

**EXPLORING LEVELS OF AUTISM SYMPTOM SUPPORT AFTER ELIGIBILITY
DETERMINATIONS**

by

Zachary A. Bella

A Dissertation Submitted in
Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
in Educational Psychology

at

The University of Wisconsin-Milwaukee

August 2023

ABSTRACT

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Zachary A. Bella

The University of Wisconsin-Milwaukee, 2023
Under the Supervision of Professor Karen C. Stoiber

The identification of autism spectrum disorders (ASD) occurs in educational and health settings. Many children with autism will only receive a classification of autism in the educational setting (Esler et al., 2022, Pettygrove et al., 2013, Wiggins et al., 2020). There is significant overlap between the early intervention offered to children with autism in health settings and what is provided through Individualized Education Programs (IEPs) (National Autism Center, 2009; Morset et al., 2010). However, there is an increasing trend of children with autism being classified with significant developmental delay (SDD) instead of autism initially in schools and the impact of this trend is underexplored (Rubenstein et al., 2018). This investigation compared initial IEPs for 112 children who classified with ASD or SDD in a large public school district who all eventually were classified with autism. Many children (35%) who were later reclassified with autism classified with SDD initially instead. Additionally, the classification of autism was significantly associated with race and with a previous diagnosis of ASD in health settings. Findings reveal similar levels of support offered in many autism symptom-specific areas, and similar amounts of specialized instruction and related services provided in IEPs between autism and SDD classifications. Some differences emerged, including IEPs for children who classified with autism initially including more autism-specific IEP goals in the areas of social

communication/interaction and nonverbal communication and were more likely to include supplementary aids and services related to restricted and/or repetitive behavior, interests, and activities, or sensory differences than those IEPS for children classified initially with SDD. Implications for eligibility determination decision makers and special education teams, limitations, and future directions are discussed.

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This work is dedicated to the people in my support system who have been with me throughout the adventure that is graduate school. Despite the odds, I have achieved this milestone and owe you a debt of gratitude for helping me remain grounded and intentional.

To my life partner Ashley, thank you for encouraging me during the good days and bad. During an experience that can feel isolating and unpredictable, you made me feel consistently seen, loved, and heard. To my dog and companion Millie, I will forever be thankful for your presence and our bond during this time of my life, and I wish you were with me to celebrate the results. Dad, your continued encouragement and our phone calls, and witnessing your drive, resilience, and determination have been key factors in my reaching of this goal. Mom and Courtney, I continue to look up to you and model myself after the people you were, and I find peace knowing that this achievement would make you both proud. To Leslie, Alex, Miranda, and Quinn, our family and your company have helped me reach the finish line. To my Grandparents, for your presence and the many celebrations and game nights— I am so thankful for your constant support. To the Kenney family, I greatly appreciate the light that you and our relationships are.

I would like to thank my dissertation committee members for their expertise and availability during this project, and especially my committee chair and advisor Dr. Stoiber for your guidance and support during my graduate school experience. Finally, I would like to thank the district's data team for their time and dedication to this project so that we can continue to advance the field's shared understanding of the special education evaluation practices and support offered in school settings for children with autism.

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Introduction

Exploring Autism Symptom Goal Specificity and Support After Eligibility Determinations

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by differences in communication and social behaviors, and restricted/repetitive behaviors, interests, activities, and/or sensory differences (American Psychiatric Association, 2013). Autism can be diagnosed medically in health settings early on during development, oftentimes qualifying for early intervention services. Evaluation of autism can also occur in educational settings through eligibility determinations, which can result in an educational classification of autism. Autism eligibility determination can inform the need for symptom-specific supports addressing autism symptoms (e.g., communication differences, restricted/repetitive behaviors) that negatively impact a student's ability to access the educational environment by qualifying for an Individualized Educational Plan (IEP) or Section 504 (Kurth & Mastergeorge, 2010). Although the diagnostic and classification systems in health and educational settings can be described as “separate and parallel processes” (Esler et al., 2022, para. 5), each serve as a method for autism in children to be identified and autism-specific symptoms to be supported early in a child's development.

Educational Autism Eligibility Classifications as a “Safety Net”

After detection of ASD, research suggests that the critical period for early intervention begins when a child is between 2-3 years of age (Zwaigenbaum et al., 2015). Early intervention for ASD is associated with both immediate and long-term benefits (e.g., needing less or no special education) compared to children who are identified later (Anderson et al., 2014; Koegel et al., 2014; Dawson et al., 2010). Despite the importance of early identification and intervention for ASD, estimates suggest that children of color experience autism diagnoses in health settings at a later time than their White peers (Constantino et al., 2020; Mandell et al., 2009). As a result,

Smith and colleagues (2020) indicate that racial and ethnic minority groups have both decreased access to and lower use of early intervention services outside of the educational setting.

However, the Individuals with Disabilities Education Act (IDEA) requires districts to conduct evaluations for children to determine qualifications for services and supports by the IDEA in a procedure known as *Child Find* (IDEA, 2004). Child Find ensures that school districts actively search for children who may be deemed eligible for supports and services after eligibility determinations. Further, in Part C of the IDEA, districts are required to conduct eligibility evaluations for children ages 0 to 3 years, which can provide early identification within the critical period of early intervention for ASD. Barnard-Brak (2019) explains that eligibility classifications for autism in the school setting serves as a “pipeline” for clinical settings to be informed of the presence of autistic symptoms and potentially initiate the progress for a diagnosis of ASD in clinical settings. Thus, the educational setting serves as a mandated evaluative realm and potential *safety net* for children who may not have been previously identified with autism and/or received autism-specific support in a health setting.

Procedures like Child Find and early determinations of educational autism may serve as the first indication for families that a child/student has an autism spectrum disorder. For stakeholders who are aware of both the difference in diagnosis in health settings versus classifications within educational settings, and the existence of intensive early intervention and support services for ASD outside of the educational setting, eligibility determinations may also serve as an indication that a child could benefit from intervention outside of the schools. However, a subset of children will *only* receive an eligibility determination of educational autism during early childhood and not a diagnosis of ASD in health settings.

In an earlier review exploring a nationwide dataset (i.e., Autism and Developmental Disabilities Monitoring Network; ADMM) within the United States from 2002, Pettygrove and colleagues (2013) reported that nearly 40% of the children who would meet a clinical diagnosis of ASD in health settings were represented in the dataset by autism eligibility classifications in educational settings. More recently, Wiggins et al. (2020) explored the same updated ADMM dataset and found that over 1 in 10 children who meet the criteria for a diagnosis of ASD in health settings *only* received an eligibility classification of educational autism by age 8-years-old and did not receive a diagnosis of ASD in health settings. Similarly, of nearly 1500 children within the 2016 surveillance year of the ADMM dataset, Esler et al. (2022) found that 23% had *only* an educational eligibility classification for autism and did not have a diagnosis of ASD. Thus, there is a “substantial minority” of children who will be identified with autism through eligibility determination evaluations within educational settings and will not be diagnosed with ASD in health settings (Esler et al., 2022).

Despite the importance of early intervention and support after identification, as well as the mandated evaluation procedures that may *catch* children who do not initially receive a diagnosis of ASD in health settings, various student-level and systemic factors contribute to children not receiving a classification of EA early on in educational settings. Rubenstein and colleagues (2018) indicate that differences in special education classifications may be the result of school evaluation personnel receiving less intensive clinical training, which may lead to inaccurate or missed eligibility determinations when considering autism. Further, when a child is undergoing an eligibility evaluation, children who are only represented by educational records (e.g., teacher interviews, grades, school behavior) are less likely to have an educational eligibility determination of EA compared to those who have both education *and* health records reviewed

during an evaluation (Pettygrove et al., 2013). Multiple factors regarding socioeconomic status (e.g., mobility, maternal education status) contribute to children's records including information only from educational sources and not healthcare sources. Some research suggests Hispanic children are more likely to be represented by educational records within the ADDM database without health records (Pettygrove et al., 2013), whereas earlier research suggests Black children are more likely to be represented solely by records from educational sources (Yeargin-Allsop et al., 2013). In addition, work conducted by Morrier and Hess (2012) supported that some ethnically minoritized groups are underrepresented in educational autism prevalence throughout public educational settings in the United States.

Volker (2012) explains that many children/students with ASD are classified in other special education categories outside of autism and other students with ASD may not ever qualify and/or be evaluated for any special education services. Failing to qualify in educational settings despite meeting diagnostic criteria in health settings is expected for some children, as qualifying within educational settings also requires that the symptoms impact a child's ability to access the school curriculum and/or environment. However, Part C of the IDEA which provides birth to 3 services does not specify the need for an educational *impact* (IDEA, 2004). Relevant to the scope of this investigation, children who have autism may be classified with a significant developmental delay (SDD) initially rather than autism and then be re-classified after aging out of services. The impact for children who are classification initially with SDD rather than under the classification of autism in terms of the support and services they receive remains underexplored. It should be noted that some states refer to developmental delay in the educational setting as "significant developmental delay" or "SDD." For ease of conceptualization, both "SDD" and "SDD" refer to the same special education classification. The

term “significant developmental delay” will henceforth be used throughout this manuscript due to the use of “SDD” label in the target district’s state-level special education criteria.

Significant Developmental Delay Classifications

In educational settings and in district of interest that is the focus of the current investigation, a significant developmental delay eligibility determination may be given to a child early on and up to age 9 who demonstrates delays in areas such as communication, cognition, and emotional activity (Hadadian & Koch, 2013). Although eligibility age criteria can vary slightly dependent upon state, children who are initially classified with SDD typically age-out of eligibility at age 9 and are re-evaluated for eligibility in other areas, including autism. The use of significant developmental delay classifications has been traditionally considered as “more accepting” and potentially less stigmatizing than initial early and specific classification labels like educational autism (Hadadian & Koch, 2013; Danaher, 2011).

In a sample of 1,514 children classified initially with SDD in preschool and who later qualified for special education supports after age 9, ninety-five children were re-classified with educational autism (Delgado et al., 2006). More recent research supports an increasing rate of children who meet diagnostic criteria for ASD in health settings but are instead being supported in educational settings through a label of significant developmental delay (Rubenstein et al., 2018). In a review of eligibility classifications trends for children who met diagnostic criteria of autism, Esler et al. (2022) found that the use of significant developmental delay labels was associated with evaluations where educational sources of information, and not healthcare sources of information, were available for children. Morrier and Hess (2012) indicate that the use of significant developmental delay criteria may affect ethnically minoritized groups more and impacts the underrepresentation and the prevalence of diverse children who meet eligibility

criteria for educational autism. Specifically, in their earlier investigation the researchers reported that approximately 20% of states who reported eligibility rates demonstrated eligibility classifications for autism for ethnically and/or culturally diverse that were proportional with broader population percentages (2012).

Significant developmental delay eligibility labels may also be used for children whose presentations are less clear and demonstrate delays in multiple areas. Presentations of ASD can co-occur with ADHD and intellectual disability (Casanova et al., 2020) and around 25 – 50% of individuals with ASD may be unable to communicate meaningfully (Patten et al., 2013). These common co-occurrences can cause individuals with ASD to present with delays or differences in multiple areas and create complex presentations for evaluators. Thus, accurate assessment and eligibility determinations for autism require evidence-based comprehensive evaluation methods (Esler & Ruble, 2015). However, many stakeholders who classify EA within educational settings (i.e., school psychologists) report the absence of evidence-based best-practice evaluation methods for ASD (Aiello et al., 2017; Allen et al., 2008) and a desire for additional training for autism assessment within the schools (Nathanson & Rispoli, 2021). Recently, Esler and colleagues (2022) outline this best-practice evaluation gap in a nationwide review, finding that nearly half of the evaluations used for children who met diagnostic criteria for ASD but were classified with a significant developmental delay, did not include an autism-specific assessment instrument. Thus, due to the presentation of ASD early on, SES and sociodemographic factors, SDD eligibility criteria, and assessment methods within the school, children who have autism and may meet the criteria for and Educational Autism (EA) may instead be classified as SDD within educational settings and may not be re-evaluated until age 9 when the SDD label no longer is appropriate.

Does early eligibility specificity matter? Current Cautions and the Unknown

Despite the option for educational autism classification early on, evaluations where educational sources of information are available without healthcare information, as well as evaluations for ethnically minoritized children, are more likely to receive a significant developmental delay eligibility classification initially compared to their White peers. Typically, these children are not re-evaluated and re-classified with educational autism until age 9 upon aging out of a significant developmental delay classification. But does early eligibility specificity matter? Regardless of eligibility classification (i.e., educational autism or significant developmental delay), a child will receive an IEP after being determined eligible. Esler et al. (2022) report that due to significant developmental delay evaluation practices, the needs of a child who meets the diagnostic criteria for autism in health settings *may* be “adequately” captured in an IEP for SDD.

However, Esler and colleagues (2022) also report significant differences in the documentation of restricted/repetitive behaviors (i.e., fixated interests, compulsions/rituals, sensory differences) in autism evaluations versus significant developmental delay evaluations. These cluster two symptoms, or the restricted/repetitive behavior domain of ASD, can significantly impact academic functioning (Azad & Mandell, 2016) and are symptoms typically targeted during early intervention (Esler et al., 2022). Supporting the potential negative impact of symptom documentation differences, the Division for Early Childhood (2009) cautioned that low incidence disabilities (e.g., autism spectrum disorder) are at risk for “loss of services, authorization of inappropriate services, loss of access to appropriately qualified service providers, or adequate and appropriate funding resources” (pgs. 2 – 3). Similarly, Hadadian and Koch (2013) indicate that significant developmental delay labels may cause a loss of disability-

specific services and supports due to the use of a “non-specific” disability category (p. 192). For children who may not otherwise qualify and receive ASD-specific intervention outside of educational settings, the effect of lost services within educational settings may become even more pronounced. However, there has yet to be a structured analysis of how the supports and services offered after eligibility for children diagnosed with autism may differ when compared to eligibility classifications of significant developmental delay.

Addressing the Gap

A breadth of research cautions the potential risks and vulnerability for children who have autism regarding the loss of ASD-specific support in educational settings after a significant developmental delay label, but the true impact of initial early and specific EA eligibility determinations remains underexplored (Blackwell & Rossetti, 2014). Researchers have begun to examine IEP quality and variability among students with educational autism (e.g., Ruble et al., 2010) but there remains a need to compare IEP differences among groups of children who meet the criteria for ASD and are deemed eligible using different classifications (i.e., EA versus SDD). In addition, research has yet to examine the difference in supports and services offered for children with an initial EA determination during early childhood compared to those who first receive a SDD eligibility determination and age out of the classification.

Study Purpose and Significance

The importance of early detection and subsequent intervention for ASD is well-established (see for example, Koegel et al., 2014; Dawson et al., 2012). ASD evaluations and diagnosis in health settings can qualify children for comprehensive early intervention services (e.g., applied behavior analysis) during critical periods of intervention. However, evaluation and intervention accessibility are associated with factors that create significant barriers to early

detection of ASD in health settings. For example, Constantino and colleagues (2020) suggest that African American children experience a three-year lag time in receiving a diagnosis of ASD in health settings compared to their non-Hispanic White peers.

