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Underserved and Underrecognized: Elevating Teaching Strategies, Special Education Eligibility, and Educational Outcomes for Grade 2-6 Girls on the Autism Spectrum

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Underserved and Underrecognized: Elevating Teaching Strategies, Special Education Eligibility, and Educational Outcomes for Grade 2-6 Girls on the Autism Spectrum

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ABSTRACT

This study involved a qualitative exploratory case study research design and employed in-depth online interviews as the primary data collection method. Participants were former or current special education teachers in Minnesota who had worked with Grade 2-6 girls on the autism spectrum and were sourced from professional networks, educational associations, online platforms, chain sampling, and snowball sampling. This study sought to elucidate the reasons behind the underidentification of girls eligible for autism spectrum special education services, streamline their qualification process, reveal practical educational strategies for academic, emotional, and social support, and furnish accessible resources and training alternatives for classroom teachers assisting girls diagnosed on the autism spectrum or eligible for autism spectrum special education services. Four key themes related to grade 2 to 6 girls on the autism spectrum emerged in this study: "Identification and Referral Challenges," emphasizing the need to broaden expectations and recognize diverse behaviors; "Qualification Challenges," highlighting concerns about standardized checklists and advocating for a tailored evaluation approach and enhanced collaboration among professionals; "Misidentification Challenges and Complexities," exploring unintentional and intentional misidentification, emphasizing the need for a flexible, culturally sensitive diagnostic process; and "Improving Educational Outcomes," which discusses effective classroom supports and accommodations for these girls, emphasizing the challenges in measuring educational outcomes and the need for realistic goal tracking within Individualized Education Programs (IEPs). Recommendations for educational leaders include enhanced training and professional development for teachers, collaborative evaluation practices with multidisciplinary teams, a critical review and update of evaluation tools, and mechanisms for continuous improvement in educational leadership practices.

Keywords:

Autism spectrum disorder, autism spectrum eligibility, autistic girls

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CHAPTER ONE: INTRODUCTION

Autism in girls and women[1] is critically underdiagnosed. The primary reason for this is that the current diagnostic criteria for Autism Spectrum Disorder (ASD) are based on historical research and studies primarily involving young males (D'Mello et al., 2022). Females on the autism spectrum typically present very differently than young males on the autism spectrum due to a range of factors, including social and biological factors (Halladay et al., 2015). Females who are diagnosed often are diagnosed because their ASD presents in a fashion similar to that which is typical of males, because a sibling or other family member was diagnosed with ASD, or because they have spent years pursuing second opinions on conflicting diagnoses from a variety of medical professionals and finally have found a professional who was able to provide the correct diagnosis (Estrin et al., 2021; McCrossin, 2022; Harmens, Sedgewick, Hobson, 2022).

Problem of Practice

My study revealed that girls on the autism spectrum are disproportionately underrecognized and underserved compared to their male counterparts, leading to educational and social disadvantages. This can lead to a complex variety of issues for autistic girls, especially as they reach adulthood. For example, these girls may have experienced academic success in primary and even secondary education; however, as their age and life demands increase, they may begin to hit barriers in post-secondary education or their careers (Gabrielsen et al., 2023). Post-secondary institutions are unlikely to provide accommodations if the student cannot show a

[1] In this dissertation, the terms "girls" and "women" in referenced studies may refer to people assigned female at birth, people whose gender identity/identities is/are associated with femininity but who were not assigned female at birth, and/or people assigned female at birth whose gender identity/identities is/are not associated with femininity. This is because the majority of the literature and studies surrounding autistic girls and women do not differentiate between sex and gender or are presented as sex-based with no discussion of gender. When I am discussing "girls" and "women," the reader may assume I am using these terms as defined above in this footnote.

history of needing academic accommodations or support throughout their primary and secondary school years, presuming that lack of such a history means the student is attempting to get an unfair academic advantage (Feder Ostrov & Ibarra 2019). This also applies to seeking accommodations in post-secondary standardized testing or licensure examinations, which can be significantly more challenging than primary- and secondary-level testing (Feder Ostrov & Ibarra 2019).

The current diagnostic definition of autism spectrum disorder (see Appendix 1) is based on the initial research of Hans Asperger and Leo Kanner – research colored heavily by its scientific era (Atbaşoğlu, 2020). Through my research on the literature and my study, I found that while this definition has been updated over the past several decades, its core continues to be based on research rife with, albeit likely unwittingly, classist and sexist implications.

Study Purpose

The purpose of my study had two parts. The first was to discover and analyze the challenges in identifying and qualifying grade 2-6 girls for autism-spectrum services in the school setting. The second was to discover and analyze the teaching strategies, actions, and supports classroom teachers could implement to improve educational outcomes for qualifying and non-qualifying girls on the autism spectrum.

My study aimed to show why many girls eligible for autism spectrum special education services are not being identified and facilitate their qualification for special education services. Additionally, my study sought to uncover practical educational strategies for academic, emotional, and social support of these girls as well as to provide accessible resources and training options for classroom teachers supporting girls either diagnosed on the autism spectrum or eligible for ASD special education services.

Overview of Previous Research

My first body of literature is focused on educational training approaches for teachers servicing targeted disabled student populations. Specifically, this outlines the different types of teacher development, elements of effective teacher development programs, and autism training centered on positive student outcomes. My second body of literature looks at educational strategies and learning actions for teachers supporting students on the autism spectrum. This includes a list of the most effective evidence-based practices and the elements necessary to properly apply these practices and create optimal student outcomes. My third body of literature examines bias and norming in education surrounding gender and ability. This body centers on how the literature on autism and other disabilities is often gendered and encourages using normalization to educate these populations.

Research Questions

The information for my study was gathered by remotely interviewing a combination of six current and former Minnesota special education teachers who had worked with grade 2-6 girls on the autism spectrum. The following two research questions guided my interview questions and investigated my dissertation's problem of practice:

1. What are the challenges in identifying and qualifying grade 2-6 girls for autism-spectrum services in the school setting?
2. What teaching strategies, actions, and supports could classroom teachers implement to improve the educational outcomes for grade 2-6 girls qualifying for autism-spectrum services, as well as for the girls who were assessed and did not qualify for services?

Research Site/Context and Participants

My study was based on a qualitative exploratory case study research design and utilized in-depth online interviews as the primary data collection method. Participants were current or former Minnesota special education teachers who had worked with Grades 2-6 girls on the autism spectrum. Participants were sourced via Minnesota professional networks, educational associations, online platforms, and snowball sampling.

Theoretical Framework

To address the aforementioned research questions, this study utilized methodological pragmatism. Creswell defines pragmatism as "a worldview aris[ing] out of actions, situations, and consequences rather than antecedent conditions. … [that is concerned] with applications—what works—and solutions to problems" (2009, p. 10). The pragmatic theoretical framework is further grounded in the idea that research "always occurs in social, historical, political, and other contexts" and that studies with pragmatic frameworks are frequently underpinned by "a theoretical lens that is reflective of social justice and political aims" (2009, p. 11). The framework in my study The study in this dissertation primarily used a qualitative approach, and the pragmatic framework gave more research flexibility in a study focused on a population with a diverse and nuanced presentation.

Significance of the Study

Despite increased awareness of autism spectrum disorder, I found in my review of the literature that research about girls on the spectrum continues to be limited. In the United States, 20.4% of children ages 3 to 21 enrolled in public schools receive special education services, and 11.5% (828,338) of these students receive autism-related services (Digest of Education Statistics, 2021). The latest data from the Center for Disease Control and Prevention (CDC) on 4-year-old

children showed that “children born in 2014 were 50% more likely to receive an ASD diagnosis or ASD special education classification by 48 months compared to children born in 2010” (Autism and Developmental Disabilities Monitoring (ADDM) Network, 2022). Despite the prevalence of ASD and this notable diagnostic increase, the number of girls diagnosed as being on the autism spectrum continues to be dramatically outweighed by the number of boys with an ASD diagnosis (Centers for Disease Control and Prevention, 2021.

The Centers for Disease Control and Prevention states that “for every 1 girl, 4.1 boys [have been] identified with ASD” (Centers for Disease Control and Prevention, 2021). This data also does not account for transgender and gender non-binary children, according to the CDC (2021). Between 2014 and 2018 (the most recent data), the average ratio of male to female students receiving ASD services in school was approximately 5.2 to 1 (Centers for Disease Control and Prevention, 2021). Educational leaders have a responsibility to not only academically and behaviorally support their students but also to ensure they are receiving an equal education regardless of sex. The sizable autistic population in schools indicates there are likely even more students, potentially girls, who have not been identified but need academic and behavioral support.

Definition of Terms

The following terms are featured throughout this dissertation:

Autism Diagnostic Observation Schedule-Second Edition: “is a standardized assessment tool that helps providers diagnose autism spectrum disorders (ASD) in children and adults. The ADOS involves a semi-structured play or interview session determined by the age and communication level of the individual” (Massachusetts General Hospital, 2023).

Autism Spectrum Rating Scales: "[is] the first nationally standardized, norm-referenced ASD Rating Scale. This multi-informant measure helps identify symptoms, behaviors, and associated features of Autism Spectrum Disorders (ASDs) in children and adolescents aged 2 to 18 years" (Pearson, 2023).

Autism Spectrum Disorder: "Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects how an individual processes information and interprets the world. Core features of autism are persistent deficits in social interaction and communication and restricted, repetitive or stereotyped patterns of behavior, interests or activities. Each individual with ASD displays a unique combination of characteristics, ranging from mild to severe, requiring individually determined educational and treatment programming. The first signs of autism appear in early childhood and can be detected by an experienced professional as early as 18 to 24 months of age. Early and accurate identification and intervention can change the trajectory for many children on the autism spectrum" (Minnesota Department of Education, 2022).

Autism Spectrum Disorder (Minnesota Educational Criteria): See Appendix 2.

DSM-5 Autism Diagnostic Criteria: See Appendix 1.

Emotional or Behavioral Disorders (Minnesota Educational Criteria): "For students to meet criteria and receive special education services in Minnesota under the disability category of Emotional Behavior Disorders (EBD), students must demonstrate behavioral consistency by having an established pattern of one or more of the following emotional or behavioral responses: A. withdrawal or anxiety, depression, problems with mood, or feelings of self-worth; B. disordered thought processes with unusual behavior patterns and atypical communication styles; or C. aggression, hyperactivity, or impulsivity. The established pattern of emotional or behavioral responses must adversely affect educational or developmental performance, including

intrapersonal, academic, vocational or social skills; be significantly different from appropriate age, cultural or ethnic norms; and be more than temporary, expected responses to stressful events in the environment. The emotional or behavioral responses must be consistently exhibited in at least three different settings, two of which must be educational settings, and one other setting in either the home, child care or community. The responses must not be primarily the result of intellectual, sensory, or acute or chronic physical health conditions" (Minnesota Department of Education, 2023).

Evidence-based Practices: "practices that have been shown, through research, to be effective with children and youth with ASD" (Odom & Wong, 2015, p. 14).

Individualized Education Program: "the term individualized education program or IEP means a written statement for each child with a disability that is developed, reviewed, and revised in a meeting in accordance with [federal and state law]." (Individuals with Disabilities Education Act, 2017).

Normalization/Norming: An act that "prescribes acceptable behavior based on norms and relies on professionals to train their clients to follow the standards of nondisabled communities" (Bumiller, 2008, p. 976).

Optimal Leadership: is "characterized by high levels of transformational and transactional leadership behaviors" (Melgarejo et al., 2020, p. 1107).

Social Validity: When assessing the effectiveness of practices, one must look to "judgments of social validity" (Wolf, 1978, p. 207). These include "1. The social significance of the goals. Are the specific behavioral goals really what society wants? 2. The social appropriateness of the procedures. Do the ends justify the means? That is, do the participants, caregivers and other consumers consider the treatment procedures acceptable? 3. The social importance of the effects.

Are consumers satisfied with the results? All the results, including any unpredicted ones?" (p. 207).

Teacher Coaching: "individualized, time-intensive, sustained over the course of a semester or year" that was "context specific, and focused on discrete skills" (Kraft et al., 2018, p. 548).

Undifferentiated Leadership: being "characterized by moderately low levels of all leadership behaviors" (Melgarejo et al., 2020, p. 1107).

Conclusion

This chapter introduces the problem of girls with autism being underrepresented and underserved in schools and why this matters in educational leadership. Focused on grade 2-6 girls on the autism spectrum, the research identifies challenges and proposes practical teaching strategies within the current social and historical context. The research questions presented above addressed identification and qualification challenges and asked what teaching strategies create the most effective outcomes for students on the autism spectrum, guiding this dissertation's study. The next chapter of this dissertation provides a more extensive review of the literature relevant to the problem of girls on the autism spectrum being underrecognized and underrepresented.

CHAPTER TWO: LITERATURE REVIEW

Introduction

Girls and women on the autism spectrum disorder are critically under identified and, accordingly, underserved in schools. In 2018, The Centers for Disease Control and Prevention reported that 4.2 times as many boys have been identified on the autism spectrum than girls. (Maenner et al., 2021). However, recent literature reviews find that the CDC statistic is a number that underdiagnosed autistic girls (Loomes et al., 2017, Hull, 2020). Specifically, these reviews state that diagnostic criteria and research show gender bias against autistic girls and that, in reality, there are approximately three boys on the autism spectrum for every girl (Loomes et al., 2017, Hull, 2020). These reviews reveal a substantial percentage of autistic girls being missed in autism diagnosis.

The existing literature, while addressing some different characteristics of autism in girls, primarily does so through small, qualitative, and interview-based studies. Medium- to Larger-scale quantitative research on characteristics of autism in girls does not address how schools can use distinct characteristics to help identify girls on the autism spectrum. Schools currently do not do this because the characteristics they look for during identification come from male-based medical diagnostic criteria. These studies also fail to fully explain their definition of “girls” or “women" and the resulting criteria that participants must meet to qualify for the study. However, recent studies have shown that people who identify as transgender and gender-diverse are approximately 3 to 6 times more likely to be autistic than their peers who do not identify as transgender or gender-diverse, meaning that many girls and women are being excluded from these studies (Warrier et al., 2020).

This study has three aims: 1) identify autism spectrum characteristics in girls grades 2 to 6 and how to successfully qualify them under current autism spectrum disorder eligibility criteria to receive special education services, 2) identify what classroom and special education teachers have found to be practical and successful educational strategies and learning actions accessed by classroom teachers to support the academic, emotional and social needs of girls in grades 2 to 6 diagnosed as autistic or eligible for autism spectrum special education services under educational criteria, and 3) provide educational resources and training that classroom and special education teachers can access to inform and embed strategies and actions for classroom teachers in support of girls in grades 2 to 6 diagnosed as being on the autism spectrum or eligible for autism spectrum special education services under educational criteria.

To address this issue, the literature asks this question: How have scholars understood educational resources and training approaches for teachers servicing targeted disabled student populations, educational strategies and learning actions for teachers supporting autistic students, and gender/ability bias and norming in education?

Historical Background

In her 1925 article, *Schizoid Psychopathy in Children*, Kyiv-born child psychiatrist Grunya Sukhareva first described what is identified now as autistic traits in children (Scher & Gibson, 2021). Sukhareva had studied children at the Psychoneurological Department for Children in Moscow, and she concluded that these children showed a "disorder whose clinical picture shares certain features with schizophrenia, but which yet differs profoundly from schizophrenia" (Ssucharewa & Wolff, 1996, p. 131). In her article, Sukhareva discusses "autistic attitude," drawing the term "autism" from Eugene Bleuler, who coined the term as a specific clinical sign of schizophrenia. Sukhareva also uses "autism" in the clinical way used by Bleuler

and not as the name of the disorder she identifies; rather, Sukhareva calls the disorder she identifies as a whole "schizoid psychopathy" (Al Ghazi, 2018). Sukhareva's research is the first identification of the disorder now known as autism spectrum disorder (Al Ghazi, 2018).

In 1927, French psychiatrist and student of Bleuler, Eugène Minkowski, published his book *La schizophrénie,* which described Bleuler's autism as its own disorder – a disorder that generated schizophrenia and was marked by "a deficit in the basic, nonreflective attunement between the person and *his* [emphasis added] world" (Feinstein, 2011, p. 6). Minkowski further elaborated on his theory, creating the terms "autisme riche" (rich in autism) and "autisme pauvre" (poor in autism), the former meaning "individuals whose fantasies were intense" and the latter meaning "those who were capable of high achievement in a restricted field, but with an absence of fantasy" (Feinstein, 2011, p. 6).

In 1940, Ida Freye, a pedagogue trained in child psychology and development; psychologist Alfons Chorus; and psychiatrist Ton Meyknecht at the children's home of the Paedological Institute in Nijmegen (eastern Netherlands) published the Institute's *Annual Report 1939-1940,* wherein they categorized specific children as "autists" (Van Drenth, 2018). The Institute's earlier *Annual Report, 1937-1938, already contained the "autist" category but was titled* "fundamental esteem problem" instead (Van Drenth, 2018, p. 11). The authors stressed that children in this category did not have a form of psychopathy or schizophrenia; rather, these were normal children with "peculiarities in disposition and character" or developmental problems (Van Drenth, 2018, p. 11). Together, the two annual reports mentioned show the first description of "autism" that matches the modern use of the term (Van Drenth, 2018; Feinstein, 2011).

In the early 1940s, the German psychiatrists Leo Kanner and Hans Asperger, independently of each other, began researching a new childhood disorder that they called

"autism" (Jack, 2014). While Sukhareva's work remained relatively unknown, and Minkowski's work was primarily known to a French audience, Kanner and Asperger's research was soon well-publicized in Germany, with Kanner's spreading even farther west prior to the first English translation of Asperger's work in 1981 (Feinstein, 2011). It is unclear whether Asperger or Kanner ever read Sukhareva's article (which had been translated into German and republished in 1926), but she is not credited in either Asperger's or Kanner's work (Al Ghazi, 2018). Asperger and Kanner believed that autism was genetic and aimed to differentiate it from other childhood diagnoses of psychosis, schizophrenia, intellectual disability, and mental illness (Jack, 2014). In defining autism, Kanner and Asperger relied heavily on autistic children's families (Jack, 2014).

