

Cognitive Accessibility Course Series: Autism Spectrum Disorder (ASD)

1. Introduction

1.1 Cognitive Accessibility Course Series: Autism Spectrum Disorder (ASD)



Notes:

1.2 Introduction: Why Take This Course Now?

Introduction: Why Take This Course Now?

(Note: For unfamiliar terms, click the button on the right with the term's corresponding number)

FLVS offers inclusive classrooms¹, meaning that students in teachers' classes can have a variety of differing needs and abilities. The Exceptional Student Education (ESE) team exists to help support these students, such as through managing their individualized education programs (IEPs)². However, teachers also have a critical role in supporting students with disabilities.

In online education, much attention is given to disabilities involving hearing and vision; however, conversations are increasing about how to better support students with a cognitive disability³ (Pichiliani & Pizzolato, 2021). So, to prepare teachers and ensure FLVS has resources about cognitive accessibility⁴ in our online courses, the ESE team is creating the Cognitive Accessibility Course Series. While FLVS is not considered to be out of compliance with federal accessibility laws, which will be reviewed later in the course, proactively addressing cognitive accessibility will ensure there are no potential disruptions in compliance as increasing attention is given to this type of accessibility.

Back

Continue

1

2

3

4

Cognitive Disability (Slide Layer)

Introduction: Why Take This Course Now?

(Note: For unfamiliar terms, click the button on the right with the term's corresponding number)

FLVS offers inclusive classrooms¹, meaning that students in teachers' classes can have a variety of differing needs and abilities. The Exceptional Student Education (ESE) team exists to help support these students, such as through managing their individualized education programs (IEPs)². However, teachers also have a critical role in supporting students with disabilities.

In online education, much attention is given to disabilities involving hearing and vision; however, conversations are increasing about how to better support students with a cognitive disability³ (Pichiliani & Pizzolato, 2021). So, to prepare teachers and ensure FLVS has resources about cognitive accessibility⁴ in our online courses, the ESE team is creating the Cognitive Accessibility Course Series. While FLVS is not considered to be out of compliance with federal accessibility laws, which will be reviewed later in the course, proactively addressing cognitive accessibility will ensure there are no potential disruptions in compliance as increasing attention is given to this type of accessibility.

Back

Continue

1

2

3

4

A cognitive disability describes a condition that affects an individual's cognition, such as their ability to learn and communicate. Such cognitive disabilities include autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), learning disabilities, and dyslexia (Pichiliani & Pizzolato, 2021).

✖

Cognitive Accessibility (Slide Layer)

Introduction: Why Take This Course Now?

(Note: For unfamiliar terms, click the button on the right with the term's corresponding number)

FLVS offers inclusive classrooms¹, meaning that students in teachers' classes can have a variety of differing needs and abilities. The Exceptional Student Education (ESE) team exists to help support these students, such as through managing their individualized education programs (IEPs)². However, teachers also have a critical role in supporting students with disabilities.

In online education, managing and supporting students with a cognitive disability³ (Pichillani & Pizarro, 2021). So, to prepare teachers and ensure FLVS has resources about cognitive accessibility⁴ in our online courses, the ESE team is creating the Cognitive Accessibility Course Series. While FLVS is not considered to be out of compliance with federal accessibility laws, which will be reviewed later in the course, proactively addressing cognitive accessibility will ensure there are no potential disruptions in compliance as increasing attention is given to this type of accessibility.

1

2

3

4

Cognitive accessibility will be reviewed in further detail in the first section of this course. At its core, cognitive accessibility is about increasing accessibility for individuals with cognitive disabilities.

Back

Continue

IEP (Slide Layer)

Introduction: Why Take This Course Now?

(Note: For unfamiliar terms, click the button on the right with the term's corresponding number)

FLVS offers inclusive classrooms¹, meaning that students in teachers' classes can have a variety of differing needs and abilities. The Exceptional Student Education (ESE) team exists to help support these students, such as through managing their individualized education programs (IEPs)². However, teachers also have a critical role in supporting students with disabilities.

In online education, managing and supporting students with a cognitive disability³ (Pichillani & Pizarro, 2021). So, to prepare teachers and ensure FLVS has resources about cognitive accessibility⁴ in our online courses, the ESE team is creating the Cognitive Accessibility Course Series. While FLVS is not considered to be out of compliance with federal accessibility laws, which will be reviewed later in the course, proactively addressing cognitive accessibility will ensure there are no potential disruptions in compliance as increasing attention is given to this type of accessibility.

1

2

3

4

An individualized education program (IEP) is a plan that is designed and implemented to support students with additional needs, such as students with disabilities.

Back

Continue

Inclusive Classroom (Slide Layer)

Introduction: Why Take This Course Now?

(Note: For unfamiliar terms, click the button on the right with the term's corresponding number)

FLVS offers inclusive classrooms¹, meaning that students in teachers' classes can have a variety of different needs and abilities. The Exceptional Student Education (ESE) team works with teachers to ensure that all students are included in the classroom. Inclusive classrooms are those that include students with and without disabilities, as opposed to having separate special education classrooms. Teachers also have a critical role in supporting students with disabilities. In online courses, teachers have opportunities involving hearing and vision; however, conversations are increasing about how to better support students with a cognitive disability³ (Pichiliani & Pizzolato, 2021). So, to prepare teachers and ensure FLVS has resources about cognitive accessibility⁴ in our online courses, the ESE team is creating the Cognitive Accessibility Course Series. While FLVS is not considered to be out of compliance with federal accessibility laws, which will be reviewed later in the course, proactively addressing cognitive accessibility will ensure there are no potential disruptions in compliance as increasing attention is given to this type of accessibility.

Back Continue

1

2

3

4

1.3 Introduction Continued: Why Autism Spectrum Disorder (ASD)?


Introduction Continued: Why Autism Spectrum Disorder (ASD)?

Autism spectrum disorder, commonly abbreviated to ASD, will be the first cognitive disability that this series will address. ASD was chosen first since incidences of diagnoses have been increasing the past two decades, with 1 in 36 children today being diagnosed (CDC, 2023). Parents also have an invested interest in ensuring a good learning environment for their child with ASD (Zeedyk et al., 2021).

Future courses in this series will address other cognitive disabilities as well. For example, the ADHD course is planned to address relevant psychological topics, such as details on how attention works, and corresponding course design strategies. For now, continue to the next slide for an overview of the present course.

Back Continue

1.4 Course Overview



Course Overview

This course consists of six sections. The first four sections will provide information on cognitive accessibility, relevant cognitive development principles, information about ASD, and course design recommendations to support students with ASD. The fifth section will consist of multiple-choice practice questions to review the content. The sixth and final section will be a course review activity to apply the concepts you have learned.

Continue to the next slide to review the specific goals for this course. If you would like to navigate to a specific section, click one of the buttons to the right.

