

2022

How Secondary Teachers Select, Implement, and Assess Reading Comprehension Interventions for Students with Autism Spectrum Disorder

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Tracy S. Herdlein

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Walden University
2022

Abstract

How Secondary Teachers Select, Implement, and Assess Reading Comprehension

Interventions for Students with Autism Spectrum Disorder

by

Tracy S. Herdlein

MA, Nazareth College, 1993

BA, Ashland University, 1988

Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

May 2022

Abstract

Several researchers examined reading interventions used with students with autism spectrum disorder (ASD), but few looked at teachers' perceptions of their abilities to select, implement, and assess reading interventions. The problem is that secondary teachers in a suburban Mid-Atlantic public high school acknowledge that they struggle with the knowledge of effective instructional approaches for students with ASD. This qualitative case study aimed to understand how nine secondary teachers who have worked with students with ASD for five or more years select, implement, and assess reading intervention strategies to increase the comprehension of students with ASD. Vygotsky's sociocultural theory of cognitive development and Allington's ideas for interventions for struggling readers were used as lenses to explore this qualitative case study. The case study included data from questionnaires, semistructured interviews, and lesson plan reviews with nine secondary teachers at the focus high school who work with students with ASD. Results of this analysis indicated that secondary teachers need additional professional development and effective communication to collaborate with teachers on the needs of students with ASD. Secondary teachers in this study found that recognizing students with ASD as individuals and addressing each student's needs led to reading comprehension interventions that had a better chance of being effective. The needs of these teachers are addressed in the form of a 3-day professional development webinar. The study has implications for positive social change, both locally and nationally, by providing secondary teachers with additional professional knowledge about choosing effective reading interventions and assessments to meet students with ASD needs.

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Dedication

To all the amazing teachers that I am so fortunate to work with. Your dedication to the teaching profession and to shaping young minds is awe inspiring. To all my students with ASD that constantly challenge me to look at the world from a different perspective. To my father-in-law who always believed in the power of education and inspired generations of college graduates. Finally, to my parents who have each in their own way, inspired me to be a better version of myself.

Acknowledgments

To my wonderful husband Matt who has supported and encouraged me through this journey by making my success a priority in our lives. To my children Blake and Quincy for always saying how proud they are that I choose to continue my education. To my extended family which kept me motivated to press on and allowed me the space when I needed to finish my work.

To my professor, mentor and chairman, Ellen Scales who provided me not only with the guidance needed to complete this study, but who was supportive even when I doubted myself. I have learned so much from you through this research experience about tenacity and patience. Thank you for all encouragement and for always being in my corner.

To my friends in the 'Ville who have proofread my papers, kept me focused on my dreams, and helped me celebrate my achievements. Thank you for your incredible insights and love. To my friend Jen who help me brainstorm ideas for this project. To my friend Rose who I met during my Walden residency and have spent the last four years talking about the doctoral process, education, and our families. I could not have made it without your colored charts and your incredible sense of humor.

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Section 1: The Problem

The Local Problem

One in 34 children in New Jersey is diagnosed with autism spectrum disorder (ASD; Centers for Disease Control and Prevention [CDC], 2018). New Jersey continues to report more children with this diagnosis than any other state in the nation (CDC, 2018). In this case study, the problem I addressed was, based on the lack of progress of students with ASD, secondary teachers may be using instructional interventions for reading comprehension that are not effective in terms of supporting students with ASD. The problem varies from district to district depending on the type of instruction given to students. Teachers at a suburban high school in a Mid-Atlantic state in the United States acknowledged their lack of a skill set to effectively select, implement, and assess reading comprehension interventions to support students with ASD. The case study approach provided a way to obtain data on how teachers decide which reading comprehension intervention to select and how these interventions are implemented and assessed.

Using a case study approach, I was able to determine why secondary teachers may choose specific reading comprehension interventions for students with ASD. The case study helped address the gap in practice that secondary teachers lack in implementing educational interventions suggested by researchers (see Afflerbach et al., 2018; Allington, 2002; Armstrong, 2018; Webster, 2020).

Rationale

Many secondary teachers are not prepared with a comprehensive pedagogy to address reading comprehension interventions for students with ASD, leaving these

students without the necessary reading comprehension skills to pass formative and summative assessments (Arciuli & Bailey, 2019). Teachers, both local and global, face challenges with effective instruction in terms of lack of progress of students with ASD (Beamish et al., 2021). Secondary teachers are concerned that their strategies may not be helpful to increase comprehension outcomes on formative and summative testing. Without effective reading comprehension interventions, students with ASD may be confronting limited academic success (Beamish et al., 2021).

Secondary reading teachers at this study site administer the reading inventory assessment to students three to four times in an academic year. The results of the past 4 years of reading inventory assessments illustrate those students with ASD have struggled with reading comprehension. Partnership for Assessment of Readiness for College and Careers (PARCC) assessment scores show students with special needs at this high school are consistently not meeting minimum English Language Assessment (ELA) state assessment scores (see Table 1). The poor ELA scores affect this population and the overall school's test scores and performance rating (Department of Education, 2020). The first column of Table 1 represents average reading inventory comprehension scores for students with ASD. The second column of the table indicates the percentage of students with ASD who did not meet or only partially met the New Jersey PARCC-ELA proficiency requirements. Table 1 illustrates that for 3 straight years, students with ASD were not proficient in the New Jersey PARCC-ELA.

Table 1*Scholastic Reading Assessment Scores for Students with ASD*

Year	Reading Inventory Assessment Comprehension Score	New Jersey PARCC-ELA Score		
		Level 1	Level 2	Level 3
2019-2020*	45%			
2018-2019	36%	90%	10%	0%
2017-2018	40%	75%	25%	0%
2016-2017	42%	80%	20%	0%

Note. Level 1 = Did not meet expectations, Level 2 = Partially met expectations, Level 3 = Met expectations.

*Students did not take the PARCC because of the nationwide COVID-19 shutdown.

The purpose of this qualitative case study was to investigate how secondary teachers in a suburban Mid-Atlantic public high school select, implement, and assess reading comprehensive interventions to support students with ASD. This qualitative case study addressed the gap that secondary teachers, both local and global, lack educational interventions suggested by researchers (Beamish et al., 2021). A better understanding of teachers' experiences with reading comprehension strategies provided stakeholders with information about reading interventions that support students with ASD. Data will help secondary teachers, locally and internationally, develop and improve the reading curriculum for students with ASD, which can be transferred to all academic areas. Effective progress monitoring through ongoing assessment is essential to improving test score outcomes for students with ASD (Arciuli & Bailey, 2019).

Definition of Terms

Anaphoric cueing: A facilitation method that aids reading comprehension through identifying referents within the text (El Zein et al., 2014).

Anxiety: A distinct and disproportionate fear about social situations that involve an exposure to possible negative evaluation by others (Muris & Ollendick, 2021).

Autism spectrum disorder (ASD): A complex developmental condition that involves persistent challenges in social interaction, speech, and nonverbal communication, and restricted and repetitive behaviors (Austin & Peña, 2017).

Concept formation: The process by which a person learns to sort specific experiences into general rules or classes. As children grow and develop, they form concepts through interactions with others from experiences and through touch, smell, sight, hearing, and taste (Elleman & Compton, 2017).

Evidence-based practice: Integrating the best available research evidence with clinical expertise and the patient's unique values and preferences (Albarqouni et al., 2018).

Executive functions: Mental processes that help the brain prioritize tasks. These skills also help the brain filter distraction, remember responsibilities, and set and achieve goals, which are crucial for learning and development (Zelazo et al., 2016).

Fusiform face area: A region in the ventral temporal cortex that shows preferential responsiveness to faces and responds to non-face objects of visual expertise (Foss-Feig et al., 2016).

Monotropism: The tendency for an individual to focus intensely on a small number of interests, which leads the person to miss things outside this attention tunnel. The idea is based on the model of the mind as an *interest system*. People are all interested in many things, and these interests direct one's attention. Interests are more relevant at

different times. However, in a monotropic mind, there are fewer but more concentrated interests that can be aroused at any time. These interests can be so intense that they attract more processing resources, making it more challenging to deal with or see perspectives outside of that individual's existing attention focus (Wood, 2019). When working with students with ASD, teachers need to consider this challenge when developing reading comprehension interventions.

More knowledgeable other: A person who knows more about the concept being learned than the students do (Vygotsky, 1978).

Pedagogy: The study of teaching methods in which educational goals may be obtained. The term refers to the method of how teachers teach, in theory and educational practice. A teacher's pedagogy is influenced by philosophical beliefs and various ways individuals learn (Troyer et al., 2019).

Scaffolding: Completion of small steps or sections until a specific goal is achieved. To make connections between concepts, a student works in collaboration with a teacher or more knowledgeable peers (Vygotsky, 1978).

Self-efficacy: The belief in one's capabilities to organize and execute courses of action required to manage prospective situations (Bandura, 1977).

Social pragmatics: The skills to use language appropriately for social and situational contexts (Andrés-Roqueta & Katsos, 2020).

Theory of mind: The ability to ascribe mental states, such as beliefs, intents, desires, emotions, and knowledge, of other people (Dore et al., 2018).

Significance of the Study

The role of the teacher in comprehension and learning for students with ASD has been the focus of research since the conception of the Individuals with Disabilities Education Act (IDEA) in 2004 (Kats, 2021). Despite this long history, there has been little discussion about how teachers select, implement, and assess reading comprehension interventions for students with ASD. Secondary teachers across the United States are challenged to use reading comprehension interventions to support students with ASD. This study is significant because it contributes to literature on students with ASD and reading comprehension interventions.

There are two possible benefits to this qualitative study. One benefit of this study is dissemination of intervention strategies that have shown potential in terms of comprehension acquisition for students with ASD. Additionally, through evaluation of lesson plans and interviewing secondary teachers, this research may improve the reading curriculum for students with ASD by implementing more reading comprehension strategies into their lesson plans. By adding to the literature about reading comprehension strategies and students with ASD, secondary teachers may improve comprehension summative and formative scores for students with ASD.

This doctoral project study is significant because its findings contribute to positive social change, both locally and nationally, in terms of education and reading comprehension for students with ASD. Professional development and enhanced resources aide secondary teachers in meeting the reading needs of students with ASD. Secondary teachers who acknowledge ASD students' personal learning profiles, can incorporate

effective comprehension interventions within their pedagogy. These effective reading interventions can be applied to other content areas to support students with ASD.

Research Questions

Acquiring a better understanding of teachers' experiences involving reading comprehension interventions for students with ASD benefits the local school district and informs nationwide practitioners about how teachers are using reading comprehension interventions. Data from this research helped facilitate relevant professional development for teachers who work with students with ASD. The data generated by this study assisted in creating a plan for potential professional development in terms of reading practices for students with ASD. The following research questions, written through the lenses of Vygotsky's sociocultural theory in learning and Allington's ideas for interventions with struggling readers, guided this study.

RQ1: How do secondary teachers in a suburban Mid-Atlantic public high school select and implement reading intervention strategies to design lesson plans that increase reading comprehension for students with ASD?

RQ2: How do secondary teachers in a suburban Mid-Atlantic public high school assess and monitor the success of intervention strategies for reading comprehension of students with ASD?

Review of the Literature

Reading comprehension is a cognitively demanding skill. During the reading process, readers draw on contextual information containing syntactic, semantic, and discourse constraints that affect their text interpretation (Salem, 2017). Higher mental

processes include selective attention, reasoning, analysis, and problem-solving (Dastpak et al., 2017). Vygotsky (1980) maintained that these higher mental processes are generated via the goal-directed, guided activity of social interaction. Since this type of mediation is an instrument of cognitive change, Vygotsky suggested that teachers need to provide different kinds of direct instructions with varying levels of assistance solving (Dastpak et al., 2017). Vygotsky stated that teachers scaffold instructional to help students understand and comprehend reading task information. The reading process involves the reader recognizing words and using perceptual and comprehension processes throughout every activity stage (Salem, 2017). Reading comprehension entails knowledge of vocabulary and syntax, but the reader must identify the passage's intent. Because of the specific characteristics of students with ASD and their struggles to interpret implicit facts, teacher intervention is necessary to assist students in acquiring reading skills (Arciuli & Bailey, 2019).

Search Strategy

The purpose of this qualitative doctoral case study was to investigate how secondary teachers select, implement, and assess reading comprehension interventions to support students with ASD. To accomplish this study's literature review, I read research-based intervention strategies, peer-reviewed scholarly journal articles, theoretical books, and other scholarly journal articles identified through different databases published between 2016 and 2020, such as ProQuest, EBSCO, SAGE Journals, Google Scholar, SpringerLink, Thoreau, and ERIC. The following keywords were used in this review: *autism, evidence-based practices, Allington, self-efficacy, monotropism, Vygotsky,*

assessment, fusiform face area, Theory of Mind, concept formation, teacher pedagogy, reading strategies, anxiety, executive functions, reading interventions, vocabulary acquisition, behavior, fluency, social pragmatics, teaching pedagogy, teacher effectiveness, zone of proximal development, effective teachers, teachers' perceptions of teaching students with ASD, reading comprehension, characteristics of ASD, and struggling readers.

Conceptual Framework

Vygotsky's sociocultural theory of cognitive and Allington's recommendations for comprehension interventions guided this qualitative case study. Both researchers have spent their lives in the pursuit of discovering ways to help children learn. Allington stated that schools are responsible for educating all children using evidence-based strategies and interventions. Vygotsky (1978) focused on what children can achieve with guidance and encouragement from a teacher.

Vygotsky's influence in developmental psychology includes numerous contributions to psychology and education (Dastpak et al., 2017). Vygotsky's multifaceted sociocultural theory guided this qualitative study. Sociocultural theory of cognitive development incorporates Vygotsky's ideas relating to how teachers use scaffolding to guide students in the learning process. Vygotsky (1980) said individual cognitive and affective processes originate in human interactions. Teachers need to understand how students develop their meaning by decoding words in texts using context clues and analyzing and connecting new information to prior experience (Dastpak et al., 2017). Cognition is the mental steps used to process and understand (Salem, 2017).

Learning comes at the end of a series of cognitive processes. Vygotsky believed that learning is not based only on cognitive development that occurred, but also the learning process in the scaffolding practice as applied by a social-cultural relationship (Stevens-Fulbrook, 2020).

The purpose of this qualitative study was to determine how secondary teachers select, implement, and assess reading comprehension interventions to support students with ASD. Vygotsky's essential concept in the sociocultural theory of cognitive development, explains the importance teachers play in reading comprehension acquisition through scaffolding and the student's eventual reading independence (Salem, 2017). Vygotsky's conceptual framework was used when developing and analyzing interview and questionnaire questions. Through the lens of Vygotsky's theories, data analysis contributed to answering the research questions regarding how secondary teachers select, implement, and assess reading intervention strategies to increase comprehension for students with ASD. Vygotsky's theories helped explain how secondary teachers selected reading comprehension interventions based on personal learning profiles of students with ASD.

Allington's research with comprehension intervention and struggling readers was used as a lens to see how effective reading comprehension interventions are needed to increase comprehension for students with ASD. Allington (2002) suggested there are six concepts that teachers should keep in mind when developing reading programs and interventions. The first concept is that teachers need to allow time for students to read. Students should have the opportunity to be reading and writing for at least half of the

school day. For a student to become a proficient reader, extensive practice is needed to consolidate skills and strategies that have been taught (Allington, 2002). Allington stated that all students should not have the same textbook or worksheets. Reading programs should be individualized, with students having input in chosen materials. Allington's third concept states that teachers should be conscious of direct and explicit demonstrations of the cognitive strategies when developing reading interventions. Allington noted that teachers need to help students learn by modeling reading processes used by good readers. Teachers should demonstrate how to decode unknown words, decipher word meanings, and summarize for understanding.

Allington (2002) suggested that teachers should allow for more opportunities for students to discuss ideas, hypotheses, and strategies with each other. These types of discussions can be done by posing open questions to students, who could then share multiple responses and ideas. Allington's fifth concept stated that teachers should create more student generated assignments. By allowing students more choice in reading materials and evaluative assignments, students take more ownership of and engagement with their work. Allington's final concept to improve reading is in the actual reading assessment process. Teachers should assess based on *effort and improvement* grading, which requires that teachers know their students and can recognize growth. In conjunction with Vygotsky's theories, Allington's research provided both a model and framework for investigating reading comprehension interventions for students with ASD.

Review of the Broader Problem

According to Arciuli and Bailey (2019), one in 54 children have been identified with ASD. ASD is a lifelong developmental disorder that affects an individual's communication and behavior and is associated with significant language delays, social functioning, and intense behaviors and interests (Yesmin et al., 2020). Regardless of these academic challenges, teachers are still responsible for adhering to state standardized tests according to the Race to the Top federal grant competition and the No Child Left Behind Act of 2001 for students with ASD (Katz, 2016). Katz (2016) said secondary teachers must provide reading comprehension strategies for students with ASD to pass state standardized tests because the Race to Top and No Child Left Behind Act 2001 encourage states to participate in student growth measures. Finnegan and Marzin (2016) noted a demand for teachers to use effective instructional strategies to improve reading comprehension scores in students with ASD. However, few studies focus on how teachers' knowledge of students with ASD is pertinent to understanding reading and oral language deficits (Solari et al., 2020). Because of these deficits, researchers have examined how student vocabulary, fluency, and comprehension development all play a part in a student with ASD's ability to read efficiently. According to Solari et al. (2020), not understanding the personal learning profiles of students with ASD affects a teacher's ability to select appropriate reading comprehension interventions.

Reading comprehension is a cognitively demanding skill to teach. Allington's literacy studies have contributed to the research literature about the effectiveness of reading interventions for students with reading difficulties (Allington & McGill-Franzen,

2018). As a researcher, he has spent his career formulating ideas about reading proficiency and how classroom teachers can provide exemplary reading instruction in response to children's needs (Allington, 2013). Allington's ideas and philosophies about struggling readers' needs and the advocacy of effective reading comprehension interventions supported this qualitative research study. Additionally, Allington and McGill-Franzen's studies also contributed to the research literature about the effectiveness of reading interventions for students with reading difficulties.

School districts spend a significant amount of money on reading programs, trying to intervene and remediate students struggling in the reading process (Allington & McGill-Franzen, 2018). Allington (2013) suggested that teachers vary reading interventions based on struggling readers' needs. Allington studied reading interventions and suggested that districts should not rely only on single reading intervention nor commercial products or materials (Allington & McGill-Franzen, 2018). Because students with ASD are not monolithic, teachers must recognize that reading interventions must be individualized and address this population-specific and complex characteristic (Arciuli & Bailey, 2019). Allington (2013) said students with ASD could learn to comprehend better when preventive interventions are used to reduce the incidence of reading difficulties.

It is pertinent that teachers recognize that students with ASD can have a limited vocabulary in terms of understanding word meaning or the ability to summarize and synthesize text. Allington (2013) suggested that teachers who limit reading comprehension interventions using a single product or inadequate materials would have

difficulties remediating students with ASD. Allington suggested that multi-sourced and multi-level curriculum plans were most effective when teaching struggling readers.

Longer-term support interventions should be implemented and maintained to increase on-level literacy development throughout a struggling reader's academic career (Allington & McGill-Franzen, 2018). Allington (2013) also recognized that acceleration interventions designed to speed up learning are effective for students who fail to meet grade-level reading. Based on Vygotsky's ideas about scaffolding, Allington suggested that struggling readers should have personalized instruction for the most effective learning, continuing until they no longer need this type of instruction.

Reading Comprehension

There are significant deficits in reading comprehension among individuals with ASD (Solari et al., 2017). Reading comprehension means understanding and interpretation of what is read. Teachers must recognize that children need to decode, make connections, find meaning in text, and accurately understand written material. Reading comprehension is a complex and purposeful activity that involves an integration of multiple processes. Teachers need to understand complexities of reading comprehension processes related to reading's intentional nature, such as executive functions and intrinsic motivation. Van Steensel et al. (2019) said one of the fundamentals of reading comprehension is decoding text while attending to the overall meaning of the material. Allington (2013) said teachers should understand that reader experiences also play a role in understanding what the text conveys.

Vygotsky's sociocultural theory of cognitive development and scaffolding were pertinent to this study because these ideas emphasize the importance of establishing and evaluating activities to support learning. Both Vygotsky and Allington stressed the importance of teachers using interventions to support students, leading to the reader's independence. Vygotsky (1980) suggested that teachers scaffold the level of support to meet the needs of the students. Allington (2013) stated that a teacher should introduce interventions that meet the needs of students. If a student requires more intense one-to-one and guided reading to understand what the text is saying, the teacher should design the lesson to meet their needs. As the student becomes more efficient with the concept, the teacher can lessen support until the student can be considered independent (Vygotsky, 1980). In cases where students with ASD are involved, this level of support may need to be extended when a new level of difficulty is introduced.

Studies on how reading comprehension can be improved among students with ASD have focused on several different methods. Campbell (2010) researched the effects of anaphoric cueing instruction on the reading comprehension of students with ASD. Teachers indicated essential points from the text while the student with ASD was reading. They would then ask the student comprehension questions based on crucial parts of the text (Campbell, 2010). O'Connor and Klein (2004) studied the effects of anaphoric cueing, pre-reading questions, and cloze completion on reading comprehension in 20 teenagers with ASD. The teachers in the study used scaffolding to implement these three interventions, which led to increased understanding among participants. These cases implied that teachers need to select effective reading comprehension interventions based

on learning needs (Allington, 2013). Allington (2103) suggested that one problem in classrooms is insufficient instruction of these proven comprehension interventions.

Teachers need to be aware that comprehension strategies include vocabulary, fluency, and comprehension development to impact students with ASD's comprehension (Solari et al., 2017).

Vocabulary

Another aspect of a teacher's reading pedagogy is being cognizant of how vocabulary acquisition affects reading comprehension. Khezrlou et al. (2017) posited that a lack of vocabulary leads to reading difficulty for learners. Word knowledge is an essential factor which contributes to improved reading comprehension. Van Steensel et al. (2016) found that vocabulary knowledge facilitates comprehension by increasing more cognitive capacity for higher-level processes. Teachers should recognize that reading comprehension is the product of decoding skills and oral language comprehension. Understanding this concept aids teachers in selecting reading interventions that address oral language and vocabulary deficits that limit reading comprehension (Åsberg Johnels et al., 2019). Åsberg Johnels et al. (2019) studied how language development of children with ASD at age 3 was a predictor of the child's reading comprehension at age 8. Those who were considered poor readers also displayed more autistic behaviors and had more limited communication. Åsberg Johnels et al. (2019) research confirmed a close relationship between students with ASD's verbal language and their reading comprehension skills.