According to Kanner and Asperger, children with autistic traits only came from successful, middle-class parents (Jack, 2014). Kanner and Asperger used character sketches of parents, gender, physical appearance, home cleanliness, personal cleanliness, sexual morality, financial responsibility, employment status, and social class to distinguish autistic children from disabled children who came from poor parents and socially "inferior" backgrounds (Jack, 2014). These disabled children from low-income families and backgrounds were labeled "feebleminded," a condition that eugenic practices sought to eliminate (Jack, 2014). Accordingly, from the beginning, autistic children were differentiated from the "feebleminded" because of their higher class and "superior" appearance and parentage (Jack, 2014).

As Kanner and Asperger's studies proceeded, they identified specific traits in the parents of autistic children: "intelligent and absent-minded, eccentric and anxious, obsessive and withdrawn" (Jack, 2014, p. 24). However, Kanner and Asperger's research employed gender roles and gender norming in identifying these traits (Jack, 2014). So-called "feebleminded" families of the day had been given stereotyped gender roles. Men were viewed as financially

irresponsible, uncleanly, and intellectually disabled, and women were described as being unable to reason, unable to protect themselves, and also as guided solely by emotions, sexuality, and "animal instinct" (Jack, 2014, pp. 19-21).

To differentiate autistic children from the "feebleminded," Kanner and Asperger applied different but more acceptable gender roles and gender norms to parents of autistic children (Jack, 2014). Mothers of autistic children specifically were identified as obsessive, socially odd, and having reduced emotions, while fathers of autistic children were explicitly identified as successful, meticulous, absent-minded, and distant (Jack, 2014). While Asperger investigated autism further, he stated that autism specifically appeared to show an "extreme variant of male intelligence," instantly associating autism with sex – something Kanner did not discuss regarding his study participants (Jack, 2014, p. 24; Asperger, 1944, p. 84). Kanner and Asperger's gender representations and Asperger's association between autism and sex ultimately informed later psychoanalysis used to identify autistic children and to create theories about how autism occurred (Jack, 2014). For example, this influence can be seen in Bruno Bettleheim's 1967 theory that parents, primarily the "refrigerator mothers" (mothers who were perceived as distant and cold), were the cause of autism in children (Bumiller, 2008).

The history of autism is multifaceted and far-reaching, but the history discussed up to this point highlights how sex and gender bias in autism research, literature, medicine, public knowledge, and other areas began and continue to be perpetuated.

Clinical criteria used for making an autism diagnosis differ from the identification criteria used to determine special education autism services in schools. Additionally, school identification criteria can even vary from state to state in the U.S., and few states use autism-specific diagnostic tools in special education service evaluations. While Autism Spectrum

Disorder (ASD) identification criteria in states tend to align with federal guidelines under the Individuals with Disabilities in Education Act (IDEA), assessment tools can vary more widely.

Changes in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision* (DSM-V-TR) from the previous DSM-IV-TR autism spectrum disorder diagnostic criteria oversimplify core ASD symptom identification and exclude many children who are likely on the autism spectrum and would benefit from the services a diagnosis could help them access. Girls and women on the autism spectrum, in particular, are underidentified, leading to questions about the efficacy of tools used in school and clinical settings to identify autistic girls/women and LGBTQIA+ people.

Educational Training Approaches for Teachers Servicing Targeted Disabled Student Populations

Disabled student populations in the United States are legally entitled to a free and appropriate education (FAPE) under section 504 of the Rehabilitation Act of 1973 and the Individuals with Disabilities Education Act (IDEA) (U.S. Department of Education, 2023). As such, educators and related professionals are required to meet the individual educational needs of students with disabilities in the least restrictive environment to ensure an equitable education for students with disabilities and as much access as possible, based on the level of student need, to the same setting as peers without disabilities. Accordingly, teachers and other relevant staff, such as paraprofessionals and specific service providers, need substantial training to properly support students with disabilities and meet the required legal standards. The literature discussed in this section speaks to what scholars accept as optimal versus suboptimal training approaches for educators who serve disabled student populations.

Commonalities in the Literature

Scholars in the field of education training (also referred to as professional development or continuing/continuous professional development/learning) primarily seek links between teacher training and student achievement. Student achievement is most frequently measured by assessing standardized or classroom testing data, but sampling may be by class, grade level, school, district, state, or country. Professional development metrics, however, tend to vary in assessment type and sampling. Some of the teacher assessments I found in my research into the literature include classroom observations, number of professional development hours, teacher coaching, professional learning communities, mentoring, teacher evaluations, amount of knowledge learned and retained, self-efficacy assessments, peer assessments, classroom application, etc.

Studies on education training approaches also show an interest in improvement, whether on the teacher side, student side, or the two combined, and frequently cite the need for more research to find causal relationships more conclusively. As a whole, the literature is paradigmatically positivist as it is primarily evaluative and seeks to analyze impact and effectiveness by assessing outcomes using quantitative methods (Brundrett & Rhodes, 2013, pp. 12-23).

Contributions of the Literature

Wei et al. (2009) discuss teacher development in the U.S. and internationally. Wei et al. break teacher development into the following types: teacher learning in professional communities, joint work in school-based communities, learning from professional communities beyond the school, school-based coaching, and mentoring and coaching during induction. Wei et al. (2009) also looked at academically high-performing countries and identified five professional development practices that they shared. These included providing extensive formal and informal

in-service development opportunities, building professional learning and collaboration time into teacher's work schedules, using ongoing teacher-relevant and contextual professional development activities over multiple occasions, administration involving teachers in curriculum and instructional practice decisions, and new-teacher-specific programs with free collaboration time for teachers and mentors in addition to formal training for mentors (Wei et al., 2009).

Desimone and Garet (2015) analyzed several U.S. cross-sectional studies, longitudinal studies, literature reviews looking at both qualitative and quasi-experimental studies, and large randomized control trials on best practices for teacher professional development programming. Desimone and Garet found the following: "(a) changing procedural classroom behavior is easier than improving content knowledge or inquiry-oriented instruction techniques; (b) teachers vary in response to the same PD [professional development]; (c) PD is more successful when it is explicitly linked to classroom lessons; (d) PD research and implementation must allow for urban contexts (e.g., student and teacher mobility); and (e) leadership plays a key role in supporting and encouraging teachers to implement in the classroom the ideas and strategies they learned in the PD" (2015, p. 252).

Kraft et al. (2018) conducted a meta-analysis on the effectiveness of teacher coaching on student achievement. Kraft et al. defined teacher coaching as "individualized, time-intensive, sustained over the course of a semester or year" that was "context specific, and focused on discrete skills" (2018, p. 548). Kraft et al. found that small-scale teacher coaching programs "improved classroom instruction by 0.63 *SD* and raised student achievement by 0.28 *SD.* These pooled effect sizes are approximately twice the size of effects on instruction for larger-scale programs (0.34 *SD)* and three times the size of effects on achievement for larger programs (0.10 *SD),* with both differences statistically significant at the .05 level" (2018, p. 572). To put this into

context, “statistically significant” here refers to the p-value. If a p-value is statistically significant, this is a strong indicator that the base hypothesis is most likely true / the intervention works (McLeod, 2019b). Effect size is a way to measure the magnitude of the effect of the intervention or, in other words, how well the intervention works (2019b). Following Cohen’s “rule of thumb” (the general guidance used to measure the significance of effect size), an effect size has an insignificant effect if it has a value below 0.2, a small effect if it has a value of 0.2 or higher, a medium effect if it has a value of 0.5 or higher, and a large effect if it has a value of 0.8 or higher (McLeod, 2019a).

This places Kraft et al.’s findings for small teacher coaching programs improving classroom instruction at a statistically significant level, with a medium effect; for small teacher coaching programs raising student achievement at a statistically significant level, with a small effect; for large teacher coaching programs improving classroom instruction at a statistically significant level, with a small effect; and for large teacher coaching programs raising student achievement at a statistically significant level, with an insignificant effect. This suggests that when teacher coaching programs “scale-up implementation challenges likely attenuate [coaching effectiveness]” (Kraft et al., 2018, p. 572). In other words, coaching effectiveness drops substantially when smaller-scale programs evolve into larger ones.

Sims et al. (2021) conducted a systematic review and meta-analysis of effective teacher development characteristics. Sims et al. specifically assessed causal evidence in the literature, finding that high fidelity in implementing and maintaining teacher coaching interventions is unlikely to occur, that school support system, intervention design, and school context have a strong impact on coaching implementation, and that there is a higher likelihood of interventions being implemented when they are fitted both to needs of the specific school and teacher/s (2021).

Sims et al. further found that the greater the number of mechanisms incorporated into a professional development program, the greater the impact on student test scores (2021).

Sims et al. also identified three effective professional development methods: lesson study, teacher-learning communities, and instructional coaching (2021, p. 24). Within each of these professional development methods, Sims et al. found four essential purposes. These four purposes and the fourteen mechanisms needed to support each of these four purposes properly are: 1) Instill Insight: manage cognitive load, revisit material; 2) Motivate Goals: goal setting, credible source, positive reinforcement; 3) Teach Techniques: instruction, practical social support, feedback, modelling, rehearsal; 4) Embed Practice: environmental cues, action planning, monitoring behaviour, context-specific repetition (Sims et al., 2021, pp. 24, 31).

Sims et al. provide the following definitions for mechanisms, grouped by professional development method:

- Mechanisms of Lesson Study: “Action planning: when teachers jointly develop the lesson plan for a specific lesson. Practical social support: when teachers advise each other on how to develop the lesson. Feedback: from the observer-teachers who follow the study lesson”;
- Mechanisms of Instructional Coaching: “Goal setting: coaches and/or coachees identify specific, focused areas of improvement for coachees. Feedback: coaches provide feedback following observations of coachee practice. Instruction OR modelling: coaches point coachees toward specific improvements in practice. Rehearsal OR context-specific repetition: instructional coaching always involves deliberate practice of new techniques, outside or inside the classroom”;

- Mechanisms of Strong Teacher Learning Communities, “Practical social support: when teachers advise each other on how to develop the lesson. Action planning: when teachers jointly develop the lesson plan for a specific lesson.” “Goal setting: teachers identify specific, focused areas of improvement [for themselves and each other]” (2021, pp. 23-24).

As for teacher educational training approaches for disabled students, more specifically autistic students, the literature is more sparse, but most of the themes are nonetheless consistent with the broader educational professional development literature. Lessner Listiakova and Preece (2020) utilize a critical review methodology in assessing the professional development literature, with a focus on autism due to a lack of consistency in research designs and concerns about missing key themes if too much of the literature needed to be excluded from conducting a systematic review. Studies falling into three categories were included in this critical review: studies concerning teacher attitudes regarding autism spectrum disorder and other issues like school ethos and teacher aspirations; studies about issues surrounding teacher training needs as well as knowledge and skills in relation to autism; and studies on methods and interventions for supporting autistic students (2020, p. 180).

Lessner Listiakova and Preece’s review found further-narrowed themes, including “teachers’ general skills and confidence in teaching students with ASD”; “the need for effective collaboration – with other teachers, other professionals and families”; and “specific classroom issues [such as] supporting communication, managing challenging behaviour, and making appropriate adaptations and modifications to support learning” (Lessner Listiakova & Preece, 2020, p. 191). While these studies identify essential areas of growth and need, there appears to be

a general lack of studies addressing or evaluating how to model teacher training and what effective teacher training approaches for autism include (Lessner Listiakova & Preece, 2020).

Hill et al. (2021) identify six items that professional development programs need to follow to positively affect student outcomes. First, Hill et al. note that "[q]uality is more important than quantity," and the number of hours of professional development does not improve student outcomes unless the quality is high-value (2021, p. 7). Second, Hill et al. state that professional learning based on curriculum is efficacious in improving student outcomes if teachers engage in "'doing' the curriculum with peers and rehearsing instruction" and if the professional learning "provides teachers with diagnostic information about students and specific guidance about subsequent instruction" (2021, p. 7). Third, Hill et al. specify that "[g]rounding [professional learning (PL)] in content matters" and that professional learning "providers should discuss whatever topics the PL covers—curriculum, assessment, student learning instruction—in the context of specific disciplinary content" (2021, p. 7). Fourth, Hill, et al. state that "[t]eacher collaboration can boost PL program outcomes" and that professional learning "can be particularly effective when teachers work with members of their grade-level or subject-area teams, especially when that collaboration is well structured" (2021 p. 7). Fifth, Hill, et al. note "[e]xpertise matters," and that professional learning's effectiveness in developing "the knowledge and skills of teachers depends critically on the capabilities and capacities of those leading the PL (outside providers, coaches, or peers)" (2021, p. 7). Finally, Hill et al. articulate that "coherence matters" and that professional learning will need to be adjusted to take into account different types of schools, districts, and environments because "[i]f teachers perceive conflicts between the practices promoted by PL and other sources of instructional guidance, they will not take up those PL practices" (2021, p. 7).

Gonzalez et al. (2022) found "that a 1 SD increase in teacher knowledge and instruction outcomes is associated with a 0.21 SD improvement in student achievement" (2022, p. 22). They also found that "a 1 SD increase in classroom instruction yields a 0.27 SD change in student achievement" (Gonzalez et al., 2022, p. 22). Both findings were identified as being statistically significant (2022, p. 22).

According to Cordingley et al. (2020), effective professional development programs allow for teachers to have "active opportunities to explore new knowledge, ideas and skills encountered during CPD [continuing professional development] activities in their day to day working contexts on a sustained basis through: ongoing phase and/or subject/departmental meetings; and/or high impact CPDL [(continuing professional development learning)] processes structured through explicit protocols such as coaching, mentoring, lesson study or collaborative enquiry" (2020, p. 8). Effective professional development program learning includes activities that "explore and build upon teachers' starting points and their aspirations for their pupils' achievement and well-being," where teachers and leaders "specifically explore how diagnostic and formative assessment will be built into the workshops, seminars etc. and into follow-up active professional learning activities" (Cordingley et al., 2020, p. 8). The authors also noted that effective professional development program learning required "support, tools, and resources" including those "based on appropriate specialist expertise and evidence related to both teaching and learning and its content and on a sound theory of action" and those that "[t]ake account of the practical, cognitive and emotional demands being made on them" (Cordingley et al., 2020, p. 8-9).

Darling-Hammond et al. (2017) found "common design elements of these effective PD approaches" in their systematic review, including approaches that are "content focused,"

"incorporate active learning strategies," "engage teachers in collaboration," "use models and/or modeling," "provide coaching and expert support," "include time for feedback and reflection," and "are of sustained duration" (Darling-Hammond et al., 2017, p. 23).

Vincent-Lancrin et al. (2019) found that across the last decade or so, "[o]ne of the most remarkable innovations for students lay in how their teachers developed their professional knowledge. In brief, the share of students taught by teachers who participated in peer learning increased considerably, while those taught by teachers who attended a formal teacher training in the past two years remained stable" (Vincent-Lancrin et al., 2019, p. 30).

Limitations of the Literature

My research into teacher professional development and training found that the breadth of the literature has steadily increased over the past four decades, increasing at a faster rate in the last 15 years. However, in reviewing the literature, I found inconsistencies that make claims of causality somewhat speculative. For example, I found that teacher, student, and school outcome metrics are non-standardized; definitions of essential terms can imprecise or nebulous; critical data, results, and information about methodology necessary for systematic review and meta-analysis of a study can be missing; not mitigating for or minimizing the effects of confounding variables on sampling can occur; and studies can produce equivocal, inconclusive, or weak results, all contributing to the absence of a consistent empirical picture of the literature.

Despite this absence, I did find a growing selection of studies with structured, complete reporting of their research and a handful of ongoing projects aiming to standardize reporting in the field. I believe publishing more studies that are consistently structured like these will result in stronger evidence of causal relationships and a more robust empirical picture of the literature.

Educational Strategies and Learning Actions for Teachers Supporting Students on the Autism Spectrum

Commonalities in the Literature

Throughout the literature on the best educational strategies and learning actions for teachers supporting students on the autism spectrum, one unifying theme particularly stands out: evidence-based practices. Evidence-based practices are "practices that have been shown, through research, to be effective with children and youth with ASD" (Odom & Wong, 2015, p. 14). In 2006, the U.S. Department of Education tasked the National Professional Development Center on Autism Spectrum Disorder (NPDC) with "the explicit goal of promoting educators' use of evidence-based practices for children and youth with ASD (from birth to 22 years—that is, from early intervention to the transition-to-community years of schooling)" (Odom & Wong, 2015, p. 14). Odom and other professionals at the NPDC conducted two literature reviews, which ultimately resulted in narrowing down the practices discussed in the reviewed literature to 27 evidence-based practices that "educators can use to promote the development and learning of children and youth with ASD" (Odom & Wong, 2015, pp. 14-15). The practices included the following:

Current Evidence-Based Practices, Grouped Conceptually

Fundamental Applied Behavior Analysis Techniques

- Reinforcement
- Prompting
- Time Delay
- Modeling
- Task Analysis

Positive Behavioral Interventions and Supports

- Functional Behavior Assessment
- Antecedent-Based Intervention
- Extinction

- Response Interruption/Redirection
- Differential Reinforcement of Alternative, Incompatible, or Other Behavior
- Functional Communication Training

Social-Communication Interventions

- Social Skills Training
- Peer-Mediated Instruction and Intervention
- Social Narratives
- Structured Play Group
- Picture Exchange Communication System

Teaching Strategies

- Visual Supports
- Discrete Trial Teaching
- Naturalistic Intervention
- Parent-Implemented Intervention
- Pivotal Response Training
- Scripting
- Exercise

Cognitive Behavioral Interventions

- Self-Management
- Cognitive Behavioral Intervention

Technologically Oriented Interventions

- Technology-Aided Instruction and Intervention
- Video Modeling

Note. From "Connecting the Dots: Supporting Students with Autism Spectrum Disorder" by S.L. Odom and C. Wong, 2015, *American Educator*, *39*(2), p. 15.