(Section 1) Cognitive Accessibility

(Section 2) Cognitive Development

(Section 3) Autism Spectrum Disorder

(Section 4) Design Tips for Accessibility

(Section 5) Practice and Review

(Section 6) Final Activity

[Back](#)[Continue](#)

1.5 Course Objectives



Course Objectives

After completing this course, you will be able to:

01

Describe cognitive accessibility and its importance to online education

02

Evaluate popular theories of typical cognitive development

03

Understand characteristics of autism spectrum disorder (ASD)

04

Compare the cognitive development of students with and without ASD

05

Apply cognitive accessibility strategies to improve existing courses

Continue to
Section 1

[Back](#)[Continue to Section 1](#)

2. Section 1 (Cognitive Accessibility)

2.1 Cognitive Accessibility

Section 1

Cognitive Accessibility

Section 1 will cover:

- What cognitive accessibility means
- Key definitions, such as neurodiversity
- Relevant laws, such as the Americans with Disabilities Act

CONTINUE →

2.2 Cognitive Accessibility Overview



Cognitive Accessibility Overview

Cognitive Accessibility Definition

Cognitive accessibility is a type of accessibility that supports people in better processing information and interacting with the world, including people with a cognitive disability (W3C, 2022). Cognitive disabilities include conditions like ASD, ADHD, dyslexia, and learning disabilities (Pichiliani & Pizzolato, 2021).

Cognitive Accessibility Online

In the context of online classes, cognitive accessibility relates to both the appearance of your classes and how you present the content. Essentially, cognitive accessibility in online environments is another dimension of web accessibility, which involves supporting everyone in interacting with web pages (Pichiliani & Pizzolato, 2021). So, by addressing cognitive accessibility in your online courses, you will help students better interact with and learn in a digital environment.



[Back](#)[Continue](#)

2.3 Cognitive Accessibility: Key Terms

Cognitive Accessibility: Key Terms

When entering conversations about cognitive accessibility, you will likely encounter the common terms below. Click each tab for the definition to become more confident in these conversations!

Neurotypical

Neurodiverse

Neurodiversity

Neurotypical (adj.)

Neurotypical describes an individual who is considered to have typical cognitive development and abilities, such as individual without a cognitive disability (Cleveland Clinic, 2022).

Back

Continue

Notes:

Neurotypical (Slide Layer)

Cognitive Accessibility: Key Terms

When entering conversations about cognitive accessibility, you will likely encounter the common terms below. Click each tab for the definition to become more confident in these conversations!

Neurotypical

Neurodiverse

Neurodiversity

Neurotypical (adj.)

Neurotypical describes an individual who is considered to have typical cognitive development and abilities, such as individual without a cognitive disability (Cleveland Clinic, 2022).

Back

Continue

Neurodiverse (Slide Layer)

Cognitive Accessibility: Key Terms

When entering conversations about cognitive accessibility, you will likely encounter the common terms below. Click each tab for the definition to become more confident in these conversations!

Neurotypical

Neurodiverse

Neurodiversity

Neurodiverse or Neuroatypical (adj.)

In contrast with neurotypical, neurodiverse describes an individual whose cognitive development and abilities are not considered typical, such as an individual with a cognitive disability (Cleveland Clinic, 2022). Neuroatypical is a more medical term that is essentially synonymous with neurodiverse. However, neurodiverse will be used throughout this course as it has a more positive connotation and doesn't suggest a deficit.

BackContinue

Neurodiversity (Slide Layer)

Cognitive Accessibility: Key Terms

When entering conversations about cognitive accessibility, you will likely encounter the common terms below. Click each tab for the definition to become more confident in these conversations!

Neurotypical

Neurodiverse

Neurodiversity

Neurodiversity (n.)

The term neurodiversity is related to neurodiverse, and Baumer and Frueh (2021) provides an excellent definition: "Neurodiversity describes the idea that people experience and interact with the world around them in many different ways; there is no one 'right' way of thinking, learning, and behaving, and differences are not viewed as deficits" (p. 1).

BackContinue

2.4 Cognitive Accessibility Legislature

 **Cognitive Accessibility Legislature**

Federal Accessibility Laws


The Americans with Disabilities Act (ADA) and Section 504 are two federal laws that include cognitive accessibility within their accessibility requirements (ADA, 2023a; U.S. Department of Education, 2023a). Both of these laws address the requirement for accessible digital content and affect FLVS, such as through funding. Click each button below to review these laws and their implications for FLVS in more detail. When finished, continue to Section 2.

Americans with Disabilities Act (ADA)

Section 504

[Back](#)[Continue to Section 2](#)

ADA (Slide Layer)

 **Cognitive Accessibility Legislature**

Federal Accessibility Laws

The Americans with Disabilities Act (ADA) and Section 504 are two federal laws that include cognitive accessibility within their accessibility requirements (ADA, 2023a; U.S. Department of Education, 2023a). Both of these laws address the requirement for accessible digital content and affect FLVS, such as through funding. Click each button below to review these laws and their implications for FLVS in more detail. When finished, continue to Section 2.

The Americans with Disabilities Act (ADA)

According to the ADA (2023a), “The Americans with Disabilities Act (ADA) is a federal civil rights law that prohibits discrimination against people with disabilities in everyday activities” (p. 1). This includes physical disabilities, such as those relating to hearing and vision, but also includes cognitive disabilities. The part of the ADA that specifically applies to FLVS is Title II and is enforced by the U.S. Department of Education (U.S. Department of Labor, n.d.).

Title II affects state and local governments and includes public schools (ADA, 2023b), which includes FLVS. To comply with Title II means ensuring everyone has the ability to benefit from what is being offered, (ADA, 2023b), which, in this case, is education.

[Back](#)[Continue to Section 2](#)

Section 504 (Slide Layer)

Cognitive Accessibility Legislature

Federal

The ADA includes Department of Education access below continuing

Section 504

Section 504 is a federal law enforced by the U.S. Department of Education (U.S. Department of Education, 2023a). This law ensures that everyone has the equal ability to benefit from an offering, just like the ADA does. The difference is that Section 504 directly affects institutions that receive funding from the federal government (U.S. Department of Education, 2023a), which FLVS receives in the form of grants.

.S. n shed,

Back

Continue to Section 2

3. Section 2 (Cognitive Development)

3.1 Cognitive Development

Section 2

Cognitive Development

Section 2 will cover:

- Cognitive development definition
- Popular theories of typical cognitive development
- A comparison of these theories


CONTINUE →


3.2 Psychological Theories of Cognitive Development

Psychological Theories of Cognitive Development

Cognitive Development Definition

According to Gauvain and Richert (2016), "Cognitive development is the process by which human beings acquire, organize, and learn to use knowledge" (p. 1). This development involves the maturation of the brain as it acquires new abilities related to cognition, such as memory, decision making, and problem solving.





Ideas About Cognitive Development

In the fields of psychology and education, two influential figures on child cognitive development are Jean Piaget and Lev Vygotsky. Despite being contemporaries in the 1900s, they developed two differing theories about typical cognitive development, i.e., the development of children without cognitive disabilities. Click each button to learn more about these two theories; when you are finished, click "Continue."

Piaget

Vygotsky


Back

Continue

3.3 Piaget's Theory Of Cognitive Development

Piaget's Theory Of Cognitive Development

Piaget's theory of cognitive development suggests that cognitive development is innate and unaffected by cultural or social influences. Development occurs in four discrete stages, and one cannot skip a stage of development (Malik & Marwaha, 2023; Pagano & Parnes, 2022). Click the buttons to the right to explore each stage, starting with "Sensorimotor."