Solari et al. (2020) suggested that competent reading comprehension depends on understanding the written text and its purpose. Skills required to extract meaning from the text, while simultaneously interacting with it, have proven difficult for students with ASD. Vygotsky (1980) maintained that there are fundamental differences between learning and developing. Teachers need to address those students with ASD build comprehension by learning the meaning of words and connecting those words to experiences (Solari et al., 2020). Quinn et al. (2020) investigated the developmental relationship between vocabulary knowledge and reading comprehension in students with a learning disability. The researchers compared children with a learning disability to academically age-appropriate students. Quinn et al. found bidirectional influences between both groups' vocabulary knowledge and reading comprehension skills. Quinn et al. concluded that if direct instruction of vocabulary proves to be ineffective, teachers should then introduce words incidentally through exposure in a variety of texts and use text and oral language interventions.

Teachers' reading interventions can significantly impact how well students with ASD respond to the interventions. Both Allington and Vygotsky suggested that the intervention selected should focus on the multiple facets of the reading process, including reading fluency (Stevens et al., 2017).

Fluency

Fluency is the ability to read with speed, accuracy, and proper expression (Young et al., 2015). Reading fluency is an important reading proficiency that allows for proficient reading and comprehension. Researchers have found that students with low

decoding skills often have difficulty with comprehension because they need to use their cognitive resources for word recognition (Förster et al., 2018). Teachers need to be aware that students then must switch their cognitive focus to what the word means after decoding. This interruption in reading interferes with fluency and prohibits comprehension (Stevens et al., 2017). Teachers should select fluency interventions to improve automatic word decoding and recognition to allow a reader's cognitive resources to focus on meaning (Allington, 2013; Förster et al., 2018). These interventions include concentrating on components that are related to improved reading fluency. The interventions include having students repeat text aloud to an adult at least three times, modeling by a fluent reader, error-correction computer programs, teacher feedback while the child is reading, and verbal cues to read with fluency and comprehension (Begeny et al., 2018).

Vygotsky (1980) suggested that the teacher's role in improving fluency is to provide experiences and support that help challenge students' performance. Vygotsky's sociocultural view suggests that teacher-supported reading practices can increase reader fluency and aid in overall comprehension by applying interventions in small groups and direct instruction (Young et al., 2015). Allington's (1994) research on the importance of reading comprehension interventions is supported in Vygotsky's (1978) sociocultural theory of cognitive development. Allington (2002) stated that it is essential for teachers to select text and other reading passages that the student can perform with accuracy and fluency. This practice is inherently true for students with ASD, who may have limited experiences and shut down if the text is too difficult (Åsberg Johnels et al., 2019).

Comprehension is more apt to occur for the reader when a string of known words follows one another, building on the reader's experiences. Teachers who work with students with ASD can act not only to increase fluency but as a vehicle to help connect words and prior experiences for the reader (Allington & McGill-Franzen, 2018). This collaboration between teachers and students with ASD allows students to gain fluency and increase reading comprehension (Allington, 2013; Vygotsky, 1980).

Comprehension Strategies

Reading comprehension strategies are essential in accessing all academic areas (Gabriel & Wenz, 2017). Between 33% and 65% of students with ASD cannot comprehend age-appropriate reading material, complicating these students' academic and cognitive development (McIntyre et al., 2017). Arciuli and Bailey (2019) profiled 41 students with ASD. The researchers found that academic achievement was directly affected by the students' lack of reading comprehension. The research is significant because comprehension is understanding how ideas are represented in the language and convention of that discipline (Gabriel & Wenz, 2017). Because reading comprehension affects all academic aspects for students with ASD, Arciuli and Bailey concluded that teachers who work with students with ASD need to integrate comprehension interventions throughout the students' content-area classes.

Vygotsky's (1980) sociocultural theory of cognitive development has shown that guided reciprocal instruction can improve all academic areas. Researchers have used Vygotsky's sociocultural theory of cognitive development to propose structuring instructional environments and activities to promote reading comprehension. Allington

(1994) stated quantity and quality of the reading experiences are essential in children's reading development. However, the design of quality instructional interventions for students with ASD is not always available throughout the content-area curriculum. Allington suggested that secondary teachers were implementing interventions that primarily focused on skill lessons instead of creating interventions that immerse students in the reading experience. Teachers should integrate reading opportunities throughout a content area, not limited to the reading or English curriculum (Arciuli & Bailey, 2019). In addition to selecting reading comprehension interventions based on multiple skill acquisition, teachers must also consider students with ASD's specific personal learning profiles (Austin & Peña, 2017). These personal learning profiles include a student's social pragmatics, communication deficits, ability to construct meaning, and any other areas that may impede a student with ASD from understanding written text.

Personal Learning Profiles of Students with ASD

Teachers who work with students with ASD must have a solid grasp of the intricacies of reading development and know the personal learning profiles of their students. Austin and Peña (2017) suggested that students with ASD have a different cognitive learning style and have trouble understanding complex stimuli. Researchers found a significant correlation between high word recognition and low reading comprehension in students with ASD (Accardo et al., 2017). However, researchers warn that teachers need to recognize that individuals with ASD should not be associated with any specific reading profile. McIntyre et al. (2017) investigated the heterogeneity in reading development and found that comprehension challenges increased with ASD

symptomatology. Because symptoms of ASD fluctuate depending on the individual, there is an increasing need for teachers to provide instructional practices formulated for students with ASD.

Teachers should know the ASD personal learning profiles that may impede students with ASD's comprehension. These profiles include a student's ability to communicate effectively, see the author's point of view, and perceive information (Solari et al., 2017; Woods & Waltz, 2019). When considering reading comprehension intervention for students with ASD, Yesmin et al. (2020) found it necessary to acknowledge these specific developmental qualities of students with ASD. An investigation is necessary to determine how secondary teachers in this local setting select effective reading comprehension interventions for students with ASD (Allington, 2013).

Solari et al. (2020) suggested that teachers understand that students with ASD have unique developmental learning profiles that often interfere with comprehension. Teachers need to realize these developmental learning profiles because students with ASD have different levels of social pragmatics. The variation in social pragmatic levels make it difficult to narrow in on just one effective strategy to meet each student with ASD's needs (Allington, 2013).

Social Pragmatics

Social pragmatics refers to how children use language within social situations (Andrés-Roqueta & Katsos, 2020). Successful communication demands that a person understand information given linguistically, simultaneously, and use contextual and social factors when interpreting written language (Loukusa et al., 2018). Secondary

teachers need to understand how cognitive and social skills play a part in developing pragmatic ability (Andrés-Roqueta & Katsos, 2020). Teachers should be aware that children diagnosed with ASD have difficulties with social communication, such as taking turns in conversations, looking at the speaker, standing at an appropriate distance from the speaker, and using facial expressions and gestures (Greenslade et al., 2019). Teachers must know their students with ASD's social communication limitations because social perception plays a vital role in written comprehension (Loukusa et al., 2018). The deficits in social pragmatics children with ASD have interfere with their ability to understand an author's intent. When selecting reading comprehension interventions, teachers must recognize deciphering an author's intention is not based solely on developing a child's cognitive abilities but on the experiences the child brings to the learning process (Vygotsky, 1980).

Secondary teachers who work with students with ASD play an essential role in understanding how these students view the world. Vygotsky's (1978) sociocultural theory of cognitive development includes how important student social interaction and teacher instruction are vital in promoting human competence in students with ASD. Studies have shown that guided social interaction can improve reading, extending to other academic areas (see Andrés-Roqueta & Katsos, 2020). Incorporating experiences for these students can serve as instruments for social regulation and communication and eventually facilitate cognitive abilities that allow the students with ASD to perform on a higher cognitive level (Dastpak et al., 2017).

Based on Vygotsky's (1978) sociocultural theory of cognitive development, secondary teachers need to facilitate opportunities for new experiences because students with ASD may not be inherently driven to seek new social situations and experiences. Secondary teachers can help students with ASD navigate and interpret the perspectives of social experiences. Allington relates this point with his work with children in poverty (Allington & McGill-Franzen, 2018). Allington concluded that impoverished students might lack some of the actual experiences that their peers may have, which interferes with understanding an author's intent (Allington, 1977; Allington & McGill-Franzen, 2018). However, in students with ASD, another contributing factor in their reading comprehension deficits is how these students interpret the written text (Dore et al., 2018).

Theory of Mind

Social pragmatics are important when comprehending written text (Kenny et al. 2019). One aspect of reading comprehension is the ability to see the author's point of view. Dore et al. (2018) found that many students with ASD lack theory of mind (ToM). Secondary teachers who work with students with ASD should be conscious that this deficit interferes with the ability to understand character perspectives, inferences about people's intentions, and the capacity to make character predictions. Kenny et al. (2019) suggested that children's understanding of others' perceptions may be a potential missing piece when determining why students with ASD have difficulty with reading comprehension. Since ToM is acknowledging that other individuals' mental states can be different from one's perspectives, students who lack ToM find it challenging to relate to the intention of an author's text (Dore et al., 2018). By acknowledging this barrier to

reading comprehension, secondary teachers need to search for differentiated reading comprehension strategies that meet students with ASD's needs (Allington, 1977).

Vygotsky's (1980) sociocultural theory reflects the idea that human mental functioning corresponds to the environment in which they live. These settings provide the necessary tools to facilitate individual's ability to process information related to their environment. Allington (1994) discussed the importance of teachers using reading interventions that reflect the experiences and needs of students. Deficits in ToM lead to difficulties for students with ASD, but teachers can still reach these students (Arciuli & Bailey, 2019). If a significant reading comprehension component is to realize an author's intention, specific instruction for students with a deficit in ToM is needed.

Both Allington (1994) and Vygotsky (1980) discussed the importance of a teacher's ability to reach students by relating experiences to written text. Vygotsky (1978) believed that comprehension is accomplished by intertwining experience and the written word through scaffolding. Allington and McGill-Franzen's (2018) research documented the importance of teachers seeing the world through that child's perspective, especially if that teacher is working with students with special needs. When working with students with ASD, these convictions become more applicable when considering ToM as a barrier to reading comprehension (Kenny et al., 2019). Seeing through a student with ASD's eyes becomes more complex when these students may also have a limited number of interests in which to connect (Dore et al., 2018).

Fusiform Face Area and Monotropism

When selecting and implementing comprehension interventions, teachers should be mindful that students with ASD often have social communication deficits (De et al., 2018). These communication deficits include restricted and repetitive patterns of behavior and interest. The fusiform face area is a region in the ventral temporal cortex that shows preferential responsiveness to faces and familiar visual objects (Foss-Feig et al., 2016). Secondary teachers must be aware that elevated levels of visual expertise are often associated with individuals with ASD. Foss-Feig et al. (2016) conducted a study to determine the extent to which the fusiform region affected individuals with ASD. The study indicated that the fusiform face area region in individuals with ASD only responds to images associated with these individuals' restricted interests. Foss-Feig et al. concluded that brain regions associated with social functioning are less responsive in ASD. Still, other stimuli may be taking precedence, resulting in a term called *monotropism*.

Teachers need to understand that children with ASD have a strong sense of *monotropism* when selecting appropriate reading comprehension intervention (Murray 2018). Intense concentration of internal input and stimuli with the exclusion of others' involvement affects children with ASD's cognitive, perceptual, and emotional processes. Woods and Waltz (2019) explained that *monotropism* is a fundamental characteristic of students with ASD that involves cognitive and sensory inputs. Secondary teachers should realize that in some instances, this intense interest can often monopolize students with ASD and prevent other stimuli from being internalized. However, despite apparent

problems and negative associations, this type of repetition, monotropism, can be beneficial in educating students with ASD (Wood, 2019).

Troyer et al. (2019) demonstrated that it is critical to attend to students' interests, background characteristics, and reading levels to generate reading motivation and comprehension. Vygotsky's (1980) sociocultural theory of cognitive development supports the idea that teachers have an integral part in student learning. Since monotropism is commonly associated with students with ASD, finding what motivates these students can facilitate the reading comprehension process. Troyer et al.'s results indicated positive correlations between interest-based text and intrinsic reading motivation, time spent on that material, and reading comprehension.

Vygotsky's scaffolding ideas support the premise that teachers can achieve reading comprehension by building a foundation of ideas surrounding a student with ASD's interests. Because children with ASD have unique reading profiles, the restricted interests in ASD need to be understood to provide the basis for developing new comprehension reading interventions (Murdaugh et al., 2017). Creating an inductive teaching intervention weighs heavily on how the teacher internally and externally motivates students (Allington, 2013).

Concept Formation

Concept formation is an educational strategy designed to help students understand ideas using small set of examples of a particular concept (Elleman & Compton, 2017). Vygotsky (1980) believed that children construct meaning through shared activities. Meaning can be accomplished by communicating through different modalities in which

language plays a key role. Because students with ASD often have difficulty communicating, teachers often assume the role of the other correspondent. Verbal and nonverbal collaboration can be developed using scaffolding (Vygotsky, 1978).

By working directly with students, teachers can determine a child's gap in thinking (Vygotsky, 1980). Vygotsky's (1980) sociocultural theory of cognitive development is essential to reflect upon when working with students with ASD. Finding out what motivates a student with ASD by distinguishing that student's personal learning profile is an effective way to create reading comprehension interventions (Allington, 2013). Elleman and Compton (2017) argued that concept formation, knowledge building, and reading comprehension is a complex ability, and comprehension instruction should reflect this complexity.

For teachers to impact stable growth in reading comprehension, teachers need to increase their instructional methods. Methods should include interventions that support the acquisition and integration of a more diverse range of texts and topics, which is especially true for students with ASD (Elleman & Compton, 2017). Allington (2013) found that evidence-based comprehension interventions were rooted in the idea that the intervention acted as a motivator for reading. Because students with ASD's more challenging learning profiles, teachers need a repertoire of interventions (Elleman & Compton, 2017).

Challenges in Teacher Pedagogy

Austin and Peña (2017) stated that students with ASD often develop academic strengths and skills, but have restricted interests, communication deficits, and social

information processing difficulties. These educational problems pose significant challenges for teachers who work with students with ASD (Murdaugh et al., 2017). De et al. (2018) found that ASD affects a child's cognitive and social maturation. Individuals with ASD develop atypical ways of thinking and learning (De et al., 2018). Teachers need to be prepared with practical skills to identify participation and learning obstacles for students with ASD (De et al., 2018). Without knowing the ASD characteristics that may impede comprehension and instructional methods, teachers have difficulty achieving the best reading outcomes for these students (Allington, 1994; Nally et al., 2018).

Allington (2013) believed that for students to significantly increase reading comprehension, a teacher must use appropriate text and motivation to focus on the student's learning styles. One premise of Vygotsky's (1980) sociocultural theory of cognitive development focuses on the idea that children have the capacity to learning more than they already know. Teachers who work with students with ASD are challenged to find what motivates each student (Dore et al., 2018). By examining their students' personal learning profiles, teachers can use evidence-based intervention effectively to increase reading comprehension for students with ASD (Allington, 1994). However, since students with ASD pose many different types of challenges to ascertain the meaning of the text, secondary teachers must provide additional resources (Holcombe & Plunkett, 2016).

Education and Experience

Little is known about the social communication phenotype of children with ASD and how these impairments may affect their learning and achievement in educational

settings (McIntyre et al., 2017). This lack of information hinders educational interventions that focus on reading interventions for students with ASD. Holcombe and Plunkett (2016) investigated how teachers could academically support students with ASD more effectively. The authors' findings indicated that despite extensive educational experiences and considerable knowledge of ASD, many teachers lack an understanding of identifying individual students with ASD's comprehension needs and appropriate reading strategies (Allington, 1994; Holcombe & Plunkett, 2016).

Allington (1994) noted that effective teachers matter more than a particular curriculum or materials. However, Allington did acknowledge that many districts do not invest in the pedagogical development of their teachers. Hikida et al. (2019) study found teachers identified a weakness in their foundational knowledge of the reading process. The deficit in knowledge was attributed to the quality and quantity of the teacher's coursework and academic instruction. Hsiao and Sorensen Petersen (2019) found that about 40% of teachers of students with ASD received little to no training on evidence-based practices, either through their teacher-training programs or through professional development. Accardo et al. (2017) suggested that for improved reading comprehension and a connection to the text, teachers must identify and use effective instructional practices for students with ASD.

Allington (1977) argued that evidence-based comprehension interventions need to be presented in response to a child's needs. A teacher should not rely on a regurgitated script or computer-based reading products that do not differentiate according to the student's needs. However, many districts spend a large sum of money to increase

students' reading comprehension without adding the professional development that should be included with these reading interventions (Allington, 1994).

Selection of Effective Interventions

A facet of Vygotsky's (1978) sociocultural theory of cognitive development is the idea of a more knowledgeable other (MKO). This MKO stems from the idea that a teacher knows more about a concept than the students do. In response to the MKO idea and reading comprehension, a teacher should know how to select, implement, and assess evidence-based reading comprehensions for students with ASD (Allington, 2013; Salem, 2017). Ely et al. (2018) noted that despite the importance of reading comprehension to students with ASD's academic success, research showed a lack of comprehension strategy instruction in the classroom. Several factors predict a teacher's adoption of effective instructional practices (Ely et al., 2018). Accardo et al. (2017) found that if a teacher believes a specific instructional approach will yield positive results, the teacher will generally use this strategy. This teacher self-efficacy constitutes the ability to carry out instructional practices effectively and plays a role in the effective implementation of research-based practices.

A second predictor was the teacher's skill level and understanding of reading pedagogy (Accardo et al., 2017). Allington (2013) suggested that teachers with a strong sense of teaching decoding skills were more successful when teaching the reading process. However, many secondary teachers do not have sufficient knowledge or the pedagogical skill to translate this knowledge to their students (Brownell et al., 2017). Additionally, many secondary teachers are not engaged in the professional collaboration

that facilitates pedagogical knowledge and skills needed to implement evidence-based instruction (Brownell et al., 2017).

Evidence-Based Practices

Legislation, such as Every Student Succeeds Act (2015) and Individuals with Disabilities Education Improvement Act (2004), mandates teaching students with disabilities essential reading skills using evidence-based reading instruction (Howorth et al., 2019). Evidence-based practices are instructional programs or practices sanctioned through either group or single-subject researched designs (McLeskey et al., 2017). These practices include small group or direct instruction focused on fluency, vocabulary acquisition, and comprehension. Hsiao and Sorenson Petersen (2019) noted that only 40% of teachers use effective classroom practices. There are several reasons for this. One problem is that there needs to be an improvement in providing evidence-based practices in both teacher education programs and in-service professional development (Hsiao & Sorensen Petersen, 2019). Many secondary teachers receive little to no training on evidence-based reading practices for students with ASD (Webster, 2020). There are also unverified interventions declaring success supporting students with ASD in reading comprehension, which causes ambiguity among teachers (Allington, 2013). Some studies focused on evidence-based comprehension interventions for students with ASD, but these strategies do not apply to all students with ASD (Webster, 2020). However, there are some fundamental evidence-based comprehension interventions that researchers have found success with students with ASD (Garrels, 2019; Hudson et al., 2017; Wood, 2019).

Self-Directed

There are definitional ambiguities concerning what constitutes an effective comprehension intervention. Allington (1994) postulated that the interventions align with the child's needs. One evidence-based reading comprehension that researchers have scientifically supported is the student-directed curriculum (Webster, 2020). Wood (2019) considered how pedagogical reading practices that incorporated the child's interests affected the reading comprehension of children with ASD. By capitalizing on students with ASD's unique characteristics of monotropism and personal learning profiles, Wood posited that teachers might gain from incorporating student-centered practices into curricular and pedagogical practices. Teachers who used the intense interests of children with ASD to promote academic agendas helped their students with a range of educational, social, and affective advantages (Webster, 2020).

Vygotsky (1978) theorized that children need to internalize language to lead to cognitive processing. Understanding language is especially true for students with ASD who have learning profiles (Wood, 2019). Garrels (2019) found that student-directed learning may address some reading comprehension challenges for students with ASD. Teachers who allowed students with ASD to select self-chosen reading materials saw increased student motivation and academic performance (Garrels, 2019). Having access to materials based on interests also showed improved communication, motor skills, socialization, and independence (Wood, 2019). Webster (2020) concluded that best practices for schools and teachers working with students with ASD should include consistent use of child-centered, evidence-based curriculum and instruction to improve reading comprehension.

Evidence-Based Interventions

Morrow and Gambrell (2018) defined evidence-based best practices as a reading achievement instructional practice with reoccurring success. This success is determined by data collection done by researchers and expert consensus among teachers who monitor student outcomes. The data collected in evidence-based practices were objective, valid, reliable, systematic, and refereed (Morrow & Gambrell, 2018). Evidence-based reading instructions consider the learning environment and differentiated methods and materials that match students' abilities (Allington, 2013). Förster et al. (2018) concluded that teachers for students with ASD, understand that reading instruction be curtailed to a student's skills and strengths. When evaluating evidence-based instruction for students with ASD, a basic prerequisite should be met. Reliable information about students' reading achievement and reading progress should be assessed and considered before implementing an intervention (Allington, 1994; Förster et al., 2018).

Allington (1994) believed that interventions address three different areas. Interventions should be preventive, accelerate learning, and maintain on-level literacy development. According to Webster (2020), several studies focused on ascertaining specific reading comprehension interventions for students with ASD, but few have looked at these strategies' applicability. This lack of investigation has created a research-to-practice gap for teachers working with students with ASD. Armstrong (2019) acknowledged this gap between educational research and classroom practice regarding students diagnosed with ASD. Armstrong found that teachers were not using evidence-based practices in classrooms because of limited exposure to effective professional

development focused on the unique needs of students with ASD. Allington (2013) suggested that teachers need professional development on re-conceptualized comprehension interventions and that interventions must provide evidence that they are effective in increasing comprehension among students with ASD.

Evidence-Based Assessments

Assessments as a tool should allow students the opportunity to describe or explain their thinking to demonstrate knowledge (Vygotsky, 1978). Thus, evidence-based assessments positively influence teaching and learning (Afflerbach et al., 2018). The benefits of these types of assessments can be achieved when the assessment is about the context of instruction. However, Allington (2013) suggested that assessments that lack instructional connection do not meet the needs of teachers or students with ASD because of a priority to high-stake summative testing. Studies have shown that many school districts use assessments that do not correspond with best practices, therefore not reflecting a student's actual reading accomplishments (Afflerbach et al., 2018; Allington, 2013; Armstrong, 2018).