Contributions of the Literature

A number of interesting studies have contributed to the research in the field of educational strategies and learning actions for teachers supporting students on the autism spectrum, particularly in relation to ensuring effective outcomes.

In their study, Melgarejo et al. (2020) identified a key component behind readying teachers to engage in learning actions and employ educational strategies. Specifically, Melgarejo et al. emphasized the importance of effective leadership and implementation climate in ensuring teachers successfully learn and apply the primary intervention used in supporting students on the autism spectrum: evidence-based practices (2020).

Not only did Melgarejo et al.'s study find that there were "associations between leadership and implementation climate and fidelity of implementation of three [evidence-based practices] . . . for children with ASD in self-contained elementary settings," but they also found that the "*optimal* leadership pattern was associated with higher teacher/ staff-reported implementation climate as compared to the *undifferentiated* leadership pattern" (2020, pp. 1113-1114). Optimal leadership was defined as being "characterized by high levels of transformational and transactional leadership behaviors," and undifferentiated leadership was defined as being "characterized by moderately low levels of all leadership behaviors" (p. 1107).

Another study by Williams et al. (2019) reinforces the importance of climate, noting that "[t]eachers and staff in schools with a comprehensive profile (high proficiency culture, positive climate) exhibited higher fidelity to two of three [evidence-based practices] (d's = .95 to 1.64) and reported superior work attitudes (d's =. 71 to 1.93) than teachers and staff in all other schools." Additionally, Williams et al. reported, "[t]eachers and staff in supportive schools (low rigidity culture, positive climate) had better work attitudes, but not better fidelity, than those in

schools with indifferent (low culture/climate, elevated stress) and constrained (high rigidity and resistance, high stress) profiles" (2019, p. 1). Accordingly, school climate/culture appears to impact teachers' fidelity in applying evidence-based practices to support autistic students (Williams et al., 2019).

A 2014 study by Stahmer et al. focuses more on the effort required for evidence-based practices to be effective, assessing teacher and staff fidelity in implementing three evidence-based practices for students on the autism spectrum in an urban district. More specifically, Stahmer et al. found that "teachers in public school special education classrooms can learn to implement evidence-based strategies; however, they require extensive training, coaching, and time to reach and maintain moderate procedural implementation fidelity" (p. 181). Additionally, when working with evidence-based practices (EBPs), it is important for teachers to understand that evidence-based practices "(a) . . .are not guaranteed to work for everyone, (b) they are difficult to implement on a broad scale, (c) they are not the only consideration in instructional decision making," and that teachers also need to learn adaptability in using EBPs to best serve their students (Cook & Cook, 2013, p. 77).

The social validity of evidence-based practices also impacts the use and fidelity of these practices. McNeill (2019) determined the social validity of evidence-based practices (EBPs) among 130 special education teachers in North Carolina and their EBP knowledge levels. McNeill then assessed the connection between these and how frequently the teachers used evidence-based practices with their ASD students (2019). McNeill's results indicated that "knowledge, use, and social validity are tightly-connected and rank the highest for modeling, reinforcement, prompting, and visual supports" and "greater knowledge, higher perceived social

validity, and a caseload including more students with autism predicts more frequent use of a practice" (2019, p. 4585).

Social validity, as defined by Wolf (1978), includes the social significance of goals, social appropriateness of procedures, and social importance of effects – alternately described as consumer satisfaction with results. In other words, if teachers perceive certain evidence-based practices as ineffective, useless, baseless, etc., despite evidence to the contrary, they will not implement the practices. Cook et al. (2008) further note that "if teachers view EBPs as limiting their instructional freedom and disregarding their professional wisdom," they will "choose not to implement them" (Cook et al., 2008, p. 106). Additionally, "if efforts to implement EBPs are executed as, or even perceived to be, a rigid, top-down movement that restricts teachers' instructional decision making, the EBPs themselves are likely to be resisted" (2008, p. 106).

While not explicitly mentioning social validity, Brock et al.'s (2014) study demonstrates the notable influence social validity can have on instructional practice. Brock et al. found in their survey of 456 teachers and administrators that "[o]verall, teachers were not very confident in their ability to implement evidence-based practices and address important issues for students with ASD" and that "[s]urprisingly, lower confidence was not related to increased interest in training" (2014, p. 67). Brock et al. further found that "teachers and administrators perceived workshops to be a more beneficial and attractive avenue of professional development compared with coaching, despite empirical evidence to the contrary" (2014, p. 67).

Relatedly, a study by Oullette et al. (2019) shows the positive impact of longer-term learning and strategy implementation. Oullette et al. found that teachers who demonstrated fidelity in applying autism spectrum disorder instructional strategies throughout the school year had lower levels of emotional exhaustion at the end of the school year than colleagues who did

not demonstrate instructional fidelity in applying ASD strategies (2019). Oullette notes there was "a −.34 point reduction in emotional exhaustion for each point increase in overall fidelity to a −1.13 point reduction for pivotal response training" and that "changes in student functioning and years teaching students with autism were not associated with end-of-year emotional exhaustion in the adjusted models" (2019, pp. 7-8).

In addition to implementation fidelity, Cook et al. (2008) note that to adequately support a diverse range of students, special education teachers "must exercise their professional wisdom to (a) judiciously select EBPs to implement and (b) adapt selected EBPs to meet the individual needs and goals of specific students" (p. 106). Cook et al. provide an example by noting that a hypothetical student who does not test well on a reading comprehension test might automatically be assumed to require a reading intervention EBP (2008). However, upon investigation, the student has a good grasp of sight words for their level and is frequently off task or distracted (Cook et al., 2008). In this scenario, a teacher properly adapting EBPs to meet a specific need would implement an EBP like self-monitoring to improve attention rather than an EBP directed toward reading comprehension (Cook et al., 2008).

Limitations of the Literature

The research in the area of educational strategies and learning actions for teachers supporting students on the autism spectrum does, however, also has its limitations. For example, I found in researching the literature that it is primarily focused on students on the autism spectrum in general and lacks differentiation based on sex and gender. Another limitation I found is that many of the recommended practices and strategies to support students on the autism spectrum come from male-focused studies, and eligibility criteria are created from predominantly male-participant studies. Furthermore, I found that while some of the literature mentioned in this

chapter states otherwise, there is a general presumption in the literature that evidence-based practices are effective for all students and are the only effective interventions. I also found that the literature contains limited discussion of the importance of school and home alignment when applying strategies and interventions. Lastly, my review found that the literature in this field tends to neglect to discuss how critical extensive relationship-building with students on the autism spectrum and their families is to the success of these students.

Gender and Ability – Bias and Norming in Education

Commonalities in the Literature

The literature surrounding disabilities like autism is often gendered and also supports the idea of educating disabled people through normalization. Simon Baron-Cohen is a prominent example of the gendering and norming that dominates the literature. Simon Baron-Cohen is a well-known psychologist, famous for making large contributions to the autism field and developing the theory upon which most autism research and teaching is predicated: the mind-blindness theory (also referred to as "theory of mind") (Baron-Cohen, 2008). Baron-Cohen's "extreme male brain" theory is also significant in the field of autism and is widely accepted as the most likely cause of autism (2008). In his theory, Baron-Cohen (2009) hypothesizes that a high level of fetal testosterone causes autism. He supports his theory by using studies of male and female empathy and systemizing skills, which show males have higher skills for systemizing and females have higher skills for empathizing. He identifies autistic people as having even higher systemizing skills than neurotypical males and takes this as evidence that autistic brains are "extreme male brains" (Baron-Cohen, 2009). He also uses this systemizing information to argue that "[t]he female brain is predominantly hard-wired for empathy" and "[t]he male brain is predominantly hard-wired for understanding and building systems" (Baron-Cohen, 2009, p. 1).

Baron-Cohen's research is emblematic of much of the research surrounding disabled populations in how it "essentializ[es] gender differences (by rooting the condition in biological maleness)" (Bumiller, 2008, p. 973). Research and literature on disabilities are often not only gendered but are also predicated on normalizing disabled populations (Bumiller, 2008). Bumiller (2008) defines normalization as an act that "prescribes acceptable behavior based on norms and relies on professionals to train their clients to follow the standards of nondisabled communities" (p. 976). Similarly, educators, particularly special education teachers, are expected to train autistic students and other disabled students on social cues and norms.

Contributions of the Literature

The education system, while moving towards more inclusive models, still shows a heavy societal gender and ability bias against disabled students by continuing to teach normalization. In a study investigating the norming and exclusion of disabled students, Reeves et al. (2022) found that "normative and oppressive discourses permeated inclusive school settings" (p. 612). The study also revealed that "[d]isabled children were frequently underestimated by actors within the school (i.e. administration, teachers, etc.) and portrayed as underperforming, unable to contribute within the classroom, and requiring specialized support" (Reeves et al., 2022, p. 630). Reeves et al. further noted that "disabled children's impairments were frequently problematized instead of problematizing socio-cultural rules, norms, and expectations" and "[e]mphasis on impairments as deficits resulted in parents and children feeling immense pressure to conform to normative ways of being and doing" (Reeves et al., 2022, p. 627).

Jack (2014) looks at the part of inclusive education that continues to promote the idea of "fitting in," arguing that this "puts the onus on the autistic student (like any other), who must struggle to conform to a schema that excludes them, and many other kids, who do not fit the

mold" (p. 211). Jack also adds that "[g]ender disciplining forms a large part of this calculus" (2014, p. 211). An example of gender disciplining can be seen when learning norms through social skill lessons or readings are taken too far. Such lessons may start with "social cues, such as teaching children to smile when they are happy to see someone" but can often be "broadened to areas like gender appropriateness, in which children are forced to conform to conventions that are irrelevant to them" (Bumiller, 2008, p. 977). Gender appropriateness lessons can frequently be found in social skills guides for people on the autism spectrum, wherein "autistic persons are explicitly taught about the relevance of gender performance to finding sexual partners" and given "specific examples of how potential dates will perceive their appearance or behavior as masculine or feminine" (Bumiller, 2008, p. 978). Jack illustrates the potential harm of normalization further, stating that "[r]emediation discourses seek to leave school hierarchies intact, rather than challenging teachers, administrators, and others to disrupt the popularity and gender ideals that penalize unusual children of all kinds, not just students with disabilities" (2014, p. 211). These observations lead Jack to the conclusion that mainstreaming is a systemic issue since "mainstreaming that emphasizes fitting in without changing the institution into which students with disabilities are placed falls short of full accommodation" (2014, p. 211).

In an analysis of the neurodiversity or autism rights community, Bumiller (2008) discusses gender in the autism community and early disidentification with gender in ""[s]chool-age children with autism often develop likes or dislikes for possessions without attributing relevance to gender demarcation" (p. 977). Bumiller further discusses how professionals may see these children's preferences as "merely gender inappropriate behavior" without considering how "they are disregarding the child's own conception of gender relevance and/or attachments to objects that reduce anxiety" (p. 977). Bumiller dives deeper into autism and gender, stating that

"gender identity matters in one's experience as autistic" and "[g]irls are much less likely to be diagnosed and to receive services, especially if they are not on the severe end of the spectrum" Bumiller further notes "disabled girls and women are often worse off than men in terms of employment and receiving adequate medical care and as the targets of social discrimination" and "[c]onversely, males with autism are more likely to be stereotyped as violent, and many of their needs may be overlooked because they are perceived as more resilient than females" (Bumiller, 2008, p, 974; Iglesias, 1999, as cited in Bumiller, 2008).

Limitations of the Literature

Criticisms of Baron-Cohen's "extreme male brain" theory stem from Baron-Cohen using Autism Spectrum Questionnaire (AQ) scores that measure behavioral, not anatomical, characteristics as the primary evidence for his "extreme male brain" theory (Ridley, 2019). Baron-Cohen uses AQ results as evidence for an anatomically male brain even though AQ does not look at brain anatomy (2019). A theoretical review by Ridley on the validity of Baron-Cohen's research methods accordingly argues that Baron-Cohen conflates "the dependent variable (score on the AQ) and the independent variable (brain anatomy of respondent)," leading "to the claim that a person with autism, even if female, has an 'extreme male brain'" (2019, p. 19). Ridley further notes that this claim from Baron-Cohen "is comparable to the claim that, because on average men are taller than women, extremely tall women have 'extreme male height'" (2019, p. 19). Therefore, Ridley argues that the "extreme male brain" theory is a "stereotypical view of gender" that "fails to recognize the overlapping diversity of cognitive styles found in males and females" (2019, p. 19). Interestingly, Baron-Cohen's "extreme male brain" theory seems to echo Hans Asperger's theory that autism appeared to have an "extreme

variant of male intelligence," which has also been criticized for showing gender bias in his research (Asperger, 1944, p. 84).

While Baron-Cohen has retracted the term "extreme male brain" and renamed it the empathizing-systemizing theory, the theory remains the same (2020). Jack (2014) affirms this, stating, "Baron-Cohen's theory does not describe gendered brains, then, but presents gender as a significant factor in autism's etiology, using representational anecdotes that function as reductions as much as they do representations." The questions in Baron-Cohen's measurement tools have systemizing items like "questions regarding financial information, wireless communication, and car engine capacity" that are "coded as masculine obsessions" (Jack, 2014, p. 140). However, systemizing activities engaged in by women are sometimes activities that do not present as "typical" autistic traits, because they are aligned with social gender norms expected from women (p. 140). Baron-Cohen's measurement tools and systemizing questions do not account for this and are more aligned with stereotypical masculinity (p. 140). Anyone with special interests deviating from that masculine stereotype and gender norms, in general, is, therefore, less likely to have autistic traits recognized under Baron-Cohen's systemizing theory and tools (p. 140).

Despite these emphases on "male" and "female" sex (often conflated with gender in Baron-Cohen's research), a study by Davidson and Tamas (2015) which examined "first-hand accounts of differently gendered emotional experience[s] of the autism spectrum drawn from responses to online surveys, blogs and published autobiographies" found that "atypical experiences and expressions of gender are considered relatively common among those on the spectrum" (p. 59). Davidson and Tamas further found that several accounts "highlight the draining and relentless emotional labour that doing gender 'typically' requires, and many on the

spectrum respond by explicitly rejecting or simply neglecting its confounding demands, identifying with neither side of the m/f divide in attempts to give up the ghost of gender" (2015, p. 59).

Conclusion

The literature on education training approaches, optimal educational strategies, and learning actions for teachers supporting students on the autism spectrum, and gender and ability biases and norming in education illustrate the dearth of research regarding autistic girls. Few studies involve balanced numbers of autistic boys and girls, and even fewer involve only autistic girls, despite the high number of studies involving only autistic boys. This male focus in the research stems from Hans Asperger's belief that the condition he encountered in children was an "extreme variant of male intelligence" (Asperger, 1944, p. 84). This male focus was perpetuated in the research over the next several decades. While a female-focused approach is emerging in research, it remains limited. Autistic girls are being left behind and forced to fend for themselves. Many of these girls will eventually hit a barrier where their disability outdistances their coping mechanisms. This leaves autistic girls struggling with what feels like a sudden, unexplained obstacle in their lives. Educators need to learn how to better identify autistic girls in their classrooms, how to successfully qualify them to receive special education services under current criteria, and how to support these girls.

To fulfill these aims, it is critical to understand why autistic girls are being missed and assess how to remedy this within current educational restraints. The following chapter reviews the methodology of this dissertation's study structure to find the answer to this question.

CHAPTER THREE: METHODOLOGY

Part I: Introduction to Research Methods

Introduction

This chapter outlines my dissertation's study design. The research questions, site, participants, ethics, instrumentation and protocols, procedures and analysis, limitations, and the role of the researcher in this study are precisely delineated and discussed. My study investigated the barriers faced in qualifying girls for autism spectrum disorder (ASD) services, facilitated their qualification for special education services, explored effective educational strategies for academic and socioemotional support, and provided accessible resources and training for classroom teachers assisting girls on the autism spectrum who receive special education services or are eligible for special education services under Minnesota educational ASD criteria.

Research Design and Questions

This study adopted a qualitative exploratory case study research design and employed in-depth online interviews as the primary data collection method. Qualitative exploratory case study research emphasizes gaining a deep understanding of the research topic by examining it within its natural context, thus allowing for exploring multiple perspectives (Creswell, 2013). This design was particularly suitable for this study as this study sought to examine nuanced perspectives on barriers, characteristics, and effective practices related to girls on the autism spectrum. A qualitative exploratory case study design and using online interviews as the data collection method allowed for rich and contextualized insights. The following research questions guided this case study:

- **RQ1.** What are the challenges in identifying and qualifying grade 2-6 girls for autism-spectrum services in the school setting?

- **RQ2.** What teaching strategies, actions, and supports could classroom teachers implement to improve the educational outcomes for grade 2-6 girls qualifying for autism-spectrum services, as well as for the girls who were assessed and did not qualify for services?

Position of Researcher

I am currently a special education teacher in my sixth year of teaching. I have worked in public school and public charter school settings. My licensure covers the full range of special education disability categories in Minnesota and permits me to provide services to students in kindergarten through the age of 21 who have "needs in the areas of academic, behavior, social/emotional, communication and functional performance" that range from what the Individualized Education Program (IEP) team determines to be mild to moderate (Minnesota Professional Educator Licensing and Standards Board [PELSB], 2020, p. 2). I can also work with students in any federal setting permitted by my district (PELSB, 2020, p. 2). I have case-managed students in kindergarten through grade 8 who have qualified under the following categorical disability areas: Autism Spectrum Disorder (ASD), Emotional or Behavioral Disorders (EBD), Specific Learning Disabilities (SLD), Developmental Cognitive Disabilities (DCD), and Other Health Disabilities (OHD).