The educational setting can serve as a “safety net” to find and support children who may qualify for an IEP or Section 504. Children who may never be diagnosed with ASD within health settings can receive a special education classification that grants access to additional services and supports throughout early childhood. These services are not always identical to those provided within health settings (e.g., applied behavioral analysis) but can provide autism symptom-specific support for symptoms that have a negative educational impact and may contain evidence-based components incorporated in comprehensive intervention packages (Morse, 2010). However, ethnicity as well as socioeconomic/sociodemographic factors within educational settings can affect the use educational autism classification labels (Morrier & Hess, 2012). Special education policy and research cautions the loss of service risk resulting from non-specific classifications for children who meet the criteria of autism. Although, the true impact regarding the increasing trend (Rubenstein et al., 2018) of significant developmental delay classifications for children with autism has yet to be analyzed (Rubenstein et al., 2018).

Multiple aspects of this investigation should hold importance to special education implementation and policy within the United States. Current research suggests that diverse children and those who experience one or multiple socioeconomic factors (e.g., mobility, maternal education) may receive significant developmental delay labels more often (see for example, Esler et al., 2022; Morrier & Hess, 2012). Further, there is a substantial minority of children who may only receive an evaluation of autism within the educational setting. Thus, the amount and specificity of intervention and support included in IEPs or Section 504 plans for

children with autism remains paramount. However, significant developmental delay evaluations that do not typically include autism-specific assessment tools may inadvertently lead to a loss of service in educational settings (Division for Early Childhood, 2009).

This study added to the current knowledge gap regarding the impact of initial eligibility determination differences on IEP goal specificity. Systematic exploration of the differences in IEP goal specificity dependent upon eligibility classification may outline alarming and disproportionate *mandated* special education support for children with autism during periods of development when the content and quality of treatment goals is critical. Results from this investigation could provide evidence regarding how the use of a non-specific developmental delay (SDD) classification impacted the delivery of mandated special education services. Findings from this investigation also inform future evaluation practices when evaluating developmental concerns, particularly for students who may be more likely to be affected by non-specific initial eligibility classifications and/or a later age of diagnosis of ASD and lower use of intervention services in health settings.

Research Questions

The proposed study is grounded in the following four research questions:

1. Do children who are classified with educational autism initially differ significantly in race and/or sex from children classified with significant developmental delay initially?
2. To what extent does the provision of services (e.g., occupational therapy, speech therapy) and supplementary aids and services differ by eligibility classification?
3. Does the number of autism symptom-specific IEP goals differ dependent upon eligibility classification (i.e., educational autism or significant developmental delay), after controlling for adaptive behavior skills?

4. To what extent does the amount of specialized instruction differ by eligibility classification, after controlling adaptive behavior skills?

Literature Review

Autism Spectrum Disorders

Autism spectrum disorders were once conceptualized as disturbances that arise due to damages to the parent-child relationship or the presentation of a psychotic episode (Mintz, 2017). Currently, there is an expanse of empirical support that defines ASD as a neurodevelopmental disorder multiply explained by differences in communication and social behaviors, and restricted/repetitive behaviors, interests, activities and/or sensory differences (American Psychiatric Association, 2022). With the advancements in the understanding of the biological/neurological, social, and behavioral presentation of ASD, significant improvements have been made in the ability to identify/detect ASD through comprehensive evaluations and/or intervene after detection. In the medical field there is a general consensus that ASD can be detected and subsequently reliably diagnosed by age 2 (Center for Disease Control and Prevention, 2020c). Thus, many children with ASD can receive intervention and/or individualized support services early in development.

As noted in the previous section, autism can be diagnosed in both health settings as “Autism Spectrum Disorder” and classified in educational settings as “Autism” or “Educational Autism”. As a result, a child may be diagnosed with ASD in health settings but not classified with autism in educational settings, and vice versa. However, both a diagnosis of ASD in health settings and classification of autism in educational settings may grant a child access to individualized support, services, and intervention. In consideration of the aforementioned research identifying the rates of children who will only receive intervention and support in

educational settings (e.g., Esler et al., 2022; Ruble et al., 2018), ensuring that students who would qualify *do* qualify is paramount.

General Prevalence. Although this investigation focused on autism eligibility within the educational setting, the general prevalence of autism outside of the educational setting will be first be introduced and reviewed. The prevalence of autism has increased dramatically in both health and educational settings during the 21st century. Specifically, autism prevalence rates have increased dating back to 2002 (i.e., 2000 – 2002: 1 in 150; 2010 – 2012: 1 in 68; 2014: 1 in 59) (Cardinal et al., 2021). Most recently, Maenner and colleagues (2021) maintain that the prevalence rate of autism is currently thought to be 1 in 44. Researchers hypothesize that changes to diagnostic and classification system criteria and uniformity in evaluation procedures (i.e., standardized tools) account for a large proportion of the increase in prevalence (Cardinal et al., 2021).

In addition, a multitude of other factors may account for or contribute to variance in prevalence rates (e.g., geographic location, race/ethnicity, age of diagnosis). In a sweeping review of the ADDM network sites, Maenner et al. (2021) demonstrate that prevalence estimates varied widely by state (e.g., Missouri: 16.5 in 1000, California: 38.9 in 1000). However, Maenner and colleagues found minimal significant differences of racial and/or ethnic group *overall* across nationwide monitoring sites. Maenner et al. (2021) reported one significant difference between groups overall; American Indian/Alaskan Native children had a higher reported prevalence of ASD than non-White children. Results from the review also highlighted differences in prevalence rates dependent upon racial and/or ethnic group *within* states. These within state variations represent findings similar to other recently conducted investigations. For example, also using data gathered among autism and developmental disabilities monitoring

(ADDM) network sites, the Center for Disease Control and Prevention (CDC) (2020a) report that White children were more 1.2 times more likely than Hispanic children to be identified with ASD, and marginally more likely to be identified than Black children (CDC, 2020a). Additionally, White children with co-occurring intellectual disability were significantly more likely to be diagnosed with ASD early on than Black or Hispanic children with intellectual disability (CDC, 2020a). In a survey of clinical diagnoses of ASD, Wiggins and colleagues (2020) found that children identified as non-Hispanic White were more likely receive a diagnosis of ASD.

Timing of diagnosis regarding ASD is also important to understand prevalence rates. Overall, the percentage of children with ASD who receive an early developmental evaluation has increased (Center for Disease Control and Prevention, 2020c). Additionally, the majority of children who were 8 years old among the nationwide monitoring sites received an ASD diagnosis by the time they were 4 years old (84% in 2016 compared to 74% in 2014). Although research regarding the prevalence rates and access to a diagnosis of ASD is mixed, literature supports that sociodemographic and socioeconomic factors can significantly impact the *timing* of an ASD diagnosis. In health settings, Fountain and colleagues (2011) investigated individual and community factors of early diagnosis of ASD. The researchers reported that parental education level (i.e., children whose parents were more educated) was associated with an early diagnosis, and that detection of ASD occurs earlier in wealthier neighborhoods. Further, the researchers found race/ethnicity (non-White children) and maternal immigrant status among the cohorts included in the investigation were predictors of a later detection of ASD (Fountain et al., 2011). Similarly, Daniels and Mandel (2013) demonstrated that compliance with Well-Child Care Visit Guidelines, higher median household income, and families living in wealthier areas, were factors

associated with earlier timing for diagnosis. Of note, Maenner et al. (2020) demonstrated that less than 50% of the children diagnosed/represented within the ADMM Network were evaluated by 3-years-of-age. This finding is in stark contrast to research supporting that that autism can be diagnosed by age 2 (Center for Disease Control and Prevention, 2020b).

Prevalence in Schools. Because a diagnosis of ASD in health settings and classification of autism in educational settings are separate processes, there are differences in autism prevalence rates in educational settings when compared to overall prevalence rates. Currently, the prevalence estimate for an autism eligibility classification within educational settings is 1 in 81 (Safer-Lichenstein et al., 2021). In a review of educational classifications of autism, Barnard-Brak (2019) demonstrated that Asian American children had higher rates of educational classifications than clinical diagnoses of ASD in health settings, whereas the opposite was indicated for African American children. Further, results demonstrated a significant discrepancy between educational classifications of autism in girls compared to boys, while accounting for clinical diagnoses of ASD in the health settings.

Along with the rise in the general autism prevalence, the prevalence of autism within the schools has also increased (Cardinal et al., 2021). Interestingly, however, the total number of students across special education classifications has not increased significantly (2021). Cardinal and colleagues (2021) explain the growth in autism eligibility but stability in overall special education rates as the result of “classification substitution” or an increasing use of the autism eligibility criteria for students who would have met the classification criteria for autism but were classified in other eligibility areas. Classification substitution is a concept previously discussed in prior literature examining increasing autism classifications in schools (see for example Brock, 2006; Shattuck, 2006). Safer-Lichensetin and colleagues (2021) demonstrate significant

differences in autism eligibility rates within schools dependent upon state. The researchers suggest these differences may be due to factors including demographics, income and resources available, and even political leaning of the state (2021; p. 2281). Earlier, Brock (2006) demonstrated similar variability in autism prevalence by state finding rates ranging from 0.11% to 1.0%.

Aside from factors that Safer-Lichenstein et al. propose such as demographics and income, prevalence differences may also be the result of factors including a child presenting with multiple areas of impairment and/or special education classifications outside of autism. Rubenstein and colleagues (2018) used data from the ADMM network to investigate the special education eligibility trends for children with a clinical diagnosis of ASD, while cross-referencing factors such as sex and race/ethnicity. Within the data, researchers found that ASD was the most common eligibility criteria used but 36% of children in special education received primary services under areas that were not autism (e.g., intellectual disability, other health impairment). Additionally, results indicated that Black and Hispanic children with ASD were more likely to have a co-occurring intellectual disability than White children which may have led the children to receive services in a different area of eligibility.

Cardinal and colleagues (2021) also recently demonstrated discrepancies by factor of cultural and/or ethnic group in a review of autism prevalence in schools. Specifically, the researchers indicate that children of color are less likely to be identified with autism in educational settings compared to their non-Hispanic White peers. Similarly, Barnard-Blak (2019) reviewed educational classifications of autism comparatively to clinical diagnoses of ASD in health settings and demonstrated that Asian-American children were more likely to have a higher educational classification of autism than a clinical diagnosis. African American children included

in the review were twice as likely to receive a clinical diagnosis of ASD than an educational classification of autism. As mentioned, the potential symptom overlap in eligibility criteria for autism and significant developmental delay (discussed in subsequent sections) and caution of stigma associated with autism, may also account for some of the differences in prevalence (Esler et al., 2022). Further, due to the need to display an *educational impact* during eligibility evaluations after ages 0 - 3, children who are diagnosed with ASD in health settings may not present with symptoms that create an educational impact significant enough that elevates to the need for services and support.

Evaluation for Autism Spectrum Disorders

Best Practice. As Ozonoff and colleagues (2005) explain, there is international agreement among diagnostic systems (e.g., DSM-5-TR and ICD-10) regarding the defining features of ASD and the domains that are necessarily present to diagnose and/or classify ASD. Experts agree that all comprehensive evaluations should include interviews with parents/caregivers about early developmental functioning, and direct observation of the child, preferably using empirically validated standardized assessment tools (Ozonoff et al., 2005). The inclusion of these evaluation components and reliance on psychometrically validated denote a *best-practice* or evidence-based evaluation (Hunsely & Mash, 2005). The use of a parent/caregiver interview and a direct observation of the child's presentation is necessary, as parents/caregivers may struggle in recognizing and/or reporting characteristics/features of the child or individual's current and/or early developmental functioning. In addition, a standardized direct observation of the child will likely not yield all social and/or behavioral functioning characteristics, so a supporting parent/caregiver interview is needed to capture the wide spectrum of a child's development (Bella, 2022). Research also supports that comprehensive autism

evaluations must include assessments in intellectual functioning, adaptive behavior, expressive language levels, and occasional neuropsychological assessment (Ozonoff et al., 2005).

As a result of the guidelines emphasizing the inclusion of both a parent/caregiver interview, and standardized direct observation of the child, there currently exists a “gold-standard” comprehensive ASD evaluation. In a systematic review of various instruments commonly used during comprehensive “gold standard” autism evaluations, Falkmer et al. (2013) demonstrated that two tools displayed yielded robust psychometric utility (i.e., Autism Diagnostic Interview – Revised, ADI-R; Lord et al., 1994; Autism Diagnostic Observation Schedule – 2nd edition, ADOS-2, Lord et al., 2012). As Falkmer and colleagues (2013) explain, because autism cannot be evaluated through an objective blood test, standardized behavioral assessment procedures must be psychometrically sound (p. 337).

As mentioned, evaluation practices should also examine areas of psychosocial, social, behavioral, language, executive functioning, and cognitive functioning domains. Advancements in the use of psychometrically validated measures and the emphasis on the use of “gold-standard” methods for ASD assessment has resulted in overall improvements of the validity and reliability in diagnostic interpretations of ASD (Ozonoff et al., 2005). However, clinicians and practitioners alike should ask the question “best practice for whom?” The characteristics cardinal to ASD, as well as best-practice procedures highlighted in literature may be influenced by culture and impact ASD classifications in educational settings. As La Roche et al. (2018) explain, “each of [the evaluation] methods can be influenced by the observer’s or reporter’s cultural views” (p. 110).

Culture and ASD Evaluations. Prior to reviewing research that highlights the contextual impact of culture within ASD evaluations, a definition of *culture* will be introduced. Causadias et al. (2018) provide an adapted definition of culture, explaining it as:

An integrated constellation of practices, symbols, values, and ideals that are constructed and shared by a community, transmitted from one generation to the next, constantly negotiated and subject to change, and operating at the individual and societal level. (p. 244)

Interpretation, expectation, and understanding of social communication differences and social interaction can differ significantly depending upon culture (Golson et al., 2022). Previous research has found differences in the display of communication differences between cultures, specific to autism spectrum disorder. Specifically, Tek and Landa (2012) support that minoritized children were more likely to display impairments in the social communication symptom of autism and that these impairments can be paired with differences in cultural interpretation of “atypical” development. As a result of these differences in understanding and expectation, it is critical that evaluators interpret information gathered from parental or caregiver sources with an understanding of cultural difference.

Unfortunately, racial and ethnic minoritized populations have largely been underrepresented in research exploring social communication and interaction differences. Explaining the practical importance of understanding these differences in diagnostic decisions, Golson and colleagues (2022) state:

An accurate picture of cultural influences is crucial to decreasing diagnostic disparities, improving the cultural responsiveness of autism measures, and increasing practitioners’ capacity to identify autism in [racial or ethnic minoritized] populations. (p. 211)

This reality within the area of autism spectrum disorder assessment is far from an anomaly in academia and assessment/intervention research. While referencing Cheon et al. (2020), Golson and colleagues (2022) indicate behavioral research and research involving autism “suffers from the myth that Western or White samples bear the benefit of universal generalizability” (p. 211). This myth of universality directly contradicts recommendations to advance the field of social psychological and behavioral research towards becoming “multicultural”. Instead of a generalizability perspective, unique and contextual influences of culture on behavior with groups who have been traditionally underrepresented in evaluation and behavioral research inform the need to multicultural evaluation practices (Hall et al., 2016). Hall and colleagues (2016) maintain that multicultural psychology, particularly in terms of interpreting and/or evaluating behavioral differences, is a sensitive approach to understanding the cultural influence on behavior in underrepresented cultural groups.