Effective reading assessment should produce valuable information for teachers and students (Heritage et al., 2018). Vygotsky (1978) stated in his sociocultural theory of cognitive development that children are submerged in a social environment. Teachers should be aware that this social environment represents children's social, cultural, and interpersonal experiences. Daneshfar and Monharami (2018) used Vygotsky's sociocultural theory of cognitive development to investigate a child's social environment and assessments. To be effective, teachers need to develop and use assessments that

reflect the unique ways that students with ASD interpret social environments (De et al., 2018). Vygotsky encouraged teachers to understand that assessments should interpret the individual's abilities and lead them to higher levels of functioning (Daneshfar & Monharami, 2018; Vygotsky, 1978). However, despite the growing acceptance of evidence-based assessments, school districts and classrooms are inherently slow at implementing these types of evaluations (Afflerbach et al., 2018; Allington, 1994).

Formal literacy assessment is used in the evaluation of literacy that involves standardized administration and the interpretation of those results (Heritage et al., 2018). Teachers can effectively meet the needs and monitor the progress of students with ASD by using formative assessments. Research has shown that students can make substantial progress from teachers who develop ongoing assessment procedures that directly reflect instruction (Morrow & Gambrell, 2018). However, research has also indicated that students with ASD are less successful on formative assessments when teachers construct assessment practices on assumptions of typical cognitive development (Morrow & Gambrell, 2018; Vygotsky, 1978).

Vygotsky (1978) stated in his sociocultural theory of cognitive development that child development is not a direct process, but several developmental levels which do not follow a linear path (Daneshfar & Monharami, 2018). Vygotsky's sociocultural theory of cognitive development does not promote a singular type of assessment. Still, the theory suggests that the assessment should involve the teacher to better understand the students' capabilities (Vygotsky, 1980). Allington (2013) discussed the importance of teachers providing materials that students can read. When assessing students with ASD's

comprehension, teachers need to be certain that the materials and assessments are at the student's reading level. Therefore, teachers of students with ASD must consider their students' unique learning profiles by incorporating individualized methods of formative assessment (Allington, 2013; Morrow & Gambrell, 2018).

According to the Council of Chief State School Officers (CCSSO, 2017), summative assessment aims to evaluate what a student has learned. Teachers accomplish this by comparing it against a standardized test or benchmark at the completion of an instructional unit. Many students with ASD are required to take summative statewide assessments (Finnegan & Mazin, 2016). The New Jersey PARCC assessment creates a demand for teachers to use effective instructional strategies to improve reading comprehension scores at the case study site (see Table 1).

For secondary teachers to be successful in selecting, implementing, and assessing comprehension interventions for students with ASD, teachers must be aware of how the intervention will effectively increase comprehension (Allington, 2013). The intended interventions must target the area the student is deficit in, such as limited vocabulary or erratic fluency. Secondary teachers must also respond to the student with ASD's personal learning profile (Accardo et al., 2017). Teachers may need to facilitate opportunities for more life experiences (Vygotsky, 1978), so that students can diversify their thinking and improve their social pragmatics (Loukusa et al., 2018).

Secondary teachers should understand that some students with ASD struggle with comprehension due to ToM, fusiform face area, and monotropism, which all interfere with the student's ability to recognize others' intentions (De et al., 2018; Dore et al.,

2018; Murray, 2018). Inherently, teachers need to have the education and experience to support students with ASD in increasing reading comprehension. Education could be in professional development or collegiate courses (Brownell et al., 2017). Teachers who are lack experience with students with ASD, should collaborate with other professionals to broaden a teacher's knowledge of evidence-based interventions for students with ASD (Hsiao & Sorensen Petersen, 2019). This qualitative study has implications to start a dialogue at this study site about how secondary teachers select, implement, and assess reading comprehension interventions.

Implications

The purpose of this qualitative case study was to explore how secondary teachers select, implement, and assess comprehension interventions to support students with ASD. Using a qualitative case study methodology, I gathered data from participants through semistructured interviews. The findings of this qualitative doctoral case study benefit key stakeholders in the education field. Data from this qualitative case study provide stakeholders and district administrators the guidance needed to create professional development options enhancing secondary teachers' ability to select, implement, and assess comprehension interventions for students with ASD.

Administration can offer secondary teachers the tools and knowledge to help students with ASD comprehend reading material more efficiently. Secondary teachers can have opportunities to learn evidence-based interventions proven to increase comprehension for students with ASD. Finally, the data from this study assist teachers in

evaluating and assessing the effectiveness of such comprehension interventions.

(Allington, 2013; Vygotsky, 1978).

Summary

With the increasing number of students diagnosed with ASD, New Jersey secondary teachers may have students with ASD during their teaching career (CDC, 2018; De et al., 2018). In this qualitative doctoral case study, I attempted to answer the research questions: How do secondary teachers in a suburban Mid-Atlantic public high school select and implement reading intervention strategies to design lesson plans that increase reading comprehension for students with ASD? How do secondary teachers in a suburban Mid-Atlantic public high school assess and monitor the success of the intervention strategies for reading comprehension of students with ASD? The works of Vygotsky (1978) and Allington (2013) provided the conceptual framework for understanding how secondary teachers select, implement, and assess reading comprehension intervention.

The qualitative research design and approach included questionnaires, semistructured interviews with open-ended questions, and the review of lesson plans. Secondary teachers had an opportunity to state the challenges confronted when developing reading comprehension lessons for students with ASD. The qualitative case study used Vygotsky's (1980) sociocultural theory of cognitive development, along with Allington's (2013) work on interventions, as a lens to understand the importance of using effective reading comprehension interventions. The rationale for using Vygotsky's (1978) and Allington's work is based on how teachers can use interventions to increase

comprehension for students with ASD. Vygotsky's (1978, 1980) sociocultural theory of cognitive development provides a way for teachers to acknowledge their role in supporting students with ASD. In conjunction with Allington's work on effective interventions, these theories are essential to teachers who work with students with ASD. The theories provided the best lens through which to examine the questionnaire and teacher interview data.

The literature review revealed that secondary teachers must know evidence-based reading comprehension intervention to meet the specific learning profiles of students with ASD (Allington, 1994; Murdaugh et al., 2017). Both Allington (2013) and Vygotsky (1980) acknowledged that teachers could foster the knowledge and skills needed to become better readers through their interactions with students. When considering which reading comprehension intervention to choose, teachers must examine the use of vocabulary and fluency. Secondary teachers also need to consider current reading comprehension intervention used in the classroom to confirm that these interventions account for specific needs of students with ASD. Results from this qualitative case study provide significant contributions at the local and national levels in reading comprehension for students with ASD.

Section 2 focuses on the research and design of this case study using Yin's (2018) 5-phase assessment approach. I discuss justification for the methodology used in participant selection, data acquisition, and data analysis. Using a qualitative process allowed me the opportunity to explore the problem at this study site. Conducting this research as a case study helped me address the problem that secondary teachers use

instructional interventions for reading comprehension that are not effective in supporting students with ASD.

Section 2: Methodology

Qualitative Research Design and Approach

The purpose of this qualitative case study was to look at how teachers select, implement, and assess comprehensive intervention to support students with ASD. A constructivist lens was used to understand how teachers chose effective reading interventions for better student outcomes. The qualitative method allowed me to address the research questions through questionnaires, semistructured interviews, and lesson plan reviews. I addressed the gap in practice that secondary teachers do not implement educational interventions, which researchers have suggested.

Constructivists suggest that the truth is dependent on one's perspective (Yin, 2018). Constructivism is based on the social construction of reality (Yin, 2018). Yin's approach allowed for a close collaboration between the researcher and participant. Participants described their views of reality through their experience, which allowed for an understanding of their actions and motivations. An inductive approach acted as a guide to condense extensive and varied raw text data into a summary format. The approach establishes clear links between research objectives and the summary findings derived from raw data and ensure that these links are both transparent and defensible. Finally, an inductive approach focuses on using data to gain insight from the experiences of secondary teachers who work with students with ASD. The data collected will help minimize the gap in practice regarding the identification and effective use of evidence-based reading comprehension interventions.

The research questions were based on Vygotsky's sociocultural theory of cognitive development. RQ1 was structured to answer how secondary teachers in a suburban Mid-Atlantic public high school select and implement reading intervention strategies to design lesson plans that increase reading comprehension for students with ASD. Allington (2013) suggested that evidence-based comprehension interventions should be used to improve the overall quality of reading lessons. Using this research question as a guide allowed me to see how these secondary teachers determine the quality of interventions used in their lessons.

RQ2 was formulated to understand how secondary teachers in a suburban Mid-Atlantic public high school assess and monitor the success of intervention strategies for reading comprehension of students with ASD. Allington's ideas about appropriate testing for students with disabilities was used as a lens as these secondary teachers shared how they judged comprehension interventions to be successful. By structuring questionnaires and interview questions to explore sociocultural aspects of classroom instruction, I obtained data to determine how secondary teachers use reading comprehension interventions for students with ASD.

Qualitative research includes data acquired from interviews, observations, and document analysis (Burkholder et al., 2016). I conducted qualitative interviews with secondary teachers who support students with ASD. The data gathered from the interviews revealed how they implement comprehension intervention strategies to support students with ASD. As shown in Table 2, data collection followed a detailed timeline. This qualitative case study included a brief questionnaire to establish which

participants met case study criteria. A pre-interview questionnaire was used to pilot the interview and provide validity to the interviews. Semistructured interviews were used to provide in-depth qualitative data.

Table 2

Data Collection Timeline

Week	Action
Week 1	Send brief questionnaire via email to secondary teachers who work with students with ASD, inviting them to participate in a research study and gathering additional information about the participants.
Weeks 1 – 2	Organize those who meet the case study criteria for the case study. Send informed consent forms to all agreeable participants.
Week 2	Email to confirm participation and seek availability of each participant. Collect informed consent forms.
Weeks 2 – 3	Distribute pre-interview questionnaire.
Week 3	Questionnaires returned and organized. Schedule interviews. Solicit participants' lesson plans.
Week 4	Collect and analyze lesson plans via email.
Week 5	Begin virtual/in-person interviews.
Week 6	Continue virtual/in-person interviews.
Week 7	Organize and analyze interviews.
Week 8	Data analysis.

I sent questionnaires to secondary teachers who work with students with ASD at the study site to understand their perceptions regarding how they choose reading comprehension interventions (see Appendix B). The pre-interview questionnaire helped prepare participants for semistructured interview questions. The questionnaire was designed to avoid bias and shared with participants via email prior to interviews to allow participants the opportunity to answer questions on their own time. Participants' answers

were broad statements which answered open-ended queries. The questionnaire included participants' demographic data. Questionnaires allowed for generation of specific data and insights that might otherwise be unavailable.

Qualitative Case Study Design Justification

A qualitative case study design provided the opportunity to gain a deeper understanding of challenges secondary teachers who work with students with ASD face when using reading interventions to increase comprehension. A qualitative research design and approach was applicable because it allowed for a detailed and consequential understanding of how secondary teachers choose, implement, and assess reading comprehension interventions for students with ASD. The purpose of this qualitative case study, driven by Vygotsky's sociocultural theory of cognitive development and Allington's ideas of struggling readers, was to understand phenomena and perspectives of secondary teachers who select, implement, and assess comprehension interventions for students with ASD.

Bulterman-Bos (2017) stated, "Knowledge acquired in classrooms enables researchers to perceive more relevant factors in practice and enables them to understand the problems of teaching better" (p. 2). A case study approach allows a researcher to look at a topic in a more profound and multi-sided way (Ravitch & Carl, 2016). I chose a case study because I was able to investigate this topic in more detail with a smaller number of participants. A case study design was appropriate for this qualitative study because I wanted to contribute to literature on how reading interventions help improve students

with ASD's comprehension through in-depth interviews, questionnaires, and evaluation of lesson plans.

Ravitch and Carl (2016) noted that qualitative research has the potential to generate knowledge, and informed action, because it incorporates the complexity of lived experiences. Bulterman-Bos (2017) emphasized the impact that the development of professional knowledge can have on educators. In this case study, Vygotsky's sociocultural theory of cognitive development was used to inform the development of interview questions and data analysis. Employing a case study design allowed secondary teachers to reflect on how they select, implement, and assess reading comprehension interventions to support students with ASD. By reflecting on their actions about the teaching situation, secondary teachers were afforded the chance to gauge which interventions were appropriate for which situations and expand on their pedagogical knowledge (see Bulterman-Bos, 2017).

Yin (2018) stated that the researcher needs to ask *how* and *why* questions to address the phenomenon of interest. This qualitative study addressed research questions using a case study approach that asks critical questions throughout the inquiry. I discovered how teachers personalize comprehension interventions for the variability of each student's strengths and weaknesses for summative and formative assessments (Burkholder et al., 2016). Because each student with ASD has a different learning profile, a case study approach provided the framework to find the answers to why secondary teachers are challenged to implement comprehensive interventions (Dore et al., 2018; Webster, 2020). The case study design allowed me to concentrate on what determined the

selection and use of reading interventions. This case study also focused on how these teachers assessed the comprehension skills of students with ASD when monitoring reading comprehension progress (Yin, 2018).

Other qualitative methodologies were considered, including ethnography, grounded theory, and phenomenology; however, they were not appropriate based on the research questions (Merriam, 1998). Ethnography focuses on providing deep, holistic insights into an individual's views and actions, like a case study. The goal of ethnography is to record the people's culture, perspectives, and customs in these settings to see how each group in the study sees the world. Ethnography is the fundamental assumption that culture is central to understanding human beings, focusing on population patterns (Burkholder et al., 2016). This methodology uses interviews to gather information about the participants' approaches (Dodgson, 2017). However, I rejected this methodology for several reasons. Ethnography requires a larger sample size that allows the researcher to better immerse themselves in the participants' culture to understand the problem (Merriam, 1998).

In this study, I focused my attention on the teachers in one district to determine how these participants think and approach the challenge of working with students with ASD to increase reading comprehension. Through this qualitative case study, I was able to see how teachers use their different experiences and knowledge bases when determining which reading comprehension intervention to use when working with students with ASD. Ethnography requires the researcher to immerse themselves into the study culture through observation. Observation is unnecessary for the study because the

sought information was about teachers' perspectives. The primary focus of the study was to determine how secondary teachers select, implement, and assess reading comprehension interventions to support students with ASD. Ethnology, as a methodology, would not address *how* this happens, which was needed for this qualitative study (Ravitch & Carl, 2016).

A second methodology considered for this study was grounded theory (GT). GT was contemplated as a theoretical lens to examine how teachers use reading comprehension interventions to support students with ASD (O'Connor et al., 2018). Ravitch and Carl (2016) suggested that GT allows researchers to include their perspectives to understand how people construct a particular situation. One connection between this conceptual framework of my study is that GT offered ways to investigate the effective pedagogical concepts reading teachers use with students with ASD that focus on learner differentiation (Merriam, 1998). However, according to Dodgson (2017), GT's research purpose is to create a theory about how individuals make sense of their social interactions.

The purpose of the qualitative case study was not to prove a particular theory but to discover how secondary teachers use their experiences and education to select reading comprehension interventions for students with ASD. GT did not support this study's intended problem statement or research questions (Merriam, 1998). A single case study was appropriate because this qualitative project study's purpose and research questions focused on how secondary teachers use reading comprehension interventions for students with ASD (Burkholder et al., 2016; Yin, 2018).

A phenomenological study was considered. The phenomenology approach concentrates on a lived experience within a particular group (Ravitch & Carl, 2016). The primary goal of the approach was to determine the nature of a particular phenomenon (Merriam, 1998). This approach involves group interviews with first-hand knowledge of an event, situation, or experience (Ravitch & Carl, 2016). The purpose of the interviews in a phenomenological study is to answer two specific questions: 1. What has the participant experienced in terms of the phenomenon? 2. What contexts or situations have typically influenced the participant's phenomenon experiences? (Creswell, 2013). Data collection for a phenomenological study includes documents, observations, and art. A phenomenological study requires more than one interview, with a time lapse between the interviews. Like a case study, data analysis involves reviewing the interviews and looking for phrases or themes to understand the event, situation, or experience. A phenomenological study aims to construct the universal meaning of the situation using phenomenological analysis. Due to students with ASD's differential learning profiles, there was no general solution to increasing reading comprehension for students with ASD.

A case study method involves in-depth investigations of contemporary, real-life events (Yin, 2018) within a bounded time, place, or system (Burkholder et al., 2016). According to Yin (2018), "Single cases may be used to confirm or challenge a theory, or to represent a unique or extreme case" (p. 64). Single case studies are also appropriate for revelatory cases where a researcher can access a contemporary phenomenon (Yin, 2018). The contemporary phenomena in this case study were the secondary teachers who use

reading comprehension interventions to support students with ASD (Merriam, 1998). In this case study, the bounded unit was teachers in a local Mid-Atlantic high school. One characteristic of a case study is to develop knowledge that improves professional practices and increases the well-being of the population involved (Ravitch & Carl, 2016). In this case study, I researched how secondary teachers who work with students with ASD chose comprehension interventions. The case study included descriptions of these teachers' experiences when implementing reading interventions with their students with ASD.

Participants

Criteria for Selecting Participants

Qualitative studies use purposeful sampling to provide context-rich and detailed accounts of a particular population and location (Ravitch & Carl, 2016). Participants are selected to answer the specific qualitative study's research questions (Merriam, 1998). The case study participants were nine secondary teachers who work with students with ASD, which Yin (2018) deemed appropriate for a rich and in-depth case study. The secondary teachers were selected from a local Mid-Atlantic high school. For this case study, the designated high school had students from five sending districts. Because students with ASD have personal learning profiles and present specific challenges, the invited participants worked with students with ASD for at least five or more years in their teaching careers (Ravitch & Carl, 2016).

This qualitative case study aimed to obtain a detailed understanding of how secondary teachers select, implement, and assess reading comprehension interventions

for students with ASD. The primary criteria for choosing the participants were: (a) participants must be secondary teachers at the study site; (b) participants must have worked with students with ASD for five or more years in their teaching careers; (c) participants must have provided reading instruction to students with ASD, either directly or within a content-area classroom; and (d) participants must have agreed to participate in the qualitative case study through a signed, written consent form (Ravitch & Carl, 2016).

Participant Justification

This qualitative case study aimed to understand how secondary teachers select, implement, and assess reading comprehension interventions to support students with ASD. Yin (2018) suggested that participants meet the investigation criteria and provide essential data on the investigated topic. The justification for selecting secondary teachers who work with students with ASD is that these teachers have the experiences that contributed data needed for this case study (Ravitch & Carl, 2016). To discover an in-depth understanding of each participant's perspective, I conducted interviews with each participant using an interview protocol based on Vygotsky's learning theories.

The semi-structured interviews took place with the nine teachers who work with students with ASD, which Yin (2018) deemed an appropriate number for a qualitative case study. The nine participants had worked with students with ASD for over ten years. Two of the participants teach English at the college-prep and honors levels. Six participants are special education teachers, and one participant is a speech teacher who worked at the secondary level in the district. Working with nine participants, both

English and special education teachers, helped incorporate a wider variety of perspectives from teachers of multiple grades and student levels.

Procedures for Gaining Access to Participants

I contacted the superintendent for permission to do the case study at this high school, and it was approved at the school district board meeting (see Appendix C and Appendix D). Initially, I contacted the participants through email. I asked them to fill out a questionnaire to determine the individual's interest in being part of the case study and if they met the study's criteria. After sorting through the responses to the questionnaire to confirm which individuals met the criteria, I sent a consent form to the nine secondary teachers. The latter was willing to participate in the study. Data saturation was reached with the nine participants, so no additional secondary teachers who met the pre-set criteria were contacted to participate in the study (Merriam, 1998).

Researcher-Participant Relationship

I established a non-biased researcher-participant relationship (Merriam, 1998). A brief questionnaire was sent through the school's email system to establish that participants met the criteria for this case study to ensure the participants' understanding of the case study's goals. I had access to this email system as an employee of the school where the study was conducted. After selecting which participants met the criteria, I emailed participants the consent form. The consent form indicated how data would be collected, the confidentiality of information provided by the participants, and any ethical issues that may be encountered. An explanation of the interview procedure was also included (see Appendix E and Appendix F). The documents explained that participants

would receive the transcripts from the interview to review authenticity and for a chance to clarify any intentional or unintentional comments (Ravitch & Carl, 2016). The participants had a week to review the information and return the consent form. All participants returned the consent form within 48 hours of receiving it. Secondary teachers who met the criteria and agreed to participate in this research study were requested to fill out a five-question questionnaire, which should take approximately 10 minutes. Once the questionnaires were reviewed, I asked the selected secondary teachers to participate in a 45-minute interview.

As a current high school employee, it must be noted that I already had a professional working relationship with the participants. I followed Walden University's research guidelines and always remained professional (Ravitch & Carl, 2016). All participants were assigned a pseudonym on their questionnaire and interview, which was kept confidential (Saldaña, 2016). Any identifiable information from the collected data was omitted. These procedures allowed for the ethical treatment of participants and a non-biased study (Ravitch & Carl, 2016).

Ethical Treatment of Participants

This qualitative case study focused on how secondary teachers select, implement, and assess comprehension interventions for students with ASD. Walden University's IRB protocols reduce any risks to participants and ensure the secondary teachers' rights, safety, and confidentiality (Ravitch & Carl, 2016). The participants' consent form informed the participants that all data collected would be kept confidential with codes known only to me (Saldaña, 2016). When the signed consent form was returned,

participants discussed the type of interview, and an appropriate time for the interview was conducted by email. I followed Walden University's IRB for participant communication, selection requirements, and data collection confidentiality (Saldaña, 2016). Data collection will remain secure on a computer for five years (Ravitch & Carl, 2016). After five years, I will eliminate the data from the computer and shred all documents. All risks and benefits were discussed with the participants (Merriam, 1998). Since participation in this case study was voluntary, participants were allowed to change their minds.

Data Collection Methods

I used Yin's (2018) 5-phase cycle for working with qualitative research data to understand how secondary teachers select, implement, and assess comprehension interventions for students with ASD. I collected data through questionnaires and interviews in the first phase and reviewed lesson plans. A case study's qualitative design allowed for data collection and analysis of secondary teachers' experiences selecting, implementing, and assessing reading comprehension interventions (Burkholder et al., 2016; Yin, 2018). I conducted intensive one-to-one interviews to validate the case study during the first phase (Yin, 2018). The primary data collection included data from the interviews conducted with high school secondary teachers and those teachers' self-selected lesson plans (Ravitch & Carl, 2016).