I particularly have a great deal of experience with students qualified in the area of ASD and EBD with a wide range and variety of needs. Since transitioning to the profession of being a special education teacher, my interest has been drawn to an underserved population: unidentified girls on the autism spectrum. Girls on the autism spectrum are identified and diagnosed at a far lower rate than their male peers and, accordingly, are underserved. I hope to add to this new,

expanding area of research and literature to help in the identification and support of girls on the autism spectrum.

Role of the Researcher

In a qualitative exploratory case study research design, the role of the researcher is crucial in ensuring the successful implementation of the research design, data collection, analysis, and interpretation. This design emphasizes gaining a deep understanding of the research topic by examining it within its natural context and allows for the exploration of multiple perspectives (Creswell, 2013). The researcher assumes several key responsibilities throughout the research process, which are particularly relevant within the context of a qualitative exploratory case study design. The researcher plays a pivotal role in designing the qualitative exploratory case study, aligning the design with the research questions and objectives of the study. The researcher further reviews relevant literature, theoretical frameworks, and previous studies to inform the design and ensure its suitability for exploring nuanced perspectives on the study topic (Creswell, 2013). Additionally, the researcher must be vigilant in addressing potential biases throughout the research process. Bias refers to any systematic deviation from the truth or accuracy of the research findings resulting from the researcher's preconceived notions, beliefs, or personal interests (Creswell, 2013). It is important for the researcher to actively acknowledge and mitigate bias to ensure the credibility and objectivity of the study.

To address bias in this study, as the researcher, I was transparent with participants about my position and role in the research process. Additionally, I have provided a clear account of my background, experiences, and qualifications in this dissertation to allow readers to assess any potential biases that may arise from my standpoint (Creswell, 2013). Transparency in researcher positioning is intended to enhance the trustworthiness and objectivity of the study (Creswell,

2013, p. 162). I also employed data triangulation as another method to limit individual bias by collecting data from a variety of participants (Creswell, 2013). Triangulation helps validate findings by ensuring convergence across various data sources and reducing the impact of individual researcher bias (Creswell, 2013). I also engaged in peer debriefing and consulted with colleagues and other researchers with expertise in qualitative research. Through these discussions, I obtained critical feedback, alternative interpretations, and suggestions for mitigating bias. Peer debriefing, as a form of external validation, enhances the credibility of the research process (Creswell, 2013).

By implementing these strategies, I worked to minimize bias and enhance the validity and trustworthiness of this qualitative exploratory case study. Recognizing and addressing bias strengthens the integrity of the findings of this study and contributes to a more comprehensive understanding of this study's research into unidentified girls on the autism spectrum.

Research Ethics

Ethical considerations were strictly followed and included informed consent, confidentiality, and data protection. Participants were provided clear information about the study, its purpose, and their rights. The anonymity and confidentiality of participants' identities and responses were maintained by replacing the participants' names with numbers and removing any identifying or anonymizing information before the coding process began. Names and identities were not associated or stored with any study data. The interview questions asked for information about personal preferences, viewpoints, experiences, and observations. Participants were asked to use pseudonyms and anonymize identifying information about the students with whom they had worked. This study did not involve covert research practices. Participants had the right to

withdraw from the research process at any time and were not pressured to continue or participate in the research study.

Part II: Data Collection Steps

Research Site and Participants

The participants included former or current special education teachers in Minnesota who had worked with Grade 2-6 girls on the autism spectrum. Prior to sourcing and selection, I submitted my study proposal to the Concordia University, St. Paul (CSP) Institutional Review Board (IRB) for compliance review. The CSP IRB ensures that laws and regulations surrounding original research are followed and that research is conducted ethically, particularly in regard to human subjects. Upon receiving IRB approval, I sourced and selected participants. Special education teachers were chosen as participants due to their direct involvement in providing support and services to students with special needs, including those on the autism spectrum. To maintain anonymity, each participant was provided with a number and referred to using that number throughout the results chapter of this dissertation. Their experiences and insights proved crucial for understanding the challenges related to identifying and supporting girls on the autism spectrum showing educational need.

The research site for this study was primarily online via Zoom, a virtual video conferencing software. One participant needed to interview over the telephone due to technological difficulties, and another participant opted to join the online Zoom meeting via telephone. For the remaining participants, some opted to turn on the video option in Zoom, and others opted to keep the video option turned off. Zoom and telephone options offered the participants convenience and flexibility, allowing them to engage in the study from their preferred location. Only the audio from participant interviews was recorded, but participants

consented to audio and video recordings. Remote technology ensured consistency and standardized conditions for data collection and eliminated potential biases associated with physical site variations. Remote interviews also allowed for participants from diverse geographic locations within Minnesota, including inside and outside of the greater metropolitan area, contributing to the study's generalizability and capturing a broad range of perspectives.

To initiate the recruitment process, various channels and networks were utilized to reach potential participants. The following recruitment strategies were employed:

- Professional Networks: Special education associations, organizations, and networks within Minnesota were used to source participants. These networks had established connections with special education teachers working with students on the autism spectrum. Several professional networks were contacted to request their support in disseminating information about the study to their members. This approach helped reach a targeted group of knowledgeable professionals interested in the study topic.
- Educational Associations: Educational associations operating within Minnesota were also used to locate study participants. These associations had platforms where teachers connected and shared their expertise. These associations publicized the study via email newsletters/mailing lists and online forums and invited interested teachers to participate in the study. Involving educational associations helped the study reach a wide range of special education teachers across different school districts in Minnesota.
- Online Platforms: Online platforms and communities, including Facebook and Instagram, were used as recruitment resources. Online platforms specific to Minnesota, including special education listservs, social media groups, and educational websites, were utilized to create awareness about the study. Recruitment messages and study information were

posted on these platforms, targeting special education teachers working with Grade 2-6 girls on the autism spectrum. Using online platforms allowed for broader reach, as teachers from any location in Minnesota could conveniently access and participate in the study.

- Chain Referral Sampling: This study employed chain referral sampling as an additional recruitment method (Penrod et al., 2003). In this approach, individuals within the researcher's network were asked to leverage their personal connections to identify and refer potential participants (Penrod et al., 2003). This method proves particularly effective in reaching niche populations with limited availability, such as the special education community (Penrod et al., 2003). By tapping into existing networks, the study aimed to establish trust and rapport, facilitating the engagement of participants who otherwise would have been challenging to reach (Penrod et al., 2003). The iterative nature of chain referral sampling also allowed for a diverse and well-rounded representation of perspectives within the study, enriching the overall data collection process (Penrod et al., 2003).
- Snowball Sampling: A supplementary recruitment method for this study was snowball sampling (Patton, 1990). Participants who agreed to participate in the study were asked to refer other eligible colleagues or professionals who might have been interested (Patton, 1990). This referral approach was used to help identify potential participants who may not have been reached through the initial recruitment channels (Patton, 1990). Snowball sampling enabled further expansion of the participant pool and access to individuals embedded within the special education community, but not easily reached through other recruitment methods (Patton, 1990).

Instrumentation and Protocols

Aligned with the research questions mentioned in the research designs and questions section above, each participant was asked a series of interview questions (see **Table 1**).

Table 1

Research & Interview Questions

Research Questions	Interview Questions
1. What are the challenges in identifying and qualifying grade 2-6 girls for autism-spectrum services in the school setting?	● Describe common factors that lead to grade 2-6 girls being referred for special education ASD evaluation. ● Describe common obstacles or challenges when qualifying grade 2-6 girls for autism-spectrum services. ● Describe factors you have observed that make grade 2-6 girls on the autism spectrum who need services less likely to be identified or referred. ● Describe factors that contributed to grade 2-6 evaluated girls not qualifying when, in your professional opinion, they showed a need for autism-spectrum services. ● Describe any external factors you have observed, such as funding constraints or limited access to specialized professionals, that affect the timely identification and qualification of grade 2-6 girls for autism-spectrum services. ● Describe any situations you have encountered where a grade 2-6 girl's autism spectrum characteristics were initially mistaken for a different learning or behavioral disorder, how this was resolved, and the challenges it presented. ● In your experience, are girls commonly referred for special education ASD evaluation at a specific age or grade level? If so, describe factors you have observed that lead to girls to be referred at that age or grade level and not earlier or later.

2. What teaching strategies, actions, and supports could classroom teachers implement to improve the educational outcomes for grade 2-6 girls qualifying for autism-spectrum services, as well as for the girls who were assessed and did not qualify for services?	• Describe how you measure the overall educational outcomes for grade 2-6 girls on the autism spectrum and what indicators or data points you use to assess educational outcomes (standardized testing, grades, etc.). • Describe how you measure the success of specific strategies and actions you implement. • Describe instructional strategies you have found to be the most effective in improving educational outcomes for grade 2 to 6 girls on the autism spectrum. • Describe classroom supports or accommodations you have found most effective for grade 2 to 6 girls on the autism spectrum. • Describe how classroom teachers can implement these effective strategies and supports so that grade 2 to 6 girls who have not qualified for autism-spectrum services but show a need for them can also benefit. • Describe additional actions in or outside of the classroom that teachers can take to improve the educational outcomes for grade 2 to 6 girls on the autism spectrum and girls who have not qualified for autism-spectrum services but show a need for them. • Compare the educational outcomes you have observed in grade 2 to 6 girls who qualified for autism-spectrum services with the educational outcomes of nonqualifying grade 2 to 6 girls who showed a need for services.
Interview Probes:	• Can you please tell me more about this? • Can you provide a specific example of this? • Is there anything else you would like to add before we move on?

Part III: Procedures and Analysis

Semi-structured online interviews were conducted in this study and enabled the participants to provide detailed accounts and insights regarding the research topic. Online interviews provided the convenience of remote participation by overcoming geographical constraints and allowing for increased accessibility and flexibility for participants (Merriam, 2009). The qualitative nature of the data collection process allowed for the collection of detailed accounts, opinions, and experiences, and the use of open-ended interview questions allowed for flexibility (Yin, 2018). This also provided the opportunity to delve deeply into special education teachers' perspectives and experiences related to girls on the autism spectrum, their identification and qualification for special education services, and effective teaching practices that can improve their educational outcomes (Yin, 2018). Participant narratives are crucial to revealing the complexities and nuances associated with the research topic (Merriam, 2009). Before interviews began, interview questions were piloted with a special education teacher colleague who had worked with grade 2 to 6 girls on the autism spectrum. Participants were told interviews would range between 45 and 60 minutes. One interviewer asked ahead of time for a 30-minute interview due to time limitations. The rest of the interviews ranged from 55 minutes to 2 hours and 25 minutes. The interviews that exceeded 60 minutes continued past 60 minutes with the consent of the participants. These interviews exceeded the 60-minute mark due to a combination of participants' desire to share their knowledge and their interest in the topic.

Data analysis in this qualitative exploratory case study research design involved a thorough examination of the interview transcripts. The data was carefully reviewed and coded to identify recurring themes, patterns, and categories related to identifying, qualifying, and supporting girls in the autism spectrum in schools (Braun & Clarke, 2006, p. 6). The analysis

process involved organizing the data, identifying key concepts, and generating meaningful interpretations based on the participants' narratives (Braun & Clarke, 2006, p. 24).

Part IV: Limitations

Despite the strengths of the qualitative exploratory case study design and the rigorous research process outlined in this study, it is important to acknowledge certain limitations that may affect the findings and generalizability of the research, and the following limitations should be considered.

The participants in this study were former or current special education teachers in Minnesota with expertise or experience in working with Grade 2-6 girls on the autism spectrum. While this targeted selection provided valuable insights from professionals directly involved in supporting girls on the autism spectrum, it may limit the generalizability of the findings to other geographic locations or educational settings with different contexts and practices (Creswell, 2013, p. 65). The generalizability of this study may be further limited due to the specific focus on Grade 2-6 girls on the autism spectrum in Minnesota, and the results may also not apply to other groups or regions (Creswell, 2013, p. 137).

The primary data collection method employed in this study was the use of online interviews, which relied upon participants' self-reported experiences, perceptions, and beliefs. Self-reported data may be subject to recall bias or social desirability bias should participants provide responses that align with societal expectations or personal biases (Creswell, 2013, p. 87). Despite efforts to promote open and honest responses, the reliability of self-reported data is always a potential limitation.

While efforts were made to mitigate bias, it is important to recognize that the researcher’s background, experiences, and personal beliefs may influence a study's design, data collection,

analysis, and interpretation. Accordingly, my positionality and potential biases may have inadvertently influenced participant selection, interview questioning, and data analysis despite the strategies employed to minimize bias (Creswell, 2013, p. 102).

Although this study aims to capture diverse perspectives by utilizing various recruitment strategies, the perspectives of special education teachers may not represent the entire range of those involved in the qualification process, such as parents, administrators, or other professionals working with girls on the autism spectrum. Therefore, the study's findings may reflect the views and experiences of special education teachers rather than a comprehensive understanding of all members involved in the special education evaluation process (Creswell, 2013, p. 125).

The research process was necessarily conducted within specific time and resource limitations. The data collection and analysis procedures and the sample size may have been influenced by practical constraints such as limited access to participants and time restrictions. These constraints may have impacted the depth and breadth of the data collected and analyzed, potentially limiting the comprehensiveness of the findings (Creswell, 2013, p. 154).

Despite the limitations mentioned above, this study provides valuable insights into unidentified girls on the autism spectrum, their needs, and how they can be identified, qualified, and supported.

Part V: Conclusion

This chapter outlined the methodology of this study on the identification of girls on the autism spectrum, barriers to qualification of girls who may benefit from services related to autism spectrum disorder, and practices that lead to effective outcomes for students and girls on the autism spectrum. The findings from this study provide an in-depth understanding of this underidentified population and offer insights into effective training and practices for improving

outcomes for students on the autism spectrum. The results contribute to the existing knowledge and inform the development of targeted interventions, policies, and practices specific to Minnesota to better support girls with ASD within educational settings. The following chapter addresses the results of this study.

CHAPTER FOUR: RESULTS

Introduction

This chapter embarks on a comprehensive examination of the identification, qualification, misidentification, and improvement of educational outcomes for grade 2 to 6 girls on the autism spectrum. A thematic approach to examining this study's results was chosen as it permitted a deep and complex interpretation of the interview data and its patterns, going beyond a simple summary of the data. The interview data themes presented in this chapter—Identification and Referral Challenges, Qualification Challenges, Misidentification Challenges and Complexities, and Improving Educational Outcomes—unfold a narrative that unveils the challenges, nuances, and potential strategies for addressing the unique needs of these girls within the educational context.

Identification and Referral Challenges

This theme emerged from findings related to the difficulties of identifying and referring girls on the autism spectrum showing educational needs. Specifically, participants addressed common referral factors, identification challenges due to societal, cultural, and gender-specific factors, and systemic and structural factors affecting the identification of grade 2 to 6 girls on the autism spectrum.

Common Referral Factors

This theme discusses common referral factors and analyzes the reasons girls on the autism spectrum are referred for evaluation as compared to boys, details the age or grade of referral, and looks at who refers these girls or identifies concerns. Insights derived from the interviews with participants offered a deeper understanding of the obstacles and complexities involved in identifying and referring girls on the autism spectrum.

Participants discussed various common referral factors for girls, including behavioral challenges and emotional dysregulation, social challenges, peer relationship challenges, grade/age, academic challenges, and parent concerns and initiative. Behavioral challenges noted by participants included difficulties in emotional regulation, including intense emotional responses and/or difficulty managing emotions. Participant 1 stated, "I see the referrals when the emotional regulation becomes an issue, when there's bigger meltdowns." Participant 3 also spoke about the emotional issues for girls, "It seems like the first comments I hear from teachers or parents have to do with emotional dysregulation, disrespectful, disorganized."

Social challenges were discussed as significantly contributing to referrals for girls. Such challenges included difficulty forming and maintaining peer relationships, navigating social cues, and engaging in reciprocal social interactions. Participant 1 articulated this social element, " I will say that they're having difficulty, usually in the social interaction and the communication." Participant 1 also highlighted lack of friends as a common referral factor for girls, "[in] kindergarten, they seem fine, very social, and chatty …by second or third grade, they don't have any friends." Observations of girls struggling in peer relationships, experiencing exclusion, or having difficulty fitting into social groups also came up as common triggers for referral, with Participant 4 stating, "Just thinking of the … idea that they have lots of friends, but when you watch closely, they talk to everybody, but … nobody in the class would say that they are a close friend with them."

Referral patterns were also discussed, and variations in the age or grade at which girls are referred were compared to when their male peers are referred as noted by Participant 4 stated that "boys get referred more in kindergarten, first-grade level when they aren't following expected rules." Whereas for girls, Participant 1 notes, "it's mostly like that second, third, fourth-grade

level...where social skills start getting a little harder." Participant 6 further emphasized this period, stating, “[it] seems like second and third grade seems like a hotbed of time just because that's when the social piece starts.”

Participant 2 noted that all the girls they had worked with came identified right out of early childhood, having already undergone testing and identification at that time. Participant 1 contributed to the early childhood discussion, noting that referral may happen earlier with girls under specific circumstances: “I will say they’re referred younger, if there’s behaviors … where they’re turning the classroom upside down, and then they get a lot of attention.” Participant 3, who works in a K-2 setting, did not report seeing girls being more commonly referred for services at a specific age or grade level, meaning that she was not typically seeing ASD-specific referrals. Rather, Participant 3’s experience surrounded students who were already qualified for services under the Minnesota category of Development Delay (children up to age 7 “experiencing a measurable delay in development according to diagnostic instruments and procedures” can qualify under this category instead of needing to meet the more stringent criteria of the other categories to qualify for special education services) (Minnesota Department of Education, 2023). Participant 3 saw these students occasionally being assessed under ASD criteria during their reevaluation process to determine if they still qualified for special education services in a non-Developmental Delay category.