The dearth in research regarding cultural differences in autism evaluation, as well as the gaps in culturally sensitive assessment tools can greatly impact the validity/reliability of autism evaluations for culturally and/or linguistically diverse populations (Ozonoff et al., 2005). It may be the case that early in development, minoritized children who are displaying the most significant/impairing social communication and behavioral differences are those who will be receiving an evaluation and diagnosis within the window for early intervention. However, it is also the case that minoritized children may not present with “the most” impairing or observable social communication or behavioral differences. This potential difference due to race and/or ethnicity may add to the necessity for diagnosticians to rely on information from the family or caregiver more heavily, as well as clinical judgment (Garb et al., 2012). Harris et al. (2019) further noted in their research that school psychologists report low degrees of confidence in

incorporating other culturally sensitive methods into assessment. In addition, findings in their survey of practicing school psychologists demonstrate that parent engagement with culturally and/or linguistically diverse families is extremely low during autism evaluation in education settings (2019).

Representation in Autism Evaluations. In an earlier overview of evaluation practices for children, SenGupta et al. (2004) noted that “the field of evaluation has a long road to go in incorporating cultural context in its everyday practice” (p. 11). As mentioned, Causadias and colleagues (2018) previously highlighted evidence that psychologists may overemphasize the role of culture when exploring areas of social-emotional and behavioral functioning, whereas psychological factors may be more often considered when evaluating non-Hispanic Whites. This finding, supporting a cultural (mis)attribution of data within an evaluation, may underscore some of the variance that children of Color experience in terms of a later diagnosis and/or classification of ASD and reception of special education services.

In a longitudinal investigation of special education representation among minoritized groups, Morgan et al. (2015) provide evidence that minoritized children were underrepresented in five special education eligibility groups. Morgan and colleagues (2015) suggest that minoritized children are underrepresented in special education eligibility categories as a result of linguistic and cultural barriers during IDEA procedures (i.e., evaluation, access of services), minoritized families experiencing stigma associated with a disability label, and differences related to achievement in some underperforming schools (i.e., in underperforming schools only the students who are profoundly impacted will be identified as having academic difficulties) (p. 287). In a semi-related investigation, Horovitz and colleagues (2011) demonstrate that minoritized children who display more problematic behaviors (e.g., aggressive behaviors) were

most likely to be diagnosed with ASD. Results from the study do not support the same associations between minoritized children who displayed other symptoms within the restricted/repetitive behavior symptom cluster of autism (e.g., stereotypic behaviors) and a diagnosis of autism spectrum disorder (Horovitz et al., 2011). These results, while considering both the Causadias and colleagues (2018) and Morgan et al. (2015) investigations, provide evidence that minoritized children may be most likely diagnosed with ASD when impairment is *most* significant. For symptoms that are not always as interpersonally impairing in environments (e.g., repetitive behaviors, sensory differences) but are common manifestations in ASD, differences may be missed as a result of cultural (mis)attributions or deficits in diagnostic accuracy.

When examining domains of sensitivity and specificity in the use of *best practice* evaluation tools for autism spectrum disorder, there are critical issues in the degree to which evaluation tools are both normed considering racial and/or ethnic differences and procedures are adapted through a cultural lens. A component cardinal to the evaluation and diagnostic or classification conclusion of autism spectrum disorder are social communication differences (American Psychiatric Association, 2022). In a review of the current diagnostic and screening tools commonly implemented in *best practice* procedures, Harris and colleagues (2014) concluded that the tools within evaluations are “inadequate” for culturally and/or linguistically diverse populations (p. 1283). The authors indicate that most of the tools within best practice procedures did not include diverse samples while establishing norms and therefore, may not be sensitive to cultural differences. In their review of all the autism research included in the analysis, approximately 20% had an explicit reference to racial and/or ethnic demographics used to frame findings and interpret effects. As a result, the authors caution practitioners and

clinicians to avoid using standard scores or cut-off scores until diverse samples are represented in normative groups (Harris, 2014).

Specific to autism, and in consideration of psychologists' tendency to overemphasize cultural factors for minoritized youth, Harris et al. (2014) explicate the challenges regarding culturally sensitive autism evaluations within educational settings. After reviewing tools often included in "best practice" comprehensive autism evaluations, Harris and colleagues conclude "it is possible that [culturally and/or linguistically] diverse populations are misidentified and under-identified with ASD due to the assessment practices employed" (Harris et al., 2014, p. 1286). Further, implications from the findings suggest acculturative practices commonly experienced by minoritized youth may simulate delays present in ASD (e.g., speech/language delays, social communication differences).

Limitations to School-Based Evaluation Practices. Adding to the complexity of autism evaluation, evaluators within school settings report markedly variable evaluation procedures. In a recent review, Esler and colleagues indicate that specific ASD testing measures were used approximately in nearly 50% of evaluations (2022). This is of significant concern, as extant literature has previously documented the legal and litigation implications after ASD evaluations in school settings that are deemed "inadequate". Specifically, after reviewing a rise in litigation cases/procedural violations related to educational programs for students with autism (i.e., Individualized Education Plans), Yell and colleagues (2003) indicate that an autism evaluation must examine all areas of the suspected disability. Further, school districts must have professionals who have expertise in the area of comprehensive autism evaluations. If districts do not have a professional with this expertise, it remains paramount that districts conduct intensive

training and/or contract professionals from outside of the educational setting to conduct the evaluation (Yell et al., 2003, p. 187).

The differences in recommended, standardized “best-practice” procedures and those often conducted in the schools is noteworthy. However, given the current gaps and lack of tool sensitivity in best-practice autism evaluation methods for diverse children the practical implication of this variability is muddled. As the IDEA (2004) explains, determinations regarding eligibility should be made through “use of a variety of assessment tools and strategies to gather relevant, functional, developmental, and academic information”. Within the IDEA recommendations, there are no requirements for the use of *specific* instruments validated in best practice assessment (e.g., ADOS-2). To ensure sensitivity and specificity during evaluations school teams may benefit significantly from the use of such measures. Stichter et al. (2021) demonstrated that use of the ADOS-2 resulted in a more sensitive autism eligibility classification and was more discriminant of autism symptoms between an eligibility classification of autism alone. Specifically, an autism classification score using the ADOS-2 discriminated significantly between an autism spectrum disorder and those without ASD, whereas an eligibility classification of autism did not discriminate by key characteristics of autism (2021).

In a concerning survey assessing school psychologist’s assessment practices for ASD, Aiello and colleagues (2017) demonstrate that most practitioners did not conduct evaluations using best-practice methods. In a similar survey assessing practitioners’ evaluation methods, Allen et al. (2008) found that a nationally represented sample of school psychologists reported a significant gap in the use of best-practice methods. Specifically, concerning tools that are commonly denoted as the “gold standard” (i.e., ADOS-2, ADI-R; Falkmer et al., 2013), most of

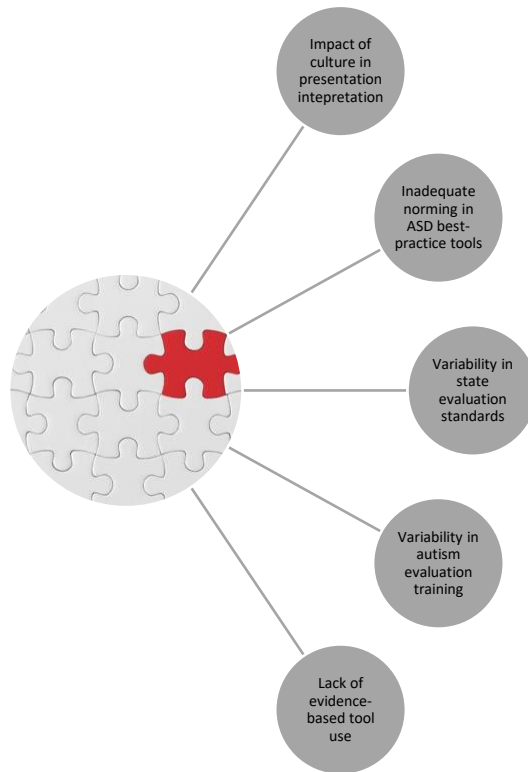
the 117 nationwide school psychologist respondents reported never using the best-practice ASD assessment methods (i.e., ADI-R, ADOS-2) (Allen et al., 2008).

Relatedly, through a review of current autism educational assessment practices Barton et al. (2016) reported that differences in evaluation procedures and educational criteria used to inform classification decisions likely contribute to significant deviations in early identification of ASD, which in-turn affects prevalence. Specifically, Barton and colleagues (2016) found variations in state assessment procedures regarding the necessary inclusion of direct observations and the use of assessment tools. Notably, only eight states' evaluation procedures mandated the use of standardized autism specific assessments. Unsurprisingly, a recent survey of school psychologists indicated a desire for additional training for comprehensive autism evaluation within educational settings (Nathan & Rispoli, 2021).

While exploring differences in special educational eligibility classification, Rubenstein and colleagues (2018) report that a gap in best practice assessment procedures and less intensive clinical training in evaluation may contribute to autism eligibility underrepresentation and/or inaccurate eligibility determination. For ease of conceptualization, I propose Figure 1 as a method to denote the sources of “noise” or “error” reviewed in the recent sections, which may contribute to differences in special education classifications and/or special education programming content. In consideration of the literature reviewed in the preceding sections, these sources of error likely interact for students (e.g., culturally and/or linguistically diverse students) and contribute in-part to differences in special education programming.

Figure 1.

Sources of Noise or Error in Autism Evaluations.



Are Eligibility Determination Differences Important?. Despite these gaps and variability, do assessment practices and differences in specific or non-specific eligibility determinations matter? Any child who is determined eligible with an autism classification or other special education classification can receive intensive intervention and curriculum modifications (i.e., Individualized Education Plan) and/or accommodations (i.e., Individualized Education Plan; Section 504 plan). Early and accurate ASD evaluations can provide access to and matching for appropriate interventions. Early interventions, reviewed in the subsequent section, provide overly enriched and structured environments (Kolb & Gibb, 2014). Thus, it may be the case that regardless of eligibility classification, enriched and structured environments are provided through components inherent in an IEP.

Importance of Early Intervention for Autism Spectrum Disorders

A substantial body of research exists in support of the importance of early intervention after detection for neurodevelopmental disorders (see for example, Cioni et al., 2015; Spittle et al., 2015). Early intervention can be conceptualized as a targeted approach to intervene with behavioral, social, and cognitive factors that arise as a result of or risk for neurodevelopmental disorders (Inguaggiato et al., 2017). Early intervention for autism spectrum disorder for example, has demonstrated improved outcomes, increases in social motivation, and decreases in behavioral stereotypy/rigidity (Camarata, 2014).

Dawson (2008) proposes that despite the initial susceptibility in genes and other risk factors present with ASD, adapted intervention can produce a “more typical development of neural circuitry and reduced autism symptoms” (p. 777). Positive related outcomes of early intervention for ASD include needing less or no intensive special education later on, and it is more cost efficient compared to a type of “wait and see” approach for characteristics cardinal to ASD (Koegel et al., 2014). Additionally, early intervention becomes particularly important because some autism presentations include significant reduction in motivation for social interactions and also over-selectivity in interests and behaviors which may contribute to deleterious outcomes (Camarata, 2014). Early intervention has the capacity in some cases to target early changes in social motivation and decreases in over-selectivity which may lead to a more favorable outcome.

At the foundation of the working mechanism for early intervention is the role that brain plasticity holds. Brain plasticity refers to the nervous system’s ability to change its structure and function in response to environmental stimuli (Cioni et al., 2015). There are three types of brain plasticity, including: experience-expectant, experience-independent, and experience-dependent

(Greenough et al., 1987). Experience-expectant plasticity occurs during development, in which brain systems grow through the requirement of specific experience (Kolb & Gibb, 2014). Experience-independent plasticity refers to the brain's overproduction of neurons and subsequent connections because it would not be functional for the brain to develop connections after each developmental experience (Kolb & Gibb, 2014). Experience-independent plasticity can best be described as hard-wired or pre-programmed neurons and connections that do not require experience. Lastly, experience-dependent plasticity refers to the ability of the brain to change neuronal structure in response to situations or stimuli experience (Kolb & Gibb, 2014). This type of structural change is dependent on specific experiences.

Because of its emphasis on the provision of new experiences, experience-dependent plasticity accounts for the largest role in significant responses to early intervention. Kolb and Gibb (2011) explain that there are eight different environmental events identified that can affect the brain's development and promote structural change, including but not limited to sensory stimuli, peer/parent relationships, and stress. Notably, the educational setting (e.g., classrooms, peer and teacher interactions, sensory input) provide many of those environmental events. The ability for the neuronal structure to change is semi-dependent on age during development, however. Cioni et al. (2015) explain that there are critical periods in development where neuronal structure change is more dependent on direct experience and stimuli presented in a child's direct environment. After this critical period wanes, so does the degree of neural plasticity in the brain (Baroncelli et al., 2011). Autism spectrum disorder is typically diagnosed around the age of 3, which is described as a "time of intense-experience dependent circuit refinement" (LeBlanc & Fagiolini, 2011, p. 2). However, recent estimates suggest that the median age of autism diagnosis in health settings may be closer to 4-years-old (Esler et al., 2022)

and the median age of identification of autism in educational settings is about 5-years of age (Pettygrove et al., 2013). Despite this difference, and some general consensus among medical and educational practitioners that “earlier is better,” positive effects of early intervention are supported throughout development in early childhood (e.g., 7-years-old) (Towle et al., 2020). Thus, enriched environments and intensive, individualized support in educational settings that begin after the age of 5 are likely still to capitalize on the brains’ neuroplastic nature.

The intensity and frequency of the provision of environments rich with learning opportunities are thought to be directly related to changes in neural plasticity (Kolb & Gibb, 2014). Comprehensive early intervention packages often emphasize components of both frequency of intervention delivery, as well as overly enriched environments filled with environmental stimuli (e.g., behavior specific prompts, social interactions). Early intervention services are often qualified with a diagnosis of ASD in health settings but Individualized Education Plans may also encompass some aspects of intensive intervention traditionally found in early intervention packages (e.g., structured social support, prompts).