Formal Operational

Concrete Operational

Preoperational

Sensorimotor

Back

Sensorimotor (Slide Layer)

Sensorimotor Stage (Stage 1) – 0 to 2 Years Old	Development
<p>Children during this first stage rely on their physical senses and developing motor skills, such as their hands and walking, to explore and learn through trial and error. This stage is characterized by:</p> <ul style="list-style-type: none">• Learning about cause and effect relationships, such as that a caregiver appears after crying, but not yet knowing why such relationships exist• Thinking and memory developing, along with problem-solving and planning abilities• The development of object permanence, where children can understand something still exists even when it isn't visible• Developing the ability to find objects that are not in sight• Predicting what will happen without seeing it happen in the physical environment• Understanding how numbers can relate to the physical world, such as knowing the difference between one versus two dogs (Malik & Marwaha, 2023; Ojose, 2008; Pagano & Parnes, 2022)	Formal Operational
	Concrete Operational
	Preoperational
	Sensorimotor

Preoperational (Slide Layer)

Preoperational Stage (Stage 2) – 2 to 7 Years Old	Development
<p>The second stage of cognitive development is the preoperational (or pre-operational) stage. "Preoperational" generally means that the child does not yet have solid logic and instead relies on intuitive reasoning. This stage is characterized by:</p> <ul style="list-style-type: none">• Increasing language abilities• Developing symbolic thought, which involves thinking with symbols; words are an example of symbols• The ability to imitate behaviors and engage in pretend play, which includes imaginary friends• Egocentrism, or believing that everyone thinks the same way as themselves• Making erroneous conclusions about the cause of events, which are often based on a magical world view, such as that rain happens when clouds are sad and crying• Understanding rules, such as for social games, but viewing these rules as unchangeable (Malik & Marwaha, 2023; Pagano & Parnes, 2022)	Formal Operational
	Concrete Operational
	Preoperational
	Sensorimotor

Concrete Operational (Slide Layer)

Concrete Operational Stage (Stage 3) – 7 to 11 Years Old

The third stage is concrete operational, where “operational” refers to the development of logic, but only for the “concrete,” i.e., what can be perceived and experienced in the environment. This stage is characterized by:

- Emerging logic for problem solving, but difficulty with hypothetical and abstract problems
- Development of inductive reasoning, which is based on observation of the physical environment
- Ability to understand physical laws
- The development of theory of mind and the ability to understand others’ point of view
- Ability to accept a change in games rules if everyone agrees to the change
- Inability to understand abstract concepts and ideas (Malik & Marwaha, 2023; Pagano & Parnes, 2022)

ment

Formal Operational

Concrete Operational

Preoperational

Sensorimotor

Formal Operational (Slide Layer)

Formal Operational Stage (Stage 4) – 12 Years and Older

The final stage is formal operational, where “formal,” as opposed to concrete, means the child is developing the ability to think abstractly. This stage is characterized by:

- Abstract thinking, including for thinking about hypothetical situation and the future
- The ability to manipulate objects in their head without seeing the object in the physical environment
- Can understand theories and hypothesize scientifically
- Development of social cognition, which is the ability to use information about other people and social environments
- Ability to solve abstract math problems and understand abstract concepts like love, justice, and politics
- Can solve problems with logic and intention, as opposed to the trial and error or magical thinking of previous stages (Malik & Marwaha, 2023; Pagano & Parnes, 2022)

ment

Formal Operational

Concrete Operational

Preoperational

Sensorimotor

3.4 Vygotsky's Sociocultural Theory of Cognitive Development

Vygotsky's Sociocultural Theory of Cognitive Development

As part of his sociocultural theory, Vygotsky proposed that cognitive development is propelled by interactions with other people and one's own culture. As such, the environment is considered highly influential on the child, and development is ongoing with no specific stages (LaMarr, 2022).

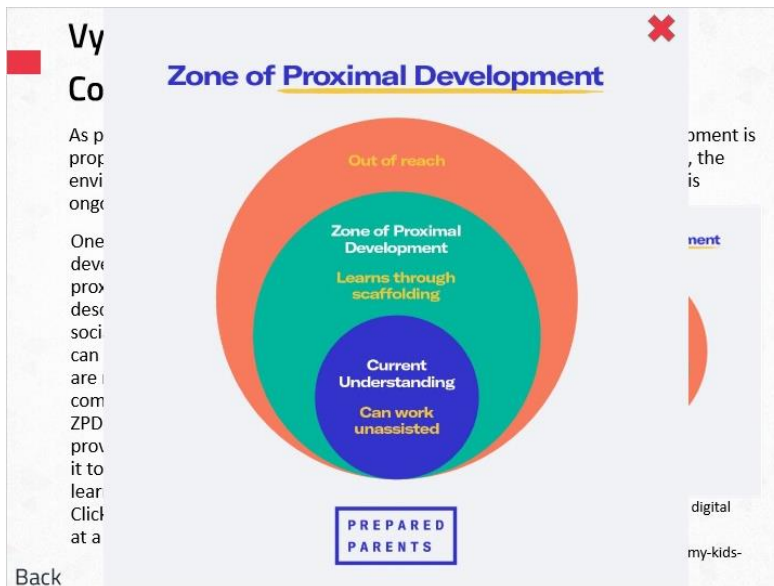
One example of socially-driven cognitive development is the idea of the zone of proximal development (ZPD). This zone describes what a learner can accomplish with social support; there is also what a learner can accomplish on their own, and what they are not yet capable of even with support. A common instructional technique based on the ZPD is scaffolding, where a teacher first provides support and then gradually removes it to encourage the development of students' learning and cognitive abilities (LaMarr, 2022). Click the graphic to the right for a closer look at a model of the ZPD.



Note. By Prepared Parents, 2021, digital graphic, located at <https://preparedparents.org/tip/getting-my-kids-in-their-sweet-spot-of-learning/>

Back

ZPD Graphic (Slide Layer)



3.5 Comparing Piaget & Vygotsky

Comparing Piaget & Vygotsky

Before moving onto the next section, take a moment to compare and fully understand these two theories; Section 3 will include comparing these theories with the development of students with ASD.

Piaget	Vygotsky
Development is innate and internally driven	Development is driven by external social influences
Development is a lone process	Development is aided by other people
Development happens through specific stages	Development happens continuously, without stages
Development occurs in the same way regardless of social and cultural factors	Development can be affected by the social and cultural environment

BackContinue

4. Section 3 (Autism Spectrum Disorder)

4.1 Autism Spectrum Disorder

Section 3

Autism Spectrum Disorder

Section 3 will cover:

- Definition of autism spectrum disorder (ASD)
- Common characteristics of ASD
- Differences in cognitive development for students with ASD


CONTINUE →

4.2 Autism Spectrum Disorder Overview

Autism Spectrum Disorder Overview


ASD Definition

Autism spectrum disorder (ASD) is a neurodevelopmental disorder, meaning that it affects the development and functioning of the brain. This disorder is associated with differences in social and communicative abilities, perception and cognition, and behavior (APA, 2021; NIH, 2023). The "spectrum" refers to how symptoms of ASD can vary significantly among individuals (NIH, 2023), as demonstrated by "twice exceptional students," meaning a student can have ASD and be identified as gifted (LeBeau et al., 2022).



Diagnosis

ASD is a lifelong disorder that can be diagnosed at any age, but signs typically start to appear before the child is two years old (NIH, 2023). Signs that may reveal an ASD diagnosis can range from motor skill issues in the sensorimotor stage of development to issues with attention in social situations (Estes et al., 2015; Stephens et al., 2017). ASD can also co-occur and be diagnosed with other disorders, such as ADHD (Baker & Blacher, 2015; Paulais et al., 2019).

[Back](#)[Continue](#)

4.3 Common Characteristics of ASD

Common Characteristics of ASD

Click through each tab to review some common characteristics of ASD. This page is not exhaustive of all possible characteristics due to ASD existing on a spectrum.