Participants additionally cited academic challenges as a reason for referral of girls, with Participant 4 stating, “I think in those … upper grades [referring to upper elementary] … they get referred for special education evaluation because there's academic concerns or attention concerns.”

Parental concerns about their daughters' development, academic progress, or social interactions were also mentioned as playing a significant role in the referral process. Participants report that parents often take the initiative in seeking evaluations. Participant 3 noted seeing "mostly parent [referral] at the younger age… it seems like girls, it seems to come more from parents." Participant 4 also discussed parent referral, stating:

> Parents have referred sometimes for a school evaluation, or sometimes have gotten an outside diagnosis of ASD. . .parents are seeing those emotional roller coasters or, you know, seeing the difficulties with friendships and not understanding social cues and that kind of thing … and so then they do a[n] outside diagnosis and then come to school and say, 'Hey, we have the diagnosis of ASD, can you do an eval in school too?'

Participant 1 discussed parent concerns frequently coming to light earlier than school concerns and parents accordingly seeking outside evaluation, "And what happened is her parents took her for an outside evaluation. And that's what happens a lot of times, I think. It's the family [that] sees more of a dysregulation at home, more of the meltdowns at home because the girls hold it together all day at school. ... And then by the time they get home, it just, you know, it falls apart, and they're noticing that emotional dysregulation."

Societal, Cultural, and Gender-Specific Factors

Social expectations and societal norms were recognized as influential factors in the identification of autism in girls. Participants discussed that girls on the autism spectrum may conform to societal expectations of behavior, making it challenging to recognize underlying autism characteristics. Participant 5 reports, "[Girls] they're much more likely to come off, they're much more likely to just … look like high achievers." Participant 4 noted, "Girls seem

like high achievers, but there's something else going on...falling apart at home or arguing with teachers."

Parental preferences and cultural views also came up as factors affecting referral. Participants articulated challenges regarding parental preferences and resistance to an autism diagnosis, with Participant 1 stating, "I don't know if anybody's talked to you about this, but a lot of parents don't want to tell their young girls they have autism, and I think they need to," continuing, "I think autism is such a weighty word and … people sadly still think of Rain Man … and they probably think of people in the corner … hand flapping and … after all this time I don't think people really understand." Participant 3 also notes:

> Well, sometimes the word autism is really hard to bring up with families. I've had some that will go through the evaluation process, but they're not okay with that diagnosis or services under that area. They want EBD [Emotional or Behavioral Disorders]. They want speech. They want, you know, something else.

Girls exhibiting masking behavior, particularly in a school setting, was highlighted by participants as a significant identification challenge by all but one of the participants. Participants emphasized that girls often mask autism characteristics effectively, which can make it difficult for educators and professionals to recognize their needs. Participants did not note observing masking behavior in boys, with Participant 6 stating, "It's been my experience that girls mask better than boys, and so they fly under the radar longer than boys."

Systemic and Structural Factors

Limited awareness and expertise among professionals were recognized by participants as a significant challenge in the identification process, specifically regarding girls on the autism spectrum, as noted by Participant 5:

> I'm working on an evaluation for a girl … [and] the special education teacher's ASRS [Autism Spectrum Rating Scales], it's like, all in the average range….I think there's some bias going on with the teachers, and… I think she presents normally enough in a lot of areas that they – even a special ed teacher who has an ABS license, so she's had some exposure to autism – she's not seeing the autism characteristics that are there.

Participant 4 stated:

> There have been many times where parents have the medical diagnosis of ASD, and I go to watch the kid in class and ask the teacher and everybody's like 'they're fine, would never pick them out of the crowd in my lifetime' kind of thing….But like I said, sometimes they're falling apart at home or masking really well.

When responding to a question about whether external factors such as limited access to specialized professionals, monetary constraints, parents, or any others affected the identification of girls, Participant 6 replied, "All of the above." Participant 6 further noted identification difficulties due to families' inability to access external resources:

> Trying to get anybody in for a neuro-psych eval is ridiculously hard. The waiting lists are atrocious; I'm seeing nine months out if you can get an appointment, like they're not even taking appointments. You have to call on a very specific day at a very specific time to maybe get on the waiting list. So, it's awful. Mental health services, and especially in this area suck; there aren't hardly any. We do not have nearly enough providers for people who need them. Appointment times are months out if you can find somebody at all.

Participant 4, when asked if any external factors affected the timely identification of girls, stated, "Yeah, the parents' socio-economic level, to have the ability to seek a diagnosis for sure." Additionally, Participant 6 discussed the high mobility of families with a lower socioeconomic

status, further impacting identification: "Well, we have a highly itinerant population. It seems like a lot of kids move in and out around here …. I think that impacts things too, just because you have to see the kid for a long time."

Identification and Referral Challenges Summary

This theme and the findings supporting it indicate a need to move beyond conventional expectations and consider a broader range of behaviors and communication styles when identifying girls for autism spectrum services. Parental reluctance to accept the autism label can affect the referral process and delay access to appropriate services. Stereotypes and gender-related biases surrounding observable behaviors associated with autism may contribute to fewer girls being identified. High verbal skills and high masking skills in girls may further contribute to the misconception that they do not exhibit autism-related challenges, have autism, or their challenges may be attributed to other factors. Additionally, professionals may lack the necessary training to recognize subtle presentations of autism, leading to underidentification. Increasing awareness among educators of the different presentations of autism can further contribute to enhancing early recognition.

Moving from the identification and referral challenges, the next findings center on qualification challenges, with participants shedding light on systemic obstacles, the influence of the COVID-19 pandemic, the necessity for early interventions, and the struggles faced by grade 2 to 6 girls on the autism spectrum who remain unidentified in later grades.

Qualification Challenges

The findings behind this theme focus on complexities surrounding the assessment and qualification of grade 2 to 6 girls on the autism spectrum for ASD special education services. Participants illustrate systemic and procedural hurdles behind the assessment and qualification

process, discussing the unprecedented challenges brought by the COVID-19 pandemic and the shift to distance learning, the need for early childhood interventions, and the difficulties faced in later grades by unidentified girls on the autism spectrum.

Systemic and Procedural Challenges

Participants shed light on the complexities and challenges associated with evaluating and qualifying children for services, particularly in the context of distance learning and the COVID-19 pandemic. Participant 1 underscores the unique challenges faced by children who experienced preschool and kindergarten at home during the pandemic:

> During COVID and after COVID, that whole crew of kids that had preschool at home essentially or you know, preschool and kindergarten at home, I've had more and more evaluations that are much more tricky because … they weren't exposed to social skills.

The absence of exposure to social interactions may contribute to difficulties in assessing and qualifying children for services, as social development becomes a critical factor in these evaluations. Participant 5's insights further emphasize the limitations of relying solely on adult observations and input for qualification purposes:

> And then I wonder how much COVID … impacts that. We ask questions like, how does your child get along with other kids? … What was their play like? … with other children when they were two? 'We were in full lockdown. … No one was playing with anyone.' So, that contributes not only to … delayed social development, but it also skews the parents' … information to draw from.

In highlighting how the lockdown measures during the pandemic influenced parents' ability to provide accurate information about their children's social interactions and play, this quote questions the adaptability of evaluation methods in the face of such an unprecedented disruption.

The study also indicates the pivotal role of early childhood interventions in the qualification process. Early identification and intervention were viewed positively, suggesting that timely support can have a significant impact. Participant 2's example of a preschool program linked to an elementary school demonstrates the potential benefits of a seamless transition between early childhood programs and subsequent educational levels in ensuring timely support and qualification for services:

> We have a preschool program that's attached to our elementary school, so [the three girls] were in the preschool program there and went through the testing, the identification, all that was already there. So then, when they came to my program as kindergarteners, they already had the ASD label.

Participant 3 did not report seeing girls qualifying under ASD services in early childhood but did note that early childhood special education qualification can lead to ASD services qualification:

> Being a K - 2, we just get the whole categorical where they're under early childhood, under behavior, and in those cases when they've moved up, we've got to figure out a way to go and one of the things, if their academics [are] okay, and if their functional skills are okay, well okay, could it be autism? … Do they have an Other Health Disability, maybe ADHD or something? So, we kind of take a look at both of those with the categoricals a little bit more.

However, challenges in the qualification appear to occur for girls in later grades (2-6), as noted by Participant 1:

> A lot of times what happens is the families, they see the meltdowns at home, but sometimes they're not happening at school and we don't have an educational need either and we'll evaluate this child, but she just won't meet [the qualifications] because she is

> doing well enough. Now, what happens is sometimes, they might not qualify earlier, but then later, they can, which can be frustrating to families.

The discrepancy between home and school observations, coupled with the evolving nature of social dynamics, presents obstacles to timely qualification. Participant 1's account of families witnessing meltdowns at home while the child appears to function well at school highlights the dynamic and context-dependent nature of behavioral assessments.

Challenges in educator awareness and recognition of autism spectrum characteristics in girls emerged throughout interviews with participants. Participant 2, located in a rural school district in Minnesota, shared, "So, in all my [32] years of teaching, I have never initially evaluated a girl for autism. I've only had three in the last 19 years. And they already came to me identified … our preschool identified them." Participant 6, also located in a rural school district in Minnesota, reports that as an ASD teacher for grades 5 through 12, she has only had four girls with ASD over the entire 11 years she has spent in her current school district. However, current Center for Disease Control and Prevention (CDC) statistics state the ASD ratio in boys to girls is 4:1 (Centers for Disease Control and Prevention, 2021). If this figure from the CDC is anywhere close to accurate, the number of years both participants have been working with ASD students would seem to indicate a large proportion of girls with ASD that educators are failing to recognize.

The issue of requalification or continuing services adds another layer of complexity to the qualification process. Participant 1 noted challenges surrounding requalification or continuing services when a girl appeared to be doing better emotionally and academically in school:

> This girl...whose parents said she was having problems where the child wasn't directly observed by adults, the school did want to drop her services …. [and was not] willing to

> re-qualify her…. I [told the school] autism doesn't go away, and she has these needs, and maybe they're presenting a bit differently and more quietly, but these are to the point where she has extreme anxiety now…. She masks that anxiety so well and does well in her work – she's not blowing up like she used to with real dysregulation, she's holding it together better – but she's like a slow burn. And then eventually what happened is she … just started running away …. [The school] wanted to take it [the ASD qualification and services] away. They didn't think she needed it. But she did.

Participant 1's case illustrates the challenges of advocating for continued services when a child's presentation changes, emphasizing the importance of understanding the evolving nature of presentation and behaviors and the need for continued supports to maintain progress.

The findings in this section display the intricate interplay of various factors in the qualification process, ranging from the disruptions caused by the COVID-19 pandemic to challenges in recognizing and addressing the unique needs of girls with ASD. These insights contribute to a deeper understanding of the complexities surrounding the assessment and qualification of grade 2-6 girls for services, particularly in the context of evolving educational landscapes and external disruptions.

Perspectives on the Challenges of Qualification Nuances

The study uncovered nuanced insights into the challenges faced by girls who, despite demonstrating a need, do not qualify for services. Participants underscored the significance of adopting a comprehensive and nuanced evaluation process that uses the judgment of professionals in addition to formal assessment tools.

The evaluation challenges primarily stem from the necessity to be sensitive to diverse presentations, particularly in girls. The participants emphasized the existence of discrepancies

between assessment tools and the nuanced needs of girls. For example, Participant 5 pointedly questioned the adequacy of existing tools, stating, "There's just things to me that are, to me are, super obvious" about a girl's ASD presentation but voiced frustration about assessment tools' inability to capture such characteristics. This frustration highlights a perceived misalignment that prompts questions about the appropriateness and sensitivity of current tools. Participant 1's comments further accentuate the challenges in assessing girls, discussing how many deficit areas are missed in assessment because of skills, making certain ability areas look superficially high. "So there's a lot of obstacles other than that girls look, quote, 'less autistic,' you know? And they have high verbal skills, you know what I mean? Some of them are really missed because of that." Participant 5 underscores the broader concern about the efficacy of formal screening processes, stating:

> I wonder … how many … formal screening processes we have set up that, like the ASRS [Autism Spectrum Rating Scales], – it's even worse than the ASRS because they're usually shorter and less detailed. – … They're not requiring the observation and contemplation about this child on … a deeper level, and it's just this very surface-level list of criteria.

Participant 1 also reports dissatisfaction with the depth of one of the commonly used ASD educational assessment tools, noting:

> I think the ADOS [Autism Diagnostic Observation Schedule-Second Edition] frustrates me a lot. … It's pretty simplified. … Girls can do really well on something like that, sitting down one-on-one with an adult and having conversations. And you might not see the same things as you would see when they're, you know, in the classroom in a friend group. … It just doesn't go deep enough, especially for girls. … [I]t's like supposedly the

> gold standard, but … I think you have to put a lot of pieces with [the ADOS results] …. I've had … kids not qualify on the ADOS, and then we do qualify them … and, vice versa, … they qualify on the ADOS, but … we don't think that there's really a lot of other things going on. … [S]o, it can go both ways. It's not really the so-called gold standard.

Participant 5 further illuminates the nuance and complexity of evaluation, stating:

> I worked with a couple psychs and ended up having some resources like…this observation checklist that … is broken into the three areas [of Minnesota ASD educational criteria] but it was expanded, so there were like a lot more examples for each area. And that, I think, kind of started to open my eyes that there are more indications of these different impairments than the eight phrases on [the Minnesota ASD educational criteria checklist].

The reflections of these two participants emphasize the need for a critical examination of existing screening mechanisms and suggest a call for tailored assessment approaches. Participant 1 mentions pieces she finds particularly important in assessment, noting:

> I think you need to have that developmental history; that's really important. Some parents will give you a lot of information, some barely a word. You have to be prepared for that. Some teachers, the same … that's one of the hardest things about my job is getting information from people to really see this child and [see] the whole picture.

Participant 5 discussed how even special education teachers often lack the insight to get the whole picture of a child, generally as a result of inadequate teacher training, "[Criteria on the Minnesota ASD educational checklist] like limited joint attention, … imitation, imaginative play, those all kind of refer to the like Theory of Mind type things and … I didn't learn a ton about that kinda stuff [in school] in a really like applicable way." This displays the need for improved

training for professionals, particularly in understanding how to approach Minnesota special education eligibility criteria from a more critical perspective and to analyze evaluation criteria at a deeper level.

Participants identified challenges in collaboration among professionals engaged in the qualification process, bringing attention to communication gaps. Participants' views made it evident that effective collaboration plays a crucial role in developing a comprehensive understanding of each girl's needs. Additionally, addressing communication challenges was underscored as a key factor in enhancing the efficiency of the qualification process. Participant 5 articulated the importance of effective collaboration:

> There's just things that I … process … through a different lens [than others], and … at the end of the day, all these evaluations should all be … multi-disciplinary … [and] team things. It should never be like just up to me because … much of this is very subjective.

Participant 5 further discussed experiences where she and other professionals at her school had discussed their observations and went through rating scales or questionnaires in concert. This can help ensure that the respondent/s properly understood the intent of the questions and can allow for clarification if the respondent/s comes across a question they find confusing. Participant 5 noted that such discussions frequently resulted in individuals gaining a new, deeper perspective and insight into a particular student.

Qualification Challenges Summary

This section delved into the nuanced challenges faced in qualifying girls for ASD services, emphasizing the subjective nature of assessments and the limitations of existing tools. Participants expressed concerns about the inadequacy of standardized checklists, such as the ADOS, in capturing the complexities of girls' presentations. There is a call for a more

comprehensive and tailored evaluation approach, considering developmental history and addressing professional training gaps. The discussion also speaks to collaboration challenges among professionals involved in the qualification process. Effective collaboration is deemed crucial, with a recommendation for multidisciplinary evaluations to understand individual needs better. Building upon the analysis of the nuanced challenges faced during the qualification of girls for ASD services, the following theme investigates both unintentional and intentional misidentification, the underlying reasons for misidentification, and its impact on grade 2 to 6 girls on the autism spectrum.

Misidentification Challenges and Complexities

The findings underlying this theme highlight the intricate nature of identifying and understanding autism spectrum characteristics in girls when qualifying them for special education services. The analysis below summarizes the key findings within the subthemes of unintentional misidentification and challenges, as well as intentional misidentification and challenges.

Unintentional Misidentifications and Challenges

Participants provided valuable insights into contextual factors contributing to the unintentional misidentification of autism in grade 2-6 girls. Participants observed instances where autism spectrum characteristics in girls were mistakenly associated with different learning or behavioral disorders. Participant 5 highlighted a common scenario where an evaluation team might predominantly consider outside diagnoses, such as ADHD:

> I feel like probably the most common scenario is that the team is seeing … an outside ADHD diagnosis and … is just kind of like automatically going to OHD [Other Health Disabilities] as an eligibility category, and they're not noticing … some of those nuanced social problems or behavioral issues. It just gets automatically attributed to the ADHD.

A tendency to only consider an outside diagnosis might lead to overlooking subtle signs of autism in girls.

Participant 5 further discussed outside diagnoses, noting that external evaluations from therapists often focus on mental health concerns in girls that do not include autism, “if it's a therapist assessment, I almost never see the therapist talk about autism. The therapist is going to talk about, you know, attention issues, possible ADHD, depression, anxiety, Oppositional Defiant Disorder.” The presence of disorders that are comorbid with autism or characteristics of autism that can present like other disorders may lead to girls on the autism spectrum being misidentified. In contrast to external therapist evaluations, which may omit autism, Participant 5 reports that “[the] full psychoeducational evals that I've seen … do a pretty good job of, you know, including … the ASD, they consider that.” However, Participant 5 also raised concerns about the limitations of full psychoeducational evaluations, particularly when they occur over a short period in a clinical setting:

> But again, I think that a barrier there is that … the kids getting tested maybe over one day or two days, with a team of people who like are only seeing them in this clinical setting and … if the kid has any masking skills whatsoever, it's real easy to … pass as normal and … not have those things picked up.