Types and Sources of Data

The necessary data for this case study came from secondary teachers who work with students with ASD. According to Ravitch and Carl (2016), the questionnaire prepares participants for the semistructured interviews and allows them to consider each

area that was addressed. Participants have worked with students with ASD for five or more years for this case study. After the consent form was signed and returned, I sent a questionnaire to the selected secondary teachers via email. The questionnaire asked participants: (a) how long they have worked with students with ASD; (b) if they currently provide or have provided reading instruction to students with ASD; (c) what type of educational coursework have they received regarding comprehension interventions, including when and how much; and (d) have they attended any professional development on reading comprehension development with students with ASD and, if so, what kind, when, and where did this training occur. Once the participants completed the questionnaire, interviews were scheduled, allowing the participants to elaborate on questionnaire responses and collect additional data (Burkholder et al., 2016).

Yin (2018) suggested that case study research should use multiple sources of evidence to create triangulation and avoid biases. I used in-depth interviewing in this qualitative case study research to collect as many details as possible to answer the research questions imposed in the case study (Ravitch & Carl, 2016). Using Vygotsky's (1980) and Allington's (2013) learning theories as a lens for interview questions allowed for content-rich data. I conducted the interview process for this qualitative case study using semistructured interviews with secondary teachers who work with students with ASD (Saldaña, 2016). Questions were designed to answer the research questions posed in this case study; a semistructured interview process was used (Merriam, 1998). The interview allowed for follow-up questions generated by participants' responses. It provided an in-depth understanding of how these teachers select, implement, and assess

comprehension intervention for students with ASD. I worked with my committee chair, the second member, and Walden University's IRB to review the semistructured interview protocol, which minimized biases and allowed for valid, productive interviews to enhance this case study (Ravitch & Carl, 2016).

The interview protocol asked secondary teachers questions regarding challenges they face when selecting comprehension interventions for students with ASD (Saldaña, 2016). The interview questions contained questions about the participants' education and professional development in reading comprehension interventions. Finally, the interview included questions that examined secondary teachers' perceptions of the effectiveness of comprehension intervention assessments and how their pedagogy has evolved over their teaching careers (Ravitch & Carl, 2016).

For a case study to contribute to the existing literature on a subject, Yin (2018) emphasized that quality data must be collected in a valid and reliable manner. Considerable emphasis on preparing the details of the data collection design should be in place before the start of data collection (Ravitch & Carl, 2016). One-on-one interviews are a specific tool for gathering in-depth information and are prepared in correspondence with the case study research questions (Burkholder et al., 2016). As a type of data collection, interviews provide the researcher with information that contributes to what is known about a phenomenon (Yin, 2018). I asked the participants for permission to audio-record the interview to better analyze the collected data (Saldaña, 2016).

Semistructured Interviews

While virtual interviews can provide both the researcher and the participants a layer of protection during the Covid-19 pandemic, only one participant chose a virtual interview. The other eight participants preferred to talk in a socially distanced environment. The CDC guidelines were followed for all in-person interviews. The guidelines included a protective barrier between the interviewer and the participant. Both parties also wore masks. However, not part of the participant criteria, all participants and the researcher were vaccinated against Covid 19. All the interviews took place during non-student contact time.

I recorded the participant's answers using an audio recording device. During the interviews, I listened and took notes. After the interview was completed, I created a transcript from the audio recording, listening to each interview several times for clarity. I then cleaned up any grammatical mistakes and checked the spelling. The participants included specific reading and assessment programs, which were checked for spelling accuracy. I then handed the cleaned-up transcript to each participant and asked them to read it for accuracy and content. The participants were informed that they had a week after receiving the transcript to correct spelling and content.

I developed the interview questions using Vygotsky's (1978) sociocultural theory of cognitive development. This theory suggests that the role of the teacher is to modify their practice to accommodate a student's active learning and facilitate meaning as part of this process. The first two interview questions focused on the participant's education and experience with students with ASD (see Appendix B). Interview questions 3 through 9

centered around how the secondary teacher selects and implements reading comprehension interventions for students with ASD. The final two interview questions asked about the selection of reading comprehension assessments for students with ASD. The interview questions were designed to answer the two research questions. In this phase, common trends or themes in the data started to emerge.

I disassembled and coded all the formal data (Yin, 2018). The third phase involved the researcher better understanding the patterns illuminated from data dissection. From these patterns, three themes emerged. The last two phases focused on interpreting and drawing conclusions for all the data collected (Yin, 2018).

Lesson Plans

I reviewed the participants' lesson plans with the teachers using an audiotape to determine how the participants designed lessons that included comprehension interventions that address students with ASD. The lesson plans also indicated what assessments were done to validate the selected intervention (Burkholder et al., 2016). Secondary data that supports this study came from documentary analysis, including summative and formulated assessments (Yin, 2018). These documents included the reading inventory and teacher-selected assessments, which determine how secondary teachers in a suburban public high school assess the comprehension skills of students with ASD to monitor reading comprehension progress (Ravitch & Carl, 2016). The data collected from secondary teachers through a questionnaire, a semistructured interview, and lesson plans were designed to answer the following research questions:

RQ1: How do secondary teachers in a suburban Mid-Atlantic public high school select and implement reading intervention strategies to design lesson plans that increase reading comprehension for students with ASD?

RQ2: How do secondary teachers in a suburban Mid-Atlantic public high school assess and monitor the success of intervention strategies for reading comprehension of students with ASD?

Questionnaires, semi-structured interviews, and lesson plans provided context-rich data. The data answered the research questions of how secondary teachers use reading comprehension interventions for students with ASD. Through the lens of Vygotsky's (1978) and Allington's (2013) learning theories, the questionnaire and semistructured interviews also investigated what challenges these teachers confronted implementing these interventions (Ravitch & Carl, 2016).

Justification for Data Collection Methods

A questionnaire, semistructured interviews, and lesson plan reviews were needed to gather the necessary data to determine how secondary teachers select, implement, and assess comprehension interventions to support students with ASD (Saldaña, 2016). The initial phase of the data collection method was to send out a flyer via email to access those interested in participating in the study (Yin, 2018). Once the questionnaire was completed and returned, I sent the participants the informed consent form, which needed to be signed and returned before the next step began. Next, I sent out via email a questionnaire to those interested participants, requesting it be completed and returned within five business days (Ravitch & Carl, 2016). After the participant completed and

returned the questionnaire, I scheduled an interview with each selected participant within two weeks.

The 11 interview questions focused on how the teacher selects and implements comprehension intervention when designing lesson plans for students with ASD. The semistructured interview questions also included how these secondary teachers validate reading comprehension interventions used with students with ASD when monitoring reading comprehension progress (Ravitch & Carl, 2016).

Maintaining participant confidentiality, identity, and information is essential (Saldaña, 2016). I assigned a pseudonym for participants on their questionnaire and interview protocol (see Appendix G). Burkholder et al. (2016) suggested that the researcher should use non-ambiguous and non-leading statements in both the individual interview and in the questionnaire to avoid bias.

Sufficiency of Data Collection

Triangulation was accomplished using questionnaires, interviews, and participants' lesson plans to examine the data from more than one vantage point (Ravitch & Carl, 2016). The goal during each interview was to reach saturation of relevant data identified by the participants. Interviews allowed for the opportunity to collect essential data to answer the research questions (Ravitch & Carl, 2016). These secondary teachers provided context-rich and detailed accounts of their experiences using reading interventions for students with ASD. The data collected helps determine how secondary teachers select, implement, and assess comprehension interventions to support students with ASD.

System for Data Tracking

To keep the data collected from secondary teachers on selecting, implementing, and assessing comprehension interventions, Yin (2018) suggested using a systematic approach to organizing the data collected. The audio recordings from the one-to-one interviews were typed up, transcribed, and stored. All data is protected on my personal computer. Any hard copies of materials and other data are stored in a locked closet. Data will be kept secure for five years. After that time has expired, the materials and other data will be deleted and shredded (Ravitch & Carl, 2016).

Role of the Researcher

I am currently a special education teacher at the study site, employed there for 18 years, and have worked with students with ASD for almost 28 years. The study participants were current colleagues for this qualitative study which investigated how secondary teachers at this study site selected, implemented, and assessed comprehension interventions to support students with ASD. Ravitch and Carl (2016) suggested that researchers make methodological choices to recognize, explain, and manage researcher bias. I conducted this research with ethical rigor by addressing personal opinions or viewpoints. I was meticulous about the data collection process and considerate about the participants' time and information presented to avoid biases (Merriam, 1998). I treated all participants with the utmost confidentiality and respect (Ravitch & Carl, 2016).

Data Analysis

This qualitative case study focused on the secondary teachers who work with students with ASD. The data analysis was examined through the theoretical lens of

Vygotsky's (1980) sociocultural theory of cognitive development frameworks and Allington's (2013) suggestions for reading interventions. This framework provided a way to examine data to understand how secondary teachers use reading comprehension interventions to support students with ASD (Ravitch & Carl, 2016). Vygotsky's theory of how scaffolding affects a child's cognition abilities and development and Allington's theories about evidence-based reading interventions provided a lens for this study. These two researchers' ideas informed how secondary teachers should select and implement reading comprehension interventions based on the specific needs of students with ASD (Allington, 2013; Stevens et al., 2017). Additionally, the data analysis examined how teachers integrate reading comprehension interventions into lesson plans to support students. Since the primary focus was to investigate teachers' experiences and perceptions of reading comprehension and how they affect students with ASD, a single case study was the best choice for this research study (Ravitch & Carl, 2016).

After all interviews were completed, Yin's (2018) phase of working with qualitative research data occurred to understand how secondary teachers select, implement, and assess comprehension interventions. I transcribed the audio recording interviews into the written text (Saldaña, 2016). After the initial transcription, the information was re-checked against the original recorded interviews several times. I assigned all interview transcripts with the participant's pseudonym, removed the participants' names, and numbered each line per page (per Ravitch & Carl, 2016). The data collected were stored on a password-protected computer, and the hard copies were kept in a locked dresser.

The next step was to see if any patterns developed from the collected data regarding how secondary teachers select, implement, and assess students with ASD (Yin, 2018). I put each of the 11 questions on an Excel sheet and recorded the participants' answers on each sheet. The pre-coded terms, which aligned with each interview question, allowed me to read through the data objectively, seeking similarities among the secondary teachers' responses to the same questions (Ravitch & Carl, 2016).

Following the precoding stage, I read the data several times and coded the data using predetermined colors. I organized the comments concerning Vygotsky's (1980) sociocultural theory of social development of teacher assistance, assessment, and progression. According to Ravitch and Carl (2016), coding can provide the researcher with common themes extracted from the data collected and help the researcher distinguish emerging themes and patterns. In this case study, thematic coding helped identify secondary teachers' overall challenges and successes regarding selecting, implementing, and assessing reading comprehension interventions. I collected the data using a questionnaire and audio recordings and analyzed the data using a hand-written coding system for thematic analysis (see Saldaña, 2016).

Procedures

This qualitative case study may help understand how secondary teachers select, implement, and assess reading comprehension interventions to support students with ASD (Ravitch & Carl, 2016). Qualitative research is used to understand a phenomenon using interpretative practices (Burkholder et al., 2016). Vygotsky's (1980) sociocultural theory of cognitive development guided the analysis of the data collected through

questionnaires and one-to-one interviews. Yin's (2018) five phases were used for the case study data analysis to guide data collection and analysis, beginning with data collection, data assembling-disassembling-reassembling, interpretation of data, and conclusions.

All interviews were recorded on an audio recorder. I reviewed the interviews and then sent them to the participants for any additional comments or clarification of their responses to maintain the interviews' accuracy and viability (Ravitch & Carl, 2016). During the research and data analysis process, validity was ensured by systematically recording the data once each participant had reviewed the audio transcript and read the interview answers (Burkholder et al., 2016).

Qualitative Credibility and Trustworthiness

This study investigated how secondary teachers select, implement, and assess comprehension interventions to support students with ASD. The first analysis of the data was through a precoding process (Ravitch & Carl, 2016). This precoding process answered the research question—how secondary teachers select and implement reading intervention strategies to design lesson plans that support the comprehension skills and the assessments of these interventions to monitor the progress of students with ASD. The precoding allowed me an initial read of the data to start systematically and critically reflecting on thematic clusters and patterns of the collected data (Ravitch & Carl, 2016; Saldaña, 2016; Yin, 2018).

Based on Vygotsky's (1978) ideas about children's cognition abilities and development, teacher support and scaffolding, assessment, and students' progression, I used inductive and a priori coding (Ravitch & Carl, 2016). The goal of the coding process

was to emerge with themes that captured and summarized the data and recognized patterns that created categories from the themes (Ravitch & Carl, 2016; Yin, 2018).

Coding Procedures

I used several coding cycles to determine how secondary teachers select, implement, and assess comprehension interventions to support students with ASD. The first coding cycle was the initial read-through of data for general ideas of the data (Yin, 2018). In this first coding cycle, the focus was on the participants' perspectives and actions, coding emerging ideas in each interview (Saldaña, 2016). In the second phase of coding, the data were re-read to analyze ideas and look for patterns and themes shared among participants when answering each interview question (Ravitch & Carl, 2016). The data included any comments I observed from the participants. The information stated by the participants was recorded in the field notes and contributed to a particular area of the study (Saldaña, 2016).

I used concept mapping to organize codes to assist in transitioning from the first to second cycle coding. A concept map is a schematic device for representing a set of concept meanings found in a (Merriam, 1998). Concept mapping improved the trustworthiness and credibility of the data analysis. I developed *a priori* coding system before examining the data aligned with the two research questions proposed in this case study. The codes included data that relate to a teacher's comments regarding how reading comprehension interventions are selected, implemented, and assessed, plus any challenges that interfered with these processes.

Axial coding was used after the initial coding process to connect data into emerging themes (Ravitch & Carl, 2016; Saldaña, 2016). Axial coding assisted in categorizing and defining which thematic codes were more dominant (Saldaña, 2016). Once the process of synthesizing all the collected data and emerging themes had been identified, an understanding of the topic was analyzed (Ravitch & Carl, 2016; Yin, 2018).

Evidence of Quality of Procedures

Assuring valid data coding is vital to a qualitative case study (Merriam, 1998; Yin, 2018). I used more than one source for data collection to ensure credibility when determining how secondary teachers select, use, and assess reading comprehension interventions (Saldaña, 2016). Interview transcripts were member-checked, which provided a thick description of the data (Ravitch & Carl, 2016). During the research and data analysis stage, the participants checked these summaries for accuracy and provided additional validation of the data (Merriam, 1998). All data remained confidential to ensure validity and protect the participants (Saldaña, 2016).

The information gathered from this qualitative case study may be transferable or may assist other secondary high school teachers who support students with ASD. Because of the complexity and challenges of students with ASD (De et al., 2018), secondary teachers who work with students with ASD may gain insight from the findings of this case study. Since New Jersey continues to report more diagnoses of children with ASD than any other state in the nation (CDC, 2018), this qualitative case study may also provide additional information to secondary teachers who support students with ASD. Other high schools in New Jersey with students with ASD struggle with reading

comprehension in reading classrooms and in other content areas (CDC, 2018). These secondary teachers' perspectives and perceptions could help other teachers understand how to select, implement, and assess reading comprehension interventions to support students with ASD.

Discrepant Cases

I conducted a rich, detailed, and complex account of the data collected to investigate how secondary teachers select, implement, and assess comprehension interventions (Saldaña, 2016; Yin, 2018). Discrepant data was considered, which aided in challenging, complicating, and enriching the findings. Ravitch and Carl (2016) suggested that outliers in data can challenge preconceived notions and themes that develop.

Assumptions, Limitations, Scope, and Delimitations

Assumptions

The site for this qualitative project study was a suburban high school in a Mid-Atlantic state. Based on conversations and formal and informal assessments, I assumed that secondary teachers were using reading comprehension interventions to support students with ASD. I assumed that each participant provided candid responses to the questions asked during the semistructured interviews.

Limitations

The project study conducted was limited to the responses of secondary teachers on this study site. The participants responded based on their education and experience working with students with ASD. A more extensive research scope may have included other school districts, which could have yielded different results. Another limitation of

the study could have been that all participants had over ten years of experience but had not been in a collegiate academic environment at least within the last decade. The study results may have differed if the participants had been recent special education teachers.

Scope of Project Study

The project study site was one public school in New Jersey where students with ASD have had difficulty in the areas of reading comprehension. At the project site, secondary teachers have been inconsistent in applying reading comprehension interventions.

Delimitations

The project study participants consisted of secondary English and special education teachers. Participants varied in the academic levels taught at the study site, which ranged from cognitively low to honors-level students. The interviews were limited to those teachers who had worked at least five years with students with ASD. I meticulously analyzed the data to ensure that the qualitative study results reflected a summation of the participants' perspectives. Any preconceptions, biases, or preferences were deliberated and stated before the study was conducted to any predilection. I consistently reflected on personal biases to ensure these preferences did not affect or influence the data.

Conclusion

This qualitative case study aimed to understand how secondary teachers select, implement, and assess reading comprehension interventions to support students with ASD. This qualitative case study aligns with the conceptual framework, data collection

methods, analysis, procedures, and research questions. Secondary teachers who work with students with ASD filled out questionnaires, participated in semistructured interviews, and provided assessment examples from lesson plans. These interviews and analyzed transcripts provided data that helped answer the research questions: How do secondary teachers in a suburban Mid-Atlantic public high school select and implement reading intervention strategies to design lesson plans that increase reading comprehension for students with ASD? How do secondary teachers in a suburban Mid-Atlantic public high school assess and monitor the success of the intervention strategies for reading comprehension of students with ASD?

The conceptual framework of Vygotsky's (1980) sociocultural theory of cognitive development and Allington's (2013) ideas of evidence-based interventions for struggling readers aligned the ideas behind the research questions, data collection methods, data analysis, and procedures. I used Allington's ideas about reading comprehension interventions and struggling readers to understand how secondary teachers select, use, and assess reading comprehension interventions for students with ASD. Vygotsky's sociocultural theory of cognitive development acted as a lens to examine the data collected through questionnaires and teacher interviews. Using these two researchers as a guide to this qualitative framework and model, a better understanding of how secondary teachers select, implement, and assess reading comprehension interventions to support students with ASD emerged.

Data Analysis Results

After reviewing the questionnaires, interview transcripts, and lesson plans, the data results were determined. The first nine interview questions were designed to answer the RQ1: How do secondary teachers in a suburban Mid-Atlantic public high school select and implement reading intervention strategies to design lesson plans that increase reading comprehension for students with ASD? Three patterns emerged after synthesizing the data: education, communication, and collaboration (see Table 3). The data was organized by the patterns and themes that emerged from the study. Graphic representation, tables, and narratives highlight and explain the phenomenon of how teachers select, implement, and assess reading comprehension interventions for students with ASD. I used Saldana's, Merriam's, and Yin's ideas about coding as a lens to analyze the data for this study.

I segmented the interview questions according to RQ1 and RQ2. The data collected from these interview questions are presented as patterns and themes concerning RQ1 or RQ2 (see Table 3). The second phase of decoding (see Yin, 2018) resulted in patterns for RQ1 (see Appendix D): How do secondary teachers in a suburban Mid-Atlantic public high school select and implement reading intervention strategies to design lesson plans that increase reading comprehension for students with ASD? The third decoding phase (see Yin, 2018) for RQ1 describes the emerging themes from the collected data (see Appendix E). The following section discusses how I analyzed the results of the data according to the participants' answers to the interview questions.

The last two interview questions answered RQ2: How do secondary teachers in a suburban Mid-Atlantic public high school assess and monitor the success of the intervention strategies for reading comprehension of students with ASD? The data collected showed the second decoding phase (see Yin, 2018), which resulted in two patterns (see Appendix F). The third stage of decoding (see Yin, 2018) resulted in two themes (see Appendix G), which is discussed in the following section.

Table 3

Summative Coding Table for Research Questions

Research Question	<i>A Priori</i> Codes	Patterns	Themes
<i>RQ1</i>	Professional Development; need for communication	Inadequate education and/or professional development	Addressing challenges of students with ASD before teaching can begin
	Interventions: How teacher's education affects intervention	Importance of communication with other staff members and parents	Individualized interventions for figurative language and character nuances
	Collaboration of resources	Successful interventions through collaboration	Generalization and consistency of interventions
<i>RQ2</i>	Informal Assessment	Unsure of evidence-based assessments	Alternative assessments
	Formal Assessment	Distrust in formal assessments for students with ASD	Scaffolding assessments

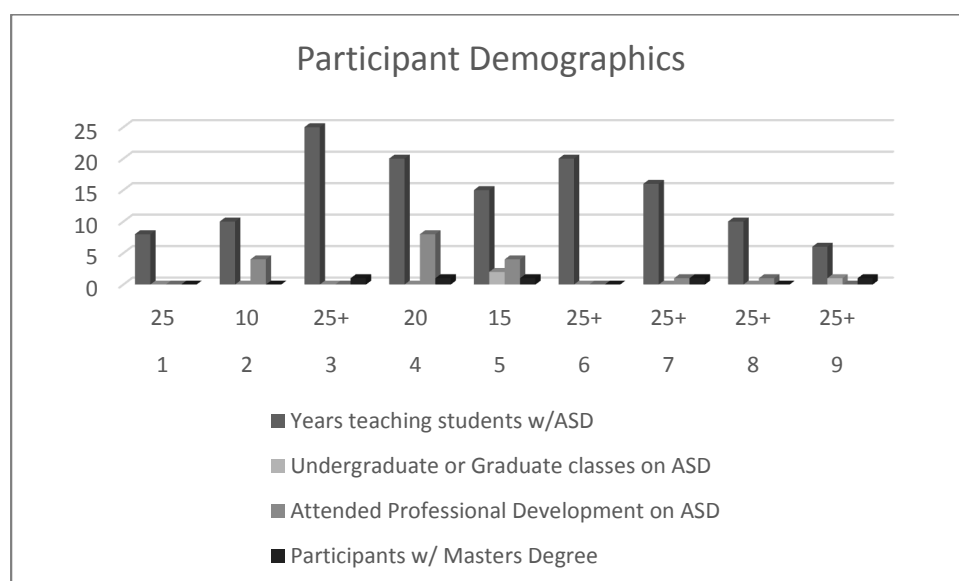
Participant Demographics

In this study, the intention was not to focus on whether the participants had a master's or higher degree; however, it became apparent that this information should be included. All participants had a degree in education, and five special education

participants had master's degrees. General education English teacher participants had taken classes through undergraduate and graduate programs to teach reading. However, all participants admitted that they had no training in working with students with ASD. Five of the seven special education teacher participants stated that they had little to no educational classes or professional development regarding students with ASD. One of the special education participants had some professional development on reading instruction for students with ASD, and one special education participant took annual courses to improve reading and communication for students with ASD (see Figure 1).