Special Education Eligibility

As mentioned, there are a multitude of disability categories that a student may qualify for. There are two methods/systems used to provide support to children who are eligible. These methods include both an Individualized Education Plan and a Section 504 plan. There are significant differences between the two methods, as a Section 504 Plan arises from civil rights statute (i.e., Section 504 of the Rehabilitation Act) and an IEP falls under the broader Individuals with Disabilities Education Act (i.e., federal statute) (deBettencourt, 2002). These two supports also entail markedly different student-level support. IEPs include curriculum modifications along with comprehensive student programming that address symptoms which impact academic

functioning. Alternatively, Section 504 plans provide eligible children/students with accommodations to their environment to make the curriculum most accessible (deBettencourt, 2002). There are also differences in the process for determining eligibility between an IEP and a Section 504 Plan (i.e., IEP: Meeting eligibility criteria versus Section 504 Plan: Existence of Mental or Physical Condition). As deBettencourt indicates, evaluation procedures for determining eligibility differ slightly, with procedures for IEPs requiring a comprehensive evaluation and procedures for a Section 504 Plan requiring gathering information from all sources. Individuals classified with autism in educational settings may instead qualify for a Section 504 plan (504). Importantly, these plans were outside the scope of this investigation. Because of the rate at which IEPs are provided to children compared to 504 plans (14% of all public-school students versus 1.48% of all K-12 students) (National Center for Education Statistics, 2021; Zirkel & Weathers, 2016), as well as the emphasis of modifications and intensive/individualized support in IEPs, a review of IEP content and support was the focus of this investigation.

Federal policy and the Individuals with Disability Education Act defines disability and a child who may qualify for services or supports as represented by “intellectual disability, hearing impairments (including deafness), a speech or language impairment, a visual impairment (including blindness), serious emotional disturbance, an orthopedic impairment, autism, traumatic brain injury, another health impairment, a specific learning disability, deaf-blindness, or multiple disabilities” (U.S. Department of Education/Individuals with Disabilities Education Act, 2017). Further, and relevant to the scope of this study, federal policy indicates that a child may also be deemed eligible for a Significant Developmental Delay at the state level (2017). Considering the focus of this investigation, the disability categories of autism and significant

developmental delay as defined by the U.S. Department of Education and Individuals with Disabilities Education Act are presented below in Table 1.

Table 1.

Federal definitions of autism and developmental delay.

Eligibility Classification	Federal Definition
Autism	“A developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child’s educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences”
Significant developmental delay	“Delays, as defined by the State and as measured by appropriate diagnostic instruments and procedures, in one or more of the following areas: Physical development, cognitive development, communication development, social or emotional development, or adaptive development; and who by reason thereof, needs special education and related services”

In addition, state-specific eligibility criteria highlighting necessary symptom presence for each disability are also presented below in Table 2 (Wisconsin Department of Public Instruction, 2021).

Table 2.

State-level criteria for autism and significant developmental delay.

Eligibility Classification	State-Level Criteria

Autism	<p><u>Section 1 – Social Participation/Communication</u></p> <p>*Must present with both areas</p> <ol style="list-style-type: none"> 1. “Displays difficulties or differences in interacting with people and events. The student may seek consistency in environmental events to the point of exhibiting rigidity in routines” 2. “Displays problems which extend beyond speech and language to other aspects of social communication, both receptively, and expressively” <p><u>Section 2 – Other Characteristics</u></p> <p>*Must present with <i>at least one area</i></p> <ul style="list-style-type: none"> • “Exhibits delays, arrests, or regressions in motor, sensory, social or learning skills” • “Exhibits abnormalities in the thinking process and in generalizing” • “Exhibits unusual, inconsistent, repetitive or unconventional responses to sounds, sights, smells, tastes, touch or movement” • “Displays marked distress over changes, insistence on following routines, and a persistent preoccupation with or attachment to objects”
Significant Developmental delay	<p>“A child may be identified as having significant developmental delay when delays in development significantly challenge the child in two or more of the following life activities”</p> <ol style="list-style-type: none"> 1. Physical play in gross motor skills. 2. Cognitive activity, such as the ability to acquire, use and retrieve information as demonstrated by the level of imitation,

	<p>discrimination, representation, classification, sequencing, and problem-solving skills often observed in child’s play</p> <p>3. Communication activity in expressive language or receptive language</p> <p>4. Emotional activity such as the ability to feel and express emotions, and develop a positive sense of oneself; or social activity, such as interacting with people, developing friendships with peers, and sustaining bonds with family members and other significant adults</p>
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As depicted in Table 1 and Table 2, there are slight variations (and some overlap) between both the definition and criteria used to determine eligibility for autism and significant developmental delay. Notably, during the 2019 – 2020 school year, the National Center for Education Statistics (2022) reports that 7% (~ *N* = 511000) of all students in special education were classified with a significant developmental delay and 11% (~ *N* = 803000) were classified with autism. Due to the symptom/criterion overlap, some children who may otherwise qualify for an initial classification of autism will instead be initially classified with a non-specific developmental delay label. Those children may age out of significant developmental delay eligibility and then be re-classified with autism (Delgado et al., 2006; Esler et al., 2022; Morrier & Hess, 2012; Pettygrove et al., 2013; Rubenstein et al., 2018).

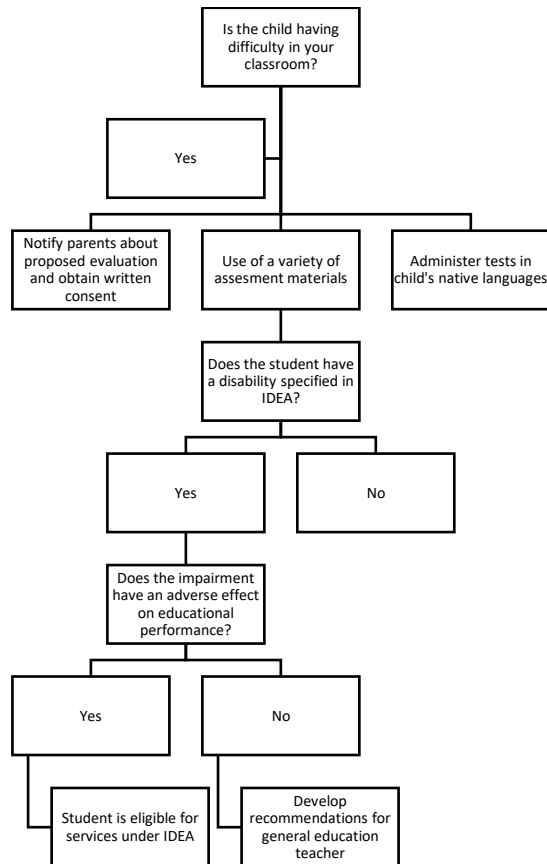
For both eligibility areas, state-level criterion varies in terms of symptom presentation requirements and the use of specific tools/procedures during evaluation (Esler et al., 2022). Specific to evaluations and determining eligibility for significant developmental delay, federal policy indicates that teams must “[assess] in all areas related to the suspected disability” (IDEA,

2004). Alfonso and colleagues (2020) outline best practice recommendations for the evaluation of significant developmental delay, explaining that evaluations examining significant developmental delay should be comprehensive and cover all developmental domains. As mentioned, a breadth of literature cites the importance of utilizing best-practice autism spectrum disorder evaluation methods when ASD is a concern (see for example Falkmer et al., 2013; Ozonoff et al., 2005; Stichter et al., 2021).

However, even when a child/student meets the presentation requirements for eligibility in the area of autism or significant developmental delay, federal policy also mandates the need for an “educational impact” (deBettencourt, 2002). That is, the symptoms/presence of a disability must adversely affect the child’s performance for children 3-years-or-older. A decision tree regarding eligibility determination for IDEA has been adapted from deBettencourt’s (2002) paper and is depicted by Figure 2. As represented in Figure 2, if all conditions are met for eligibility determinations then a child may qualify for an IEP.

Figure 2.

Adapted deBettencourt (2002) IDEA IEP decision tree.



Individualized Education Plans

A sweeping review regarding the history of Individualized Education Plans (IEPs) was outside the scope of this investigation. However, a brief background highlighting the purpose of IEPs and common components included in IEPs will be introduced. The Individuals with Disabilities Education Act (IDEA) is a law that provides early intervention, evaluation, special education, and related services to over 6.5 million infants, toddlers, and students with disabilities (IDEA, 2004a). This provision of services from IDEA is granted for children to young adults, ages 3 to 21 (2004a). Recent trends in special education research find that 14% of all total public-school enrollees receive special education services through a special education

classification within IDEA (Institute of Education Sciences, n.d.). Within IDEA, there are various classifications that a child may meet in order to qualify for services. These special education classifications include but are not limited to autism, intellectual disability, speech or language impairment, other health impairment, serious emotional disturbance, and specific learning disability (IDEA, 2004b). If a child has met one or more of the special education classifications, they are offered a variety of supports including and central to the current study, an IEP. The supports offered through an IEP for children who qualify for them are essential, as these services promote further development and learning, target social-emotional and academic skill growth, and may reduce need for intensive special education intervention later on (Lipkin & Okamoto, 2015; Koegel et al., 2014).

The IEP is a tailored education program that indicates disability, statements for measurable academic and functional goals, how child progress will be tracked, and the supports/related services that will be provided to the student in order to target academic success (IDEA, 2004a). In a systematic review discussing the origin and purpose of IEPs, Mitchell (2010) explains that an IEP “must include short and long-term goals for the student, as well as [ensure] that the necessary services and resources [are] available to the student” (p. 7). Students who qualify for an IEP are also assigned a team comprised of their parents or caregivers, regular education teacher, special education teacher, local educational agency, and specialists able to describe/interpret the results of evaluations (IDEA, 2004a). Additionally, the student is entitled to procedural safeguards that afford fair consideration of all academic records and disability identification in-light of any presenting significant academic or behavior difficulties (IDEA, 2004a). The tailoring, support, and safeguards provided to eligible students after an evaluation are invaluable for promoting academic success. IEPs have been mandatorily provided to students

who qualify for special education dating back to the 1975 Education for All Handicapped Children Act (Dunn, 2013).

Overlap Between Early Intervention and Individualized Education Plans. Despite the breadth of literature cited within this literature review that highlights the positive effects of intervention as a support for autism, many children will not access these services in health settings. Tek and Landa (2012) previously found that low-SES minority children with ASD were at risk to be enrolled in early-intervention services later on when compared to children in high-SES classes. More recently, Smith et al. (2020) replicated these findings, demonstrating that children of color had lower rates of access and use of early intervention services for ASD compared to their non-Hispanic White counterparts. As mentioned, there are a significant number of children who will only ever be identified with ASD in the educational setting (Esler et al., 2022; Pettygrove et al., 2013; Wiggins et al., 2020). As a result, schools contribute to a primary role providing both evaluation and intervention services for the majority of children (Ruble & McGrew, 2013) and may serve as the “cornerstone” for the support of autism spectrum disorders (Myers et al., 2007).

After a child with autism is determined eligible for an IEP, Yell and colleagues (2003) recommend that an IEP must include goals and support related to both academic and nonacademic areas including “social development, communication, and behavior” (p. 190). Similarly, while discussing recommendations from the National Research Council regarding supporting ASD in educational settings through IEPs, Kanne et al (2008) indicate that IEPs should support goals in areas like verbal and non-verbal communication and behavioral functioning. Goals in these areas are all common to goals included in early intervention packages. These areas ideally arise from any area of need that is identified through information

gathered during an initial evaluation to determine special education eligibility. Further, in the implementation of an IEP, Yell et al. (2003) maintain that school districts need to adopt and implement empirically supported practices to target those academic and nonacademic needs for students with ASD. While implementing the practices and support targeting academic and nonacademic areas it is important that teams monitor short-and-long-term progress.

There is significant overlap between the comprehensive programming a school team is required to offer for a student with autism who qualifies for an IEP and early intervention services for ASD in health settings. In a review of the comprehensive special education services that school districts are recommended to provide within IEPs for children with autism, Morse (2010) outlines six components that are coherent with the autism early intervention literature and recommended by other experts (i.e., Iovannone et al., 2008; Iovannone et al., 2003). Morse (2010) suggests that an IEP must include individualized supports and services, systematic instruction, comprehensive/structured learning environments, specific curriculum content, functional approaches to behavior, and family involvement (pgs. 8 – 9).

These components highlight significant overlap between a comprehensive IEP and early intervention for autism in health settings. For example, adaptations to a child's environment that provide comprehensive, rich, and structured learning opportunities are a component cardinal to early intervention services. Further, applied behavioral analysis (i.e., early intervention for autism with a breadth of empirical support) frequently utilizes behavioral theory and functional approaches to understanding a child's behavior to better adapt intervention. Currently, there are a set of evidence-based practices for autism within school settings published by the National Autism Center that explicates empirically supported possible practices for autism that an IEP may be grounded in (e.g., visual schedules, modeling, self-management) (2009).

Content and Quality of IEPs for Autism. Public Law 108 – 144 outlines the legally mandated requirements of IEP components (IDEA, 2004). Per the IDEA, these components include but are not limited to a) a statement of the child’s present levels of academic achievement and functional performance, b) a statement of measurable annual goals (e.g., academic and functional goals), c) a description of how the child’s progress toward meeting the annual goals described will be measured, d) a statement of the special education and related services and supplementary aids and services, based on peer-reviewed research to the extent practicable, to be provided to the child, or on behalf of the child and a statement of the program modifications or supports for school personnel that will be provided, e) which the child will not participate with nondisabled children in the regular class and in other activities. Despite these legal requirements and the recommendations presented above by Morse (2010), the content of goals, intervention, and services in and quality of IEPs for autism can vary. In consideration of the variability in autism evaluation practices in school-settings (Esler et al., 2022) and the recommendation that comprehensive evaluations *must* inform IEP goals (Yell et al., 2003), variability in IEP goal content may be the result of differences in evaluation practices. In a sweeping systematic review of IEP content and quality, Blackwell and Rossetti (2014) conclude “there [is] comparatively limited research on the ways in which assessment information is utilized” (p. 10).

Although research exploring potential IEP variability is paramount, there are a limited number of investigations that focus on IEP content/quality specific to students with autism. In a systematic review of Individualized Education Programs dating back to 1997, Blackwell and Rossetti (2014) found only four empirical investigations that focused exclusively on the content of IEPs for students of all ages with autism. Of those four investigations, only one explored IEP

quality for children with autism. Thus, there is a glaring gap in research that has systematically examined the content of IEP goals and potential variability in those goals for children with autism. Investigating the content of IEPs for multiple disability categories, results from the Blackwell and Rossetti (2014) review suggested that IEPs are often failing to meet all content requirements.

In a review of IEP goals and the provision of services for adolescents with autism, Kurth and Mastergeorge (2010) demonstrated that IEP goals for students in both inclusive and noninclusive settings generally targeted the core symptoms of autism versus academic goals. Of note, in both groups of students (i.e., those inclusive settings, those in non-inclusive settings) the four most included IEP goals targeted the areas of communication, self-help, motor/sensory, and social domains, respectively. However, significant differences in IEP service provision were found dependent upon age (i.e., younger students had less adaptations to the curriculum) and placement (i.e., students in inclusive settings have more adaptations compared to those in noninclusive settings). Recently, Findley et al. (2022) reviewed content goals for students with autism who are of “transition age” finding that on-average, IEPs contained around 3 goals related to academic, learning, and/or communication domains. It should be noted that IEPs included in their review did not consistently meet IEP standards for students of transition age (i.e., targeting postsecondary goals). In regard to overall IEP quality, Blackwell and Rossetti (2014) demonstrated marked variability of IEPs for multiple disabilities. Similarly, in a concerning investigation of a multi-state sample of IEPs Ruble and colleagues (2010) reported that most IEPs designed to support children with autism in the sample were of *poor quality*. Other studies have demonstrated alarmingly low levels in the implementation of evidence-based teaching methods for students with ASD (Hess et al., 2008, Morrier et al., 2011).