The potential for masking skills to be employed by girls during these evaluations may result in their challenges going unnoticed, leading to misidentifications.

Participant 6 emphasized that girls, due to their effective masking, may be identified or labeled under the umbrella of the Emotional and Behavioral Disorders (EBD) educational category:

> I just have found that the girls mask better so they don't get picked out, or they get identified as something else, like, identified more like on the EBD range, on the E side, like the ones who have more significant social troubles. … A lot of times, most of my ASD kids are also identified with some mental health issues as well. So, sometimes they end up on the EBD side, the E side of the EBD thing, get services that way. I think the E side is getting bigger and bigger and bigger.

Participant 6 observes that the EBD category is expanding, possibly indicating an increasing trend of using this label for girls who may have autism but are not identified as such. This shift to the E side of EBD might result in girls receiving services for mental health issues rather than addressing their underlying autism spectrum challenges. Monitoring the growing impact of the EBD label and understanding its implications for accurate identification is essential for effective support.

Participant 4 listed alternate identifications or diagnoses grade 2-6 girls have received before later being identified under ASD:

> [I've seen] anxiety, depression – social language disorder, I think is one I've seen, which is, I mean, that kind of seems like it's just another word for autism. … For other diagnoses, … girls maybe shifting from like, just speech only, or even a learning disability or something. … Sensory Processing Disorder, that's … probably one of the more common ones for girls … because that's what … the family might notice first.

Several participants noted a perception that misidentifications might occur more often with girls compared to boys, emphasizing a potential gender disparity in the misidentification of autism. Incorrect or incomplete identifications or diagnoses may delay the identification of autism in girls.

Ultimately, participants described an intricate web of factors contributing to the unintentional misidentification of autism in grade 2-6 girls. These factors include automatic reliance on external diagnoses, presentation mimicking mental health disorders, and challenges in clinical settings leading to misidentification within other categories and incorrect or alternative diagnoses. Understanding these contextual elements is essential for improving assessment sensitivity and accuracy to properly identify girls on the autism spectrum.

Intentional Misidentifications and Challenges

The motivations behind intentional misidentifications were not explicitly outlined, but participants did discuss occurrences that fall under intentional misidentification. The primary motivation for intentional misidentification reported by participants was the desire to help students gain access to specific services by labeling autism as another disability category or placing a different disability category under the autism spectrum umbrella.

Formal and Informal Assessments and Stances

Participant 5 highlights the tension between the Minnesota ASD criteria and the challenges faced when informal assessment and observation findings that provide the critical context in the evaluation and qualification process have no formal assessment instruments to support them:

> If I pull up the Minnesota ASD criteria, and I look through it, I feel like I can easily check boxes, yep, yep, yep, yep, yep. And, you know, easily make the case. But I may not have the… formal assessment instrument to back that opinion up. You know, I'm basing it off of informal assessments, interviews, observations, developmental history, obviously.

Participant 5 further discusses the struggle with those who adopt a more formal stance in aligning educational criteria:

> I've gotten into some arguments with staff, and … I've gotten into arguments with [our ASD evaluation contractor] because … she's very black and white, and … she's like, 'well, I don't think this child has autism.' I'm like, well, at the end of the day, it doesn't matter because we're not diagnosing them… they either fit the criteria … or they don't. … [I]t's not my job to say that this kid has autism or doesn't have autism. It's my job to say they meet the Minnesota criteria.

Participant 5's dialogue sheds light on the contrasting perspectives that can occur within evaluation teams. The black-and-white approach, demanding a more formal stance, clashes with Participant 5's emphasis on the educational criteria and the inherent flexibility required in the evaluation process. This dichotomy exposes the struggle between the appearance of criteria frameworks as rigid and immutable and the need for contextual flexibility in understanding the diverse manifestations of autism.

Family Influences

The difficulty in broaching the term "autism" with families emerged as a recurrent theme. Participant 3 shared instances where families uncomfortable with an autism diagnosis preferred alternative classifications such as Emotional and Behavioral Disorders (EBD) or speech-related issues:

> Well, sometimes the word autism is really hard to bring up with families. I've had some that will go through the evaluation process, but they're not okay with that diagnosis or services under that area; they want EBD, they want speech, they want, you know, something else, social things.

Participant 4 emphasized how different cultural backgrounds seemed to influence parental preference for certain labels, "I have had conversations with families where … they would rather have the EBD label than the ASD label." Participant 1 shared instances where families instead preferred the ASD label to another label or were more accepting of it, "In fact, the parents almost want [the ASD label], and they would be very, almost, I don't know, have a very difficult time with EBD." This parental resistance reflects the familial, societal, and cultural perceptions and influences to favor certain labels over others and the complexity that comes with qualification under ASD and other categories.

Dual Diagnoses

Participants acknowledged the complexity of dual diagnoses and the need to prioritize certain aspects over others. The intentional decision to prioritize one aspect of a dual diagnosis over the other is discussed by Participant 3:

> Sometimes it's the dual diagnosis thing … we just kind of go with one and say, okay, we'll service the social and … we'll do the autism piece without saying [it falls under autism]… So, occasionally, it's the dual, [and] putting the other side first.

The consideration of developmental stages, the potential for growth, and evaluating whether the child might "grow out of it" introduce intentional complexities in determining the most fitting educational label. This approach, while attempting to tailor interventions to individual needs, could inadvertently lead to the overshadowing of autism needs.

Impact of Trauma

The impact of trauma emerged as a significant factor influencing the identification process. Participants recognized the challenge of disentangling trauma-related behaviors from those associated with autism, as noted by Participant 1:

> It's gotten very difficult now with some of the kids I see because they've experienced a lot of trauma in life. And I do believe sometimes that trauma's going to manifest and [look] like they have ASD. And … what ends up happening is these kids need services very badly, and if they meet the educational needs and the criteria of autism, we serve them and qualify them.

The desire to provide necessary services to children with trauma histories may lead to intentional misidentifications, as the educational needs and criteria for autism might align, even though the core issue may be rooted in trauma.

Misidentification Challenges and Complexities Summary

Intentional misidentification of autism in grade 2-6 girls involves a delicate balance between educational criteria, family preferences, cultural acceptance, trauma acknowledgment, and developmental considerations. These findings underscore the importance of a flexible, societally and culturally sensitive diagnostic process that navigates the complexities inherent in understanding and addressing the unique needs of girls on the autism spectrum. The challenges of misidentification outlined in this section showed how girls on the autism spectrum can be negatively affected. The subsequent section illuminates strategies and practices that positively affect grade 2 to 6 girls on the autism spectrum by contributing to improved educational outcomes for these girls.

Improving Educational Outcomes

One of this study's overarching themes delves into improving educational outcomes for grade 2 to 6 girls on the autism spectrum. This theme is dissected through four interconnected subthemes: measuring educational outcomes, effective instructional strategies, effective classroom supports, accommodations, and strategies, and implementing strategies in the

classroom. Each subtheme provides unique insights into the challenges and successes of educational interventions for these girls.

Measuring Educational Outcomes

The study explored the measurement of overall educational outcomes for girls on the autism spectrum in grades 2 to 6 and unearthed a range of insights.

Participant 6 outlined a streamlined approach for measuring progress, emphasizing simplicity and feasibility, saying:

> I always write just one goal and two objectives …. I write it as a scale … five is always, four is most of the time, three is sometimes, two is rarely, one is never …. I ask the teachers [via email] to rate them at their current level of whatever the skill is … every quarter … and then I just keep averaging the ratings, and that's how I measure progress. It's quick, it's easy, it's accurate because the teachers are measuring it based off of their overall performance for the quarter.

Participant 6 highlighted the importance of realistic and manageable goal tracking, “[this way] it actually happens, because if I try to do like weekly points, nobody ever fills those out … I can usually get them to give me back one number once a quarter, which is big.”

Participant 2 discussed a different method to track goal progress. Participant 2 first shared an example of a measurable social goal she might use, "[student] will be able to…identify how a person is feeling in a picture, … then be able to imitate [the] feeling, and then tell the feeling on another person," and then discussed how she would measure the outcome:

> [I have a] functional skills, social skills checklist …. I do observations, and then check … a scope and sequence of joint attention, perspective-taking, communication skills, self-

> regulation … [noting] okay, they can do this, they can't do this… they [can] do it in a one-on-one setting, structured group [setting], natural setting, generalized [setting].

Participant 2 also brought attention to some of the complexities of the observation side of data collection:

> People ask me [how I measure social goals progress], and I go, “Oh, I don't know, I just have that in my head.” And that is the hard part of collecting data. And sometimes it's just kind of like talking to the adults around this individual … about the observations they've had or saying, "Hey, can you watch this for me?” …. I like to work really closely with the family, so talking with them, too, about “Is she able to do this at home? Do you see this happening?” like that type of thing.

Specifically, Participant 2 stressed collaborative efforts as a key part of measuring education outcomes accurately.

The study also found concerns surrounding goals and measuring student educational outcomes. One area highlighted by Participant 5 was the overall lack of skills among special education teachers in determining the unique educational needs of students on the autism spectrum and measuring student progress toward meeting those needs:

> I think that broadly speaking, special ed teachers in general … lack a tremendous amount of skill when it comes to determining … the educational needs of the student …. [and] determining, “okay, based on this educational need, what do I want this student to improve on?... how am I going to teach [it]? … how do I measure that?” and actually doing it. I can't tell you how many IEPs I go to where the teacher is looking at the goals and says something like… “They've met this goal,” “They do this most of the time,” … something super, super general.

Struggles in goal-setting and measurement within Individualized Education Programs (IEPs) were also emphasized, with Participant 5 noting, “the [social skills, emotional regulation, and behavior regulation] goals are hard to write in a measurable way. It's hard to know how to teach it.” Consequently, Participant 5 addressed this goal-measuring complexity, stating “when it comes down to it, I would rather be putting my energy into trying to help the teacher problem-solve … the instruction and helping the kid than worry about … if they’re measuring it and how they're measuring it.”

This section revealed diverse approaches among participants, including streamlined scale-based methods, collaborative and observation-based strategies, and a functional skills checklist. Concerns about the overall lack of skills among special education teachers in determining and measuring the unique educational needs of students on the autism spectrum emerged, emphasizing the complexities of goal-setting and measurement within Individualized Education Programs (IEPs).

Effective Instructional Strategies

The qualitative data gathered from participants yielded significant insights into instructional strategies participants found effective in improving educational outcomes for grade 2-6 girls on the autism spectrum. Participants highlighted various approaches, emphasizing the importance of tailored methods to address the unique needs of these girls. Social instruction was the primary area addressed, targeting perspective-taking and emotional understanding. Participants noted the importance of practical, real-world applications in teaching social skills and emotional regulation.

Participant 2 discussed utilizing techniques like social stories and interactive visual aids. She detailed a case involving a student's challenging behavior, illustrating how creating a visual representation of the negative behavior alongside a positive alternative aids in comprehension

and learning, “I draw out the negative of what they just did, but then I always draw a positive of what can you do [to fix it].” Participant 2 discussed maintaining a readily accessible folder of these social story drawings for future use and emphasized the importance of social stories and repetition, noting, “Over the years, I've had a lot of success with social stories. So, I don't know, maybe some people don't believe in them, but I'm just like a firm believer in them and just feel like they help the kids.” Social stories, or social narratives, are also an evidence-based practice and appear in Chapter 2.

Participants 2 and 6 also underscored the effectiveness of other teaching strategies, such as the Zones of Regulation and social thinking skills. Participant 6 noted particularly liking to use Zones cards for emotional regulation and cue cards for targeted skills development. Cue cards were shown to be color-coded based on the Zones of Regulation for positive reinforcement and served as a tangible and visual method for behavior modification. Participant 6 also discussed using cue cards as prompts for specific behaviors like being silent or following directions. Participants found that using the Zones of Regulation provided students with options for self-regulation and acted as a proactive approach to addressing emotional distress. However, it is critical to note that the Zones of Regulation do not meet the standards for an evidence-based practice and have not been shown to be supported by any EBPs (Mason, Leaf, Gerhardt, 2023). One of the standards for an EBP requires substantial peer-reviewed research in the literature supporting the EBP (Mason, Leaf, Gerhardt, 2023). The Zones of Regulation program has very little peer-reviewed research to support it (Mason, Leaf, Gerhardt, 2023). In part due to this lack of literature, the Zones of Regulation also has little evidence to support that it is efficacious for a specific population, another standard for an EBP (Mason, Leaf, Gerhardt, 2023).

Another instructional strategy was highlighted by Participant 3, who discussed the significance of digital communication tools like Proloquo and picture schedules for nonverbal or echolalic students. Participant 3 noted that such tools provide these students with a means to express themselves and facilitate instruction and learning. This approach aligns with the broader aim of enhancing communication and understanding for improved educational engagement. Additionally, Technology-Aided Instruction and Intervention is an EBP found in Chapter 2.

The findings in this section show a multifaceted approach to instructional strategies that encompass areas including social-emotional learning, communication support, and behavioral management. Participants underscore the necessity of personalized and flexible methods to address the diverse educational needs of girls on the autism spectrum.

Effective Classroom Supports, Accommodations, Strategies

Participant data from the study provided valuable insights into the effective classroom supports and accommodations for qualified and non-qualified grade 2 to 6 girls on the autism spectrum. The participants highlighted several strategies that have proven beneficial in creating an inclusive and supportive learning environment. These strategies can be categorized into visual supports and sensory tools.

Visual Supports

Visual supports, one of the evidence-based practices discussed in Chapter 2, emerged as a fundamental strategy. Participant 1 emphasized the effectiveness of simple yet impactful visual supports, such as visual scales and schedules, "Just the little things like having a visual scale, schedule. It's simple, but it really helps our kids." The provision of a visual schedule serves as a guide, helping students navigate planned and unplanned transitions effectively. Similarly, Participant 2 underscores the significance of visual schedules, indicating that using a visual

schedule, especially for younger girls, is crucial, "things like having a visual schedule in their room up for everybody to see is a big thing..." Participant 6 emphasizes the utility of interactive visual prompts, such as post-it notes with choices to aid decision-making for students:

> I [write two choices on] a post-it, do you want this or do you want that, these are your choices, circle one, you got two minutes …. I set a two-minute timer on my phone, I ignore them for two minutes, and I say okay, your choice, pick one …. [S]ometimes before I walk away, I say if you don't choose I'm going to choose for you.

As described by Participant 6, cue cards provide a nonverbal and effective visual communication method, "I just walk up to them, and I just show them the cards. I just fan them out like this." This approach supports girls on the autism spectrum by reducing potential verbal processing difficulty and limiting the sometimes excessive sensory stimulus of hearing someone speak. Participant 6 also advocates for the integration of other visual strategies, such as project visuals, into the general classroom setting:

> There's still room for a lot more visuals that would benefit everybody. Like, [if there] is a three-step project, and they'll say, you do this, this, and this, but they don't write[it]... and there's nothing to refer to. Whereas, if you write the directions out one, two, three, you can just point and go, “one is that one.”

Overall, participants collectively stressed the importance of visual supports as a foundational strategy for creating an inclusive and supportive learning environment for girls on the autism spectrum. These tools, ranging from visual schedules to customized visual prompts, contribute to a structured and predictable atmosphere, ultimately reducing anxiety and fostering effective communication and comprehension. While participants did recommend visual supports

for girls on the autism spectrum, participants also indicated that visual supports were equally effective for both girls and boys on the autism spectrum.

Sensory Tools

Sensory breaks and outdoor activities were identified as effective tools for managing sensory challenges. Participant 2 emphasized recognizing when a student needs a break and how outdoor activities can provide a beneficial sensory experience.

Creating designated sensory spaces equipped with fidgets and tools for decompression also emerged as a successful strategy, as noted by Participant 4, "Little desk corners you can go to and use fidgets and you know, just decompress for a couple of minutes and then come back when she's ready." This approach acknowledges the sensory needs of girls on the autism spectrum and provides a controlled environment for self-regulation. Similarly, Participant 3 underscores the need for a "room setup that is conducive to having a place to go or having a quiet area to work in, … having a place to go for calming" where students can retreat to alleviate frustration.

Structuring the classroom environment to minimize sensory overload emerged as crucial, with Participant 3 stressing the importance of "being really aware of the whole sensory piece … especially in the young ages, … [and] keeping … extra sounds and even lights and … craziness out of the room when possible." Participant 2 further discussed being flexible enough to address multiple sensory pieces or difficulties that may emerge in the classroom, emphasizing,

> [using] a mellow tone of voice … trying to kind of be just even-toned with them, … wait time, you know, giving them that extra minute…. [A] kid may not be able to sit in his desk, he may not even be able to sit on his wobbly stool, but … let[ting] him work at the back counter.

This inclusive approach ensures that accommodations benefit all students, creating a universally accessible learning environment.

Sensory tools, including breaks, outdoor activities, designated sensory spaces, and a thoughtfully structured classroom environment, were identified as essential to managing sensory challenges for grade 2 to 6 girls on the autism spectrum and as promoting self-regulation and fostering a universally accessible learning environment. However, it is important to note that using sensory tools is not one of the evidence-based practices listed in Chapter 2, as the current research on sensory tools is inconclusive. Additionally, participants described the use of sensory tools as beneficial for girls and boys and did not note any specific tools being more effective for girls.

Implementing Strategies in the Classroom

Participants provided strategies for the classroom to support girls on the autism spectrum in grades 2 to 6, focusing on inclusive practices, varied instructional methods, and peer involvement. Participants specifically mentioned the importance of creating a supportive classroom community, adapting teaching approaches to diverse learning needs, and fostering social interaction to enhance the educational outcomes of these students.