Figure 1

Participant Demographics



Inadequate Education and/or Profession Development

The participants' education was reflected in how they determined the selection of reading interventions for students with ASD. The data collected through the questionnaire and the first two interview questions revealed that most participants had little to no

specific education classes or professional development in working with students with ASD (see Appendix D). In some cases, the participants revealed certain frustration levels with their educational deficiencies in autism. Participant 1 stated, “My professional development is limited to almost none in this capacity.... I wasn’t really aware of who I was teaching and what they really needed.” Participant 3 noted, “What we had in college when I was getting my bachelor’s degree that taught about autism and the spectrum was minuscule.... Our district has not touched much on it at all.” Understanding the personal learning profiles of students with ASD affects the teacher’s confidence when choosing appropriate reading comprehension interventions (Solari et al., 2020). Participant 4 stated,

Not to say that anybody trained in autism or who has a kid with autism is so much better and more qualified than somebody else who is not. You just have a different approach and a different thing to bring to it.

Participant 1 remarked, “What I need to do to (get information on ASD), to keep up with and to address these issues in the classroom. It’s (knowledge about ASD) a deficit. In my tool kit, professional development.”

Participants who had training in autism, either in undergraduate or graduate classes or professional development, felt more self-assured when selecting reading comprehension strategies for students with ASD. Participant 4 noted, “PD courses related to ASD once per year... literacy courses and ASD. The last few years have had training and education for ASD.” Participant 9 stated, “My professional development influenced how I work with students with ASD, I’ve learned different approaches to use with

students with ASD and some of these techniques were beneficial for some and not beneficial for others.” Participant 7 explained that she had done her own research into how to work with students with ASD when she was asked to teach a class on disabilities at a local college, stating, “Teaching the class through the local college...has built my understanding my awareness of it and has helped with strategies in the classroom.” Inadequate education and professional development appear to be a prevalent pattern revealed after the second phase of the first two interview questions (see Yin, 2018). The next pattern that emerged when analyzing the data was communication.

Importance of Communication

Communication was the next pattern that developed from the collected data. When selecting reading comprehension interventions for students with ASD, eight of the nine participants expressed frustration with communication, especially with documentation intended to communicate a child’s individual education plan. Participant 4 stated, “It is really hard in a mainstream integrated setting, even with in-class support, that you are not necessarily meeting their needs.” The lack of education on autism and incomplete district documents, which may not identify specific triggers of students with ASD and strategies, was a concern, regardless of the cognitive academic level the participants worked with (see Appendix D).

Participant 1 works with college-prep and honors level English students. Participant 1 expressed frustration at the expectation of working with students with ASD without proper education or training, “I cannot believe I now get 504s with autism spectrum disorder but do not have strategies or interventions on this same document.

And, I think of how ill-prepared I am for dealing with this population.” Participant 7 echoed this concern,

There should be people who have information about these kids who should be sharing it with us.... Have a list of their (students with ASD) triggers, what works, what are the rewards, and have a very fluid document anybody can view that you do not have to go into that IEP.

The participants stated that the individualized education program (IEP) and 504 documents given to teachers at the beginning of school as communication tools are too general to communicate the needs of the students with ASD. Participant 5 stated, “The statements and misinformation about students with autism are all the same regarding their disability and level.”

Seven of the nine participants admitted they had contacted other staff members to find reading interventions, other than the student’s IEP or 504, to determine what could work for their students with ASD. These staff members included communicating with other teachers, guidance counselors, case managers, therapists, and paraprofessionals. Participant 7 explained, “I also think we have a very good speech therapist who reaches out to us and lets us know what works with these particular kids and what they are working on.”

For adult learners, it is necessary to actively take part in the learning process and seek out answers, even if it is within their professional community (Knowles et al., 2014). Participant 8 communicated ideas for student success,

Use the staff members any way you can...regarding guidance counselors and case managers, they might give you tips of what you can do if you are struggling, especially with behavior problems to get the kids focused...the OT does help create social stories and speech.

Participant 3 shared, “It’s nice to have somebody who’s constantly talking and working with you and tweaking things... so, we’re constantly collecting data and looking at what’s successful, and hey, this works.” Excerpts from the participants’ interviews showed how effective or non-effective communication between staff members influenced how affective interventions and strategies were implemented (see Appendix D).

Successful Interventions Through Collaboration

The last pattern observed from the data was a collaboration between staff members of the study site. The study site for this qualitative study has in-class support (ICS) teachers, paraprofessionals, speech and occupational therapists, case managers, and academic and emotional support staff. One of the interview questions asked how the participant uses additional staff members, teaching assistants, or ICS teachers to help instruct students with ASD. Participant 3 stated, “It just depends on what their individual needs are at the time.... It is a total team approach when working with ASD.” The study data suggested that the participants had utilized at least one of these resources at the study site.

Special education teacher participants used paraprofessionals, speech therapists, and other special education teachers. Participant 6 stated, “The aides mostly work in small groups and work with them...reading stories, discussing, all the little intricate

components of a short little story.” Participant 6 also shared, “(I) talked to the speech-language therapist about (fluency) because it is not so much the acquisition of language as they’re speaking it.” Participant 2 stated, “I will always touch base with the paraprofessional prior and following the session to discuss what we’ve done and then see what they can do to implement the strategies.” Participant 7 remarked, “She will (speech therapist) reach out and say, what are you doing in class that I can support during therapy?” Participant 3 stated, “That is where paraprofessionals come in, the staff and the support staff and OTs and PTs and speech therapists, they all help so much with their assessment.... We get together so that we are all on the same page.”

General education English teacher participants tended to utilize ISC teachers and case managers for additional reading comprehension interventions for students with ASD. Participant 8 stated, “I used to work with a special education teacher who often had a relationship with the students with ASD.” Participant 1 noted, “In-class support teacher certainly helps with different types of support, redirecting, continue to explain, providing graphic, pictorial information to help or you know chunking information.” Participant 1 also shared, “I realized another teacher has the same issue when you are working through...we talked and shared different strategies.” Teachers who can share ideas on improving the curriculum for their students tend to have a better working environment that benefits their students (see Knowles et al., 2014). Participants at the study site indicated that collaboration was vital when asked about developing reading comprehension interventions for their students with ASD.

Selection and Implementation of Reading Comprehension Intervention

Each selected participant worked with a different cognitive and academic range of students with ASD. The initial expectation was that students with higher cognitive and academic levels would have fewer behaviors that interfered with reading comprehension. However, after interviewing all nine participants, the data collected refuted this preliminary idea. Three themes emerged from the three patterns determined from the interview data that helped answer RQ1: (a) Addressing Challenges, (b) Individualized Interventions, (c) Delivery and Consistency.

Addressing Challenges

Students with ASD have specific challenges with reading comprehension due to their learning profiles (Austin & Peña, 2017). The data from this qualitative study suggested several challenges that interfere with a student with ASD's comprehension. Three themes emerged from the third decoding phase (see Yin, 2018). Participants reported that the elements of reading, which include student behavior, recognizing the figurative language and character nuances, and the ability to generalize interventions, affected how the student with ASD perceived the written text.

Reading is an intrinsic activity that requires an individual to be ready to learn and understand the complexities of the text (Van Steensel et al., 2019). Exigent behaviors, difficulties in identifying character emotions, and deciphering non-literal phrases decrease learning opportunities for students with ASD and impede academic progress (Iadarola et al., 2018). These challenges reverberated in many of the participants' responses throughout the interview process (see Appendix D). Despite the lack of

professional training in ASD, participants recognized that student behavior needed to be addressed before trying to implement any reading interventions.

Addressing Student Behavior

The first theme that resulted from the coded data collected during the interview process was the idea that student behavior should be addressed before learning could occur. Students with ASD have individualized learning profiles that can affect their behavior (Kenny et al., 2019). Participants stated the challenges they have experienced when getting students with ASD to comprehend what they have read (see Appendix D). All participants agreed that treating the behaviors of a student with ASD was a priority and should be addressed before trying to implement any reading interventions. Participant 1 shared, “I remember that challenge was how do I calm her (student with ASD) or quash the issue because she got more upset... so the challenge was, how do I keep the class going, and not involve her situation.” Participant 3 stated, “We need to get through to the behavior first...the behavior is the one that’s blocking them from learning.” Participant 4 revealed,

If you see any sort of like agitation or frustration, this internal piece, I have no idea where they are at, but I know how horrible that feels, and you cannot think and move past it. So, you have to deal with that part first.

Participant 3 stated, “If they are not in a good mood, you understand the written text isn’t going to be good (understood) that day.” The study data indicated three primary sources that caused behaviors that interfered with learning reception. These included anxiety, sensory needs, and the inability to communicate effectively.

Anxiety is a distinct and disproportionate fear about social situations involving others' exposure to possible negative evaluations (Muris & Ollendick, 2021). Research has indicated that just under half of all autistic individuals have experienced an anxiety disorder at some point (Jenkinson et al., 2020). A recent study showed that 42% of adults with ASD reported a lifetime recurrence of an anxiety disorder. Participants 1, 2, 3, 4, 5, and 7 all stated that they have incidences with students with ASD and anxiety issues that have been disruptive to the classroom and interfered with learning.

According to Hein et al. (2021), anxiety impairs decision-making and interferes with learning. Participant 4 stated, "For autism, like that is (anxiety) a huge underlying, big bad beast.... I think that that is one of the things that we struggle with ... in school with these kids in general, anxiety is an invisible disability." When introducing poetry to her class, Participant 1 remembered her experience with one student with ASD, "He was upset about that entire unit, near tantrums." Participant 9 stated, "Because sometimes the kids with autism, would have anxiety when they see an extra-long task, they will start to freak out." If students with ASD cannot overcome anxiety in the classroom setting, any reading intervention strategies will be ineffective (Jenkinson et al., 2020).

Difficulty processing sensory information can impede progress in school (Butera et al., 2020). These sensory issues may include where the child is seated, class lighting or temperature, or what they are wearing. Participant 3 stated,

If they're frustrated, they're not going to learn and that's the biggest thing ... they're not learning because they're angry about something else, their clothes...something so significant that we would think is insignificant, but to

them, it's so much bigger. And so first, you first address all the behavioral issues, the sensory issues and then you work on the other parts.

Participant 4 shared, "Whether that's a sensory thing, whether it's taking a walk, meditating, doing some breathing exercises, like my primary student...creating that sense of calm" and had to determine what the student with ASD needed through trial and error due to the student's inability to communicate their needs effectively.

The participants found they had to prioritize student behavior over academics (see Appendix E). Students with ASD may not be able to communicate their needs effectively, which can happen at every cognitive and academic level. Participant 4 stated, "I have a kid that has no idea what he needs to go to the bathroom, and has no idea when he's hungry, and when he's tired. ... Still at 15, I am dealing with these basic things." All participants stated they had experiences with students with ASD who were unable to explain what they needed. Participant 1 shared, "She would not move, very catatonic. ...we used the nurse, counselor, two security guards, the principal, multiple fellow teachers. In the end, calling mom got her snapped out of paralysis." In some instances, participants stated that this was academic needs, as well as emotional needs. Participant 8 stated, "If they are feeling well, or getting a good night's sleep, all different outside factors play a role in teaching students to comprehend information and even staying on task." Participants 1, 4, and 9 found that using parents as a resource greatly improved the communication between themselves and their students with ASD.

Individualized Interventions for Figurative Language and Character

Figurative language can include literary devices, such as idioms, puns, metaphors, and similes. The second theme that all the participants from this qualitative study stated was that figurative language was the most challenging concept for students with ASD to understand (see Appendix E). Participant 4 stated, “Because students with ASD are more concrete and literal, these types of figurative language devices are difficult to understand. ... figurative language is a huge challenge now in the high school level.” General education English teacher participants found that it was important to address these literary devices prior to assigning a reading text. Participant 6 noted,

I noticed that the kids that I have, who do have ASD, they’re very concrete. They need examples, they need to see it. They need to be told a little story about it. That kind of helps, but they need something to look at, to help them out. I guess helps them to make connections maybe so that works out better.

Participant 8 stated,

I usually start with character feelings and motivations. I know that something that a lot of people have been working with them on as they’ve been going through the earlier grades.... To get the component of a true analysis, deep analysis ... oftentimes I’m not able to get there.

Special education teacher participants found that guided reading with another staff member resulted in a better understanding of literary tools because they can be addressed as the student comes across them. Participant 7 stated, “We’re doing things not aware of triggers that they had or their inability to understand metaphors.”

Being able to identify other people's feelings can be challenging for students with ASD (Foss-Feig et al., 2016). If students with ASD have difficulty identifying how other's feel, it would then be difficult to determine how characters feel by the author's description. Participant 2 stated, "Are they able to provide a character, their motive or their feelings, a problem, a solution, and an ending?" Participant 4 noted, "So, you can use the word respect, but it's kind of like these other words like love or hate, you know, they don't have meaning. They don't always have the same meaning to every single kid."

Participants used class discussions, guided reading, and visuals to increase comprehension (see Appendix E). Participant 8 stated she used emoji faces to modify reading materials where the character was expressing an emotion. Participants agreed that visuals consistently increase comprehension when working with students with ASD. Participant 6 stated, "Drawing pictures or illustrations to help them understand or trigger an understanding of what the word means." Participant 8 also noted that she found using vignettes, Readers Theater, and story mapping benefitted students with ASD. Participant 4 stated, "One of the things that I've actually found to be hugely beneficial with that is the graphic novels." Participant 4 elaborated, "I know a lot of graphic novels tend to have more expressive faces, and kids who are diagnosed early enough are given those picture cues, happy, sad...actually trained that way through their speech and through OT." Students with ASD may be able to comprehend the storyline and have better results for inferencing the material because graphic novels are pictorial with fewer words (Ahmed-Husain & Dunsmuir, 2014). Graphic novels also do not use as much figurative language as the original version, which tends to hinder students with ASD comprehension.

Generalization and Consistency of Interventions

Being able to generalize reading comprehension interventions can lead to a more independent and successful reader (MacFarland & Fisher, 2021). The third theme that resulted from the data collected suggested that participants found there was a lack of generalization of interventions and that repetition of interventions was needed for students with ASD. Participants 2, 7, and 9 found that a reading comprehension intervention that was taught to students with ASD in class one day did not usually carry over to the next day. Participant 2 stated, “You’re always re-teaching the program.” Participant 7 noted, “With kids that I’ve had for a nice amount of time, typically needed prompting and generalizing that skill into a different setting.” Participant 9 stated, “It’s just like what was taught, was there at that moment, and now it’s gone.” The theme that reading comprehension interventions rarely were transferred to other content areas was echoed through many of the participants (see Appendix E).

The idea that students with ASD need individualized reading comprehension interventions emerged from the data gained from the interviews. In one interview question, the participants were asked to describe how they differentiate their teaching methods or materials when working with students with ASD’s individual learning profiles. Participant 4 quoted Dr. Stephen Shore, an author of several books about autism and an international consultant for people with ASD, when responding to this question, “When you meet one person with autism, you have met one person with autism.” Just because an intervention or strategy works for one person with ASD, it may not work for all students with ASD (Benevides et al., 2020). Participant 7 stated,

I think different intervention strategies, obviously work with different students, and just putting a little bit of extra effort in, oftentimes gets the students with ASD to function at an appropriate level for a college prep, or an applied class.

Participants agreed that it was important to understand the needs and interests of the student with ASD first before trying to implement reading intervention.

General education teacher participants stated that because of the class size, student interest questionnaires were a more effective way of gaining insight into student's interests and how they learn. When discussing selections of interventions, Participant 3 admitted that because of their lack of education with autism, implementing reading interventions tended to be "learn as you go." Special education teacher participants tended to have more experience with students with ASD; however, they also stated that customizing reading comprehension interventions was a "learning process," and just because one intervention worked with one student with ASD, it did not necessarily work with another student with ASD. All nine participants agreed that determining how to motivate each student with ASD was the key to achieving positive results with comprehension with students with ASD.

Delivery and Consistency of Interventions

Participants reported that the implementation of reading interventions was dependent on the resources they had available to them. If available, general education English teacher participants used ICS teachers to implement the reading interventions. Participant 1 stated, "In-class support teachers certainly help with different types of support, redirecting, continue to explain providing graphic, pictorial information,

chunking information.” If the classroom did not have an ICS, general education teacher participants stated that they would check for understanding of material through class discussions, use alternate materials, and sometimes use alternate assignments, if the students just could not understand the concept. Participant 8 noted,

So instead of reading the entire full story through, and then having to answer the study questions at the end, I chunk the material, which allows the students to figure out whether they are understanding each segment of the story before moving on to the next.

Special education teacher participants stated that the use of paraprofessionals increases student reading comprehension. Participant 8 remarked, “It’s basically almost one-to-one with a paraprofessional per student. They provide support, such as verbal prompts and gestural prompts.” All participants agreed that guided reading was the best way to increase sight word acquisition, fluency, and reading comprehension.

Another commonality among the participants was the belief of using consistent reading comprehension interventions for a student with ASD. Repetition is essential for reading comprehension interventions to be successful with students with ASD, as Participant 3 noted, “The most important ... consistency is the key to consistency and constant consistency repetitive and that is really the key to learning.” The participants suggested that it was necessary to use the same types of graphic organizers, verbiage of questions and directions, prompts, and individuals when working with the student with ASD. Participant 8 stated, “Repetition is key. The more you can present the same material, maybe not repeatedly, but in different ways helps reinforce the comprehension.”

All participants used scaffolding of ideas and “chunking” of material into smaller passages. Study participants stated that the longer the passage, the less students with ASD comprehended it. Participant 5 stated, “The longer the text, the less they understand. There’s no doubt about it. They need shorter chunks of information.” Participant 8 also used chunking accompanied with a video representation of the part of the story that was read, and found this extremely effective for all his students, especially those with ASD.

Table 4 demonstrates what reading comprehension interventions have worked for the participants’ students with ASD. It illustrates that the two most common interventions were differentiation of instruction and scaffolding of materials. All participants, except Participant 2, used student-generated materials, and all participants, except Participant 2 and Participant 7, used some type of computer-based programs to increase reading comprehension for students with ASD.

Table 4

Reading Comprehension Interventions Used by Participants

Intervention	P1	P2	P3	P4	P5	P6	P7	P8	P9
Differentiated instruction	X	X	X	X	X	X	X	X	X
Scaffolding of materials	X	X	X	X	X	X	X	X	X
Guide reading			X	X	X	X		X	
Chunking material	X	X		X	X	X	X	X	
Visual displays		X	X	X	X	X		X	
Computer-based programs	X		X	X	X	X		X	X
Student-generated materials	X		X	X	X	X	X	X	X
Reader’s Theater		X			X			X	

Assessment of Reading Interventions

The last two interview questions were designed to answer RQ2: How do secondary teachers in a suburban Mid-Atlantic public high school assess and monitor the

success of the intervention strategies for reading comprehension of students with ASD?

All participants were able to give examples from their lesson plans of formal and informal assessments used for their students with ASD. Table 5 illustrates the two patterns and two themes that were prominent from the data analysis.

Table 5

RQ2 Coding

<i>A Priori</i> Codes	Patterns	Themes
Informal assessment	Unsure of evidence-based assessments	Alternative assessments
Formal assessment	Distrust in formal assessments for students with ASD	Scaffolding assessments

All students at the study site participate in the New Jersey PARCC or the Dynamic Learning Maps as a graduation requirement. The only exception was in 2020 due to Covid-19 concerns about large gatherings. Question 10 and Question 11 (see Appendix B) asked participants the type of methods they used to assess students with ASD’s reading comprehension. After reviewing and analyzing the data that resulted from these questions, two patterns were identified.

Questions About Evidence-Based Assessments

The first pattern that emerged from the data collection was that some participants seemed unsure which evidence-based assessments to use for students with ASD. Despite a need for teachers to utilize research-based practices for students with ASD, participants reported a lack of implementation to such practices. Participant 1 stated, “I don’t know how I’m going to assess that differently than the students.” Participant 2 noted, “I feel like it is more informal, especially at the beginning of the year and throughout the year.”

Participant 4 echoed this sentiment, “If we could just talk and do more of like an oral assessment, I would get a better idea of what they really know about the information.”

When asked about supplemental reading comprehension interventions for an existing reading program, Participant 6 stated, “I have to find something where they can work and learn, and it can be explained.” To rectify an ambiguous approach to reading comprehension assessments, professional development, and the need for increased communication between researchers and teachers is recommended (Accardo & Finnegan, 2019).

Formal Assessments

Formal assessments included teacher-made tests, reading inventory assessments, progress monitoring charts, standardized tests, and computer-generated programs designed for comprehension assessments. For formal evaluations, general education English teacher participants used open-ended paragraph questions and short answers to find out if the applied intervention(s) was successful for the students with ASD.

Participant 8 discussed how she scaffolds her assessments,

I will give them a shot at redoing it, maybe their introduction is really well formed and leads nicely into their first body paragraph, but maybe they didn't expand on the conclusion enough, so I'll ask them, how could you expand or stretch this out or explain it a little more clearly at the end.

While all participants used some type of formal assessment (see Table 6), most of the participants stated they preferred informal assessment for students with ASD because they found formal assessment was not an accurate assessment of what the student with

ASD knew. A distrust in formal assessments for students with ASD was the second pattern identified from the data analysis. Participant 4 stated, “I think standardized tests are poor assessment of any child because if you’re not good at multiple choice tests, and you don’t have good test taking strategies, I don’t think any kid really performs to their potential.” Participant 5 replied, “I don’t really give these kids like a formal test at the end, just because of their comprehension levels and they have a hard time remembering what they read.” Participant 9 noted, “Because sometimes the kids with autism would have anxiety when they see an extra-long task, they will start to freak out.” Participated 8 stated, “It’s the concrete thinking again.... anything that I’m giving the student that has anything to do with abstract understanding, just needs guidance.” After the third phase of data analysis (see Yin, 2018), two themes were identified.