Extant international investigations exploring IEP content and implementation have also demonstrated similar alarming indicators. For example, in a sweeping review of over 2000 IEP goals written for preschool children with developmental disabilities, Rakap (2015) demonstrated that both IEP goals and IEP objects were “poor”, independent of disability status. In a similar investigation in public schools in Portugal, Boavida et al. (2010) provided results that suggested that IEP goals were being written too broadly, although more severely impacted students (i.e., higher symptom severity) had more measurable goals. More recently, Sanches-Ferreira and colleagues (2013) also investigated IEP quality and goal content in a sample of IEPs for students in Portugal. Supporting results in other aforementioned investigations, Sanches-Ferreira et al. demonstrated that of nearly 2500 reviewed IEP goals, most were written poorly and the IEP quality decreased as the students’ aged.

Growth, Progress Monitoring, and Outcomes After IEP Receipt. Notwithstanding the variability in IEP content and quality for children with autism that qualify for individualized support, IEPs can target student-level growth. Although similar to other areas of autism-specific IEP research (see for example Blackwell & Rosetti, 2014), investigations focusing on student-level growth are also limited. Student-level growth and distal outcomes after qualifying for an IEP is associated with IEP quality, student-level factors, and setting. Unfortunately, many earlier longitudinal investigations exploring post-secondary education outcomes after a child receives IEP support demonstrate poor outcomes (Ryndak et al., 2010).

In an exploration of student growth/progressing monitoring while receiving IEP support, Ruble and McGrew (2013) demonstrated that IEP goal attainment was associated with increased cognitive functioning, expressive and receptive communication skills, higher adaptive behavior skills, and lower autism symptom severity. However, their findings also demonstrated that the

only significant predictor of goal attainment after controlling for other variables in a regression model (e.g., expressive/receptive communication skills) was child engagement. As Ruble and McGrew (2013) explain, “engagement, as measured in [our study], represents child behaviors that can be influenced by the environment. Further, engagement is considered an active ingredient of effective early intervention programs” (p. 2758). In an investigation exploring the impact of IEP receipt for students with a range of disabilities on cognitive functioning in a sample of Head Start enrollees, Lee and Rispoli (2016) found interesting and somewhat perplexing results. Lee and Rispoli (2016) demonstrated that after IEP receipt, cognitive functioning and other academic or school readiness domains (e.g., language skills, early literacy) were lower for a child with an IEP than without. The authors rationalized this result by explaining that children identified earlier on (i.e., in Head Start Settings) are more likely to be profoundly impacted by disability symptoms and inherently have more academic impairments than those identified later on.

Other factors outside of IEP content/quality are also associated with student outcomes after qualifying for an IEP. Exploring proximal and distal outcomes of IEP progress for students with autism, Wong et al. (2017) demonstrated that teacher-perceived personal accomplishment was significantly related to distal student outcomes. Results also suggested that teacher stress and engagement of the student were immediate, proximal outcomes for children with ASD who qualify for an IEP (Wong et al., 2017). In an earlier archival analysis of three students with autism who received IEP support during early childhood, Schwartz and colleagues (1998) revealed that all three students made substantial gains in both academic and autism symptom domains. Further, of the three students who were included in the sample one later exited special education. Torana et al. (2010) conducted a similar archival analysis of outcome and goal

acquisition in IEPs for a small sample of children aged 3-16 with autism in Malaysia. Results from the study demonstrated that growth in and achievement of IEP goals varied from 40% to 100%. Although, of parents/caregivers surveyed within their investigation, most indicated feelings of happiness regarding their child's growth in response to IEP provision.

IEPs for Autism versus Significant Developmental Delay

As mentioned, children who are eligible for an autism special education determination may instead qualify through a significant developmental delay classification between the ages of 0-years-old to 9-years-old. Various factors are associated with the special education classification of significant developmental delay, including for example: evaluation teams having access to educational records but not healthcare records for students (Esler et al., 2022; Pettygrove et al., 2013), sociodemographic factors like race and ethnicity (see for example Morrier & Hess, 2012), and gaps/variability in the use of comprehensive evaluation methods (see for example Esler et al., 2022; Rubenstein et al., 2018). Further, significant developmental delay classifications have been historically considered less “stigmatizing” than classification labels like autism (Danaher, 2011; Hadadian & Koch, 2013). The interaction of these factors has led to an overall increase in the use of significant developmental delay classifications (Rubenstein et al., 2018) but it is important to note that the prevalence/rate of special education classifications for autism has also increased (Cardinal et al., 2021).

Despite the overlap in eligibility criteria between autism and significant developmental delay classifications, there is a paucity of research directly comparing IEP content (i.e., goals) between the two classifications. Further, evidence pertaining to the cautions regarding the use of a non-specific label (i.e., significant developmental delay) versus a specific label (i.e., autism) remains mixed. At the foundation of this ambiguity, concerns have been noted regarding the

potential loss of autism-specific services for a child classified with significant developmental delay who may otherwise classify for autism and concerns regarding the stigmatization of an early autism label.

However, there remains a significant lack in research exploring the content, quality, and related services/supports within IEPs for significant developmental delay. This gap may be due to differences inherent in the nature of a classification of autism versus significant developmental delay. In an earlier paper outlining classifications for significant developmental delays, Petersen and colleagues (1998) note that developmental delays are more representative of a “chief complaint” versus a diagnosis. Developmental delays can be represented by gross delays in a variety of developmental areas. As such, the IEP content, quality, and supports/services after a significant developmental delay classification can vary widely and may make direct IEP comparisons more complex. In addition, there is a lack of general consensus for the definition of a developmental delay (1998). These factors are diametrically opposed to autism spectrum disorders, as ASD is both a diagnosis and there exists general consensus regarding the presentation/definition. Notwithstanding differences in diagnoses, researchers have posited that as a result of the broad significant developmental delay eligibility criteria, there is “some support that an assessment for SDD eligibility will cover broad developmental domains affected by ASD” and may address a child’s developmental needs (Esler et al., 2022; sect. ASD Eligibility Versus Developmental Delay).

Loss of Autism-Specific Services. As noted, low incidence disabilities like autism spectrum disorder may be at a risk for “loss of services, authorization of inappropriate services, loss of access to appropriately qualified service providers, or adequate and appropriate funding resources” (Division of Early Childhood, 2009; pgs. 2 – 3). Hadadian and Koch (2013) also

caution the use of non-specific labels, as the labels may not address symptoms specific to a disability and instead target broader, global goals. In a review of evaluation practices for both autism eligibility and significant developmental delay eligibility, Esler and colleagues (2022) recently found reductions in the documentation of autism cluster 2 symptoms (e.g., repetitive behavior, interests, activities) for significant developmental delay evaluations when compared to autism evaluations. Cluster 2 symptoms of autism can significantly impact academic and behavioral functioning in schools (Azad & Mandell, 2017).

While considering the importance/recommendations of using evaluation data to inform comprehensive special education programming offered through IEPs (Yell et al., 2003), these differences may lead to a lack of support/targeted intervention in IEPs for significant developmental delay. This becomes increasingly important, as the research reviewed in preceding sections highlight that many children will only receive intervention in schools and not in health settings (see for example Pettygrove et al., 2013; Wiggins et al., 2020) and that behavioral and academic support in school represent a pillar of intervention for children (Myers et al., 2007). Further, considering the age at which children age out of a significant developmental delay classification (i.e., approximately 9-years-old), this loss of services may extend throughout and beyond critical windows for autism intervention.

Despite the differences in classification documentation and cautions put forth by researchers and special education policy regarding the potential loss of autism-specific support in IEPs for SDD, there are no studies (to this author's knowledge) that directly compare IEPs for children initially classified with significant developmental delay and were later classified with autism versus students initially determined eligible with an autism classification. Lindley et al. (2015) explored the receipt of services regarding IEPs for significant developmental delay versus

autism. Findings in the investigation supported that children who had an IEP for SDD were less likely to receive school-based therapy services than children with autism who had an IEP (2015). In an exploration of Oregon state-based special education services for children initially classified with significant developmental delay, Twardzik et al. (2018) found that children initially classified with significant developmental delay experienced both gaps in special education services and were more likely to re-enroll in special education services compared to children initially classified with a primary/specific diagnosis (e.g., autism). Using data from the Pre-Elementary Education Longitudinal Study, Bitterman and colleagues (2008) compared parent satisfaction regarding IEPs and related supports/services for children with autism compared to other disabilities. Results from the study demonstrated similar rates of parental satisfaction and types of services received when comparing IEPs for autism and other disabilities. However, this investigation did not focus or compare IEP content or quality in IEPs for significant developmental delay nor did the investigation explore direct comparisons between autism and SDD. While considering the importance of comprehensive special education programming, this study added critical information regarding the potential difference in services provided for children.

Impact of a Label. The impact that a non-specific developmental delay label may have regarding a child's access to autism-specific support and services is this study, but non-specific labels for a child with autism spectrum disorder may also impact others' understanding of their social-emotional and behavioral presentation. This impact grounds some research/caution that indicates a specific label of autism may be inadvertently stigmatizing and that significant developmental delay classifications may avoid this stigmatization (Hadadian & Koch, 2013; Danaher, 2011). In an investigation regarding parent and teacher perspectives of labeling,

Lalvani (2015) found that some parents held beliefs that labeling changed perceptions of their child within educational settings. Parents reported beliefs that *specific* labeling (e.g., autism versus significant developmental delay) were “less acceptable” than other less specific labels (p. 383, 2015). However, research that cautions the potential negative effects of labeling as reason for the use of less-specific labels is mixed. Butler and Gillis (2011) posit that the atypical behaviors oftentimes observable with autism are the main antecedent to stigma and not necessarily the label alone. Instead, an initial early and accurate autism classification within the school setting may be protective in nature, impacting others’ (e.g., teachers, classmates) views and understanding of a child’s presentation in schools (Butler & Gillis, 2011).

Individuals with neurodevelopmental disabilities, particularly autism spectrum disorder, may not have physical markers that others would be able to interpret and assume causal explanation for differences in behavior (Aubé et al., 2020). As Aubé and colleagues (2020) explain, “because children with ASD often look like neurotypical children, people expect that they behave in a typical way” (p. 1584). However, children with ASD may display restricted/repetitive behaviors, speech, and/or hyper- or-hyper-reactive sensory differences. Further, and cardinal to autism spectrum disorder, children with ASD demonstrate unique social communication differences. Attribution theory (i.e., the process of making inferences/causal explanations as a response to behavior and affect) (Fiske, 2013) may explain the degree to which others may attribute observable social-emotional and behavioral differences to factors outside of autism for children with ASD.

The observable differences may be more salient in the school and/or community environment when interacting in familiar or novel situations and observers may be uncertain as to why the differences are occurring. As mentioned, there are no ubiquitous physical markers for

ASD and thus, people are more likely to individually infer or attribute the causes of observable differences to factors not related to the manifestation of ASD. As a result, expectations between how a child *should* act in situations/settings and a child with ASD's presentation can at-times inform negative reactions and ostracism (Aubé et al., 2020). McClure and Abbott (2009) support these negative attributions indicating that when behavioral and social functioning differences are unclear, novel persons (i.e., those lacking specialized training) are more likely to attribute observable differences to factors related to personality.

A known label or disclosed diagnosis may inhibit the negative reactions that people have regarding social-emotional or behavioral functioning differences. Recently, White et al. (2020) explored the effect of disclosing an ASD diagnosis in schools on stigmatization in the United Kingdom. Interestingly, results from the study demonstrated that disclosure of a diagnosis was not related to decreased frequency of negative responses from peers (i.e., emotional and behavioral distancing). However, disclosure of an ASD diagnosis was related to ratings of individual responsibility for differences in social-emotional and behavioral functioning.

In a dissertation investigating teacher perspectives regarding the overall impact of autism labels, Wood (2018) found that specific autism labels positively affected funding, services, and understanding of behavioral and/or communication differences. Similarly, in an investigation of teacher-reported perceptions of behaviors in vignettes, teachers who were made aware of a diagnostic label viewed behaviors less negatively than when compared to behaviors of controls (i.e., non-label) (Nah & Tan, 2021). In an additional exploration of teacher-specific consequences associated with a diagnostic label of ASD in educational settings, Hiruma (2011) examined teacher response practices to behavior. Results from the investigation supported that when a diagnosis label of ASD was provided through vignettes, teachers were more likely to

implement *positive* behavioral response practices (Hiruma, 2011). These practices included providing classroom-based supports like a visual schedule for classroom transitions and individualized instruction after reductions in classroom engagement. However, response ratings for behaviors in vignettes that did not have a child diagnosed with ASD were more likely to align with punitive behavioral responses (e.g., point deduction, time-out). Interestingly, this finding was not replicated in a more recent investigation examining teacher attitudes and behavioral intentions. Results from a sample of nearly 100 elementary and middle school teachers did not suggest that teachers change attitudes and/or behavioral intentions (e.g., response practices) dependent upon absence or presence of diagnostic label (Johnson, 2012).

Research suggests that an autism label in schools may also positively impact peers' understanding of and responses to social communication and/or behavioral differences. In an earlier investigation exploring differences in peers' perceptions of ASD, Campbell et al. (2004) demonstrated that multiple sources of information positively impacted peers' perception. Upon viewing videotapes of a neurotypical child and a child with ASD, children who were provided both descriptive information (i.e., highlighting similarities) *and* explanatory information (i.e., autism symptoms as the result of a biological disorder) positively impacted perceptions and behavioral intentions. While exploring perceptions of college students with or without ASD, Bronsan and Mills (2016) found that when an ASD diagnosis was known/disclosed in vignettes, college age peers rated behavioral and social communication differences markedly more positive and less negative. More recently, Sasson and Morrison (2019) investigated first impressions of adults with ASD by utilizing video recordings of a performance-based social skill task. Results from their study also demonstrated that without disclosure of an ASD diagnosis, individuals with ASD in the videos were rated markedly more negative than typically developing adults in the

video. However, when disclosure of ASD was noted, social communication and behavior of individuals with ASD in the videos were rated more positively. Further, knowledge of ASD was also associated with more positive ratings (Sasson & Morrison, 2019).

In a related investigation, Campbell (2019) implemented a peer education program for children with autism attempting to target peers' knowledge of ASD. Results of the program supported marked improvements in knowledge about ASD and some positive effects related to perceptions/attitudes of peers with ASD. The findings did not support positive effects in behavioral intention and social interaction with children who have ASD, regardless of disclosure of ASD diagnosis. These results, while accounting for the earlier research conducted by Campbell and colleagues (2004), suggest that the largest positive impact on peer perception/attitudes of an autism label occur with the provision of education about autism. Further, while recognizing the protective nature/benefit of an autism label within the classroom, these results suggest that equal effort should be dedicated to ensuring that peer knowledge about ASD is targeted.