Inclusive Classroom Practices

Creating a supportive and inclusive classroom community was highlighted as a key strategy. Participant 1 specifically noted, "I just think making all kids feel special and important in the classroom and having a chance to talk about their …knowledge and expertise in an area or bring something from home." Encouraging teachers to make all students feel seen and providing opportunities for them to stand out contributes to a positive classroom environment.

Concerns were raised about traditional lecture formats not being conducive to the learning styles of students on the autism spectrum, as articulated by Participant 1, "I go to classrooms where the teacher just lectures all day, and, you know, this girl is totally zoned out, you know, she can't sustain, the fatigue, you know, the mental fatigue of having someone talk at you all day." Participant 1 further noted that some students struggle with extended periods of verbal instruction, necessitating a more varied and interactive teaching approach. To address this, Participant 1 suggested a shift to incorporating more interactive teaching approaches, "I think they need more movement in the classroom. I love classes that have those actual movement breaks where kids get up and kind of dance."

Acknowledging the diverse learning needs of students, participants encouraged teachers to vary their instructional methods, fostering engagement and accommodating different comprehension levels and abilities. Chapter Two also supports using exercise, identifying it as an evidence-based practice.

Social Interaction and Peer Involvement

Creating friendship groups, using supportive peers, and improving peer understanding were viewed by participants as ideal ways to support grade 2 to 6 girls on the autism spectrum in the classroom.

Involving “typical” peers as role models emerged as a beneficial strategy. Participant 1 observed, “I think teachers can have typical peer role models … and I think [it’s] really important to use other kids…. They're such good role models, they can be … understanding, some are really nurturing.” Participant 1 also emphasized the importance of peer modeling and inclusion in friendship groups to enhance social skills in girls on the autism spectrum.

Social interaction barriers were highlighted by Participant 4, emphasizing the need to create understanding among neurotypical peers, "I think sometimes the biggest challenge is helping other kids understand, you know, why she might react a certain way or why she might not make eye contact all the time." The peer-mediated instruction/intervention and structured play groups discussed in this section are also noted as evidence-based practices in Chapter 2. Educating classmates about the unique characteristics of students on the autism spectrum can contribute to a more inclusive and accepting social environment within the classroom.

Improving Educational Outcomes Summary

The findings and analysis presented in this section shed light on effective classroom supports, accommodations, and implementation strategies for addressing the educational needs of qualified or non-qualified girls on the autism spectrum in grades 2 to 6. Some of the supports, accommodations, and implementation strategies that emerged were evidence-based practices, whereas others were not (See **Table 2**).

Table 2

Evidence-Based Supports, Accommodations, Strategies

Supports, Accommodations, Strategies	**Evidence-Based Practice?**
Social Stories / Social Narratives	Yes
Zones of Regulation Curriculum	No
Technology-Aided Instruction and Intervention	Yes
Picture Exchange Communication System	Yes
Visual Supports	Yes
Sensory Tools	No
Exercise	Yes

Peer-mediated Instruction/Intervention	Yes
Structured Play Group	Yes

Overall, the participants' diverse perspectives contributed to a comprehensive understanding of the complexities involved in fostering an inclusive educational environment for these girls on the autism spectrum.

Conclusion

This chapter shared and analyzed the findings from the study participants and revealed four key themes: Identification and Referral Challenges, Qualification Challenges, Misidentification Challenges and Complexities, and Improving Educational Outcomes.

The Identification and Referral Challenges theme emphasized behavioral, social, academic, and parental concerns as key contributors to referrals. The societal, cultural, and gender-specific factors reveal how societal expectations and parental preferences can complicate the identification process, emphasizing the need for a broader understanding of autism presentations in girls. The systemic and structural factors of limited awareness and expertise among professionals and external factors like access to specialized resources and socioeconomic status cause substantial challenges in timely identification.

The Qualification Challenges theme exhibited the complexities of assessing and qualifying girls for ASD services. Systemic and Procedural Challenges highlighted the impact of the COVID-19 pandemic on evaluations, emphasizing the need for adaptability in assessment methods. The importance of early childhood interventions in the qualification process was conveyed, showcasing the positive influence of timely support. Challenges in educator awareness and recognition, coupled with issues of requalification and continuing services, reveal

the evolving nature of the presentation and the dynamic context of behavioral assessments. The nuanced aspects of evaluation were explored and accentuated the limitations of standardized tools and the necessity for a more comprehensive, tailored approach. Increased collaboration among professionals and a multidisciplinary evaluation process to enhance understanding of individual needs also arose as a critical finding.

The Misidentification Challenges and Complexities theme displayed the obstacles caused by unintentional misidentifications. Reasons for unintentional misidentifications included an automatic reliance on external diagnoses, masking skills employed by girls during evaluations, and the expanding use of the Emotional and Behavioral Disorders (EBD) label. Concerns about misidentifications delaying the accurate identification of autism were articulated. On the intentional front, the deliberate misidentification of autism raised discussion about the motivations behind such actions and pointed to the tension between formal assessment criteria and the need for contextual flexibility in the evaluation process. Family preferences, cultural influences, and the impact of trauma emerged as complicating factors and emphasized the need for a flexible, culturally sensitive identification and qualification process.

The Improving Educational Outcomes theme covered strategies for enhancing the educational experiences of grade 2 to 6 girls on the autism spectrum. Measurement of educational outcomes emerged as a notable challenge, and participants stressed the importance of simplified and realistic goal tracking. The struggle with goal-setting and measurement within Individualized Education Programs (IEPs) pointed to the need for increased skills among special education teachers and a more precise focus on the unique educational needs of girls on the autism spectrum.

Social instruction, sensory tools, and digital communication tools were crucial to fostering a supportive learning environment. Classroom supports and accommodations, including visual supports, sensory tools, and inclusive classroom practices, surfaced as essential in creating an environment that acknowledges and accommodates the diverse needs of girls on the autism spectrum. Peer involvement and social interaction strategies were found to further enrich the educational experience for girls on the autism spectrum and emphasized the role of inclusive practices in creating a positive and accepting classroom community.

The exploration of these four themes illuminated the complexity and diversity inherent in understanding and supporting grade 2-6 girls on the autism spectrum. The findings called for a holistic and context-sensitive approach to identification, the expansion of assessment methods, deeper insight into the multifaceted nature of misidentification challenges, and tailored strategies and inclusive practices to improve educational outcomes and create a supportive and enriching educational environment for these girls. The following section looks at such policy and practice approaches and discusses recommendations and implications, aiming to guide educational institutions and professionals in effectively addressing the needs of grade 2-6 girls on the autism spectrum. The next section also provides direction for future scholarship in this area.

CHAPTER FIVE: RECOMMENDATIONS AND CONCLUSION

Introduction

The forthcoming chapter presents the implications and recommendations derived from the extensive exploration of challenges and supports associated with the identification, qualification, misidentification, and educational outcomes of girls on the autism spectrum in grades 2-6. The implications and recommendations for practice and policy are designed to address the challenges uncovered in the preceding chapters and guide educational institutions, policymakers, and practitioners in creating a more supportive and inclusive environment for girls on the autism spectrum. The recommendations encompass enhanced training and professional development, collaborative evaluation practices, review and update of evaluation tools, and continuous improvement mechanisms in educational leadership practices. Each recommendation is based on the research findings and its potential impact on improving the identification, qualification, and educational outcomes for girls on the autism spectrum.

This chapter also offers recommendations for scholarship, outlining key avenues for advancing research and practices in the field. These recommendations include prioritizing gender-inclusive research, advocating for research funding with a focus on gender differences, researching assessment tools, promoting interdisciplinary research and collaborations, emphasizing intersectional research, and translating research findings into practical strategies. Each recommendation is framed to encourage scholars to contribute to the evolving understanding of autism spectrum characteristics in girls and promote evidence-based practices in the educational landscape.

My study exposed the intricate challenges related to identifying autism spectrum characteristics in girls. Emphasis was placed on lack of identification and qualification due to

limited awareness, insufficient training, and subtle presentations. Misidentification difficulties were also explored. Finally, finding and implementing instructional strategies and classroom supports that improve education outcomes and supports for non-identified, non-qualified, and qualified grade 2 to 6 girls on the autism spectrum are investigated. Girls are often mislabeled under incorrect categories or not qualified due to inaccurate external diagnoses coloring the picture of academic need and thus postponing proper identification. Improving the identification, qualification, and educational outcomes of girls on the autism spectrum with educational needs emerges as a complex but critical issue in education that must be addressed.

Implications and Recommendations for Practice & Policy

Implications

This study aimed to explore the multifaceted challenges and potential supports associated with the identification, qualification, and educational outcomes of girls on the autism spectrum in grades 2-6. Ultimately, it revealed the complexities surrounding referral factors, societal and cultural influences, as well as systemic and procedural barriers affecting the timely identification and qualification of grade 2 to 6 girls on the autism spectrum with educational need while uncovering both unintentional and intentional misidentifications and shedding light on the contextual factors contributing to these phenomena.

Exploring common referral factors revealed behavioral challenges, emotional dysregulation, social difficulties, academic concerns, and parental initiative as pivotal in the identification of girls on the autism spectrum. Behavioral challenges, particularly emotional dysregulation, emerged as a significant trigger for referrals, displaying the need for interventions when emotional concerns become pronounced. Subtle manifestations of social challenges encompassing difficulties in forming and maintaining peer relationships, navigating social cues,

and engaging in reciprocal interactions highlighted the intricate social dynamics girls face. Referral patterns also exhibited variations in the age or grade at which girls are identified, emphasizing the need to understand developmental phases and the evolving nature of social challenges.

The study delved into the societal, cultural, and gender-specific factors influencing the identification and referral of girls on the autism spectrum. It unveiled the impact of societal expectations, gender norms, and cultural views on the recognition of autism characteristics in girls. The phenomenon of masking behavior, where girls effectively conceal their autism traits, emerged as a significant identification challenge. Parental preferences, cultural perspectives, and the reluctance to embrace the autism label were recognized as additional hurdles in the referral process. The findings show the need for a nuanced understanding of gender-specific manifestations of autism and the importance of addressing societal biases that may contribute to underidentification.

External factors, such as limited awareness and expertise among professionals, systemic challenges, and structural issues in the healthcare and education systems, were identified as critical elements influencing the identification process. Limited access to specialized professionals, monetary constraints, and the high demand for diagnostic evaluations pose challenges. Socioeconomic status affecting the ability of parents to seek timely diagnoses and services was also acknowledged. The findings point to systemic issues that impede the timely identification of girls on the autism spectrum, showing the need for broader structural changes to enhance accessibility and reduce waiting times for evaluations.

The insights provided by participants highlighted the challenges arising from the disruptions caused by the COVID-19 pandemic and the resulting impact on social skill

development and the reliability of parent-reported information. The study elucidates the crucial nature of early childhood interventions, presenting a positive perspective on the seamless transition between early childhood programs and subsequent educational levels. However, challenges in later grades, where the discrepancy between home and school observations complicates the qualification process, were also illuminated. The study further revealed disparities in educator awareness and recognition of autism spectrum characteristics in girls, particularly in rural school districts. These challenges collectively contribute to the intricate qualification landscape, urging a reconsideration of evaluation methods and support systems.

Examining nuances in the qualification process uncovered subjective challenges and raised questions about the adequacy of existing assessment tools. Participants articulated the need for a more comprehensive evaluation process that considers developmental history and addresses professional training gaps. The inadequacy of standardized checklists, such as the ADOS, was brought into focus, signaling a call for a deeper, more tailored understanding of girls' presentations. The importance of effective collaboration among professionals was raised, advocating for multidisciplinary evaluations to enhance the accuracy and depth of assessments.

Participants detailed contextual factors leading to the unintentional misidentification of autism, emphasizing scenarios where characteristics were misattributed to different learning or behavioral disorders. The reliance on external diagnoses, such as Attention-Deficit / Hyperactivity Disorder (ADHD), often overshadowed nuanced social and behavioral issues, potentially resulting in the underdiagnosis of autism in girls. External therapist evaluations were noted for focusing on mental health concerns rather than autism, further contributing to misidentifications. The effective masking skills employed by girls during clinical evaluations posed challenges, potentially allowing their challenges to go unnoticed. Misidentifications under

the Emotional and Behavioral Disorders (EBD) category, driven by effective masking, raised concerns about the increasing trend in using this label for girls who may have autism. Additionally, alternate identifications, shifting diagnoses, and comorbid conditions added complexity to the misidentification landscape.

The study uncovered instances of intentional misidentification motivated by the desire to access specific services. The tension between formal assessments and informal findings, as outlined by Participant 5, revealed contrasting perspectives within evaluation teams. The reluctance of families to accept an autism diagnosis and their preference for alternative labels elucidated the influence of cultural backgrounds on parental choices. The complexity of dual diagnoses, prioritizing certain aspects over others, and considering developmental stages and potential growth introduced intentional complexities in determining educational labels. The impact of trauma emerged as a significant factor influencing intentional misidentifications, acknowledging the challenge of disentangling trauma-related behaviors from those associated with autism.

The study found various approaches to measuring educational outcomes for girls on the autism spectrum, recognizing the need for realistic and manageable goal tracking. Participants stressed simplicity and feasibility in goal-setting, advocating for a scale-based approach that aligns with the teachers' overall performance assessments. Collaborative efforts involving teachers and families emerged as a crucial aspect of accurate outcome measurement. However, challenges were noted, particularly in special education teachers' skills in determining educational needs and crafting measurable goals within Individualized Education Programs (IEPs). The findings underscore the need to enhance educators' skills in goal-setting and measurement, ensuring a more effective and individualized approach to educational outcomes.

Qualitative data from participants shed light on various instructional strategies deemed effective in improving educational outcomes for grade 2-6 girls on the autism spectrum. The emphasis on tailored methods to address the unique needs of these girls was evident. Social instruction took center stage, focusing on perspective-taking and emotional understanding. Techniques such as social stories, interactive visual aids, the Zones of Regulation, and social thinking skills were noted as successful approaches. The study shows the significance of personalized and flexible instructional methods encompassing social-emotional learning, communication support, and behavioral management. These strategies provide a foundation for creating a supportive and engaging learning environment for girls on the autism spectrum.

Participants provided valuable insights into effective classroom supports and accommodations, categorizing them into visual supports, sensory tools, social skills instruction, and flexible classroom structures. Visual supports, such as visual scales and schedules, emerged as foundational tools for creating an inclusive learning environment. Sensory breaks, outdoor activities, and designated sensory spaces for self-regulation were critical for student support. The study revealed the necessity of structuring the classroom environment to minimize sensory overload, creating an accessible learning space. Additionally, the importance of inclusive classroom practices that consider diverse learning styles and the involvement of supportive peers in fostering an inclusive community was underscored.

Creating an inclusive and supportive classroom community was identified as a key strategy for improving educational outcomes. The study displayed the need for interactive teaching approaches, acknowledging that traditional lecture formats might not suit the learning styles of students on the autism spectrum. Variability in instructional methods was encouraged to accommodate different comprehension levels and abilities. Furthermore, the importance of peer

involvement, friendship groups, and educating neurotypical peers about the unique characteristics of students on the autism spectrum emerged as integral components of an effective classroom strategy.

Recommendations

This section outlines the implications and recommendations for practice and policy stemming from the profound exploration of challenges surrounding the identification, qualification, misidentification, and educational outcomes of girls on the autism spectrum in grades 2 to 6. The implications underscore the pressing need for a paradigm shift in educational practices and policies to better accommodate the subtle and complex characteristics and challenges faced by girls on the autism spectrum. This section also provides robust recommendations to guide practitioners and policymakers in fostering a more inclusive and supportive environment. My study's comprehensive exploration of challenges associated with the identification, qualification, misidentification, and educational outcomes of autism spectrum characteristics in girls lays the groundwork for suggestions spanning a variety of dimensions in educational scholarship.

Enhanced Training and Professional Development

The first recommendation stresses the need for schools to provide prioritized comprehensive training and professional development programs for teachers and staff dealing with identified and unidentified students showing educational needs within Minnesota's categorical disability areas. This includes raising awareness of the unique challenges faced by girls on the autism spectrum. The professional development approach should include the involvement of specialists (ASD specialists, BCBAs), mentorship, ongoing coaching infrastructure, modeling, one-to-one in-classroom coaching, hands-on training, observation, and

feedback. Staff should have opportunities to observe schools with reputable programs or participate in Q&A sessions with teachers and staff from such programs. Schools should cover diverse training topics such as an overview of ASD, recognition, data collection, behaviors, curriculum modifications, evidence-based practices, relationship building, and collaboration. To support training initiatives, schools should also consider training resources from The National Professional Development Center on Autism Spectrum Disorder, including self-directed Autism-Focused Research Intervention Resources & Modules (AFIRM) internet modules and the internet Autism Internet Modules from OCALI.

Collaborative Evaluation Practices

The second recommendation encourages schools to have a collaborative approach to evaluation, involving multidisciplinary teams to ensure a comprehensive understanding of each student's needs. Fostering communication and knowledge-sharing among educators, special education professionals, and psychologists is essential. Pairing professionals with varying levels of ASD initial evaluation experience can enhance accuracy. Collaboration among educators, special education professionals, and external evaluators is vital to facilitate comprehensive assessments, reducing unintentional misidentifications.

Review and Update Evaluation Tools

The third recommendation is for schools to assemble a team that includes experts on autism and girls on the autism spectrum to critically review and update existing evaluation tools. This involves not only developing assessment approaches beyond standardized checklists, incorporating developmental history, and addressing the unique challenges girls may present, but also establishing a consistent procedures and tools list that all professionals can use. Many resources centered on evaluation tools and processes (including some compiled by schools,

districts, and occasionally the state) list anecdotally recommended tools lacking a legitimate evidence base. Rather, utilize resources from nationally recognized and reputable organizations, such as the Association for Science in Autism Research, The National Clearinghouse on Autism Evidence & Practice, and the Institute of Education Sciences' What Works Clearinghouse, accessible through their respective websites, to screen evaluation tools. Periodic review and revision of evaluation criteria are suggested to prevent misidentifications or non-qualifications and provide a more accurate representation of students' needs.

