generated using Canvas Dx item-level inputs for this child.

## Summary of Domain Specific Challenges:

*Higher scores indicate increased challenge*



0% challenge score = maximally neurotypical score. A score of 0% challenge is achieved if the maximally neurotypical response is selected for each relevant question in this domain.

100% challenge score = maximally atypical score. A score of 100% challenge is achieved if the maximally atypical response is selected for each relevant question in this domain.

This graph combines item-level data from the three Canvas Dx inputs. In cases where a behavior was recorded as "not observed" (rather than present or absent) the response was excluded from the count.

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# Developmental Domains Overview

Domain	Description	Evidence based therapies <sup>1</sup>
<b>Communication</b>	Includes aspects of nonverbal communication, receptive and expressive language as they relate to autism. For example, gestures, ability to understand spoken language or to communicate needs.	<ul style="list-style-type: none"> <li>• Speech/language therapy</li> <li>• Social skills training</li> <li>• Early intensive behavioral intervention (e.g. ABA, NDBI)</li> <li>• Developmental therapy</li> </ul>
<b>Play</b>	Includes aspects of play such as imaginative play, imitation, interest and engagement with other people.	<ul style="list-style-type: none"> <li>• Social skills training</li> <li>• Early Intensive Behavioral Intervention (e.g. ABA, NDBI)</li> <li>• Developmental therapy</li> </ul>
<b>Joint attention</b>	Ability to share focus on an object or area with another person (e.g. a parent points to a plane in the sky and says "look, a plane" and child looks at parents and then sky to share the experience)	<ul style="list-style-type: none"> <li>• Social skills training</li> <li>• Early Intensive Behavioral Intervention (e.g. ABA, NDBI)</li> <li>• Developmental therapy</li> </ul>
<b>Social skills</b>	Ability to use tools to communicate, interact, and build healthy relationships (e.g. the child's ability to engage in group play)	<ul style="list-style-type: none"> <li>• Speech/language therapy</li> <li>• Social skills training</li> <li>• Early Intensive Behavioral Intervention (e.g. ABA, NDBI)</li> <li>• Developmental therapy</li> </ul>
<b>Restricted &amp; Repetitive Behaviors and Interests</b>	Highly restrictive or repetitive behaviors fixated on an interest (e.g. a child spends a lot of time lining up his toys)	<ul style="list-style-type: none"> <li>• Behavioral intervention</li> </ul>
<b>Sensory</b>	Related to processing information from the senses, like sight, smell and sound (e.g. a child has hypersensitivity to the tags in clothing)	<ul style="list-style-type: none"> <li>• Occupational therapy*</li> </ul>

1. Hyman, S. L., Levy, S. E., & Myers, S. M. (2020). Identification, evaluation, and management of children with autism spectrum disorder. *Pediatrics*, 145(1).

\*Emerging literature/evidence base for sensory integration treatments.

# Observed / reported behaviors and history of concern

SOCIAL COMMUNICATION AND SOCIAL INTERACTION	
DSM-5 COMPATIBLE DOMAINS	IDENTIFIED DOMAIN SPECIFIC CHALLENGES FOR THIS CHILD
Social-emotional reciprocity	<ul style="list-style-type: none"> <li>• The healthcare provider reports the child doesn't smile with people but might smile at other things.</li> <li>• The healthcare provider reports the child rarely offers comfort without prompting. The child, tries to do so in odd ways such as laughing when someone is crying.</li> </ul>
	<ul style="list-style-type: none"> <li>• The caregiver reports that the child only understands only a little of the words and phrases that the caregiver says to them: The child only understands a few words.</li> <li>• The caregiver reports that the child never looks people in the eye during conversations or other social interactions, or that the child has unusual eye contact.</li> <li>• The caregiver reports that the child never responds, looks up, or pays attention to the caregiver when the caregiver starts talking to them.</li> <li>• The caregiver reports that the child rarely plays back-and-forth social games like "patty-cake" or "Simon says". The caregiver reports that the child is not really interested in playing games with others.</li> <li>• The caregiver reports that the child rarely copies or imitates the way they do things around the house. Even if the child copies what they see in the moment they do not use it in play.</li> <li>• The caregiver reports that the child sometimes shows things, like toys, to the caregiver or other people to share their interest and not just for getting help.</li> <li>• The caregiver reports that, when smiled at, typically, the child only smiles back if told to, or with familiar people.</li> <li>• The caregiver reports that the child only sometimes tends to show concern or try to comfort others when they are upset, sick, or hurt.</li> <li>• The caregiver reports that the child only sometimes tends to share their excitement or happiness with the caregiver and other people: The child's sharing of joy is limited to certain activities, people or situations.</li> </ul>
	<ul style="list-style-type: none"> <li>• Videos show some deficits with social emotional reciprocity.</li> </ul>