Behavioral

Cognitive

Social

- Repetitive behaviors, such as hand flapping and rocking, and difficulty inhibiting those behaviors (APA, 2021; Schmitt et al., 2018)
- Preferring stable routines as changes in daily routine and unexpected events can be overwhelming (APA, 2021; NIH, 2023; Wakusawa et al., 2018)
- Having an intense interest in a particular subject, from Disney to dinosaurs; these interests are commonly referred to as "special interests" (APA, 2021; Bos et al., 2019; NIH, 2023)
- Telling others about these special interests without realizing the other person is not interested or would also like to say something (APA, 2021; NIH, 2023)
- Increased motivation to engage with a special interest along with less control to not engage with their interest (Bos et al., 2019)

[Back](#)[Continue](#)

Notes:

Behavioral (Slide Layer)

Common Characteristics of ASD

Click through each tab to review some common characteristics of ASD. This page is not exhaustive of all possible characteristics due to ASD existing on a spectrum.

Behavioral

Cognitive

Social

- Repetitive behaviors, such as hand flapping and rocking, and difficulty inhibiting those behaviors (APA, 2021; Schmitt et al., 2018)
- Preferring stable routines as changes in daily routine and unexpected events can be overwhelming (APA, 2021; NIH, 2023; Wakusawa et al., 2018)
- Having an intense interest in a particular subject, from Disney to dinosaurs; these interests are commonly referred to as “special interests” (APA, 2021; Bos et al., 2019; NIH, 2023)
- Telling others about these special interests without realizing the other person is not interested or would also like to say something (APA, 2021; NIH, 2023)
- Increased motivation to engage with a special interest along with less control to not engage with their interest (Bos et al., 2019)

[Back](#)[Continue](#)

Cognitive (Slide Layer)

Common Characteristics of ASD

Click through each tab to review some common characteristics of ASD. This page is not exhaustive of all possible characteristics due to ASD existing on a spectrum.

Behavioral

Cognitive

Social

- Difficulty with abstract ideas, such as time and more abstract math, and taking things literally (APA, 2021; Bullen et al., 2020; Falter & Noreika, 2011)
- Sensory differences, such as hypersensitivity to the environment, including to light and sound (APA, 2021; NIH, 2023)
- Issues with empathy and theory of mind, which is the ability to understand others' perspectives; difficulty understanding and predicting others' actions (Bos & Stokes, 2019; Kang et al., 2016; NIH, 2023; Turevskaya & Plenskovskaya, 2021)
- Different perception abilities, such as by noticing details other wouldn't typically notice, especially when related to a special interest (Bos et al., 2019; Mercado et al., 2020)
- Focusing on smaller details rather than the whole picture, such as by understanding the details of a story but not the overall message (Hourigan & Hammel, 2017)

[Back](#)[Continue](#)

Social (Slide Layer)

Common Characteristics of ASD

Click through each tab to review some common characteristics of ASD. This page is not exhaustive of all possible characteristics due to ASD existing on a spectrum.

Behavioral

Cognitive

Social

- Difficulty engaging in back and forth conversation and using language in social contexts (NIH, 2023; Schaeffer et al., 2020)
- Difficulty recognizing and understanding their own and others' emotions (APA, 2021; Doernberg et al., 2020)
- Difficulty maintaining consistent eye contact (APA, 2021; NIH, 2023)
- Difficulty making and/or keeping friends and engaging in imaginary play (APA, 2021; NIH, 2023)
- Difficulty learning abstract rules, including rules that apply to social situations; an example is being gracious even when receiving a gift you didn't want (Jones et al., 2013)
- Not "backchanneling" as often during conversation, which means giving fewer confirmations of listening, such as head nodding or saying "mhm" (Rifai et al., 2022)

[Back](#)[Continue](#)

4.4 Comparing ASD with Piaget & Vygotsky

Comparing ASD with Piaget & Vygotsky

The chart below includes just a few comparisons of ASD development with Piaget and Vygotsky's theories. Feel free to think of some additional comparisons!

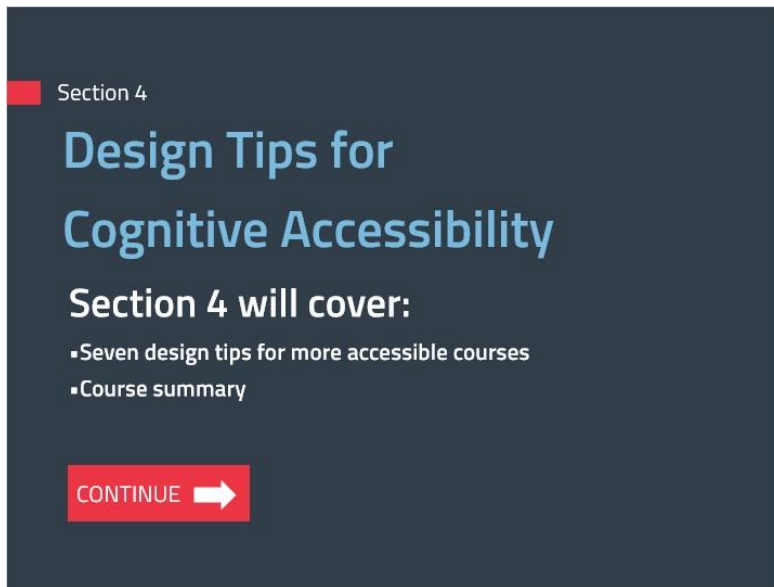
Piaget vs. ASD Development	Vygotsky vs. ASD Development
Potential signs of ASD include motor skill issues in the sensorimotor stage.	Potential signs of ASD include trouble paying attention to people as infants
Abstract understanding may not appear in the formal operational stage	Communication difficulties may affect learning through social interactions
Theory of mind may not develop in the concrete operational stage	Such difficulties may include trouble with back and forth conversation

[Back](#)[Continue to Section 4](#)

5. Section 4 (Design Tips for Accessibility)

5.1 Design Tips for

Cognitive Accessibility



Section 4

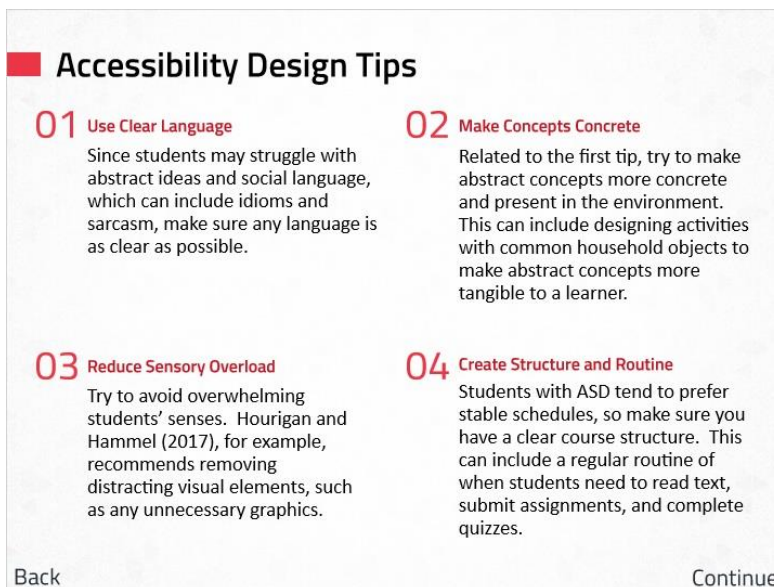
Design Tips for Cognitive Accessibility

Section 4 will cover:

- Seven design tips for more accessible courses
- Course summary

CONTINUE →

5.2 Accessibility Design Tips



Accessibility Design Tips

01 Use Clear Language

Since students may struggle with abstract ideas and social language, which can include idioms and sarcasm, make sure any language is as clear as possible.