Methods

Research Design

The following study incorporated a mixed-methods design that used extant special education records available in a district-wide database. Due to the need to understand potential differences in IEP support and services typically provided to students dependent upon eligibility classification, initial eligibility evaluations *and* Individualized Educational Programs using structured qualitative coding and quantitative analysis were reviewed and used as the method to explore the proposed research questions. Level of support in the context of this investigation was defined by the number of IEP goals that are representative of a characteristic of autism spectrum

disorder within each symptom cluster (i.e., differences in social communication; restricted, repetitive behaviors, interests, activities etc.), in addition to the provision of related school-based therapy services and supplementary aids and services. Further, classification differences by factors of race and/or ethnicity and gender were explored quantitatively by comparing expected frequencies.

Participants

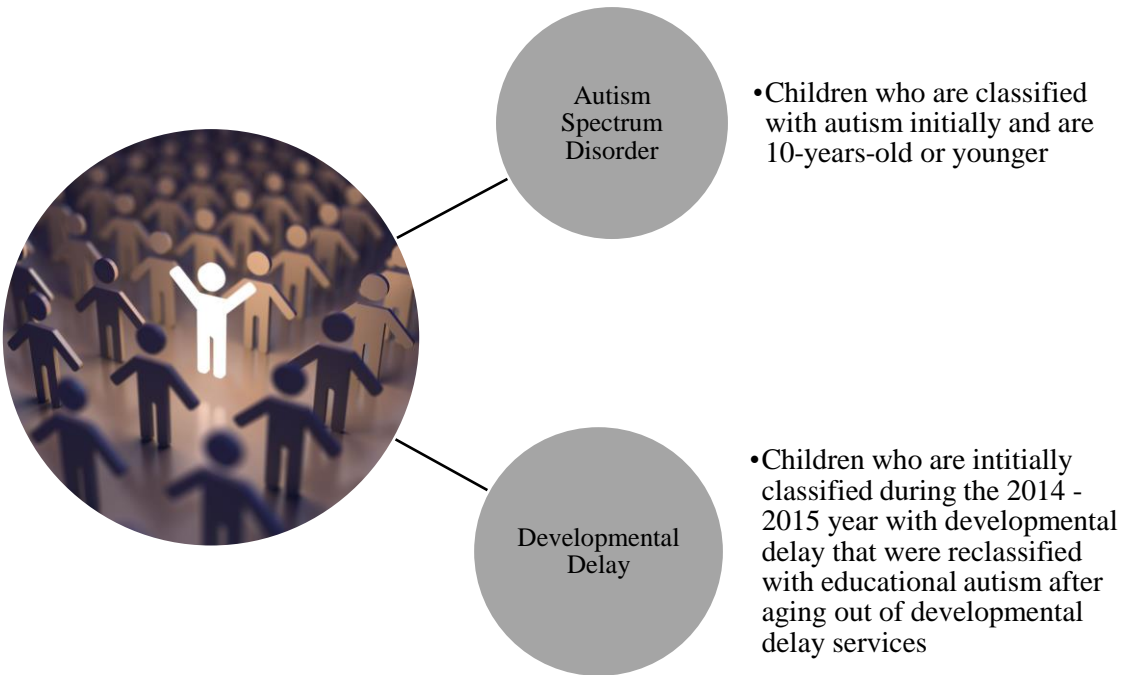
Participants included in the study were represented by available initial eligibility determination and initial IEP records in a large urban district located in the Midwest. Specifically, participants included in the study were students in the district who were evaluated and classified for autism during the 2013 – 2014 or 2014 – 2015 target years *and* participants who were evaluated and determined eligible for significant developmental delay but were re-classified with autism after either aging out of the SDD classification window or an earlier re-classification with autism (see Figure 3). The median age at re-classification for children initially classified with SDD as well as the median amount of time between initial SDD classification and re-classification with ASD label is discussed in the preliminary analysis of the results section. Two eligibility groups of interest were the focus of the current study, including (a) children initially evaluated and determined eligible for autism, and (b) children initially evaluated and classified with significant developmental delay who are later reclassified with ASD. Due to the emphasis on *initial* eligibility records and evaluation practices in public school systems, the age of participants represented by eligibility reports and IEPs varied with an emphasis on the early childhood years. Records were not included in the study for children ages 0 to 2-years 11-months who were evaluated in conjunction with Part C of the IDEA. Because of this investigation's emphasis on IEP comparisons after eligibility during early childhood and the period during and

after early intervention, records for children older than 10-years-old and initially deemed eligible for educational autism were not extracted.

A total of 169 cases who received initial classifications of autism or SDD during the 2013 – 2014 or 2014 – 2015 academic year were extracted by the district data team and sent to the researcher. Of the 169 cases, seventeen cases were excluded due to a student transferring into the district and the likelihood that the IEP provided after classification was not the student's first IEP (i.e., received special education services elsewhere outside of the district). Two cases were excluded due to missing all relevant records (i.e., initial IEP, initial eligibility determination report). A total of 38 cases were excluded as a result of incorrect eligibility filter (e.g., initial classification of Speech and/or Language Impairment without initial autism or SDD classification) or because the cases were duplicates. Collectively, of the 169 initial cases that were extracted, fifty-seven cases did not meet criteria. The final sample (N = 112), stratified by demographic and classification information, is presented in Table 6.

Figure 3.

Eligibility groups for comparison during the 2013 – 2014 or 2014 -2015 cohort years.



Target records included in the study were those between the 2013 – 2014 or 2014 – 2015 years. These target years were chosen to provide sufficient time for many of the younger students initially eligible through a significant developmental delay classification to age out and be reclassified with educational autism. Please refer to Table 3 outlining grade-specific and district-wide racial demographic information for the 2014 – 2015 cohort. The researcher coordinated with the district research team to extract records within the target years for eligible children. Each eligible case for data extraction had both an initial individualized education plan and an initial special education eligibility determination report. After receipt of the eligible records, the data were deidentified using the data extraction tools discussed below and provided a unique deidentified ID. The study was approved by the Institutional Review Board at the University of Wisconsin-Milwaukee, as well as the district’s Research, Assessment, and Data Department.

Table 3.*Student Demographics During the 2014 – 2015 School Year.*

Variable	Eligible Grade	Students per Grade	Reported Race				
			Black	Asian	Hispanic	Other	White
Enrollment	K3	2186	1288	50	528	10	310
	K4	5269	2582	373	1312	57	945
	K5	6300	3291	404	1570	62	973
	01	6140	3077	366	1654	43	1000
	02	5827	2914	339	1604	36	934
	03	5751	2983	378	1519	38	833
	04	5190	2728	314	1338	41	769
	05	5268	2785	321	1368	46	748
Eligible Enrollment	K-05	41931	21648	2545	10893	333	6512
Total District Enrollment	K-12	77332	42318	4666	18989	605	10754

Measures

Initial Eligibility Report. Considering the aim of this investigation and the need to understand differences of IEP supports/services dependent upon eligibility classification, the researcher examined initial eligibility determination records. Initial eligibility evaluation reports were used as source of diagnostic and eligibility determination data. Evaluation reports included in the present investigation were those completed by school district during the target year for children who were classified with educational autism or significant developmental delay initially.

Initial evaluation reports contained multiple sections that describe information obtained throughout the evaluation including Information from Existing Data (e.g., “information provided by the parent”, “summary of previous evaluations), Information from Additional Assessments and Other Evaluation Materials, the State Department of Education Eligibility Checklist, and Determination of Eligibility and Need for Special Education. Within the eligibility determination checklist, the eligibility report also included “considered and rejected” decisions. These decisions were of particular interest for children who were classified with SDD initially and were considered and rejected for an ASD initial classification by the special education team. The “Information from Additional Assessments and Evaluation Materials” presented assessment data gathered from appropriate personnel on the special education team (e.g., occupational therapist, speech therapist, school psychologist) that was used to inform the initial eligibility decision. Refer to Table 4 for the variables of interest/data that were extracted from evaluation reports included within this investigation.

Differences in child presentation and the unique impact of symptoms across settings were accounted for by the documentation of parent-reported adaptive behavior ratings as measured by the Adaptive Behavior Assessment – II (ABAS-II). Extant research has demonstrated the utility of using the ABAS-II caregiver ratings as a method to account for symptom presentation and impairment across settings (see for example, Kenworthy et al., 2010; Lopata et al., 2012). Lopata and colleagues (2013) demonstrated that the ABAS-II is a viable method to capture social impairments unique to ASD through parent report. Ratings in areas characteristic of and/or related to symptoms of autism spectrum disorder were included in analyses (i.e., communication skills, social skills, self-care skills, social skills, and motor skills).

Individualized Education Plan. Initial IEP records contained multiple pieces of information, however, the primary areas of focus within IEPs in this study were the type and number of IEP goals documented (e.g., restricted behaviors, social communication), type and number of related services provided (e.g., physical therapy, speech/language therapy), and the total amount of specialized instruction offered. To code the number and type of goals included within initial IEPs as well as the provision of related services, components of a previously validated IEP Evaluation Tool developed by Ruble and colleagues (2010) were used (see Appendix A). Additional items were added to the IEP Evaluation Tool to code for the type of IEP goals related to autism-specific symptoms that fell within a symptom area (see Table 4).

As mentioned, IEPs included in the analyses were those completed by the district for children who were eligible for additional supports and or services through an eligibility classification of educational autism or significant developmental delay initially. IEPs contained multiple areas of information including Information About the Student (e.g., strengths, functional performance), Special Factors (e.g., “Does the behavior impede their learning or that of others?”), Concerns of the Parent/Family, Effects of the Disability, and Summary of Disability-related Needs. IEP Objectives were developed as a result of the identified disability-related needs (e.g., receptive and expressive language) and IEP Goals were developed subsequent to the objectives (e.g., [x’s] speech will be 60% intelligible when the context of their utterances are known by the end of the current IEP”). A section of the IEP also included details regarding the Program Summary which include the Provision of Supplementary Aids and Services (e.g., adapted tools), Location and Amount of Specially Designed Instruction (e.g., early childhood services), Related Services (e.g., occupational therapy), and Program Modifications or Supports for School

Personnel. Refer to Table 4 for the variables of interest/data that will be extracted from IEPs included within this investigation.

Table 4.

Source of Data, Study Variables, Related Measures.

<i>Source of Data</i>	<i>Study Variable</i>	<i>Related Measure</i>	<i>Citation</i>
<i>Initial Individualized Education Program</i>	Demographics (Age; Gender; Race)	IEP Evaluation Tool	Ruble et al., 2010
	IEP Goals (Number; Area)	IEP Evaluation Tool	Ruble et al., 2010
	Related Services Provided	IEP Evaluation Tool	Ruble et al., 2010
	Special Education Service Hours Offered	IEP Evaluation Tool	Ruble et al., 2010
<i>Initial Eligibility Determination Report</i>	Parent-Rated Adaptive Behavior Skills	NA	Kenworthy et al., 2010; Lopata et al., 2012
	Secondary and/or Tertiary Classification	NA	NA
	Other Criteria Considered and Rejected	NA	NA

Tools for Data Extraction

Individualized Education Program Evaluation Tool. The Individualized Education Program Evaluation Tool (IEP Evaluation Tool; Ruble et al., 2010) is a coding measure developed to evaluate the components and quality of IEPs. The IEP Evaluation Tool contains multiple domains for documentation of the components of IEPs including areas regarding Demographics (items 1 – 7; e.g., “Date of IEP”, “Gender”, “Number of Goals in the IEP”), Related Services (items 8, 1, 2; e.g., “Speech Therapy”, “Yes/No”, “Time/Week”), Part A

Analysis of Overall IEP (items 3 – 20; e.g., “Includes goals objectives for fine and gross motor skills to be utilized when engaging in age appropriate activities”), and Analysis of the IEP objectives (items 21 – 28; e.g., “# of objectives under IEP goal”). The IEP Evaluation Tool includes quality/conceptual indicators regarding the support of children with autism set related to the IDEA (IDEA, 2004) and nine best-practice indicators previously established by the National Research Council (NRC; National Research Council, 2001). Coding consists of manual entry (e.g., Demographics Item 7, “Number of objectives in IEP), dichotomous coding (e.g., Review of Related Services Item 8, “If related services are provided, indicate yes [or no] and the amount of time the service is provided per week), and Likert scale ratings ranging from 0 (Not included/Not at all) to 2 (Yes/Explicitly stated). Preliminary psychometric evidence for the IEP Evaluation Tool suggests adequate interrater reliability, as Ruble and colleagues (2010) report an intra class correlation of .70.

Adaptations/Additions to the IEP Evaluation Tool. Considering the focus of the current investigation, multiple domains and items from the IEP Evaluation Tool were used to code IEP records. Specifically, the Demographics, Review of Related Services, Part A: IDEA Indicators - Analysis of Overall IEP, and Part A: NRC Indicators – Analysis of Overall IEP were used in the current investigation. However, due to the emphasis on IEP goal *type*, multiple items were added to the IEP Evaluation Tool to examine how goals are or are not related to symptoms within each area of autism (i.e., differences in social communication, restricted/repetitive behaviors). Further, areas within the IEP Evaluation Tool were adapted. NRC indicators in Part A was organized by the symptom area of ASD as they relate to IEP Goals (e.g., Goals Related to the Differences in Social Interaction). Specific adaptations to the IEP Evaluation Tool were made to Part A: NRC Indicators – Analysis of the Overall IEP with the inclusion of NRC sub-items targeting unique

symptoms of autism (e.g., IEP goal involving nonverbal gestures) were rated used a dichotomous 0 (not included) or 1 (included) code. These sub-items were included based on the manifestation of symptoms for ASD as described by the DSM-5 (American Psychiatric Association, 2022) and the type of symptoms per the MGH Autism Spectrum Disorder DSM-5 Diagnostic Symptom Checklist (Joshi, n.d.). The initially utilized 3-point Likert scale ranging from 0 (Not included/Not at all) to 3 (Yes/Explicitly Stated) was changed to a dichotomous code represented as 0 (Not included) to 1 (included). A total number of IEP goals comprising the number of sub-item goals within each autism symptom area were the dependent variables of interest in the study. In addition, the Part B: IDEA Indicators – Analysis of Specific IEP Objectives domain were included for the present investigation’s coding due to the that domain’s broader quality-related focus on performance and goal acquisition/measurement outside of the specificity of IEP goals. An adapted version of the IEP Evaluation Tool is included in the appendices (see Appendix A).