Table 6 lists the types of formal assessments used by participants of the study site. Teacher-generated assessments were used by all participants, while other assessments, such as the DLM and Attainment series assessments, were only used by a few of the participants.

Table 6

Formal Reading Comprehension Assessments Used by Participants

Formal Assessments	P1	P2	P3	P4	P5	P6	P7	P8	P9
Homework	X	X		X		X		X	X
DLM			X		X				
New Jersey PARCC	X	X		X	X	X		X	X
Computer-based			X		X		X		
Teacher-generated	X	X	X	X	X	X	X	X	X
Common Lit	X					X		X	
Attainment					X				
Reading Inventory	X					X		X	

Informal Assessments

Informal assessments can include verbal assessments after reading a project that demonstrates knowledge, classroom discussions, or teacher observations. The data collected from interviews suggested that all participants used informal assessments (see Table 7). The first theme that emerged was that the participants relied on alternative assessments for students with ASD. Special education teacher participants preferred this type of method due to the flexibility and the instant feedback it provided. Participant 3 shared, “We have to keep asking questions...we used a lot of manipulatives, a lot of art.” The special education teacher participants stated that type of assessment allowed for the opportunity to re-teach or change the intervention being used for reading comprehension. Participant 4 stated, “They’re (students with ASD) not meeting the standard way to communicate what they know... so we as teachers have to find that.” Participant 4 shared,

Being able to get these kids everything in an electronic version so that they can copy and paste, which teachers don’t like because then the kids aren’t putting it in their own words, you’re not processing it. But for some of these kids, that’s what they need to be able to copy and paste it and then to be able to read through it a few times. Talk about it, digest it.

Participant 5 stated, “So not one assessment doesn’t always give you a clear indication that they’re comprehending, but a bunch of assessments and data over time, will give you that.” Alternate assessments allowed participants a better idea of what students with ASD

really understood from what the students had read. Another way the participants were able to evaluate students with ASD was by scaffolding the assessments given.

Table 7 demonstrates the informal assessments used by the participants at the case study site. All the participants used some type of verbal assessment, and all but Participants 3 and 9 used artwork and projects for informal assessments.

Table 7

Informal Reading Comprehension Assessments Used by Participants

Informal Assessments	P1	P2	P3	P4	P5	P6	P7	P8	P9
Verbal	X	X	X	X	X	X	X	X	X
Open-ended questions	X	X		X	X	X		X	X
Guided questions				X	X	X		X	
Tactile			X		X		X		
Artwork	X	X		X	X	X	X	X	
Projects	X	X		X		X	X	X	
Story mapping					X		X		
Computer games					X		X		
Hands-on			X		X		X		X

Scaffolding of Assessments

Vygotsky’s sociocultural theory of cognitive development fosters the idea that teachers should base assessments on the individual’s abilities (Daneshfar & Monharami, 2018; Vygotsky, 1978). The participants in this study stated that in many cases, they needed to use alternative assessments for students with ASD. The second theme derived from the data collection that answered RQ2 was scaffolding. Appendix G. Table G2: RQ2 Theme 2: Scaffolding Assessments illustrates how the participants used verbal and non-verbal supports when assessing their students with ASD. Some of the participants revealed that they could scaffold assessment verbally. Participant 7 said, “I’m working right now where I have better luck doing an oral response.” Participant 6 echoed this,

“They (students with ASD) are much more responsive one on one.” However, in the general education classrooms, participants revealed that it is not always practical to do verbal assessments. Participant 4 stated, “It’s unrealistic in a public setting to say the child can give oral answers.” Participant 8 found that when it is not practical to give an oral assessment of the material, she devised other ways to scaffold the assessment, “I will scaffold questions they might get, especially when we have paper assessments, and I could discreetly slide a different one (assessment) to each student. I would sometimes put in scaffolding questions that they could use.”

The data from this case study showed that even though general education English teachers and special education teachers may not have had training in autism, their instinct to differentiate according to the needs of their students prevailed. Both general education English teacher and special education teacher participants utilized computer-based assessment, which broke down types of questions asked. The participants were able to ascertain the reading comprehension of their students with ASD by getting the computer-generated assessment summaries.

Conclusion

New Jersey continues to report more children with ASD diagnosis than any other state in the nation (CDC, 2018). This statistic suggests that there are more students with ASD entering public schools. This case study included participants who worked with a wide academic range of students with ASD. Some participants were responsible for implementing reading interventions for students with moderate to severe cognitive delay, while other participants taught honor-level students with ASD. Despite the extensive

scope of student academic abilities, the participants stated that there were specific areas of concern, regardless of where the student fell academically. Secondary teachers who work with students with ASD are faced with students with specific and often individualized challenges. These challenges are due to personal learning profiles, social pragmatics, ToM, fusiform face area, and monotropism of students with ASD. All these challenges can result in behaviors that hinder a student's ability to comprehend what they have read.

The results of this study indicated a lack of opportunity for education or professional development among most participants. English and special education secondary teachers are expected to increase reading comprehension scores among this population without the necessary education needed to create effective interventions. However, despite the lack of personal development in ASD, the participants were able to explain how they selected, implemented, and assessed reading comprehension interventions for students with ASD.

The participants interviewed for this study revealed that many of the interventions used to increase reading comprehension were based on trial and error. The secondary teachers stated that a successful reading comprehension intervention for one student with ASD often did not work for another student with ASD. The one intervention that all participants used was scaffolding the material to meet the needs of the students with ASD. Scaffolding was done during guided reading, comprehension activities, and assessments. The participants used both formal and informal assessments to determine if reading comprehension interventions were successful. Understanding the needs of

students with ASD within the participant's classroom was prioritized to prevent behaviors that could interfere with the student's ability to be an effective reader.

In Section 3, I focus on describing the data analysis results, rationale, review of literature, and the project. The project developed from the results of the qualitative study that I suggest will have implications for creating social change. In Section 4, the project strengths, limitations, and recommendations for the potential social change are discussed. Section 4 also reflects the exploration of the applications, implications, and the potential for future research in reading comprehension interventions and students with autism.

Section 3: The Project

The proposed project for this case study is a 3-day professional development webinar. This professional development webinar aims to give secondary teachers at the study site the necessary background information on ASD and add to their reading comprehension intervention tools. The proposed webinar resulted from data collected during interviews. Three themes emerged from data that helped answer RQ1: addressing challenges, individualized interventions, and delivery and consistency. These themes helped shape the 3-day professional development webinar.

There are several goals of this professional development webinar. One goal is to inform secondary teachers why students with ASD may exhibit certain behaviors or react to stimuli. Another goal is to broaden the reading comprehension interventions teachers use when supporting students with ASD. Three learning outcomes established for this professional development include understanding the complexities of children with ASD, understanding why intricacies of the reading process can be challenging for children with ASD, and increasing awareness of available interventions and resources to improve reading comprehension for students with ASD. The target audience of the professional development webinar is secondary education teachers who teach students with ASD.

Rationale

New Jersey public schools continue to integrate students with ASD at all academic levels. This study indicated that secondary teachers do not have the educational background in autism needed to effectively work with students with ASD, despite having these students in their classrooms. All nine participants expressed frustrations with the

lack of professional development regarding ASD. Data collected from the qualitative case study indicated that secondary teachers need additional resources and strategies when teaching reading comprehension to students with ASD.

The proposed 3-day professional development webinar would give secondary teachers at this study site the ability to get answers in real-time. The webinar would be offered on the district's website to be accessible when the teacher had the opportunity to review it. The uncertainties of the COVID-19 virus, the district's limited professional development budget, and the shortage of substitute teachers make an online webinar a more economical and time-saving opportunity. Additionally, having the webinar available online allows more teachers, both locally and globally, to access it at their convenience.

Review of the Literature

This literature review focuses on how the project genre can implement professional development to respond to data findings. I also address the gap in practice that secondary teachers at the study site lack in terms of implementing educational interventions researchers have suggested. Limited use of evidence-based practices has led to increased interest in forms of professional development that improve teacher practice and student outcomes (McLeskey, 2011). Recent legislative actions have mandated the professional development of teachers in hopes of improved student achievement. Studies have demonstrated a link between meaningful professional development and changes in teachers' practices, and positive student learning outcomes (Bates & Morgan, 2018). Meaningful professional development should focus on specific strategies to teach content

when working with a particular student population. However, mandated professional development usually does not lead to positive outcomes because it may not target the deficits of the intended audience.

Three critical issues are considered when formulating a professional development plan for staff (Martin et al., 2019). The first is to properly understand the intended staff members' needs the professional development webinar will address. The second issue is school administrators' role in supporting teachers upon completing their professional development. The third consideration is that it should offer cohesive and aligned professional development that meets educators' needs to increase students' learning. The professional development plan should be organized to transform teachers' and administrators' beliefs and practices.

Search Strategies

I used scholarly literature related to the study findings and project genre to find appropriate and supportive research articles and studies for this project literature review. Several resources contributed to this literature review. Databases included ERIC, EBSCO, ProQuest, SpringerLink, Google Scholar, Thoreau, and SAGE Journals. Search terms were *professional development, adult learners, evidence-based strategies, online learning, evaluations, collaboration, communication among professionals, autism, webinar, adult education, teacher knowledge, instructional practices, Knowles, andragogy*. Journal articles were primarily peer-reviewed literature published between 2016 and 2020. The literature review provided a framework for the project study. This section includes discussions regarding (a) Knowles' theory of adult learning, (b) what

constitutes quality professional development, (c) the school district's responsibilities in terms of professional development, (d) online webinars to reach a broader audience, (e) time and costs associated with traditional professional development, and (f) need for professional resources.

Conceptual Framework

Knowles introduced the term *andragogy* in the 1970s to differentiate how adults learn (Housel, 2020). Andragogy is the study of how adults learn (Knowles et al., 2014). Knowles' theories about adult education and workplace learning have been used to guide professional development in the United States since the early 1970s. Educators who work with adults frequently use Knowles' core principles in the practical task of defining the adult learning process (Housel, 2020).

When developing a professional development webinar for secondary teachers who have the potential to work with students with ASD, it is essential to keep Knowles' four principles of andragogy in mind. The first principle is that experience is the core of the learning activities. Adults learn better when the information is applicable. Subjects introduced into the professional development should directly affect the teacher's job or personal life. The third principle to remember when developing professional development is that adult learning is process-centered rather than content-oriented. Finally, adults should be involved in the planning and evaluation of instruction.

Individuals who plan professional development need to follow an andragogic approach by developing procedures to involve learners and create a beneficial climate for learning. The professional development should include opportunities for collaborative

planning, establishing, and reevaluating learning needs throughout the process.

Professional development objectives should reflect learners' needs, create opportunities for learner experiences with appropriate techniques and materials, and assess to determine if learning outcomes and goals were achieved (Conner et al., 2018). Table 8 indicates how Knowles' theory of andragogy was used as a guide when creating the 3-day *Reading Comprehension Intervention for Student with ASD* professional development webinar for secondary teachers at the study site.

Table 8*Application of Knowles' Principles to the Professional Development Webinar*

Knowles' Principle	Application
Adults need to be involved in the planning and evaluation of their instruction	<p>Prior to the start of the initial webinar, encourage teachers to submit questions regarding ASD into the chat box.</p> <p>Throughout the initial webinar, give teachers the opportunity to give feedback to be inputted into the following day's activities.</p> <p>To ensure meaningful learning and autonomy for the teachers, provide a variety of interventions and resources, and let the teachers choose which interventions they would like to try that best meets their student's needs.</p>
Experiences are important for adult learning	<p>Begin by reflecting on the challenges experienced in their classes related to using reading comprehension interventions for students with ASD.</p> <p>After each daily activity, prompt the teachers to reflect and discuss how the activity presented is related to their class. This involves reflecting on past experiences, the new information presented in each activity, and how it could be best applied to their student(s) with ASD.</p> <p>At the conclusion of each day, ask the teachers to apply one of the primary learning activities to their students with ASD and share how it went in the following day's question/discussion activity.</p>
Adults are most interested in learning content that has immediate relevance and impact on their job or personal life	<p>The webinar provides teachers with evidence-based reading comprehension interventions and behavioral strategies that can help those teachers who are challenged to find interventions that will work for their students.</p> <p>The webinar was initially designed to reflect the data from the case study. Additional content will be added based on the questions and discussions generated at the beginning of each day.</p> <p>The webinar was designed so each activity has a practical application to support students with ASD, either for behaviors or to increase reading comprehension. This will allow participating teachers to see the immediate significance of the professional development to their teaching.</p>
Adult learning should be problem-centered rather than content-oriented	<p>The professional development will offer teachers interventions to overcome reading comprehension issues for students with ASD that were identified through the case study or through questions asked at the start of each day.</p> <p>The case study identified that teachers who work with students with ASD need more education about not only the students with ASD, but evidence-based reading interventions for these students.</p> <p>Throughout the webinar, teachers will be reminded that they can choose interventions provided at the end of each day to help increase reading comprehension for students with ASD.</p>

Professional Development

Numerous reasons can determine whether a teacher will gain from the professional development experience (Cooc, 2019). Teachers are more apt to continue to reflect and examine new methods of instructional practices that will change their instructional practices and their belief systems over time if their students are learning (Martin et al., 2019). When introducing new professional development information, the key is to include and pay attention to specific strategies to teach content (Bates & Morgan, 2018). Interactive experiences, such as examining student artifacts and teaching lessons, should be incorporated during the professional development to allow teachers to reflect on their practice.

Vygotsky (1978) stated that there is power in social learning. Since professional development should support collective knowledge, opportunities for collaboration should be incorporated (Knowles et al., 2014). Another component of a successful professional development plan is to allow for various models or artifacts for teachers to study to build an understanding that students with ASD need individualized instructional materials and assessments (Bates & Morgan, 2018). The proposed professional development material spans three days, which allows for feedback and reflection; both which are important to a practical professional development experience (Knowles et al., 2014). Finally, for professional development to work, teachers need to engage in cycles of continuous learning to apply new strategies and interventions to their classrooms.

For secondary teachers who work with students with ASD, self-efficacy, and knowledge of strategies for this population often determine the need to seek professional

development (Cooc, 2019). Teachers with constructivist pedagogical beliefs about learning were found to be more apt to seek professional development. The participants in this case study were frustrated by the lack of professional development opportunities for students with ASD. The data collected from these participants indicated that applicable professional development for students with ASD is needed in the district. Cooc (2019) stated that other factors such as years of experience or education level also influenced how teachers approached the need for professional development. In this case study, all the participants who had asked for professional development about children with ASD had ten or more years of working in the educational field.

Professional Development Plan

Identifying and applying evidence-based practices is foremost in special education (Ganz & Ayres, 2018). Evidence-based practices are those lessons, interventions, and assessments that integrate the best available research evidence with clinical expertise and the patient's unique values and preferences (Albarqouni et al., 2018). Although evidence-based practices have been identified to be particularly significant for students with ASD, research suggests teachers report having only moderate levels of confidence in their ability to implement evidence-based practices (Lauderdale-Littin & Brennan, 2018). However, researchers have found a history of using unsubstantiated interventions for students with autism, which is problematic because it leads to unproductive instructional time (Morin et al., 2021). Additionally, teachers can experience frustration and professional exhaustion when repeated attempts to improve students' skills fail due to ineffective interventions (Odom et al., 2020).

Improving educational outcomes for students with autism requires delivering services supported by evidence-based practices (Knight et al., 2019). Ho et al. (2018) suggested that collaborative models of professional development for teachers who work with students with ASD should focus on this population's emotional and academic needs. A professional development plan for teachers who work with students with ASD should focus on understanding autism, techniques that increase communication and comprehension, sensory processing, recognizing, and improving social aptitude, and creating positive relationships (Ring et al., 2019). Conducting a 3-day webinar will focus on these issues and address the problem that secondary teachers need the education to diversify their reading comprehension interventions for students with ASD.

District Responsibilities

Research has shown that general and special education teachers feel unprepared to work with students with ASD to sufficiently meet their needs due to limited knowledge specific to the disability (Accardo & Finnegan, 2019; Bertuccio et al., 2019). The participants in this case study revealed a lack of professional development provided by the district regarding students with ASD. Administrators play a crucial role in providing effective professional development for their teachers (McLeskey, 2011). Significant roles include providing time for collaboration and implementation of new strategies or interventions, acquiring suggested resources, and evaluating the success of professional development (Hurlbut, 2018). Researchers argued that specified models that help teachers learn a particular skill curriculum are often school districts preferred professional development programs because these models can be quantitatively measured, which

many districts require (Spratt, 2019). This case study highlighted the lack of *real-time* comprehension interventions for students with ASD. Horan and Merrigan (2021) echoed this idea that professional development support should be constant and accessible when a specific need occurs.

Webinars

Traditional forms of expert-centered professional development have little impact on teacher practices or student outcomes (McLeskey, 2011). Researchers found conventional professional development training limited ineffectiveness, and these pieces of training were not supported by coaching (Sam et al., 2018; Trust & Pektas, 2018). Spratt (2019) stated that it is essential that teacher professional development imparts the skills and temperament needed to react to the challenges of 21st-century educational contexts.

Research has shown that professional development that used online learning resources and created online problem-based activities was influential in positively impacting teacher instructional practices (Terrazas-Arellanes et al., 2019). Learner-centered professional development has shown to be a practical approach to changing the practice of secondary teachers and improving student outcomes (Ilgaz, 2019). Teachers stated that adapting professional development activities and the way those activities are structured needs to be done in response to their classrooms and students (Yurkofsky et al., 2019).

Online learning resources offer a cost-effective means of support and provide teachers with more opportunities to access the information, especially when budgets or

time limits (Sam et al., 2018). Despite the need for innovative professional development plans, professional development remains propelled by outdated approaches (Spratt, 2019).

Knowles et al. (2014) recognized that adults have more experiences than young individuals. These experiences are very effective in establishing communication and interaction. Consequently, adults who collaborate and share application knowledge of instructional practices become a source of information for each other (Knowles et al., 2014). Each day, the participants will have several opportunities to work together in breakout rooms during the webinar sessions. Online learning allows for a more diversified group where group activities and collaboration are not limited by location restraints (Hartshorne et al., 2020). Despite these research findings, the predominant form of professional development for general and special education teachers continues to be expert-centered professional development (Martin et al., 2019).

Time

Schools are shaped by established routines and traditions, the teachers' collegial relationships, space, and time for teachers to learn (Martin et al., 2019). Spratt's (2019) research study found that participants valued professional development, allowing time and space for collaborative reflection. In Spratt's study, participants stated that it was essential to have student input. Spratt also discussed using different contexts or environments for professional development. Administration support for resources and time for professional development implementation, time to participate in needed

professional development and collaborate with other teachers, and real-life experiences using professional development materials were also important.

Recent measures to quantify teacher impact on student learning and federal legislation, such as Every Student Succeeds Act, include high-stakes assessments (Powell & Bodur, 2019). Many school districts are challenged to improve teacher professional development to enhance student learning outcomes. Powell and Bodur's (2019) study found these challenges intensified when access to quality professional development is affected by conflicts with teachers' work schedules, absence of incentives, financial cost, relevancy, and geographic restrictions. The lack of time was one barrier to participating in professional development (Heap, 2021). One-way districts are coping with these time restrictions is to provide online professional development. Online professional development can address restrictions through flexible, worthwhile, wide-scale options in many academic areas (Martin et al., 2019).

Need for Resources

General and special education teachers are expected to instruct and assist all students (Grant, 2018). Teachers who work with students with ASD need to provide a form of specialized education. These teachers generally require extra resources, such as visual aids or special instructions (Bertuccio et al., 2019). Since students with ASD are increasingly enrolled in regular school settings, it is more important than ever to provide teachers with the resources to optimally educate students with ASD (Van Der Steen et al., 2020). Obtaining these resources can be difficult in economically challenged school

districts where resources and training are unavailable, limiting the implementation of effective interventions (Iadarola et al., 2018).

One comment from the case study participants was the need for resources for students with ASD. One participant wanted “real-time” answers and support when a behavioral or academic situation occurs outside her education expertise. The participants stated that one reading comprehension intervention might work for one student but not every with ASD. The 3-day webinar would provide a variety of resources that any teacher could easily access when needed. Knowles et al. (2014) stated that effective professional development should contain materials for teachers to support student learning.

Project Description

The problem I addressed in this qualitative case study was that secondary teachers might be using instructional interventions for reading comprehension that are ineffective in supporting students with ASD. The data from this case study indicated that participants from this study site needed professional development on reading comprehension interventions for students with ASD. The participants of this case study also noted that because of the complexity of this disability, it was important to understand how to manage the challenging behaviors that often present with students with ASD. These issues will be highlighted during the 3-day professional development webinar.

Day 1 focus is on the educational complexities of children with ASD. It will highlight *why* students with ASD may think and behave in specific ways. The first theme focused on addressing challenges that students with ASD often present. A pattern that

emerged from the case study was that secondary teachers at the study site were frustrated with the lack of information that IEPs provided. Secondary teachers suggested that IEPs be written to communicate prompting cues, behavioral strategies, triggers that may set off a student, sensory techniques that may reduce student anxiety, and reading successful comprehension interventions. The proposed professional development would cover a section on how to write an IEP to cover these different areas. Secondary teachers also wanted to know effective ways to communicate with students with ASD. Because students with ASD often have communication issues, secondary teachers need strategies to interpret what is being said or implied.

Day 2 will focus on reading comprehension and ASD. The second theme illustrated the need for individualized reading comprehension interventions and how these interventions benefit students with ASD. Collaboration with other professionals was the third pattern that was prevalent throughout the participant interviews during the case study data collection. Secondary teachers stated that one helpful resource when working with students with ASD was other teachers, including speech therapists or special education teachers. By inviting therapists and special education teachers to share successful reading comprehension interventions, this professional development would create a vehicle for discussion and encourage future collaborations between staff members working with students with ASD.

Day 3 of the 3-day professional development webinar would focus on how assessments and student-centered lesson design affect students with ASD. The third theme emphasized how the delivery and consistency of interventions are essential for

achieving reading comprehension. This was also true of the types of assessments teachers found successful for students with ASD. As the data suggested, one type of assessment may not be appropriate for every student with ASD. The professional development would look at effective evidence-based assessments researchers have deemed successful for students with ASD. Secondary teachers would then have resources available to assess their students with ASD. There will also be opportunities for professional development participants to collaborate and design lesson plans based on the information presented in the 3-day professional development. Resources, existing supports, potential barriers, and potential solutions to barriers were considered when developing this professional development for secondary teachers who work with students with ASD.