02 Make Concepts Concrete

Related to the first tip, try to make abstract concepts more concrete and present in the environment. This can include designing activities with common household objects to make abstract concepts more tangible to a learner.

03 Reduce Sensory Overload

Try to avoid overwhelming students' senses. Hourigan and Hammel (2017), for example, recommends removing distracting visual elements, such as any unnecessary graphics.

04 Create Structure and Routine

Students with ASD tend to prefer stable schedules, so make sure you have a clear course structure. This can include a regular routine of when students need to read text, submit assignments, and complete quizzes.

Back Continue

5.3 Accessibility Design Tips

Accessibility Design Tips

05 Support Social Collaboration

Peters et al. (2013) emphasizes the importance of supporting social interactions between both neurotypical and neurodiverse students. So, when doing collaborative projects, such as group discussion posts, provide clear guidance on how to collaborate and intervene when needed.

06 Consider Theory of Mind

One way to consider theory of mind is when designing assignments. For example, to teach students about a certain time period, an assignment may ask for a paper written from the perspective of someone from that time period. This could be more difficult for a student on the spectrum; so, evaluate if such assignments can be designed differently.

07 Connect Through Special Interests

Bos et al. (2019) noted that while it may seem intuitive to incorporate students' special interests into learning experiences to increase motivation, this could also ultimately lead to distraction and increased focus on the interest and not the coursework. So, a better recommendation is to have the opportunity, such as a discussion board, where you students can interact with you about their interests, especially since emotional support can also improve academic performance for students with ASD (Manti et al., 2013).

[Back](#)

[Continue](#)

5.4 Course Summary

Course Summary

Below is a summary of the key concepts covered throughout this course. Next, you'll complete a few practice questions for a quick review of these concepts, followed by a final activity where you'll have the chance to apply what you've learned to one of your existing courses.

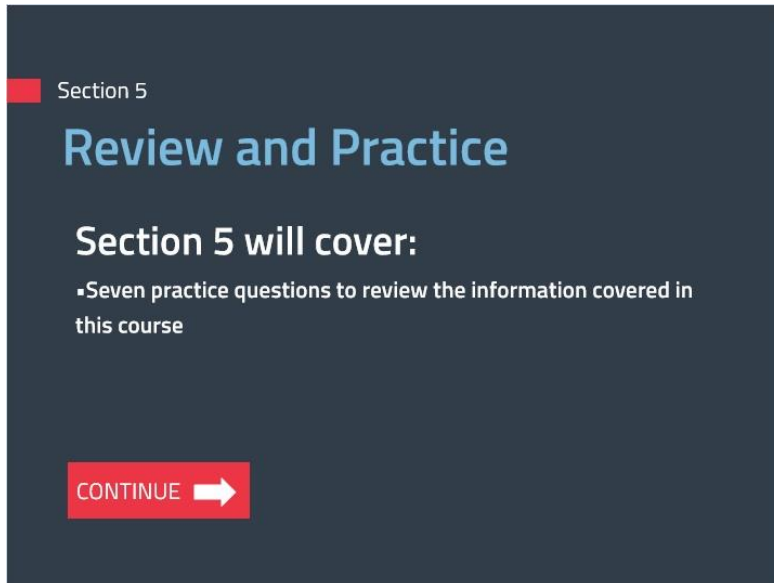
- 01 Cognitive accessibility relates to supporting people in processing information, such as when learning online, and includes individuals with cognitive disabilities.
- 02 Piaget and Vygotsky had two influential and different theories of cognitive development; however, they do not account for neurodiverse cognitive development.
- 03 Autism spectrum disorder (ASD) exists on a spectrum of abilities with a variety of characteristics relating to social interactions, cognition, and behavior.
- 04 When considering research and information about ASD, there are ways to better support these students in online courses, from the visual design to content.

[Back](#)

[Continue to Section 5](#)

6. Section 5 (Review and Practice)

6.1 Review and Practice

A dark blue slide with a red square icon in the top left corner. The text 'Section 5' is in white, followed by 'Review and Practice' in large blue letters. Below that, 'Section 5 will cover:' is in white, followed by a bullet point: 'Seven practice questions to review the information covered in this course'. At the bottom, there is a red button with the word 'CONTINUE' and a white right-pointing arrow.

Section 5

Review and Practice

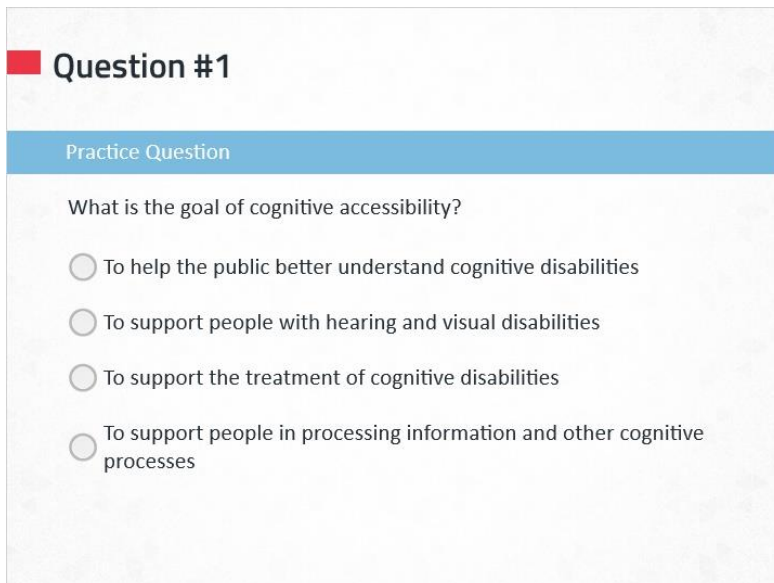
Section 5 will cover:

- Seven practice questions to review the information covered in this course

CONTINUE →

6.2 Question #1

(Multiple Choice, 10 points, 2 attempts permitted)

A light gray slide with a red square icon in the top left corner. The text 'Question #1' is in bold black. Below it is a blue bar with the text 'Practice Question' in white. The question text is 'What is the goal of cognitive accessibility?'. There are four radio button options.

Question #1

Practice Question

What is the goal of cognitive accessibility?