MGH Autism Spectrum Disorder DSM-5 Diagnostic Symptom Checklist. To account for the presence and number of ASD symptom-symptom specific goals documented in IEPs, the MGH Autism Spectrum DSM-5 Diagnostic Symptom Checklist (MGH ASD Checklist; Joshi, n.d.) was utilized. The MGH ASD Checklist is a tool used to document the diagnostic features of autism using a 3-point Likert scale ranging from 1 (absent) to 3 (Present) that includes four areas (i.e., A, B, C, D). The checklist includes ratings devoted to each of the main symptom areas of autism in areas A and B (i.e., Deficits in Social Communication and Interaction; Restricted/Repetitive Patterns of Behavior, Interests, or Activities) as well as symptom domains and examples within each main symptom area (e.g., Deficits in social-emotional reciprocity, “Socially inappropriate responses”; Stereotyped and repetitive motor mannerisms, “Flapping,

clapping, finger flicking”). The MGH ASD Checklist also includes rating areas related to the presence of symptoms early in development (Area C), degree of impairment (Area D), specifiers (e.g., with language impairment), and associated features (e.g., self-injurious behaviors).

Adaptations/Additions to the MGH ASD Checklist. As mentioned, autism-specific symptoms were defined by the MGH ASD Checklist were added to the IEP Evaluation Tool. Specifically, the inclusion of a dichotomous rating 0 (not documented) or 1 (documented) were added to document the presence of *any* goals within Area A or B in the MGH ASD Checklist. This change was necessary, some eligibility evaluations concluding significant developmental delay did not contain symptoms within Area B (i.e., Restricted, Repetitive, Patterns of Behavior, Interests, or Activities), for example. Because presentation and symptom impact was accounted for by adaptive behavior ratings, Area D (i.e., Clinically Significant Impairment in Social, Occupational or other Important Areas of Functioning) was also be removed. An adapted version of the MGH ASD Checklist used to inform IEP goal documentation is included in the appendices (see Appendix A).

Procedures/ Data Collection

Eligibility report evaluation and initial IEP data were extracted during the Fall and Winter of 2022 – 2023. The district data team extracted the target records for eligible participants attending the district or a school connected to the district that receives district evaluations during the 2013 – 2014 or 2014 – 2015 years. To identify eligible cases and extract records, the district data team initially queried for initial special education eligibility determination classifications that were made for the category of ASD between the target years of 2013 – 2015. The district data team also queried for initial special education determination decisions that were made for the category of SDD between the target years. To identify eligible initial SDD cases (i.e., those

who were later re-classified with ASD), the identification of initial SDD cases during the target years was followed by a manual search exploring re-classification eligibility decisions on a case-by-case basis at the student level and identifying initial SDD cases that were later re-classified under the ASD category. The extracted eligibility evaluation and IEP data were provided to this researcher by encrypted file.

The data was subsequently coded by the researcher using the tools explicated in the Methods section and a unique deidentified ID was given to eligible cases. All eligible cases contained two sources of data (i.e., Initial Eligibility Determination Report, Individualized Education Plan. A separate spreadsheet informed by the Individualized Education Program Evaluation Tool (Ruble et al., 2010) that included all study variables was used to document the data included in the IEPs. Adaptations to the Individualized Program Evaluation Tool (Ruble et al., 2010) were made and informed by the MGH Autism Spectrum Disorder DSM-5 Diagnostic Symptom Checklist (Joshi, n.d.) to account for IEP goal content and symptom area. A more detailed description of the tools used to code for information included in the initial eligibility report and IEPs is included in the methods section, as well as the adaptations that were made to those tools. A full list of study variables, definitions, coding schemes, and their location is included in the Data ID Codebook in the supplementary materials.

Eligible children/records for data extraction included children ages 2 – 10 years-old with either an initial educational autism classification or an initial significant developmental delay classification that was reclassified to educational autism after aging out of the window for SDD classification. Eligible schools for data extraction included those who are evaluated by the district's primary evaluation team. Specifically, district public schools, charter schools connected to the district, and early childhood education centers that are provided evaluations through the

district’s primary evaluation team were eligible for data extraction. An exemplar composition of the student demographics during the 2014 – 2015 target year and potential children eligible for record extraction within the district and/or supported by the district primary evaluation team is depicted in Table 5 (District Records, 2020).

Table 5.

District Special Education Composition During 2014 – 2015.

<i>Variable</i>	<i>Eligible Grade</i>	<i>Students per Grade</i>	<i>Special Education Students</i>
Enrollment	K3	2186	481
	K4	5269	632
	K5	6300	1008
	01	6140	982
	02	5827	932
	03	5751	1035
	04	5190	1038
	05	5268	1159
Eligible Enrollment	K-05	41931	7267
Total District Enrollment	K-12	77332	15357

The district for which data are being extracted reports a total special education classification/ placement rate of 20% or 15,357 students during the 2014 – 2015 academic year. However, multiple areas of eligibility for special education exist (e.g., emotional disturbance, specific language disability, other health impairment). Specific rates of eligibility during 2014 – 2015 for the classifications of interest (i.e., autism, significant developmental delay) were not available from the district. However, recent rates for educational autism and significant

developmental delay are available at a national level. Recently, the National Center for Education Statistics (2021) reported that the national rate for eligibility classifications of educational autism and significant developmental delay are 11% and 7% of all 7.3 million students receiving special educational services through IDEA.

Interobserver Agreement

The researcher reviewed and coded all target variables included in initial IEPs and Initial Eligibility Determination Evaluations for a total of 112 eligible students. The researcher initially coded all eligible cases using the identified coding scheme and Data ID Codebook. To assess for interobserver agreement (IOA), the present author and an additional rater with doctoral-level training in school psychology, who is also a doctoral-level Board Certified Behavior Analyst, coded approximately 20% ($n = 23$) of initial SDD and autism cases independently using the same coding scheme. The records for IOA were assigned to both raters through randomized assignment via a basic randomized function in a statistics package. Before completing IOA, the researcher conducted one, hour-long coding training session with the additional rater. During the training session, the researcher reviewed the Data ID Codebook with the additional rater and completed coding of one exemplar case while the rater observed which was not included in the final interobserver percent agreement.

A total of 49 variables were eligible to be coded for initial SDD cases and 48 variables were eligible to be coded for initial autism cases. The total number of variables coded for interobserver agreement amounted to 392 variables for initial SDD cases and 720 variables for initial autism cases. Agreement was calculated by dividing the total number of agreements by the total number of agreements plus disagreements per case (Chaturvedi & Shwedi, 2015). An aggregate interobserver percent agreement was subsequently calculated by averaging the

percentage of agreement among all SDD cases, and the percentage of agreement among all autism cases. The agreement was 89% for initial SDD cases and 87% for initial autism cases.

Results

Results from the current study are presented in the following order: (a) preliminary descriptive data (i.e., demographics, initial rates of classification, initial ages at eligibility classification, preliminary rates of medical diagnoses for ASD) and descriptive analyses (i.e., Chi-square test of independence to compare initial eligibility classifications among factors of race and sex) for Research Question One; (b) descriptive data (i.e., mean rates of specialized instruction included in IEPs, related services included in IEPs, supplementary aids and services included in IEPs) and odds-ratios exploring the likelihood of IEP goals specific to each symptom area, related services included in IEPs, and supplementary aids and services included in IEPs dependent upon initial eligibility classification for Research Question Two; (c) descriptive analysis as it relates to each initial eligibility classification (i.e., frequency of IEP goals related to each area of autism) and ANCOVA models that explore differences of autism symptom support through IEP goals by initial eligibility classification after controlling for adaptive behavior skill ratings across settings for Research Question Three; and (d) an ANCOVA model that explores the potential difference in amount of specialized instruction dependent upon eligibility classification after controlling for adaptive behavior skill ratings across settings for Research Question Four.

As sample estimates were not available due to the nature of the data that were requested, post hoc power analyses for the following Chi-square tests and one-way ANCOVA models were computed using the G*Power 3.1 software package. Results indicated an achieved power of 0.89 for estimating small to medium effects (i.e., *Cohen's d* = 0.30) for Chi-square tests, and an

achieved power of 0.74 for estimating small-to-medium effects (i.e., *Cohen's d* = 0.30) for one-way ANCOVA models.

Preliminary Descriptive Data and Analysis. Preliminary descriptive data displaying student demographics that were included in IEPs and/or Initial Eligibility Determinations are reported below in Table 6. A total of 112 students initially eligible through either classification of autism or significant developmental delay were included in the final analyses. As depicted in Table 6, more students included in the final analyses were classified through an initial classification of autism (69%, *n* = 77) versus SDD and were identified as Black and/or African American (53%, *n* = 51). Of note, racial and/or ethnic demographic characteristics for a number of students were reported in either IEP or Initial Eligibility Determination (16%, *n* = 19). The category “Other” is represented by races and/or ethnicities that include Asian, Hawaiian and/or Pacific Islander, and Indian. These races are represented by “Other” due to low rates of reporting and small cell counts. Most students initially eligible under a classification of SDD or autism also received a secondary classification of speech/language impairment during their initial evaluation (SDD: 66%, *n* = 23; Autism: 60%, *n* = 48). For students who were classified initially with SDD, an educational classification of autism was considered and rejected for 31% of them (*n* = 12). IEPs for most students classified with SDD or autism indicated that the student “would not participate full-time with non-disabled peers in regular education” but noted that most students “would participate full-time with non-disabled peers in extra-curriculars.”

Table 6.

Demographic and Classification Information for Eligible Cases Included in Analyses.

Initial Eligibility Determination	
Initial SDD (%)	Initial ASD (%)

Gender	Male	31 (89)	61 (79)
	Female	4 (11)	16 (21)
Total Eligible IEPs		35 (100)	77 (100)
Secondary Classification	Speech/Language Impairment	23 (66)	47 (61)
	Emotional/Behavioral Disability	0	0
	Cognitive Disability	0	0
	Other Health Impairment	0	1 (1)
	Specific Learning Disability	0	0
Total		23	48
Tertiary Classification	Speech/Language Impairment	0	0
	Emotional/Behavioral Disability	0	0
	Cognitive Disability	0	0
	Other Health Impairment	0	1
	Specific Learning Disability	0	0
Total		0	1
Race and/or Ethnicity	Black and/or African American	22 (63)	29 (38)
	Hispanic and/or Latino	10 (31)	14 (18)
	White	0	13 (17)
	Other	0	6 (8)
	Total	32	62
Participation in Educational Settings	“Student will participate full-time with non-disabled peers in regular education”	1 (3)	3 (4)
	“Student will participate full-time with non-disabled peers in extra-curriculars”	34 (97)	74 (96)

Children included in the final sample for both eligibility classifications ranged in age from 2-years-old to 10-years-old. The median age at initial classification for students initially classified under SDD was 2-years-old. It should be noted that only a child’s birth age year was depicted on eligible records, so the median age at initial classification does not account for birth month (e.g., a child may have been initially classified at age 2-years, 9-months old or 2-years, 11-months-old). In addition, initial special education referrals for IEPs in the target district, and that were also eligible for inclusion in the current study, occur only after a child is at least 2-years, 9-months-old. Children initially classified with SDD ranged in age from 2-years-old ($n = 18, 51\%$) to 4-years-old ($n = 11, 31\%$). The median age of children initially classified under ASD was 3-years-old. Children initially classified under ASD ranged in age from 2-years-old ($n = 23, 30\%$) to 10-years-old ($n = 2, 3\%$). A breakdown of the ages at initial classification is provided below in Table 7.

Table 7.

Age at Eligibility by Initial Classification.

Age	Initial Eligibility Determination	
	Initial SDD	Initial ASD
2	18	23
3	6	16
4	11	20
5	0	4
6	0	7
7	0	2

8	0	3
9	0	0
10	NA	2
Total	35	77

The re-evaluation eligibility determination meeting date when children classified initially with SDD and were re-classified with ASD was also provided by the district. Results indicate that children classified with SDD initially were re-evaluated and re-classified with ASD approximately 44 months or 3-years 8-months after their initial SDD classification in the educational setting ($m = 44.26$; $SD = 26.12$). The length in months between SDD initial classifications and ASD eligibility determination re-evaluations ranged between 11 months to 111 months. The median age at re-evaluation and re-classification for children classified with SDD initially was 6-years-old. The age at re-classification to ASD from SDD initially ranged from 4-years-old ($n = 5$, 14.3%) to 13-years-old ($n = 1$, 2.9%).

A “Summary of Previous Evaluations” section was included within the Initial Eligibility Determination report, denoting parent report and/or existing record of an autism evaluation previously conducted for the student in a medical setting by a medical professional. The diagnostic conclusion after an autism evaluation was also provided and is detailed below in Table 8. Many students initially classified with SDD had either not received a previous evaluation or a previous evaluation was not reported to assess for ASD in clinical and/or medical settings (88%, $n = 30$). In comparison, significantly more students initially classified with ASD had documentation of a previous evaluation assessing ASD in clinical and/or medical settings having been completed (48%, $n = 37$), $\chi^2(1, n = 111) = 18.40, p < .001, phi = .407$. Initial eligibility classification was also significantly associated with a previously provided diagnosis of

autism spectrum disorder, Asperger’s, or Pervasive Developmental Disorder – Not Otherwise Specified, $\chi^2 (1, n = 111) = 9.57, p < .005, phi = .294$. Of students initially classified with SDD who did not have a previous diagnosis of ASD (88%, $n = 30$), 23% were provided a medical diagnosis ($n = 8$) a median of four years after their initial SDD classification. Post-classification diagnostic data within health settings for children classified with SDD initially was provided in an Excel spreadsheet by the district data team within the original data pull.

Table 8.

Summary of Previous Evaluations in Clinical and/or Medical Settings.

		Initial Eligibility Determination	
		Initial SDD (%)	Initial ASD (%)
Summary of Previous Evaluations	No documentation of previous evaluation	30 (88)	39 (49)
	Previous evaluation reported	4 (12)	40 (51)
Diagnostic Conclusion After Previous Evaluation	No Diagnosis Given	0	9 (22)
	Diagnosis of ASD	4 (100)	27 (67)
	Diagnosis of Asperger’s	0	2 (5)
	Diagnosis of Pervasive Developmental Disorder – Not Otherwise Specified	0	2 (5)
Total Diagnostic Conclusions After Previous Evaluation		4 (100)	40 (100)

Independent samples *t*-tests were conducted to explore ABAS-II parent report ratings by skill area for initial eligibility classification and are depicted below in Table 9. Scores were reported as standard scores with average abilities falling between 90 – 109 ($M = 100; SD = 15$) and lower scores indicating lower adaptive behavior skills (Harrison & Oakland, 2003). Cohen’s

(1988) guidelines for the interpretation of eta squared statistics was used. Parents and/or caregivers who completed ABAS-II ratings for children classified with SDD initially rated higher adaptive behavior skills across all included areas than those with children classified with EA initially. The children classified with SDD initially were perceived by parents to demonstrate stronger adaptive behavior skills across settings.