Continuous Improvement

The fourth recommendation for schools is to establish mechanisms for continuous improvement in educational leadership practices. Regularly assess and update training programs, policies, and procedures to align with evolving research and best practices in the identification and support of girls on the autism spectrum. Establish a system for regular audits of the identification and evaluation processes. This helps to identify and rectify any systemic issues contributing to misidentifications, ensuring that educational leadership practices align with the evolving understanding of autism in girls.

Recommendations for Scholarship

The comprehensive exploration of challenges associated with the identification of autism spectrum characteristics in girls provides a foundation for substantial recommendations in educational scholarship. This section outlines key avenues for advancing research and practices to better understand and support girls on the autism spectrum.

Prioritize Gender-Inclusive Research

Recommendation one would be to have scholars pursue research endeavors that delve into the gender-specific challenges inherent in identifying autism need to be prioritized. The

emphasis is on fostering collaborations that bridge the gap between theoretical insights and practical applications, promoting a holistic understanding of gender-related dynamics in autism identification.

Research on Assessment Tools

Recommendation two would be to allocate resources for research on the adequacy and sensitivity of existing assessment tools, which is crucial. Simultaneously, there is a need to investigate the development of new tools that better capture the nuanced presentations of girls on the autism spectrum, ensuring a more accurate and comprehensive evaluation process.

Interdisciplinary Research and Collaborations

Recommendation three would be to promote interdisciplinary research collaborations, which emerges as a significant recommendation. Involving educators, psychologists, sociologists, and professionals from relevant fields is essential for fostering a holistic understanding of the challenges faced by girls on the autism spectrum. Collaborative research networks, engaging scholars, educators, clinicians, and policymakers, should be established to address multifaceted challenges in autism identification.

Intersectional Research

Recommendation four would be to emphasize intersectional research is critical, encouraging a nuanced exploration of the interplay between gender, cultural background, and socioeconomic factors in the identification process. Understanding how these intersecting elements contribute to misidentifications is paramount in informing more inclusive educational practices.

Translation of Research

Recommendation five would be to encourage initiatives that facilitate the translation of research findings into practical strategies for educators and policymakers, which is vital. This includes the development of knowledge translation initiatives to bridge the gap between research and practice and disseminating research findings in accessible formats to educators, policymakers, and parents.

Closing Thoughts

A strong sense of justice

Being female, a girl, a woman is to know the unjust.

Female. Girl. Woman.

Underseen.

Underheard.

Underrecognized.

Neurodivergent female, girl, woman?

Underfoot.

Every right, every need, every want, a fight.

Earned!

Gone.

Fight Again!

Again!

again.

For a sliver. For a splinter.

I have a strong sense of justice and have learned through my doctoral experience that I want to be a leader in justice for these women. I have worked hard to find an area where I can contribute something truly useful and improve the lives of others. Through my research and study, I feel I am making a scholarly and meaningful contribution.

The most significant insight I have gained from both research and my study is how urgently girls on the autism spectrum need to be recognized in schools. To show just how critical the need is to support these girls, I will share a few grim statistics. A 2020 study found that of the females assessed in the study who were on the autism spectrum and had ADHD, one in five had attempted suicide at least once (Hirvikoski et al.). In another study of autistic adults, 67.2% had been diagnosed with at least one mental health disorder (Fombonne et al., 2020).

The stakes are high for autistic girls. I plan to share my research with other specialists in my area of work to show them the large number of girls who are being missed and how educators can help. Specifically, I am interested in sharing my research in my own school district. I may also pursue conference opportunities or create a journal article based on this study to present this important research to a wider audience. I hope my research will edify educational and medical specialists and, eventually, the public and encourage them to seek and support this hidden population of girls.

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APPENDIX 1: DSM-5 Autism Diagnostic Criteria

DSM-5 Autism Diagnostic Criteria

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive, see text):

1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.
3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

Specify current severity: Severity is based on social communication impairments and restricted repetitive patterns of behavior. (See table below.)

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat food every day).
3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g, strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest).
4. Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

Specify current severity: Severity is based on social communication impairments and restricted, repetitive patterns of behavior. (See table below.)

B. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies in later life).

C. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

D. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

Note: Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder. Individuals who have marked deficits in social communication, but whose symptoms do not otherwise meet criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder.

Specify if:

- **With or without accompanying intellectual impairment**
- **With or without accompanying language impairment**
    - (Coding note: Use additional code to identify the associated medical or genetic condition.)
- **Associated with another neurodevelopmental, mental, or behavioral disorder**
    - (Coding note: Use additional code[s] to identify the associated neurodevelopmental, mental, or behavioral disorder[s].)
- **With catatonia**
- **Associated with a known medical or genetic condition or environmental factor**

Table: Severity levels for autism spectrum disorder

Severity level	**Social communication**	**Restricted, repetitive behaviors**
Level 3 "Requiring very substantial support"	Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others. For example, a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches to meet needs only and responds to only very direct social approaches	Inflexibility of behavior, extreme difficulty coping with change, or other restricted/repetitive behaviors markedly interfere with functioning in all spheres. Great distress/difficulty changing focus or action.
Level 2 "Requiring substantial support"	Marked deficits in verbal and nonverbal social communication skills; social impairments apparent even with supports in place; limited initiation of social interactions; and reduced or abnormal responses to social overtures from others. For example, a person who speaks simple sentences, whose interaction is limited to narrow special interests, and how has markedly odd nonverbal communication.	Inflexibility of behavior, difficulty coping with change, or other restricted/repetitive behaviors appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts. Distress and/or difficulty changing focus or action.

Level 1 "Requiring support"	Without supports in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful response to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication but whose to- and-fro conversation with others fails, and whose attempts to make friends are odd and typically unsuccessful.	Inflexibility of behavior causes significant interference with functioning in one or more contexts. Difficulty switching between activities. Problems of organization and planning hamper independence.

(Diagnostic and statistical manual of mental disorders: DSM-5, 2017).

APPENDIX 2: MINNESOTA DEPARTMENT OF EDUCATION AUTISM SPECTRUM DISORDER CHECKLIST

Autism Spectrum Disorder (ASD)

- Evaluation⇨ (Must meet initial criteria)
- Reevaluation

Based on the information in the Evaluation Report and the student file, the student must meet requirements in A and B to be eligible for this disability category. The determination must be made by a multidisciplinary team which includes at least one professional with experience and expertise in the area of ASD due to the complexity of this disability and the specialized intervention methods. The team must also include a school professional knowledgeable of the range of possible special education eligibility criteria. The behavior indicators demonstrated must be atypical for the pupil's developmental level. The team shall document behavioral indicators through at least two of these methods: structured interviews with parents, autism checklists, communication rating scales, developmental rating scales, functional behavior assessments, application of diagnostic criteria from the current Diagnostic and Statistical Manual (DSM), informal and standardized evaluation instruments, or intellectual testing.

The team must document that the pupil demonstrates patterns of behavior described in at least two of the three subitems, one of which must be subitem (1).

1. Qualitative impairment of social interaction, as documented by two or more behavioral indicators, for example:

- limited joint attention and limited use of facial expressions towards others
- does not show or bring things to others to indicate interest in the activity
- demonstrates difficulty relating to people, objects, and events
- gross impairment in ability to make and keep friends
- significant vulnerability and safety issues due to social naiveté
- may appear to prefer isolated or solitary activities
- misinterprets others' behaviors and social cues
- other

For complete information regarding disability criteria requirements, refer to Minnesota Rules, part 3525.1325

and

2. Qualitative impairment in communication, as documented by one or more behavioral indicators, for example:

- not using finger to point or request
- using other's hand or body as a tool

- showing lack of spontaneous imitations or lack of varied imaginative play
- absence or delay of spoken language
- limited understanding and use of nonverbal communication skills such as gestures, facial expressions, or voice tone
- odd production of speech, including intonation, volume, rhythm, or rate
- repetitive or idiosyncratic language
- inability to initiate or maintain conversation when speech is present
- other

or

3. Restricted, repetitive, or stereotyped patterns of behavior, interests, and activities as documented by one or more behavioral indicators, for example:

- insistence on following routines or rituals
- demonstrating distress or resistance to change in activity
- repetitive hand or finger mannerism
- lack of true imaginative play versus reenactment
- overreaction or under-reaction to sensory stimuli
- rigid or rule-bound thinking
- intense, focused preoccupation with a limited range of play, interests, or conversation topics
- other

Verification

The evaluation report must include documentation with supporting data in all four areas below that verifies ASD adversely affects the pupil's performance and that the pupil is in need of special education instruction and related services.

- Present levels of performance in each core feature identified in A (subitem 1 and either subitem 2 or 3).
- Education needs in each core feature identified in A (subitem 1 and either subitem 2 or 3).
- Observations of the pupil in two different settings, on two different days.
- Summary of the pupil's developmental history and behavior patterns.

Review of Eligibility Determination

To determine compliance with eligibility determination, one of the following must be checked.

- The documentation supports the team decision.
- The documentation does not support the team decision.

(Minnesota Department of Education, 2019).

APPENDIX 3: INTERVIEW QUESTION MATRIX

Research & Interview Questions

Research Questions	Interview Questions
1. What are the challenges in identifying and qualifying grade 2-6 girls for autism-spectrum services in the school setting?	● Describe common factors that lead to grade 2-6 girls being referred for special education ASD evaluation. ● Describe common obstacles or challenges that arise during the process of qualifying grade 2-6 girls for autism-spectrum services. ● Describe factors you have observed that make grade 2-6 girls on the autism spectrum who need services less likely to be identified or referred. ● Describe factors that contributed to grade 2-6 evaluated girls not qualifying when, in your professional opinion, they showed a need for autism-spectrum services. ● Describe any external factors you have observed, such as funding constraints or limited access to specialized professionals, that affect the timely identification and qualification of grade 2-6 girls for autism-spectrum services. ● Describe any situations you have encountered where a grade 2-6 girl's autism spectrum characteristics were initially mistaken for a different learning or behavioral disorder, how this was resolved, and the challenges it presented. ● In your experience, are girls commonly referred for special education ASD evaluation at a specific age or grade level? If so, describe factors you have observed that lead to girls to be referred at that age or grade level and not earlier or later.

2. What teaching strategies, actions, and supports could classroom teachers implement to improve the educational outcomes for grade 2-6 girls qualifying for autism-spectrum services, as well as for the girls who were assessed and did not qualify for services?	• Describe how you measure the overall educational outcomes for grade 2-6 girls on the autism spectrum and what indicators or data points you use to assess educational outcomes (standardized testing, grades, etc.). • Describe how you measure the success of specific strategies and actions you implement. • Describe instructional strategies you have found to be the most effective in improving educational outcomes for grade 2 to 6 girls on the autism spectrum. • Describe classroom supports or accommodations you have found most effective for grade 2 to 6 girls on the autism spectrum. • Describe how classroom teachers can implement these effective strategies and supports so that grade 2 to 6 girls who have not qualified for autism-spectrum services but show a need for them can also benefit. • Describe additional actions in or outside of the classroom that teachers can take to improve the educational outcomes for grade 2 to 6 girls on the autism spectrum and girls who have not qualified for autism-spectrum services but show a need for them. • Compare the educational outcomes you have observed in grade 2 to 6 girls who qualified for autism-spectrum services with the educational outcomes of nonqualifying grade 2 to 6 girls who showed a need for services.
Interview Probes:	• Can you please tell me more about this? • Can you provide a specific example of this? • Is there anything else you would like to add before we move on?

APPENDIX 4: RECRUITMENT EMAIL

Subject: Invitation to Participate in a Study on Qualifying Girls for Autism Spectrum Disorder (ASD) Services

Dear Special Education Teacher —

I hope this email finds you well! My name is Jessica Ford, and I am a special education teacher and doctoral student at Concordia University, Saint Paul. I am currently conducting my dissertation study and am writing to invite you to participate in my research.

My study is focused on understanding the barriers faced in qualifying girls for autism spectrum disorder (ASD) services and identifying effective practices for supporting girls on the autism spectrum in Grades 2-6. As a special education teacher in Minnesota with expertise or experience working with girls on the autism spectrum, your insights and experiences are invaluable to this study.

If you are a current or former Minnesota special education teacher who has worked with Grade 2-6 girls on the autism spectrum and are interested in participating in this study with a short online interview (45-60 minutes) over Zoom, please email me at or text or leave me a message with your contact information at . Please include days and times that work best for you to participate in the interview. I will then provide you with scheduling options and further details about the study, including the interview process, confidentiality measures, informed consent, and the opportunity to ask any additional questions. Your participation is completely confidential and voluntary, and you have the right to withdraw at any time without any pressure or consequences.

I am excited about the potential impact of this study and believe that your input will be invaluable in improving the support and services provided to girls on the autism spectrum. Your participation will help advance the understanding of girls on the autism spectrum and contribute to the overall body of knowledge in this important area.

Thank you for considering this invitation, and if you have any questions or would like additional information, please do not hesitate to reach out to me. I look forward to hearing from you soon!

Warmly,
Jessica Ford
Doctoral Student
Concordia University, Saint Paul

APPENDIX 5: INFORMED CONSENT FORM

Informed Consent Form

Study Information:

Title of Study: Girls on the Autism Spectrum: Improving Recognition and Support Systems in Schools
Researcher: Jessica Ford
Institution: Concordia University, Saint Paul
Contact Information:

Introduction:

You are invited to participate in a research study entitled Girls on the Autism Spectrum: Improving Recognition and Support Systems in Schools that aims to explore the barriers faced in qualifying girls for autism spectrum disorder (ASD) services, gather potentially identifying characteristics and behaviors of girls on the autism spectrum, and collect data on the types of training and practices that participants find effective in enhancing outcomes for students on the autism spectrum. The study is being conducted by Jessica Ford, a doctoral student at Concordia University, Saint Paul. Below, you will find answers to the most commonly asked questions about participating in this study. Please read this document and reach out with any questions you may have before agreeing to participate in this study.

What is the purpose of this study?

The purpose of this study is to gain a deep understanding of the barriers, identifying characteristics, and effective practices related to Grade 2-6 girls on the autism spectrum in special education services. By exploring the perspectives and experiences of special education teachers in Minnesota, I am aiming to improve the identification process, support strategies, and outcomes for girls on the autism spectrum in educational settings.

Why have I been asked to participate in this study?

You have been asked to participate in this study because you are a current or former special education teacher in Minnesota with experience working with girls on the autism spectrum in Grades 2-6. Your insights and experiences are valuable in understanding the barriers, identifying characteristics, and effective practices related to girls on the autism spectrum receiving special education services. Your participation will contribute to the advancement of knowledge and help inform future educational practices and policies.

If I decide to participate, what will I be asked to do?

If you agree to participate, you will be asked to complete an online interview. The interview will be conducted via a virtual platform and will be audio-recorded and/or video-recorded for accurate data collection and analysis. The interview questions will focus on barriers in qualifying

girls for special education services, identifying characteristics specific to girls on the autism spectrum, and effective training and practices for supporting these girls.

How long will the interview take?

The interview is expected to take approximately 45-60 minutes to complete.

Can I withdraw from the study if I change my mind?

Yes, your participation is voluntary, and you have the right to withdraw your consent or discontinue participation at any time without providing a reason. Withdrawing from the study will not result in any penalty or loss of benefits.

What are the benefits of my participation in this study?

By participating in this study, you will contribute to the advancement of knowledge regarding barriers, identifying characteristics, and effective practices for girls on the autism spectrum receiving special education services. Additionally, your insights and experiences may help inform future educational practices and policies.

What are the risks of my participation in this study?

There are no anticipated physical risks associated with participation in this study. However, you may experience emotional discomfort when discussing sensitive topics related to girls on the autism spectrum. If you feel distressed during the interview, please inform me, the researcher and appropriate support resources will be provided.

What will you do with my information and interview responses, and how will you protect my privacy?

Your participation in this study is entirely voluntary. All the information you provide will be treated with strict confidentiality. Your identity will be kept anonymous throughout the research process, and any personally identifiable information will be removed or pseudonymized during data analysis and reporting. The data collected from you will be used solely for research purposes, and it will be analyzed and reported in a manner that ensures confidentiality and anonymity. The audio recordings and/or video recordings and any digital data will be securely stored in password-protected folders on a password-protected device only accessible to me as the researcher. The data collected will be used solely for research purposes and will not be shared with any third parties. Once I have completed writing the study results and analysis, I will permanently delete audio recordings and/or video recordings.

Could my information be used for future research?

No. Your data will not be used or distributed for future research purposes, even if de-identified, without gaining further consent from you.

Will there be any changes to the study once it begins?

If I, as the researcher, learn about new findings during the course of this study, which may influence your willingness to continue participating in this study, I will inform you of these findings.

How can I get more information?

If you have any questions, please email me at or text or leave me a message with your contact information at . If you have other questions or concerns regarding the study and would like to speak with someone other than the researcher, you are welcome to contact the Concordia University Institutional Review Board at irb@csp.edu.

Please keep a copy of this form for your records.

Statement of Consent:

By signing below, you indicate that you have read and understood the information provided in this informed consent form, that you have had the opportunity to ask questions and have them answered to your satisfaction, and that you voluntarily agree to participate in this research study.

I consent to participate in the study and agree to be audio-recorded and/or video-recorded.

My spoken consent affirms I have read this information, my questions have been answered, I am at least 18 years of age, and I agree to participate in this study.

Participant's Printed Name: _____

Participant's Signature: _____

Date of Consent: _____

Researcher's Printed Name: _____

Researcher's Signature: _____

Date of Receipt: _____