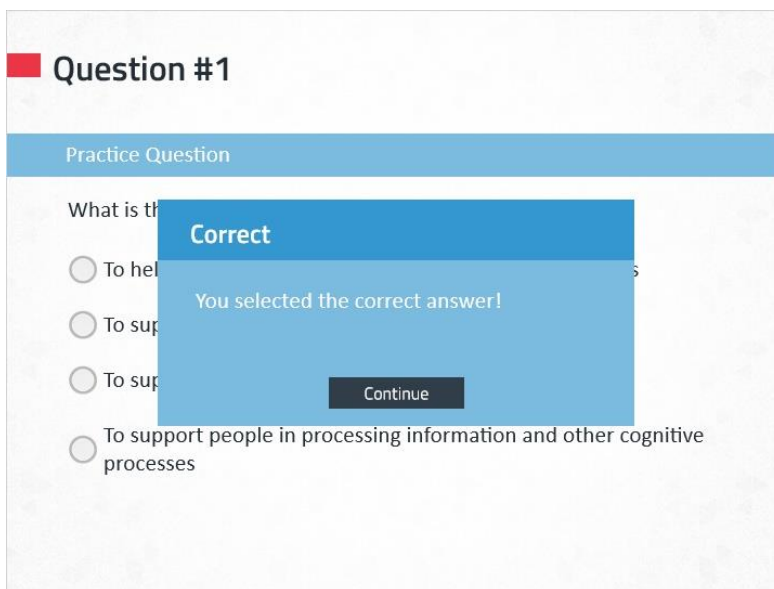
- ☐ To help the public better understand cognitive disabilities
- ☐ To support people with hearing and visual disabilities
- ☐ To support the treatment of cognitive disabilities
- ☐ To support people in processing information and other cognitive processes

Correct	Choice
	To help the public better understand cognitive disabilities
	To support people with hearing and visual disabilities
	To support the treatment of cognitive disabilities
	To support people in processing information and other cognitive processes

Feedback when correct:

You selected the correct answer!

Correct (Slide Layer)



Try Again (Slide Layer)

Question #1

Practice Question

What is the purpose of the Universal Design for Learning (UDL) framework?

- ☐ To help people with disabilities
- ☐ To support people with cognitive disabilities
- ☐ To support people with physical disabilities
- ☐ To support people in processing information and other cognitive processes

Incorrect

That answer is incorrect - please try again.

Try Again

6.3 Question #2

(Multiple Choice, 10 points, 2 attempts permitted)

Question #2

Practice Question

What is the concept of neurodiversity?

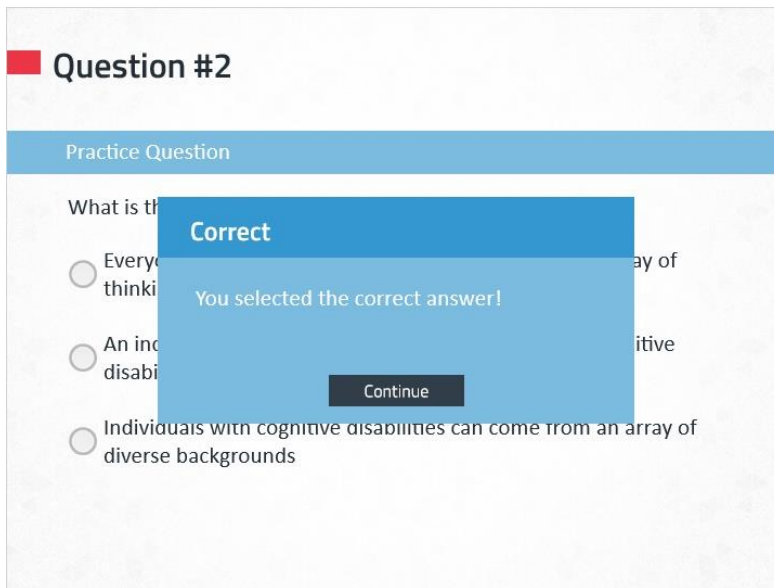
- ☐ Everyone's brain is different, so there is no one "right" way of thinking
- ☐ An individual can be diagnosed with more than one cognitive disability
- ☐ Individuals with cognitive disabilities can come from an array of diverse backgrounds

Correct	Choice
	Everyone's brain is different, so there is no one "right" way of thinking

An individual can be diagnosed with more than one cognitive disability

Individuals with cognitive disabilities can come from an array of diverse backgrounds

Correct (Slide Layer)



Try Again (Slide Layer)

Question #2

Practice Question

What is the best way to describe the diversity of individuals with cognitive disabilities?

- ☐ Everyone with a cognitive disability has a unique way of thinking and learning.
- ☐ An individual with a cognitive disability has a unique way of thinking and learning.
- ☐ Individuals with cognitive disabilities can come from an array of diverse backgrounds.

Incorrect

That answer is incorrect - please try again.

Try Again

6.4 Question #3

(Multiple Choice, 10 points, 2 attempts permitted)

Question #3

Practice Question

True or False: Piaget and Vygotsky's theories of cognitive development accurately describe the development of all students.

- ☒ True
- ☐ False

Correct	Choice
X	True

False

Correct (Slide Layer)

The screenshot shows a 'Practice Question' slide titled 'Question #3'. The question text is partially visible: 'True or False: ... development accurately'. Two radio buttons are present: 'True' (selected) and 'False'. A blue feedback overlay is centered on the screen, displaying the word 'Correct' in white, followed by the message 'You selected the correct answer!' and a 'Continue' button.

Try Again (Slide Layer)

The screenshot shows the same 'Practice Question' slide titled 'Question #3'. The question text is partially visible: 'True or False: ... development accurately'. Two radio buttons are present: 'True' (selected) and 'False'. A red feedback overlay is centered on the screen, displaying the word 'Incorrect' in white, followed by the message 'That answer is incorrect - please try again.' and a 'Try Again' button.

6.5 Question #4

(Multiple Choice, 10 points, 2 attempts permitted)

Question #4

Practice Question

What is one main difference between Piaget's and Vygotsky's cognitive development theories?

☐ Piaget proposed continuous development, while Vygotsky proposed stages for development

☐ Piaget emphasized innate influences on development, while Vygotsky emphasized social influences on development

☐ Piaget believed that the environment greatly influenced development, while Vygotsky did not

Correct	Choice
	Piaget proposed continuous development, while Vygotsky proposed stages for development
	Piaget emphasized innate influences on development, while Vygotsky emphasized social influences on development
	Piaget believed that the environment greatly influenced development, while Vygotsky did not

Correct (Slide Layer)

Question #4

Practice Question

What is one of the key differences between Piaget's and Vygotsky's cognitive development theories?

- ☐ Piaget proposed that cognitive development occurs in discrete stages, while Vygotsky proposed that it is a continuous process.
- ☐ Piaget believed that the environment greatly influenced development, while Vygotsky did not.
- ☐ Vygotsky believed that cognitive development is primarily driven by biological maturation, while Piaget emphasized the role of social interaction.
- ☐ Vygotsky proposed that cognitive development is largely determined by the child's innate abilities, while Piaget focused on the influence of the environment.

Correct

You selected the correct answer!

Continue

Try Again (Slide Layer)

Question #4

Practice Question

What is one of the key differences between Piaget's and Vygotsky's cognitive development theories?

- ☐ Piaget proposed that cognitive development occurs in discrete stages, while Vygotsky proposed that it is a continuous process.
- ☐ Piaget believed that the environment greatly influenced development, while Vygotsky did not.
- ☐ Vygotsky believed that cognitive development is primarily driven by biological maturation, while Piaget emphasized the role of social interaction.
- ☐ Vygotsky proposed that cognitive development is largely determined by the child's innate abilities, while Piaget focused on the influence of the environment.

Incorrect

That answer is incorrect - please try again.

Try Again

6.6 Question #5

(Multiple Choice, 10 points, 2 attempts permitted)

Question #5

Practice Question

True or False: The “spectrum” of autism spectrum disorder means that almost everyone with ASD has the same characteristics.

☒ True

☐ False

Correct	Choice
X	True
	False

Correct (Slide Layer)

Question #5

Practice Question

True or False: ... means that almost every ...

☒ True

☐ False

Correct

You selected the correct answer!

Continue

Try Again (Slide Layer)

Question #5

Practice Question

True or False: ... means that almost every ...