Resources, Existing Supports, Barriers, and Solutions

Funding and time are needed to support the 3-day professional development. I will consult the administration and the district business office on the availability of these resources and for permission to present the professional development. One existing support that I have already contacted is the school district's technology specialist to assist in keeping the webinar fluid. This support will be invaluable due to her knowledge of the intricacies of online program development.

There are several potential barriers to implementing this professional development. One of these is due to the uncertainty of the traditional school year at the study site. At the time of this project study, there was an increase in Covid-19 cases. How or when this 3-day professional development could be executed is one barrier. The initial professional development webinar will be done online and recorded for future use to

prevent stalling this needed professional development. The initial professional development will be an interactive webinar that will cover three days. Participants' questions and discussions will be included in the recording, but breaks removed from the professional development platform.

Another potential barrier may be that teachers who participate in the professional development may not want their names connected to comments and questions. All participants will sign a consent form, which states that they know that the webinar will be recorded and used for future professional development opportunities. No names will be posted on the chat box, and any references to students' names will be erased to keep teachers who participate in the professional development webinar anonymous.

Project Implementation and Timetable

Table 9 presents the project implementation 3-day timetable. Because the initial webinar will be live and recorded, breaks are included in professional development. The initial webinar will also have breakout rooms for teachers to discuss and collaborate. Once recorded, the webinar will exclude the breaks and allow participants opportunities for self-reflection and implementation of the presented ideas. All information and resources presented in the webinar will be easily accessible by clicking on the links impeded on the slides.

Table 9*Professional Development 3-Day Schedule*

	Time	Day 1	Day 2	Day 3
Registration	8:00-8:30	Questions you want answered Google Form		
Introduction	8:30-8:45	Objective Days' activities		
Session 1	8:45-9:45	The complexity of a child with ASD: Why they do what they do	Reading comprehension: What does this entail?	Goals of informal and formal assessment?
Session 2	10:00-11:00	What are our ASD tendencies/triggers?	Reading levels: Barriers to reading comprehension for students with ASD: <i>speaker</i>	How students with ASD view assessments: <i>speaker</i>
Lunch	11:00-12:00			
Session 3	12:00-1:00	Comfort zones and coping issues: Creating an environment of acceptance: <i>speaker</i>	Strategies to increase reading comprehension: Increasing interest in content areas	Modifying traditional assessment for students with ASD
Session 4	1:15-2:15	IEPs as effective communication tools: Breakout groups	Resources for differentiated reading levels: Application of reading comprehension interventions to a lesson: Breakout groups	Sharing assessments and discussion: Breakout groups
Wrap up	2:15-2:30	"What 3 things did you learn" survey		Evaluation

Roles and Responsibilities

After speaking with the superintendent and principal at the project study site, I will invite secondary teachers at the project study site to participate in the 3-day professional development webinar. I will send an invitation and a consent to be recorded via email, including the purpose and content of the professional development sessions.

The roles and responsibilities of the secondary teachers will be to attend the professional development days via the webinar access site to learn reading comprehension interventions for students with ASD. The administration's role is to approve the professional development hours and provide time for teachers to participate in the initial webinar. Additionally, the principal will need to allow teachers who prefer to watch the recorded webinar later the opportunity to do so and receive professional development credits. My responsibility as a researcher will be to discuss the case study findings with the principal and superintendent to acquire the support needed for professional development. I will also gather the necessary resources, organize the materials, consult with the district technology specialist, and present the professional development sessions.

Project Evaluation Plan

I will use an outcome-based evaluation of the project to measure the effectiveness of the professional development. I will evaluate the professional development at the end of the third day using an electronic Google Form (see Appendix B). Those who participated in the initial 3-day webinar will fill out a Google evaluation using a link

provided. This type of evaluation is to get honest feedback from the participants. Email addresses will be omitted when returned to keep the form anonymous.

The project's goals are to provide reading comprehension interventions and gain a better understanding of students with ASD for secondary teachers. By acquiring more evidence-based interventions, a secondary teacher will be able to implement reading comprehension interventions more effectively and confidently with students with ASD. Results from the evaluation will be shared with the principal and the superintendent. The key stakeholders include administration, secondary teachers, and eventually, students with ASD at this study site.

Project Implications

At the project study site, secondary teachers needed additional evidence-based reading comprehension interventions and assessments for students with ASD. The data from this case study are reflected in the 3-day professional development design. Secondary teachers will benefit from the 3-day professional development by learning how students with ASD process information, evidence-based reading comprehension interventions, and appropriate ways to assess these students.

Professional development activities and discussions will promote collaboration between teachers at the study site. These activities and discussions include (a) exploring the *why* students with ASD struggle with reading comprehension, (b) learning about *triggers* for students with ASD and how to create a learning environment for these students, (c) practicing writing an effective student IEP evaluation, (d) exploring

resources to create lessons and assessments for students with ASD, (e) opportunities to collaborate with teachers and speech therapists.

Stakeholders

School district administrators should use the project to increase awareness of students with ASD's learning needs. By participating in the 3-day professional development, secondary teachers at the study site will gain evidence-based reading comprehension interventions, which will help increase comprehension for students with ASD. Implications for possible social change include collaboration among secondary teachers, a more knowledgeable administrative staff, and a better understanding of how to devise effective lessons to benefit students with ASD.

Conclusion

During the data analysis process, I identified a need for professional development. The goal of the 3-day webinar is to increase secondary teachers' knowledge about students with ASD's behaviors, individual learning profiles, and evidence-based reading comprehension interventions (see Appendix H). I formulated the professional development to use best practices, interactive activities, and professional collaboration. As the secondary teachers progress through the professional development, they will learn how students with ASD process information, why behaviors interfere with learning, and what types of reading interventions have proven to increase comprehension among students with ASD. Secondary teachers will also have an opportunity to apply this knowledge when developing reading comprehension assessments for students with ASD.

By providing this professional development as a recorded webinar, it has the potential to be used for future district professional development hours.

Section 4: Reflections and Conclusions

This section includes an overview of the project study. It includes recommendations for alternative approaches to address the problem. As a researcher, it is essential to reflect on how the project study process helped me develop as a scholar, practitioner, and project developer. In this section, I also reflect on and discuss the importance of the work overall and what was learned. Finally, I describe the implications, applications, and directions for future research.

Project Strengths and Limitations

Project Strengths

The project deliverable was based on data collected from the project study. The 3-day professional development webinar was constructed to close the gap in practice in terms of secondary teachers' preparation and evidence-based reading comprehension interventions for students with ASD. The problem based on this qualitative case study was that secondary teachers were not selecting, implementing, or assessing effective reading comprehension interventions to support students with ASD. According to findings in Section 2, there was a need to provide secondary teachers with professional development focused on students with ASD's learning profiles and how to use these profiles to select evidence-based reading comprehension interventions.

There are several strengths of the project study. First, participants in the case study asked for professional development that would help them circumvent potential behaviors and acquire additional resources to support students with ASD within their classrooms. Participants also asked for resources they could reference even after initial

professional development. In response to the needs of secondary teachers, the 3-day professional development webinar will be recorded and available on the district's technology website.

Another strength is that the initial professional development program will involve participants' questions and discussions. The professional development will include areas of concern established by case study participants and any additional issues and ideas generated from those attending the webinar. Breakout rooms will be created for group discussions and activities, which will allow opportunities for the application of presented information.

The third strength is that presenters will scaffold learning by demonstrating and providing examples of delivered content. Presenters in the reading and ASD fields will allow for the distribution of accurate information to enhance pedagogical practices. During the 3-day professional development webinar, presenters will focus on the practical application of suggested materials, discussion questions derived from study data, and engaging instructional strategies.

Finally, the proposed project was developed and substantiated using Knowles' theoretical ideas and research-based professional development strategies. Sessions during the 3-day professional development will provide secondary teachers opportunities to identify and reduce gaps in knowledge about students with ASD and reading comprehension interventions. In turn, the professional development will allow for a more enriching classroom environment and increased reading comprehension levels for students with ASD.

Project Limitations

One limitation of this project was the timing of the professional development webinar. Because the school district is experiencing staff shortages and cannot get substitutes to fill in for sick or quarantined teachers, it will probably be offered during the summer months. By scheduling professional development during the summer, more secondary teachers will be able to participate. When determining dates, it will also be necessary to coordinate presenters' schedules, vacations, and other potential personal conflicts.

A second possible limitation involves revising the professional development webinar once it has been recorded. The initial 3-day webinar will be edited to keep necessary information and discussions, but all breaks and nonessential information will be eliminated. This version will be posted on the study site's technology page for future use. Creating a more concise recorded webinar will allow secondary teachers to view information without taking three days in the classroom.

Recommendations for Alternative Approaches

Alternative Approach

Using the qualitative case study design, I developed a 3-day professional development webinar for secondary teachers at the study site. The problem was that secondary teachers at the study site acknowledged a need to effectively select, implement, and assess reading comprehension interventions to support students with ASD. There are several ways this problem could have been addressed differently.

I could have used different participant criteria. Participants were nine secondary teachers who had over five years of working with students with ASD. I did not exclude newly graduating teachers from participating in the study. Recent graduates may have had opportunities for academic programs that could have added to the data.

Another way this problem could have been addressed differently is to use a quantitative approach. A quantitative survey could have been distributed to all secondary teachers in New Jersey, which would have extended the range of the study. The increase in sample size may have provided additional information regarding how secondary teachers select, implement, and assess reading comprehension interventions for students with ASD.

Alternative Solutions

An alternative solution to the local problem could be to mandate specific professional development training for all secondary teachers in ASD. The mandate could be addressed through a district-wide policy that teachers must provide evidence of professional development involving ASD prior to the new school year. Professional learning communities are formal groups of individuals who augment teacher collaboration and impact school improvement (Carpenter, 2018). District policies could also dictate that professional learning communities incorporate evidence-based reading comprehension interventions for students with ASD into content-area lessons and assessments.

Scholarship, Project Development, and Leadership and Change

Scholarship

The doctoral process has been transformative. Knowles et al. (2014) stated that the learning process happens when people are allowed to reflect on and understand how new information can affect them. As I reflect on the doctoral process, I appreciate how much I have changed. One of my goals was to construct original scholarship in ASD and reading interventions. I realized the importance of academic coursework, professor and student collaboration, and research skill development to achieve this goal. Academic coursework was the foundation of knowledge necessary to complete a capstone project. I learned how to disseminate relevant scholarly articles relevant to improving pedagogy. Professor collaboration was the key to formulating and executing the research plan used for the project study. I completed the doctoral process on time by sharing experiences and expertise in the research and education field. Finally, my ability to conduct scholarly research improved as the research progressed. I connected my passion for helping students with ASD and a desire for social change among secondary teachers who support this population in terms of reading comprehension.

Project Development

Throughout the project's development, three areas had a significant impact on my pedagogy. First, I learned how to conduct a study, analyze data, and then use that data to create a professional development training webinar. I also discovered that by using Knowles' theory of adult learning, I could provide secondary teachers the opportunity to increase their knowledge about ASD and effective reading comprehension interventions.

As a professional development developer, I learned to consider the targeted audience's needs and develop goals to meet those needs. Professional development was designed to be beneficial in both time and cost-efficient.

Leadership and Change

As a secondary teacher and a coach for over 20 years, I have had experience with leadership. However, the research and project development allowed me to assess my strengths and vulnerabilities in working with adults. I learned how to accommodate the specific needs of adult learners. I recognized the importance of respecting the participants' vulnerabilities and how to design questions that encouraged candid responses. The doctoral process also allowed me to collaborate with many other professionals throughout my coursework, the research project, and within the study site. I have gained confidence in my skills as a researcher, writer, and practitioner, which I plan to utilize during the implementation of the proposed professional development.

Analysis of Self as Scholar

As I reflect on this 4-year doctoral process, I can now see the scholar that has evolved. The doctoral process takes patience, diligence, and commitment. I started this process as an individual who relied only on my skills but now respects the impact that collaboration with other professionals can have on a relevant research study. My research skills and the ability to discern effective evidence strategies and interventions by reading peer-reviewed articles have developed and strengthened. These skills have been refined as I proceeded to write the data analysis and discuss the study's findings. Finally, the

scholarly attributes I acquired through this doctoral process were applied to the professional development training used at the study site.

Analysis of Self as a Practitioner

I developed a greater understanding of becoming an agent of change in the classroom and the confidence to share the gained knowledge with my colleagues. I have changed the way I create and implement lessons in the classroom. The research has proven that evidence-based strategies and interventions can improve pedagogy and student outcomes.

As a doctoral student, I have shown my students and peers that education is essential, regardless of age, because learning is an ongoing process. This knowledge acquisition can be through academic coursework or professional development. The doctoral process allowed me to formulate professional development, in which secondary teachers can improve their pedagogy and increase reading comprehension for students with ASD. As a special education reading teacher, I am responsible for conveying specific reading challenges to my students. I now have the self-assurance to state student achievement and suggest recommendations for remediation accurately.

Analysis of Self as Project Developer

As a project developer, I learned that creating, organizing, and implementing professional development is an extensive and intensive process that involves using data to meet the targeted audience's needs. This time-consuming endeavor should consider how adults learn, district financial and time constraints, and the utilization of experts to make a more significant impact on the participants. In the role of the researcher, I was able to

confidently plan and develop professional development because I read hundreds of scholarly articles and examined examples of successful professional development. Using the information acquired from the research project study, I acknowledged the secondary teachers' needs at the study site and developed the professional development to reflect these needs.

To accommodate time constraints posed by the daily work week, lack of available teacher coverage, and district budget, I challenged myself to turn this professional development into an interactive webinar. The initial webinar could function as recorded in-person professional development or be conducted entirely virtually. The recorded 3-day professional development can be used as a resource for future professional development in reading comprehension and students with ASD.

Reflection on Importance of the Work

The data results from this qualitative study are reflected in the professional development. This professional development will benefit secondary teachers who participate in the initial professional development and those who view it at a different time. Participants from this case study asked for additional information and resources about ASD. The data revealed that many participants felt frustrated by their lack of coursework or professional development in ASD. Teachers need to have confidence in the content area taught and the deliverability of the information. I believe that secondary teachers need to feel supported by the district and have professional development opportunities that reflect any pedagogical deficits. The 3-day professional development

webinar will assist secondary teachers in developing lessons and assessments that support reading comprehension for students with ASD.

Implications, Applications, and Directions for Future Research

Implications

There are several implications for positive social change the project study addressed. Stakeholders who could benefit from this project include teachers, students, administrators, and parents of children with ASD. At the local level, secondary teachers can increase pedagogical knowledge and create evidence-based lessons, which will have a direct impact on their students with ASD. By teaching students with ASD strategies to acquire meaning from text, formal and informal assessments will increase, and behaviors will reduce. The 3-day webinar will also collaborate between secondary teachers and other professionals. The professional development provides time for teachers to break out and talk about their insecurities when working with students with ASD. Knowles et al. (2014) stated that adults need opportunities to discuss and reflect with one another to assist in learning.

One of the stakeholders who would directly benefit from the professional development is the students with ASD. By implementing new reading comprehension interventions provided in the professional development, teachers can affect student comprehension. Due to these reading comprehension interventions and assessments, students with ASD will improve their reading comprehension. Understanding what the text is saying can have an enormous impact on a student with ASD's learning in all

academic areas. Secondary teachers who understand how students with ASD think and acquire knowledge can help reduce frustration and increase student achievement.

Another area in which the project will contribute to positive change is for administrators. The professional development will indirectly affect administrators. Administrators will be confident that staff will now be utilizing evidence-based practices for students with ASD. After four years of high school, students should be able to join the workforce or go into other educational environments. By supporting the professional development implementation, administrators will know that students with ASD will have a better opportunity to be college or career ready after graduation.

Finally, the project could have the potential for positive social change in society due to teachers and administrators better understanding the disability. Teachers who understand the complicated disability of ASD can reduce behavioral incidences in their classrooms and promote student achievement. Parents of children with ASD will be more likely to communicate and collaborate with a teacher who has a knowledge base about their child's disability. The collaboration between the parent and teacher can reduce student anxiety when entering a new classroom environment.

Theoretical implications could substantiate Knowles' theory of adult learning as the results of this study (Knowles et al., 2014). Knowles' core principles were used in the practical task of creating the professional development. I used Knowles' theory of andragogy as a guide to creating the three-day reading comprehension intervention for students with ASD professional development for the secondary teachers at the study site. Knowles suggested that teachers have input into what they are learning. The professional

development project could positively affect social change by offering secondary teachers professional development developed from the research study. Secondary teachers who participated in the study asked for additional information and resources on ASD. My professional development could also be applied to all teachers interested in learning about ASD, as the content applies to any teacher who works with students with ASD.

Applications for Future Research

The recommendations for future research could include a quantitative approach where a larger population sample could be collected and analyzed. Another recommendation would be for the study to be done nationwide. More data, additional interventions, and behavioral strategies may contribute to professional development. The data might further validate the data results from my research study site. The last recommendation would be to replicate this study in a school district from a different part of the state.

Conclusion

I developed this project based on the data collected at the study site. The participants asked for professional development that would help them reduce the frustrations of their students with ASD and increase their knowledge base of reading comprehension. To address the gap in practice, I designed the professional development for secondary teachers utilizing Knowles' theory of andragogy. The professional development incorporates opportunities for teachers to learn how students with ASD process information, behaviors that can interfere with learning, and evidence-based reading comprehension interventions. The 3-day professional development webinar

allows for applying materials, discussions, and professional collaboration. The literature review was the foundation for the professional development, in which the teacher will receive the most current information about ASD. The 3-day Reading Comprehension Intervention for Student with ASD professional development has implications for positive social change for all the stakeholders involved.

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Appendix A: The Project

The following project was developed in response to the data collected from *How Secondary Teachers Select, Implement, and Assess Reading Comprehension Interventions for Students with Autism Spectrum Disorder* qualitative study. The project is informed by scholarly articles, media resources, and the responses from the study participants. The following scholarly resources were used to support the project:

Afriani, Z. L., Anggraini, M., & Riswanto, R. (2020). The effect of question answer relationship (QAR) strategy in enhancing students' reading comprehension. *Journal of English Education and Teaching*, 4(4), 548-558.

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Reading Comprehension and Students with Autism Spectrum Disorder

PROJECT STUDY

Three-Day Schedule



Day 1: Complexities of Children with Autism
Spectrum Disorder



Day 2: Reading Comprehension Interventions
and Autism Spectrum Disorder



Day 3: Evidence-based Reading
Comprehension Assessments for Children with
Autism Spectrum Disorder to

	Time	Day 1
Breakfast/ Registration	8:00-8:30	Questions you want answered Google form
Introduction	8:30-8:45	Objective Day's activities
Part 1	8:45-9:45	The complexity of a child with ASD Objective: Participants will get a better understanding of how their students with ASD think.
Break	9:45-10:00	
Part 2	10:00-11:00	ASD strengths and needs Objective: Participants will be able to understand and look for potential triggers for their students with ASD.
Lunch	11:00-12:00	
Part 3	12:00-1:00	Comfort zones and coping issues Objective: Participants will understand how the "comfort" of their students with ASD directly relates to their ability to learn.
Break	1:00-1:15	
Part 4	1:15-2:15	Creating an environment of acceptance Objective: Participants will be able to use what they have learned to create a classroom conducive to learning for students with ASD.
Wrap up	2:15-2:30	What 3 things did you learn survey

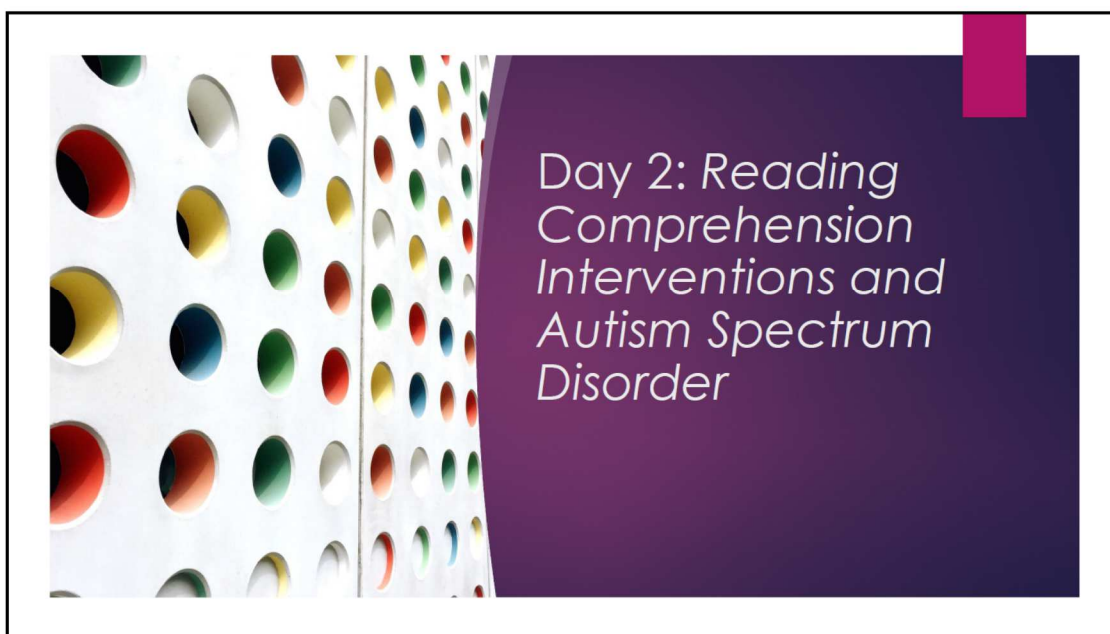
Day 1: Complexities of Children with Autism Spectrum Disorder

Background: Why the study?