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**Nonverbal communication**

- The healthcare provider reports the child does not socially pick up or bring objects to share interest or to get help.
- The healthcare provider reports the child doesn't smile with people but might smile at other things.
- The healthcare provider reports the child rarely offers comfort without prompting. The child, tries to do so in odd ways such as laughing when someone is crying.
- The healthcare provider reports that child never shakes head "no" when asked a question or a request is made and never shakes head spontaneously to mean "no".
- The healthcare provider reports that the child does not point to communicate things or objects of interest from a distance.
- The healthcare provider reports that the child rarely use hands or gestures to communicate; imitates others only.
- The healthcare provider reports that the child occasionally uses eye contact and is rarely used in social interactions.

- The caregiver reports that the child never looks people in the eye during conversations or other social interactions, or that the child has unusual eye contact.
- The caregiver reports that the child never responds, looks up, or pays attention to the caregiver when the caregiver starts talking to them.
- The caregiver reports that the child rarely shows a variety of emotional facial expressions that match the mood or situation. The child tends to use only one facial expression for most situations.
- The caregiver reports that, when communicating, the child rarely or never naturally shakes their head to mean "No" and nods their head to mean "Yes" without being told to.
- The caregiver reports that, when communicating, the child rarely uses gestures such as waving "hello" or "good bye", clapping, giving a thumbs-up, or other similar hand signals: The child only uses gestures when told to.
- The caregiver reports that, when smiled at, typically, the child only smiles back if told to, or with familiar people.
- The caregiver reports that the child sometimes points to show something the child is interested in that is far away, such as an airplane in the sky, or a toy across the room, but generally, the child doesn't check back to make sure you are paying attention.

- Videos show some deficits in nonverbal communication.

**Developing, maintaining, and understanding relationships**

- The healthcare provider reports the child does not socially pick up or bring objects to share interest or to get help.
- The healthcare provider reports the child doesn't smile with people but might smile at other things.
- The healthcare provider reports the child rarely offers comfort without prompting. The child, tries to do so in odd ways such as laughing when someone is crying.
- The healthcare provider reports that the child does not point to communicate things or objects of interest from a distance.
- The healthcare provider reports the child rarely imitates actions of caregivers, e.g. vacuuming which is limited to a few routines that were learned.

- The caregiver reports that the child never starts playing on their own with toys, crafts, games, or other activities without the caregiver's help: The child needs help to find something to do or to start playing.
- The caregiver reports that the child rarely plays back-and-forth social games like "patty-cake" or "Simon says". The caregiver reports that the child is not really interested in playing games with others.
- The caregiver reports that the child rarely copies or imitates the way they do things around the house. Even if the child copies what they see in the moment they do not use it in play.
- The caregiver reports that the child sometimes shows things, like toys, to the caregiver or other people to share their interest and not just for getting help.
- The caregiver reports that the child only sometimes tends to show concern or try to comfort others when they are upset, sick, or hurt.
- The caregiver reports that the child sometimes points to show something the child is interested in that is far away, such as an airplane in the sky, or a toy across the room, but generally, the child doesn't check back to make sure you are paying attention.
- The caregiver reports that the child only sometimes tends to share their excitement or happiness with the caregiver and other people: The child's sharing of joy is limited to certain activities, people or situations.

- Videos show some deficits in the quality of the child's play.
- Videos show some deficits in developing, maintaining, and understanding of relationships.