☒ True

☐ False

Incorrect

That answer is incorrect - please try again.

Try Again

6.7 Question #6

(Multiple Choice, 10 points, 2 attempts permitted)

Question #6

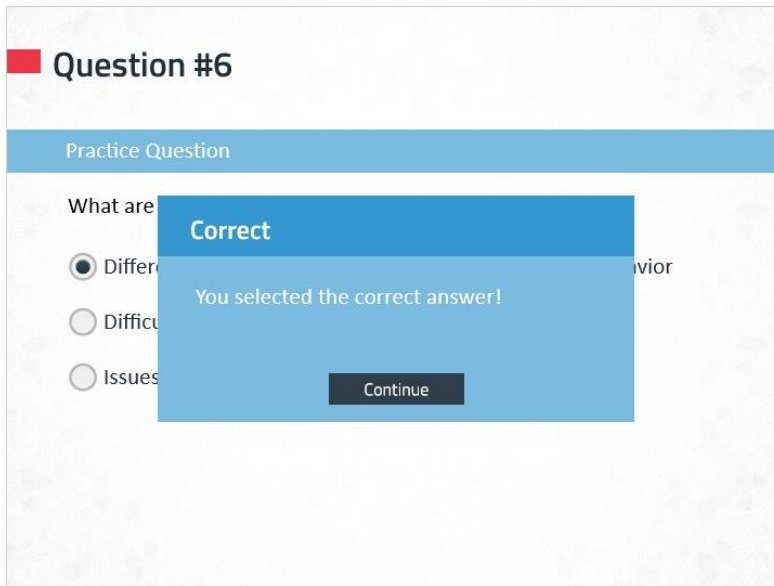
Practice Question

What are the general, overarching characteristics of ASD?

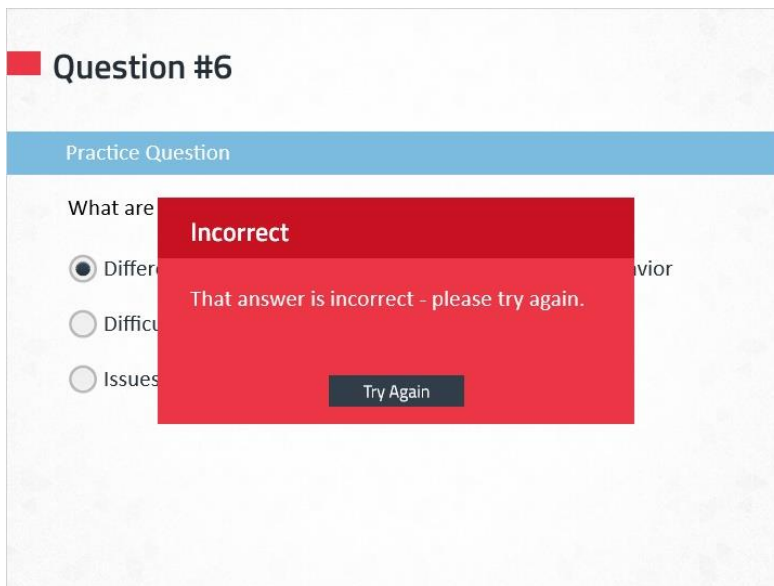
- ☒ Differences in social communication, cognition, and behavior
- ☐ Difficulty with attention and time management
- ☐ Issues with specific aspects of learning

Correct	Choice
X	Differences in social communication, cognition, and behavior
	Difficulty with attention and time management
	Issues with specific aspects of learning

Correct (Slide Layer)



Try Again (Slide Layer)



6.8 Question #7

(Multiple Choice, 10 points, 2 attempts permitted)

Question #7

Practice Question

Which of the following is NOT a recommended way to support students with ASD?

- ☐ Connect with students about their special interests
- ☐ Use lots of visuals to increase engagement
- ☐ Create a clear course schedule with routine
- ☐ Avoid unclear and abstract language, such as idioms

Correct	Choice
	Connect with students about their special interests
	Use lots of visuals to increase engagement
	Create a clear course schedule with routine
	Avoid unclear and abstract language, such as idioms

Correct (Slide Layer)

Question #7

Practice Question

Which of the following is the best way to help students understand a concept?

- ☐ Connect the concept to a real-world example
- ☐ Use a metaphor to describe the concept
- ☐ Create a story around the concept
- ☐ Avoid unclear and abstract language, such as idioms

Correct

You selected the correct answer!

Continue

Try Again (Slide Layer)

Question #7

Practice Question

Which of the following is the best way to help students understand a concept?

- ☐ Connect the concept to a real-world example
- ☐ Use a metaphor to describe the concept
- ☐ Create a story around the concept
- ☐ Avoid unclear and abstract language, such as idioms

Incorrect

That answer is incorrect - please try again.

Try Again

7. Section 6 (Final Activity)

7.1 Final Activity

Section 6

Final Activity

Section 6 will cover:

- A final course review activity
- References

CONTINUE →

7.2 Course Review Checklist - Final Activity

Course Review Checklist – Final Activity

Your final activity is completing the course review checklist below. This checklist will help you assess the cognitive accessibility of one of your courses for students with ASD. You can check off each item as you finish reviewing it. It is recommended you take notes so that you may make any necessary updates after completing this course.

- ☐ Language, such as written content, is clear and non-abstract
- ☐ Abstract concepts are taught in a way that makes them more concrete for learners
- ☐ There are no unnecessary visuals, videos, or other media that may overwhelm students' senses
- ☐ There is clear course structure and a routine for readings, assignments, etc.
- ☐ There are clear expectations and guidelines for collaborative projects
- ☐ Assignments have been evaluated for alternatives to relying on theory of mind
- ☐ Students have the opportunity to connect with their teacher about their special interests

[Back](#)[Continue](#)

7.3 Course Completion

CONCLUSION

Course Completion

Thank you for completing this course! You may use this as a course design resource at any time. Click the "References" button to see the resources used to create this course.

REFERENCES →

Notes:

7.4 References (Page 1)

References

ADA. (2023a, December 1). *Introduction to the Americans with disabilities act*. <https://www.ada.gov/topics/intro-to-ada/>

ADA. (2023b, December 1). *State and local governments*. <https://www.ada.gov/topics/title-ii/>

APA. (2021, August). *What is autism spectrum disorder?* <https://www.psychiatry.org/patients-families/autism/what-is-autism-spectrum-disorder>

Baker, B. L., & Blacher, J. (2015). Disruptive behavior disorders in adolescents with ASD: Comparisons to youth with intellectual disability or typical cognitive development. *Journal of Mental Health Research in Intellectual Disabilities*, 8(2), 98–116.

Baumer, N., & Frueh, J. (2021, November 23). *What is neurodiversity?* Harvard Health Publishing. <https://www.health.harvard.edu/blog/what-is-neurodiversity-202111232645>

Bos, D. J., Silverman, M. R., Ajodan, E. L., Martin, C., Silver, B. M., Brouwer, G. J., Di Martino, A., & Jones, R. M. (2019). Rigidity coincides with reduced cognitive control to affective cues in children with autism. *Journal of Abnormal Psychology*, 128(5), 431–441.

Bos, J., & Stokes, M. A. (2019). Cognitive empathy moderates the relationship between affective empathy and wellbeing in adolescents with autism spectrum disorder. *European Journal of Developmental Psychology*, 16(4), 433–446.