4

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graph TD
    A["Number of CHILDREN in NJ Identified with AUTISM  
1 in 34  
(CDC 2018)"] --> B["Children w/ ASD + summative & formative reading tests"]
    B --> C["Secondary teachers may be using instructional interventions for reading comprehension that are not effective in supporting students with ASD."]
    B --> D["Few studies focus on how teachers' knowledge of students with ASD is pertinent to understanding reading and oral language deficits (Solari et al., 2020)."]
  
```



	Time	Day 1
Breakfast/ Registration	8:00-8:30	Questions you want answered Google form
Introduction	8:30-8:45	Objective Day's activities
Session 1	8:45-9:45	<i>Interventions for Vocabulary Acquisition</i>
Break	9:45-10:00	
Session 2	10:00-11:00	<i>Figurative Language</i>
Lunch	11:00-12:00	
Session 3	12:00-1:00	<i>Character Nuances</i>
Break	1:00-1:15	
Session 4	1:15-2:15	<i>Generalization and Application of Reading Comprehension Interventions</i>
Wrap up	2:15-2:30	What 3 things did you learn survey

Day 2: Reading Comprehension Interventions and Autism Spectrum Disorder

Day 2 Session 1:
Vocabulary Acquisition

 A wooden figure is positioned at the bottom center of the slide, holding a white speech bubble with a black question mark inside. The background is a solid yellow color.

ASSESSMENT

Evidence-Based Reading Comprehension Assessments for Children w/ ASD

	Time	Day 1
Breakfast/ Registration	8:00-8:30	Questions you want answered Google form
Introduction	8:30-8:45	Objective Day's activities
Session 1	8:45-9:45	Types of Assessments: Pros and Cons
Break	9:45-10:00	
Session 2	10:00-11:00	Student-Centered Assessment Designs for Students w/ ASD
Lunch	11:00-12:00	
Session 3	12:00-1:00	Delivery and Consistency of Assessments
Break	1:00-1:15	
Session 4	1:15-2:15	Assessment Collaboration and Design
Wrap up	2:15-2:30	Evaluation

**Day 3
Schedule**

Terms Associated with Communication Disorders

- **Apraxia of speech**- Apraxia of speech is the acquired form of motor speech disorder caused by brain injury, stroke or dementia.
- **Developmental verbal dyspraxia**- motor speech disorder. In which individuals encounter difficulty saying sounds, syllables, and words due to problems with coordination between the brain and the specific parts of the body.
- **Dysarthria**- Dysarthria is a motor speech disorder that results from a neurological injury.
- **Selective Mutism**- a child that does not speak in at least one social setting, despite being able to speak in other situations.
- **Aphasia** - Aphasia refers disorders that usually stem from injury, lesion, or atrophy to the left side of the brain that result in reception, perception, and recall of language in which language formation and expressive capacities may be inhibited.
- **Acquired disorders** - Acquired disorders result from brain injury, stroke or atrophy, many of these issues are included under the Aphasia umbrella.

(TITUS)

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Reading Comprehension for Students with ASD PD Evaluation

Please fill out the following evaluation based on the three-day PD you have just attended.

herdlein.tracy@stateliners.org (not shared) [Switch account](#)

*** Required**

How do you feel about the overall quality of this professional development? *

great
good
parts were okay
waste of time

What impact will the content of this PD have on your teaching? *

Have already started using the material in my classroom
It was interesting but I am too overwhelmed to implement it just yet
Some of the information is applicable
None of this information was helpful

Which session(s) did you feel was/were most helpful? Select all that apply. *

Complexity of ASD
ASD tendencies/triggers
Creating an environment
Communicating through IEPs
Reading Comprehension
Barriers to Reading comprehension
Strategies to increase Reading Comprehension
Resources for differentiating
Informal/Formal Assessments
Students with ASD & Assessments
Modifying assessments
Discussions and Sharing of lesson plans and assessments

Is there anything that was not covered that you would like additional information on? Please include email if you would like a direct response.

Your answer

Submit

Appendix B: Interview Protocol

Interview Guide

Participant Pseudonym:

Content Area:

Date:

- 1) What type of professional development/education have you had regarding children with autism spectrum disorder (ASD)?
- 2) How has your professional development and /or education influenced how you work with students ASD?
- 3) How have your teaching experiences with students with ASD changed over the years? Please give examples from your experience.
- 4) What type of challenges have you experienced when trying to get your students with ASD to comprehend what they have read? Describe these challenges.
- 5) Describe how you differentiate your teaching methods or materials when working with students with ASD individual learning profiles.
- 6) How do you use additional staff members, teaching assistance, in-class support teachers, to help in the instruction of students with ASD?
- 7) Describe how does your reading instruction become more effective when using reading comprehension interventions.
- 8) What type of reading comprehension interventions have you found that improve vocabulary and reading fluency in students with ASD?

- 9) How have these interventions translated to an improvement for student with ASD understanding of the written text?
- 10) What type of methods do you use to assess students with ASD reading comprehension?
- 11) How do these assessments give you a clear indication that the reading comprehension intervention worked for a particular student?

Thank you for taking the time to meet me and be interviewed regarding your experiences on teaching reading comprehension to students with ASD. Your opinion is valuable to me as a researcher. I will prepare a transcript of your interview and send it to you for your review within one week of your interview. Finally, a summary of the full report that discusses the research questions, the purpose, data collection, and data analysis will be emailed to you at the conclusion and approval of my final study. Please do not hesitate to contact me via email or phone if you have any further concerns or questions.

Tracy Herdlein

Appendix C: Initial Questionnaire

Dear Secondary School Teacher,

Please share your experiences and perceptions as a secondary school classroom teacher who works with students with autism spectrum disorder (ASD) by responding to the following questions. Your responses will be kept confidential. Please return this questionnaire via email to herdlein.tracy@stateliners.org within five days. Please reply to each item.

- 1) Do you currently provide reading supports to students with autism spectrum disorder (ASD) in your classroom?
- 2) How many years have you worked with students with ASD?
- 3) Have you attended any professional development/education related to reading? If yes, how much and when?
- 4) Have you attended any professional development/education related to students with ASD? If so what, when, where?

Thank you for your support in my research study.

Sincerely,

Tracy Herdlein

Appendix D: RQ1 *A Priori* and Second Phase Codes from Interviews***A Priori* Code: Professional Development; Need for Communication****Table D1***RQ1 Coding Pattern 1: Inadequate Education and/or Profession Development*

Participant	Excerpts	Second Phase Coding
P1	My professional development is limited to almost none in this capacity.	“limited education”
P2	PD courses related to ASD once per year... literacy courses and ASD. Last few years have had training and education for ASD.	“courses related”
P4	Haven’t had as much like specific formal ASD training...have attended the New Jersey Autism conference.	“no specific training”
P6	What we had in college when I was getting my bachelor's degree that taught about autism and the spectrum was minuscule.... Our district has not touched much on it at all.	“Bachelors courses”
P7	Professional development? Nothing. Education, nothing until I started to teach an education course.... I don’t even think autism was a category.	“No district training”
P8	I’ve only done the vector training that we do through the school website. Professional trainings that we had to listen to and respond to. It seemed to be very basic, that’s the only training that I’ve had on autism.	“Vector training...very basic”
P9	I have my master’s degree in education, and my specialization was special education, so we learned a little bit about the autism spectrum disorder in graduate school and that was 25 years.	“very little”

A Priori Code: How Teacher's Education Affects Intervention**Table D2***RQ1 Coding Pattern 2: Importance of Communication*

Participant	Excerpt	Second Phase Coding
P1	When I've talked to those staff members, classwork, teachers, guidance counselors or talk to a parent, I learned different strategies, or we talk through what was happening with a student. I have used those staff members, also guidance counselors. The nurse, security, and the school-based crisis counselor's help.	"talked to members, staff, parents" "use staff members, guidance counselors"
P2	I will always touch base with the paraprofessional prior and following the session, discuss what we've done and then see what they can do to implement the strategies or if there's any downtime to do some of the activities with the student.	"touch base with paraprofessionals"
P3	You have to have the right staff member paraprofessional to have a rapport with the student because if they don't understand why we're doing these methods of teaching and why, breaking it down into little baby steps, then it's so difficult, so you have to really make sure that they read the idea.	"have the right rapport"
P4	I only have that student in one class. I don't see her in other classes. So, I'm getting information second or third hand.	"getting information second hand"
P6	A lot of these kids with the ASD need that one-on-one instruction. It would be nice if they can build a connection with these aids first off.	"one-on-one...build a connection"
P7	We don't have teaching assistants like we should. In the past I've had to communicate with them very clearly about what they need to do and not do with my kids.	"had to communicate with them"
P8	There should be people who have information about these kids, who should be sharing it with us. I don't think as a classroom teacher, we should not have to be going looking for it... Have the kids listed on what are their triggers, what works, what are the rewards, and have a thing, a very fluid document, anybody can view that you don't have to go into that IEP...we were talking about the quality of the IEP plan that is well written that ... it can communicate what that kid needs, our job would be so much easier.	"people should have information...share with us" "fluid document...can communicate needs"
P9	Sometimes the students with autism don't really want to talk to them (aides) ... sometimes they (students w/ ASD) just want to interact with one person.	"don't want to talk ...interact with one person"

I do a lot of in-class support...I'm usually the person also that will go over and be with the student with autism and help them the most.	“help them”
It's frustrating when I can't bring them out of the classroom and teach them because I felt like some of the times the kids were not getting it...You just keep trying to do the best that you can, and sometimes they aren't going to get a concept...you just have to accept that.	“the kids were not getting it”

A Priori Code: Collaboration of resources

Table D3

RQ1 Coding Pattern 3: Successful Interventions Through Collaboration

Participant	Excerpt	Second Phase Coding
P1	I talking to a case manager of a student.... He gave me some handouts for how to handle a student who thought more concretely and literally and had these personality traits. That is seriously the only thing I can think of that in the almost 25 years of teaching. So inherent in those duties from in-class support (teachers) that help.	“case manager of student” “handouts”
P2	I was able to be a co teacher in some of the classrooms.... A lot of the students now have the Chromebooks.... I'm able to see the content that is so super helpful because I'm able to help the students with some of the vocabulary.	“co-teacher”
P3	I'm very involved with them sharing their ideas and what works for the students, and some of the paraprofessionals have the best ideas that I don't pick up and they pay close attention to detail. So, I use them constantly as a support system.	“sharing ideas” “support system”
P4	It's nice to have somebody who's constantly talking and working with you and tweaking things.... And not to say that anybody who's trained in autism or who has a kid with autism is so much better and more qualified than somebody else who isn't. You just have a different approach and a different thing to bring to it.... My conversations with some of the teachers is...she's not trying to upset you; I know it sounds ridiculous that she keeps asking you the same question. She doesn't know	“working with you” “different approach”

	how to ask it differently, but she's not getting what she needs. And you're trying to explain it and you can't figure out why she hasn't got it.	
P6	The aides mostly work in small groups and work with them (students w/ ASD). They do reading stories, discuss all the little intricate components of a short little story, whether it's an article or whatever, and discussing it with them and having the kids communicate what their thoughts are, what their understanding is, what questions they might have. And then from there go a little further answer some different questions.	"small groups"
P7	I also think we have a very good speech therapist who reaches out to us and lets us know what works with these particular kids, what they're working on with them...what we can be doing in the classroom as well.... She'll reach out and say, what are you doing in class that I can support during therapy?	"good speech therapist...know what works"
P9	I used to work with a special education teacher who often had a relationship with the students with ASD. She was especially good with a student who also had an IEP. She could handle his discipline issues well, so my best move was to back off and provide her with support.	"special education teacher"

Appendix E: Third Phase Codes from Interviews

Table E1*RQ1 Theme 1: Addressing Student Behavior*

Participant	Excerpt	Third Phase Coding
P1	Before I got information, I remember that challenge was how do I calm her or quash the issue because she got more upset, the more I thought that she would need a break. So, the challenge was, how do I keep the class going, and not involve her situation, which I don't even think that she even necessarily cared. But in my mind, I was protecting her ... now that I've got more information on ASD, on how to handle a particular student and her struggles, and how to redirect her and help her be successful ... I use trial and error, so I guess walking the fine line of how to handle this disability.	“challenge...how do I keep her calm” “redirect her” “walking a fine line”
P3	We need to get through to the behavior first. The behavior is the one that's blocking them from learning. So, once you get through that behavior, whether it's self-stimulation, or they're just have echolalia, not comprehending what you're saying.	“behavior first”
P4	The idea of respect really isn't, it's not embedded in the same way that say a student without a disability would have.... If you see any sort of like agitation or frustration, this internal piece I have no idea where they're at, but I know how horrible that feels and you can't think or move past it. So, you really have to deal with that part first. And whether that's a sensory thing, whether it's taking a walk, meditating, doing some breathing exercises ... creating that sense of calm ... trying to find that little piece that is unique to each kid which oftentimes, they don't know what regulates them.	“agitation or frustration” “can't think or move past it...deal with that part first”
P7	They might be looking for those strategies to help self-manage some of those behaviors.... We have a bag of tricks that a lot of the younger teachers don't have.	“manage some of those behaviors”
P8	So that's the biggest challenge and keeping the students on task without distractions is another challenge. If they're not fully engaged in what you're teaching and distracted by other noises throughout the room or in the hallway, the comprehension of material may not be accomplished.	“biggest challenge keeping students on task”

Table E2*RQ1 Theme 2: Individualized Interventions for Figurative Language and Character**Nuances*

Participant	Excerpt	Third Phase Coding
P4	You can use the word respect, but it's kind of like these other words like love or hate, you know, they don't have meaning. They don't always have the same meaning to every single kid.... We'll focus on a reading piece and the figurative language piece, symbolism ... an example like <i>Of Mice and Men</i> , which is taught usually sophomore year, I'm looking at basic things like theme and symbolism, really breaking that down, but when you have one kid who doesn't get it.... It just doesn't mesh for them.	“words like love or hate...don't have meaning” “themes and symbolism” “don't mesh for them”
P6	I noticed that the kids that I have, who do have ASD, they're very concrete. They need examples, they need to see it. They need to be told a little story about it. That kind of helps, but they need something to look at, to help them out. I guess helps them to make connections maybe so that works out better. They need a lot more explaining; the students who are on the spectrum, a lot more time for processing a lot more time for understanding.... They (students with ASD) don't understand, it goes right over their head as if it were absolutely nothing.	“very concrete” “told a story...to make a connection” “goes right over their heads”
P7	The challenges would definitely be if you allow them to respond in a very concrete manner.... The challenges become an issue when you're asking them to do anything that's abstract and anything that involves creativity.	“very concrete manner” “challenge...anything abstract ...involves creativity”
P8	Kids with ASD seem to be very concrete thinkers, and to draw them into the abstract is, I usually start with character feelings and motivations. I know that something that a lot of people have been working with them on as they've been going through the earlier grades.... To get the component of a true analysis, deep analysis ... oftentimes I'm not able to get there.	“concrete thinkers...start with character feelings and motivation” “often I'm not able to get there”

Table E3*RQ1 Theme 3: Generalization and Consistency of Interventions*

Participant	Excerpt	Third Phase Coding
P1	I just I know that when I'm in real time with them in class And I break it down for them, they're getting too literal, and they don't see the actual meaning behind it. I can redirect them, but I don't know when they have it on their own.	"don't see the actual meaning behind it"
P3	The most important is consistency ... consistency and constant repetition is really the key to learning. If I do the same thing every day, follow a routine, they love it ... they know when it's not the same routine, so they know it's out of sync and we're doing something else, and they'll let you know verbally.	"consistency and constant repetition"
P4	The biggest challenges I've experienced with working comprehension of reading materials is remembering what they read. Through my experience, some students can comprehend the information in moment with certain prompts, but when prompted to recall the information a few minutes later or the next day they cannot. Let's say it's inferencing, which is like super, super hard. In our program, we see what they did while they were in the software. But when we do the small group work and we hand out the worksheets, but we don't really know how they're doing ... we only know what they're doing in the software with inferencing.... I don't know if the generalization isn't there.	"remembering what they read" "prompted to recall...they cannot" "don't know if the generalization is there"
P5	They seem to struggle to do what they learned in class, to a real-life situation. So yeah, generalizing is difficult for students have autism for sure.... With the scaffolding, we've been trying to take away some prompts to see if they're really comprehending.	"what they learned...to real-life situations"
P7	I think that's an intellectual thing if they are able to generalize it (intervention) into another story or poetry or, you know, whatever the skill.... In the past, with kids that I've had for a nice amount of time, typically needed prompting, and generalizing that skill into a different setting. But, once they were prompted, they could quickly remember what that skill was.... I've never had that aha moment when they did it on their own.	"intellectual thing...if able to generalize it"

Appendix F: RQ2 *A Priori* and Second Phase Codes from Interviews***A Priori* Code: Informal Assessment****Table F1***RQ2 Pattern 1: Unsure of Evidence-Based Assessments*

Participant	Excerpts	Third Phase Coding
P1	I gave that student a chance to re-submit that work, because I know that that student had that weakness and that struggle on that day.	“chance to re-submit that work”
P2	For reading, I feel like it is more informal	“feel like it is more informal”
P3	go down recently this workbook and look at what levels they were at, and that helped so much with what levels to choose which program to use for them or what they understood.	“with what levels to choose which program to use for them or what they understood.”
P4	But for some of these kids, that’s what they need to be able to copy and paste it and then to be able to read through it a few times. Talk about it, digest it, and then get their opinion/answer.	“oral assessment” “Talk about it, digest it, and then get their opinion/answer.”
P5	I use the Attainment series; I use basically the workbook and observation but the workbooks with the writing tasks and the comprehension aspect of it. That’s basically how I assess.	“Attainment series” “observation”
P6	I use their reading inventory, which is the first and foremost to determine their levels. Then we have their reading fluency. RC tests that they do for whatever books they have read. They got the accelerator reader. We’re using IXL two right now in the classroom.	“reading inventory”
P7	I have better luck doing an oral response. And even if it’s not just a specific answer to a specific question.	“oral response”
P9	So, because sometimes the kids with autism, would have anxiety when they see an extra-long test, they will start to freak out. Sometimes, the kids will just shut down, and we don’t want that to happen. Modifications, I would also give maybe a word	“Modifications”

bank if they needed one. If it was multiple choice, knock it down to three choices or two choices.”

A Priori Code: Formal Assessment

Table F2

RQ2 Pattern 2: Distrust in Formal Assessments for Students with ASD

Participant	Excerpt	Third Phase Coding
P1	I know it's working if the student is able to understand the objective and understand the task or the standard that we're tackling.	“able to understand the objective”
P2	I might even literally do the exact same paragraph at the beginning of the year and at the end of the year and see, how are they able to retell that story now or how are they able to read, to answer those WH questions and hopefully this has paid off.	“determine progress through just repeated informal measures”
P4	I think standardized tests are poor assessment of any child. Because if you're not good at multiple choice tests, and you don't have good test taking strategies.	“standardized tests are poor assessment”
P5	So not one assessment doesn't always give you a clear indication that they're comprehending.	“one assessment doesn't always give you a clear indication”
P7	I will give them a shot at redoing it, maybe their introduction is really well formed...but maybe they didn't expand on the conclusion enough, so I'll ask them, “How could you expand or stretch this out, or explain it a little more clearly at the end?” And I'll let them redo the middle.	“redoing it”
P8	If they are not understanding. I sometimes verbalize the assessment.	“not understanding” “verbalize the assessment”
P9	I give them partial credit.	“partial credit”

Appendix G: RQ2 *A Priori* and Third Phase Codes from Interviews**Table G1***RQ2 Theme 1: Alternative Assessments*

Participant	Excerpts	Third Phase Coding
P1	that wouldn't be fair to grade that. As it was submitted, based on that person's inability to get through that.	"re-submit work" "wouldn't be fair to grade... based on that person's inability"
P2	I like to probe different areas of language. So, I'll often do a short paragraph where the students are then required to answer their WH questions.	"probe different areas of language... answer their WH questions"
P3	It was more of a tactile program to assess.	"tactile program to assess"
P4	The hard part is determining what they know as opposed to how they can communicate what they know. If we could just talk and do more of like an oral assessment, I would get a better idea of what do you really know about the information	"determining what they know" "oral assessment"
P5	I use basically the workbook and observation but the workbooks with the writing tasks and the comprehension aspect of it. That's basically how I assess.	"observation"
P6	If I can have an aid, sit with the students and work, listen, and talk with them and discuss as they're going along. That really helps a lot with their comprehension and understanding.	"listen, and talk with them and discuss as they're going along"
P7	letting them retell	"oral response"
P9	If there were fill in the words, which our geometry class has, I would take off all the words that didn't belong on there. I would alter the difficulty of a problem or reduce the number of problems on a test.	"alter the difficulty"

A Priori Code: Formal Assessment**Table G2***RQ2 Theme 2: Scaffolding Assessments*

Participant	Excerpt	Third Phase Coding
P1	Assessing them differently would mean altering, not the expectation, but how it's being assessed, how it's being graded.	"not the expectation, but how it's being assessed"
P2	Progress monitoring would be the way to indicate and to determine progress through just repeated informal measures pre and post basically.	"Progress monitoring"
P4	You have to talk her through the whole process, ... and in this case, you can't just give nebulous examples like man versus man, man versus nature and versus himself. That doesn't mean anything to this person, like they need the concrete example.	"talk her through the whole process" "concrete examples"
P5	A bunch of assessments and data over time, will give you that, reading comprehension and the indication that they're actually learning, comprehending what they're reading and different pursuits.... We do track information and a lot of their goals, especially with my kids are based off of reading comprehension and story elements. A lot of it's, you know, it's through the informal assessments. I gave him a lot of it through teacher observation.	"bunch of assessments and data over time" "do track information" "teacher observation"
P7	How could you expand or stretch this out, or explain it a little more clearly at the end? ... I think that's part of meeting them where they are.	"redoing it" "meeting them where they are"
P8	I will restate questions for them. If they are not understanding. ...I would sometimes put in scaffolding questions that they could use, Part A and then Part B and Part B would be the actual question part, so it takes them a step toward it ... does really well with vocabulary quizzes and tests that require memorization of information ... the regurgitation, it's the concrete thinking again ... anything to do with abstract understanding needs guidance or he's not going there.	"restate questions" "scaffold questions" "anything to do with abstract understanding needs guidance"
P9	They can get step number one and number two, can't get three and four, so they would get half credit for the problem.	"can get step number one and number two,

can't get three
and four"

Appendix H: List of Evidence-Based Reading Comprehension Interventions

Table H1*Evidence-Based Interventions*

Concept	Evidence-Based Interventions
<i>Figurative Language</i>	Direct teaching Visual representation Experiences in conversation Experiences in text Repetition of topic
<i>Vocabulary Acquisition</i>	Interest-based vocabulary Text-embedded vocabulary Music lyrics Movie subtitles Word game apps Word journals Reading computer-based programs
<i>Character Awareness</i>	Readers Theater Social studies Venn diagrams Storytelling
<i>Comprehension</i>	Graphic organizers Anaphoric cueing Question-Answer-Relationship