## RESTRICTIVE OR REPETITIVE BEHAVIORS

DSM-5 COMPATIBLE DOMAINS	IDENTIFIED DOMAIN SPECIFIC CHALLENGES FOR THIS CHILD
<b>Stereotypic or repetitive behaviors</b>	<ul style="list-style-type: none"> <li>• The healthcare provider reports abnormal playing with toys or objects with definite repetitive use of objects that seriously interferes with other activities.</li> <li>• The healthcare provider reports that the child engages in repetitive whole-body movements all the time and this causes distress when interrupted.</li> </ul>
	<ul style="list-style-type: none"> <li>• Videos show some examples of restricted, repetitive behavior.</li> <li>• Videos show some examples of unusual sensory and/or repetitive interests.</li> </ul>
<b>Ritualized or inflexible behaviors</b>	<ul style="list-style-type: none"> <li>• The caregiver reports that the child usually seeks out, or becomes distracted with, sensations like touching, smelling, looking at, or listening: The child has a lot of very intense sensory interests, and it is difficult to get them to stop or to do something else.</li> </ul>
<b>Highly restricted, fixated interests</b>	<ul style="list-style-type: none"> <li>• The healthcare provider reports the child exhibits unusual sensory interests, and these behaviors take up a lot of time.</li> </ul>
	<ul style="list-style-type: none"> <li>• The caregiver reports that the child usually seeks out, or becomes distracted with, sensations like touching, smelling, looking at, or listening: The child has a lot of very intense sensory interests, and it is difficult to get them to stop or to do something else.</li> <li>• The caregiver reports that, when playing alone or with toys, the child doesn't really pretend or make up stories and characters: The child may occasionally repeat a certain made-up story, but rarely plays pretend.</li> </ul>
<b>Hyper- or hyporeactivity or unusual interest in sensory input</b>	<ul style="list-style-type: none"> <li>• The healthcare provider reports the child often has sensory issues, that is, upset, angered, or irritated by particular sounds, tastes, smells, sights or textures, and it interferes with daily life or prevents an activity.</li> <li>• The healthcare provider reports the child exhibits unusual sensory interests, and these behaviors take up a lot of time.</li> </ul>
	<ul style="list-style-type: none"> <li>• The caregiver reports that the child usually predictably gets upset by certain common noises, smells, sights, textures, flavors, or movements: This interferes with a lot of their daily activities.</li> <li>• The caregiver reports that the child usually seeks out, or becomes distracted with, sensations like touching, smelling, looking at, or listening: The child has a lot of very intense sensory interests, and it is difficult to get them to stop or to do something else.</li> </ul>
	<ul style="list-style-type: none"> <li>• Videos show some examples of unusual sensory and/or repetitive interests.</li> </ul>



### Developmental history:

- In relation to the child’s development, the caregiver reports that the child has had definite delays in development, such as a speech delay, but no difficulties socially interacting and no unusual behaviors.
  - The healthcare provider reports the child is developmentally delayed before age 3 and behavior is strongly indicative of autism.
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### Clinically significant impairment in social, occupational, or other important areas of current functioning:

- The caregiver reports that the child usually predictably gets upset by certain common noises, smells, sights, textures, flavors, or movements: This interferes with a lot of their daily activities.
- The caregiver reports that the child usually seeks out, or becomes distracted with, sensations like touching, smelling, looking at, or listening: The child has a lot of very intense sensory interests, and it is difficult to get them to stop or to do something else.
- The healthcare provider reports the child often has sensory issues, that is, upset, angered, or irritated by particular sounds, tastes, smells, sights or textures, and it interferes with daily life or prevents an activity.
- The healthcare provider reports the child exhibits unusual sensory interests, and these behaviors take up a lot of time.
- The healthcare provider reports abnormal playing with toys or objects with definite repetitive use of objects that seriously interferes with other activities.
- The healthcare provider reports that the child engages in repetitive whole-body movements all the time and this causes distress when interrupted.

# Assessment summary prepared by Dr. Light Beacon MD

Jayden Jackson is a 2 years, 5 months old who was assessed due to developmental concern.

## ICD-10 CODES

F84.0 Autistic disorder

Based on testing (results above), caregiver input, clinician and objective findings, DSM-5 criteria and evidence of impairment, this child meets criteria for autism spectrum disorder. Disturbances are not better explained by intellectual disability or global developmental delay. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

Restricted, repetitive behaviors domain severity rating:

(3) Very Substantial Support

Social communication domain severity rating:

(3) Very Substantial Support

No intellectual disability present

## RECOMMENDATIONS

Early intensive behavioral intervention (i.e. ABA or other)

Speech & Language Therapy

PROVIDER NAME Dr. Light Beacon MD	
SIGNATURE Dr. Light Beacon MD	DATE 2023-07-28 08:13PM UTC

### Signature Line

Electronically Signed by Dr. Light Beacon MD at 2023-07-28 08:13PM UTC. This note is a complete document once electronically signed.

Practice Name: Lighthouse Pediatrics

Practice Address: 123 Main St, Any Town, ST, 10000

NAME: Jayden Jackson

DOB: 2021/01/01

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