BackContinue

7.5 References (Page 2)

References

- Bullen, J. C., Lerro, L. S., Zajic, M., McIntyre, N., & Mundy, P. (2020). A developmental study of mathematics in children with autism spectrum disorder, symptoms of attention deficit hyperactivity disorder, or typical development. *Journal of Autism and Developmental Disorders*, 50(12), 4463–4476.
- CDC. (2023, April 4). *Data & statistics on autism spectrum disorder*. <https://www.cdc.gov/ncbddd/autism/data.html>
- Cleveland Clinic. (2022, June 2). *Neurodivergent*. <https://my.clevelandclinic.org/health/symptoms/23154-neurodivergent>
- Doernberg, E. A., Russ, S. W., & Dimitropoulos, A. (2020). Believing in make-believe: Efficacy of a pretend play intervention for school-aged children with high-functioning autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 51(2), 576–588.
- Estes, A., Zwaigenbaum, L., Gu, H., St John, T., Paterson, S., Elison, J. T., Hazlett, H., Botteron, K., Dager, S. R., Schultz, R. T., Kostopoulos, P., Evans, A., Dawson, G., Eliason, J., Alvarez, S., & Piven, J. (2015). Behavioral, cognitive, and adaptive development in infants with autism spectrum disorder in the first 2 years of life. *Journal of Neurodevelopmental Disorders*, 7(1).
- Falter, C. M., & eNoreika, V. (2011). Interval timing deficits and abnormal cognitive development. *Frontiers in Integrative Neuroscience*, 5.

Back

Continue

7.6 References (Page 3)

References

- Gauvain, M., & Richert, R. (2016). *Encyclopedia of mental health* (2nd ed.). Neuroscience and Biobehavioral Psychology. <https://doi.org/10.1016/B978-0-12-397045-9.00059-8>
- Hourigan, R. M., & Hammel, A. M. (2017). Understanding the mind of a student with autism in music class. *Music Educators Journal*, 104(2), 5–55.
- Jones, E. J. H., Webb, S. J., Estes, A., & Dawson, G. (2013). Rule learning in autism: The role of reward type and social context. *Developmental Neuropsychology*, 38(1), 58–77.
- Kang, E., Klein, E., Lillard, A., & Lerner, M. (2016). Predictors and moderators of spontaneous pretend play in children with and without autism spectrum disorder. *Frontiers in Psychology*, 7.
- LaMarr, T. (2022, April 24). *Vygotsky's sociocultural theory of cognitive development*. LibreTexts Social Sciences.
- LeBeau, B., Schabillon, K., Assouline, S. G., Foley Nicpon, M., Doobay, A. F., & Mahatmya, D. (2022). Developmental milestones as early indicators of twice-exceptionality. *Neurobiology of Learning and Memory*, 194, 1–10.
- Malik, F., & Marwaha, R. (2023). *Cognitive development*. StatPearls Publishing.

Back

Continue

7.7 References (Page 4)

References

- Manti, E., Scholte, E. M., & Van Berckelaer-Onnes, I. A. (2013). Exploration of teaching strategies that stimulate the growth of academic skills of children with ASD in special education school. *European Journal of Special Needs Education*, 28(1), 64–77.
- Mercado, E., Chow, K., Church, B. A., & Lopata, C. (2020). Perceptual category learning in autism spectrum disorder: Truth and consequences. *Neuroscience and Biobehavioral Reviews*, 118, 689–703.
- NIH. (2023, February). *Autism spectrum disorder*. <https://www.nimh.nih.gov/health/topics/autism-spectrum-disorders-asd>
- Ojose, B. (2008). Applying Piaget's theory of cognitive development to mathematics instruction. *The Mathematics Educator*, 18(1), 26–30.
- Parnes, M., & Pagano, M. (2022). *Infant and child development: From conception through late childhood*. Pressbooks.
- Paulais, M. A. B., Mazetto, C., Thiébaud, E., Nassif, M. C., De Souza, M. T. C. C., Stefani, A. P., Blanc, R., Gattegno, M. P., Aïad, F., Sam, N., Belal, L., Fekih, L., Kaye, K., Contejean, Y., Wendland, J., Barthélémy, C., Bonnet-Brilhault, F., & Adrien, J. L. (2019). Heterogeneities in cognitive and socio-emotional development in children with autism spectrum disorder and severe intellectual disability as a comorbidity. *Frontiers in Psychiatry*, 10.

Back

Continue

7.8 References (Page 5)

References

- Peters, B., Forlin, C., McInerney, D., & Maclean, R. (2013). Social interaction and cooperative activities: Drawing plans as a means of increasing engagement for children with ASD. *International Journal of Whole Schooling*, 9(2), 61–86.
- Pichiliani, T. C. P. B., & Pizzolato, E. B. (2021). Cognitive disabilities and web accessibility: a survey into the Brazilian web development community. *Brazilian Computer Society*, 12(1), 308–327.
- Prepared Parents. (2021, April 12). *Finding their sweet spot of learning*. <https://preparedparents.org/tip/getting-my-kids-in-their-sweet-spot-of-learning/>
- Rifai, O. M., Fletcher-Watson, S., Jiménez-Sánchez, L., & Crompton, C. J. (2022). Investigating markers of rapport in autistic and nonautistic interactions. *Autism in Adulthood*, 4(1), 3–11.
- Schaeffer, J., Durrleman, S., & Eigsti, I. M. (2021). On links between language development and extralinguistic cognitive knowledge: What we can learn from autism. *Language Acquisition*, 18(1), 1–5.
- Schmitt, L. M., White, S. P., Cook, E. H., Sweeney, J. A., & Mosconi, M. W. (2018). Cognitive mechanisms of inhibitory control deficits in autism spectrum disorder. *Journal of Child Psychology & Psychiatry*, 59(5), 586–595.
- Stephens, R. L., Sabatos-DeVito, M., & Reznic, J. S. (2017). *Psychological Assessment*, 29(5), 568–581.

Back

Continue

7.9 References (Page 6)

References

- Turevskaya, R. A., & Plenskovskaya, A. A. (2021). Theory of mind development in school children with autism spectrum disorders. *Counseling Psychology and Psychotherapy*, 29(1), 112–131.
- U.S. Department of Education. (2023a, July 18). *Protecting students with disabilities*. <https://www2.ed.gov/about/offices/list/ocr/frontpage/faq/disability.html>
- U.S. Department of Education. (2023b, May 17). *Disability discrimination*. <https://www2.ed.gov/about/offices/list/ocr/frontpage/faq/disability.html>
- U.S. Department of Labor. (n.d.). *Americans with disabilities act*. <https://www.dol.gov/general/topic/disability/ada>
- W3C. (2022, March 22). *Cognitive accessibility at W3C*. <https://www.w3.org/WAI/cognitive/>
- Wakusawa, K., Nara, C., Kubota, Y., Tomizawa, Y., Taki, Y., Sassa, Y., Kobayashi, S., Suzuki-Muromoto, S., Hirose, M., Yokoyama, H., Nara, T., Kure, S., Mori, N., Takei, N., & Kawashima, R. (2018). Intra-individual cognitive imbalance in ASD between perceptual reasoning and ambiguity solving related to tool use: Comparison among children exhibiting ASD, AD/HD, and typical development. *Brain and Development*, 40(1), 16–25.
- Zeedyk, S. M., Cohen, S. R., Blacher, J., & Eisenhower, A. (2021). Building classroom communities for children with autism spectrum disorder. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2021.1978002>

Back