There was a significant difference in ABAS-II Communication standard scores between initial autism classifications ($M = 64.42$, $SD = 10.33$) and initial SDD classifications ($M = 71.06$, $SD = 10.45$), $t(82) = 3.01$, $p < .005$, two-tailed, as children with an autism classification scored significantly lower. The magnitude of the differences in the means (mean difference = 6.65, 95% CI : 2.25 to 11.04) was moderate ($\eta^2 = .10$). ABAS-II ratings for the communication domain ranged from 55 to 90 for initial SDD classifications and 55 to 95 for initial autism classifications. Results indicated a significant difference between ABAS-II Self Care standard scores for initial autism classifications ($M = 65.83$, $SD = 9.19$) and initial significant developmental delay classifications ($M = 71.62$, $SD = 7.95$), $t(81) = 2.88$, $p = .005$, two-tailed. The magnitude of the differences in the means (mean difference = 5.78, 95% CI : 1.90 to 9.66) was also moderate ($\eta^2 = .10$). ABAS-II ratings for the self-care domain ranged from 55 to 90 for both initial SDD classifications and autism classifications. There was also significant difference in ABAS-II Social standard scores between initial autism classifications ($M = 67.90$, $SD = 10.74$) and initial significant developmental delay classifications ($M = 78.48$, $SD = 14.28$), $t(82) = 3.83$, $p < .001$, two-tailed. The magnitude of the differences in the means (mean difference = 10.58, 95% CI : 5.11 to 16.06) was large ($\eta^2 = .15$). ABAS-II ratings for the social domain ranged from 55 to 110 for initial SDD classifications and 55 to 100 for initial ASD classifications. Lastly, there was a significant difference in ABAS-II Motor standard scores

between initial autism classifications ($M = 79.89, SD = 9.80$) and initial significant developmental delay classifications ($M = 87.12, SD = 13.98$), $t(55.11) = 2.38, p = .021$, two-tailed. The magnitude of the differences in the means (mean difference = 7.23, 95% *CI*: 1.87 to 12.59) was moderate ($\eta^2 = .09$). ABAS-II ratings for the motor domain ranged from 60 to 120 for initial SDD classifications and 65 to 100 for initial autism classifications.

Table 9.

Independent samples t-tests for classification and ABAS-II Standard Scores.

<i>ABAS-II Skill Area</i>	Initial Eligibility Classification						<i>t</i>	<i>p</i>	<i>eta squared</i>
	Initial SDD eligibility			Initial EA Eligibility					
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>			
<i>Per Parent Report</i>									
ABAS-II	33	71.06	9.16	51	64.4	10.33	3.01	<.005	.10
Communication									
ABAS-II Self	34	71.62	7.95	48	65.83	9.19	2.97	<.005	.09
Care									
ABAS-II Social	33	78.48	14.28	50	67.90	10.74	3.85	<.001	.15
ABAS-II Motor	33	87.12	13.98	45	79.89	9.80	2.68	.014	.09

Note. Most eligibility determination evaluations included the use of ABAS-II parent ratings. The number of evaluations that reported each ABAS-II domain (i.e., communication, self-care, social, motor) is denoted by “*n*” in the table.

Race and/or Sex and Initial Eligibility Classification

To explore Research Question 1 and factors potentially associated with initial eligibility classification, two Chi-Square tests for independence were conducted. A Chi-square test for

independence was conducted to determine whether initial eligibility classification of autism or SDD is significantly associated with sex. The Chi-square test for independence (with Yates Continuity Correction) indicated no significant association between sex and initial eligibility classification, $\chi^2 (1, n = 112) = 1.43, p = .23$. To investigate whether there is a relationship between initial eligibility classification and race, an additional Chi-square test for independence was conducted. Because of low cell frequency the category of “Other” which consisted of children from Asian, Hawaiian and/or Pacific Islander, or Indian backgrounds were excluded in this portion of the analysis. Race demonstrated a significant, moderate association with eligibility classification, $\chi^2 (1, n = 88) = 8.73, p = .013$, Cramer’s V = .315.

Autism-Related Goals, Services, and Supports in IEPs

Descriptive data per eligibility classification for Research Question Two regarding the number of autism-specific goals included in students IEPs, the frequency/provision of specialized instruction included in IEPs, related services included in IEPs, and supplementary aids and services provided are detailed below in Table 10.

Table 10.

Descriptive data and odds ratios dependent upon eligibility classification.

Goals, Services, and Aids Included in IEP	Initial SDD eligibility			Initial EA Eligibility			Odds ratio	95% CI	p value
	n	mean	(%)	n	mean	(%)			
		Goal Present			Goal present				

DSM-5 ASD Diagnostic Symptom Area

<i>Symptom Area 1a:</i>	31	1.77	88.57	72	1.87	96	3.10	.65 – 14.64	.221
<i>Social Communication/ Interaction</i>									
<i>Symptom Area 1b:</i>	33	1.85	94.28	56	1.78	74.66	.18	0.04 - .82	.015
<i>Expressive and Receptive Communication</i>									
<i>Symptom Area 1c:</i>	0	NA	0	12	1.08	16	NA	NA	.001
<i>Nonverbal Communication</i>									
<i>Symptom Area 2:</i>	10	1.2	28.57	23	1.2	30.67	1.11	.46 – 2.67	.823
<i>Restricted, Repetitive Behavior, Interest, Activities</i>									
<i>Related Services (minutes per month)</i>									
<i>Psychological Services</i>	0	NA	0	1	120	1.31	NA	NA	NA
<i>Speech Therapy</i>	3	240	8.57	9	180	12.66	1.45	.37 – 5.74	.591
<i>Occupational Therapy</i>	15	107.33	42.86	40	102.75	52.63	1.48	.66 – 3.32	.339
<i>Physical Therapy</i>	2	135	5.71	3	146.67	4.11	NA	NA	.650
<i>Supplementary Aids and Services</i>									
<i>Related to social communication,</i>	3	1.67	8.57	13	1	17.10	3.05	.64 – 14.41	.143

<i>social interaction, and language</i>									
<i>Related to restricted and repetitive patterns of behavior, interests or activities, and/or sensory differences</i>	7	1	20	40	1.35	52.63	4.17	1.62 – 10.72	.002

Note. “n” in Table 10 refers to the number of IEPs in each initial eligibility classification that included an IEP goal, related service, or supplementary aids and services. The “Goal present” column presents the associated percentage for “n” which denotes the percentage of total IEPs by eligibility classification that included that IEP goal, related service, or supplementary aids and service.

Table 11.

Ranges for the amount and/or duration of goals, related services, and supplementary aids and services included in IEPs by eligibility classification.

Goals, Services, and Aids Included in IEP	Initial SDD eligibility		Initial EA Eligibility	
	<i>n</i>	range	<i>n</i>	range
DSM-5 ASD Diagnostic Symptom Area				
<i>Symptom Area 1a: Social Communication/ Interaction</i>	31	0 - 4	72	0

<i>Symptom Area 1b:</i> <i>Expressive and Receptive</i> <i>Communication</i>	33	0 – 4	56	0 – 4
<i>Symptom Area 1c:</i> <i>Nonverbal Communication</i>	0	NA	12	0 – 2
<i>Symptom Area 2:</i> <i>Restricted, Repetitive</i> <i>Behavior, Interest,</i> <i>Activities</i>	10	0 – 2	23	0 - 3
<i>Related Services (minutes per month)</i>				
<i>Psychological Services</i>	0	NA	1	0 – 120
<i>Speech Therapy</i>	3	0 – 240	9	0 – 360
<i>Occupational Therapy</i>	15	0 – 240	40	0 - 240
<i>Physical Therapy</i>	2	0 – 150	3	0 - 130
<i>Supplementary Aids and Services</i>				
<i>Related to social</i> <i>communication, social</i> <i>interaction, and language</i>	3	0 - 3	13	0 - 1
<i>Related to restricted and</i> <i>repetitive patterns of</i> <i>behavior, interests or</i> <i>activities, and/or sensory</i> <i>differences</i>	7	0 - 1	40	0 - 3

Note. “n” in Table 11 refers to the number of IEPs in each initial eligibility classification that included an IEP goal, related service, or supplementary aids and services. The minimum and

maximum columns denote the range of the number of IEP goals in each symptom area, amount of each related services, and number supplementary aids and services included in IEPs by eligibility classification.

Odds ratios indicated that the odds of children initially classified under ASD and SDD to have at least one IEP goal in the areas of social communication/interaction and restricted and repetitive patterns of behavior and/or sensory differences (RRBs) were not significantly different. Children initially classified with SDD were 5.55 times more likely to have at least one goal related to expressive and receptive communication included within their IEPs, $\chi^2(1, n = 110) = 5.97, p = .015, phi = .233$. Odds ratios were not calculated for the provision of IEP goals in the area of nonverbal communication due to expected cell count issues (i.e., no IEPs for children classified with SDD included goals in the area of nonverbal communication), but there was a mean difference between eligibility classification and the provision of nonverbal communication goals in IEPs which will be discussed in the following section. The odds for the provision of related services (i.e., more than one minute of [x] related service per month) did not significantly differ dependent upon eligibility classification. While the odds for children initially classified under ASD and SDD being provided with supplementary aids and services that support the first symptom area of autism did not significantly differ, results indicated that children initially classified with ASD were 4.17 times more likely to receive supplementary aids and services that supported the RRB symptom area of autism, $\chi^2(1, n = 111) = 9.50, p = .002, phi = .293$.

Table 12 provides examples of annual IEP goals and supplementary aids and services for each autism symptom area. The identified exemplars serve as a model for goals and supplementary aids and services that are coded in each autism symptom area. It should be noted

that some annual IEP goals included aspects that could be considered to support multiple autism symptom areas. In these instances, the annual IEP goal was only coded once and included objectives/benchmarks (when applicable/available) were consulted to delineate how the goal would be measured and/or supported. For example, an annual IEP goal that was coded in the restricted and/or repetitive patterns of interests, activities, speech, and/or sensory differences, instead of expressive and receptive communication, was defined by “X will increase communication function in the classroom from the 9 – 12-month level to the 15-month level through experience with a variety of sensory input (vestibular, tactile, auditory, visual, smell).” Objectives/benchmarks included for this annual goal included: “show enjoyment of sensory activities by smiling and/or taking adult’s hand and moving it toward object associated with activity,” “show desire for continuation of activities from sensory activity by giving object associated with activity to adult,” “show desire for continuation or non-continuation of activities from sensory experience by gesturing, and “X will choose a sensory activity by touching or giving object associated with the activity.”

Table 12.

IEP Goal and Supplementary Aids and Services Exemplars.

	<i>Autism Symptom Area</i>	<i>Exemplar Goal or Aids/Service Definition</i>
IEP Goals	Differences in social interaction (e.g., goals related to social or emotional reciprocity while communicating and/or through play, goals related	<ul style="list-style-type: none"> • X will participate in back-and-forth social interactions/games and routines with communication partners • With assistance and verbal cueing from adult, X will participate in reciprocal play activity with a peer or adult

<p>to engagement in tasks or play that are developmentally appropriate (e.g., attending, sitting in circle)</p>	<ul style="list-style-type: none"> • Increase engagement in guided cooperative activities with 1 or more peers during “centers” or free play
<p>Differences in expressive/receptive communication (e.g., goals related to development of spoken language)</p>	<ul style="list-style-type: none"> • X will comprehend age expected language concepts (identifying common objects/actions in pictures, use of objects, basic pronouns, and follow 1-2 step direction without gestural cues)
<p>Differences in nonverbal communication (e.g., goals related to eye gaze, facial expression, gestures)</p>	<ul style="list-style-type: none"> • X will share attention as evidenced by looking toward adults/peers, shifting gaze between people and objects, and responding to their own name
<p>Restricted and Repetitive Patterns of Behavior, Interests, or Activities, and/or Sensory Differences</p>	<ul style="list-style-type: none"> • X will use positive coping strategies (noise reduction headphones, leave area, accept hand over hand assist or adult directed calming strategies) when loud stimuli is present and will not push or hit other children to a less than two times-per-day occurrence • X will display appropriate emotional responses to tolerate transitions between materials/toys, activities, and physical transitions within the room and building successfully

	Social communication, social interaction, and expressive/receptive speech	<ul style="list-style-type: none"> • Social stories to support appropriate peer interaction and self-regulation skills
Supplementary Aids and Services	Restricted and Repetitive Patterns of Behavior, Interests, or Activities, and/or Sensory Differences	<ul style="list-style-type: none"> • Visual schedule throughout the academic day • Visual task list throughout the academic day • Personal, individualized quiet spot within the classroom • Sensory strategies to assist in overall regulation and participation

Amount of Autism Symptom Support in IEP Goals

Three one-way ANCOVA models were utilized to examine Research Question 3 and explore potential differences in the number of autism symptom-specific IEP goals by eligibility classification. Assumptions including the assumptions of independence, normality, linearity, and assumption of homogeneity of regression were all tested prior to interpretation of the one-way ANCOVA models. Assumptions of normality and linearity are reported in Appendix B. It can be reasonably assumed that all models meet the assumption of independence (i.e., number of IEP goals in one IEP has no influence on number of IEP goals in another IEP) due to the individualization of each plan and unique presentation of each student. Visual analysis of boxplots and normal probability plots demonstrated that ANCOVA models for number of IEP goals supporting social/communication interaction (Model 1), expressive and receptive communication (Model 2), and total number of IEP goals that fall within a symptom area of ASD reasonably met the assumption of normality (Model 5). A violation of the assumption of normality was depicted for Model 3 (Nonverbal Communication Goals) due to the absence of

nonverbal communication goals included in IEPs for students initially classified with SDD. Inferential analysis and results for this model were not conducted. Visual analysis of boxplots and normal probability plots for ANCOVA models exploring number of restricted/repetitive patterns of behavior, interests, and/or activities (Model 4) depicted a negative skew of the data and suggested a violation of the assumption of normality. Results for this model also are not interpreted.

The assumption of homogeneity of regression for all three ANCOVA models were tested to determine if the full model (ANCOHET) or reduced model (ANCOVA) would be used to examine Research Question 3. Results from the homogeneity of regression test for each model are presented below in Table 16. Because the interaction terms were not significant, there were no statistically significant differences between classification slopes and the relationship between adaptive behavior skills across four domains. Thus, proceeding with ANCOVA (homogeneity of slopes) models was appropriate. Correlational analyses revealed correlation coefficients for all adaptive skill covariates below $r = .80$. The assumption of homoscedasticity was tested for all reported models through comparison of Akaike information criterion with and without a Satterthwaite approximation, a technique proposed by Milliken and Johnson (2001, pgs. 362 – 369). Results from this assumption of variance test are depicted below in Table 15 and depict an Akaike information criterion (AIC) value that was smaller when assuming variances are different by eligibility classification for Models 1 (Social Communication/Interaction Goals) and 6 (Total Specialized Instruction). Variance was assumed equal for Models 2 (Expressive/Communication Goals) and 5 (Total IEP Goals) and was depicted by a lower AIC level for the model that assumes variance is equal compared to a model that assumes variance is unequal. To account for

different variance by classification, an equal slopes ANCOVA model was fit that adjusted for different variance at each classification through a Satterthwaite approximation (2001).

In total, 3 one-way ANCOVAs were conducted to explore the effects of eligibility classification on the amount of IEP goals categorized within one of the associated autism symptom areas. Results for all three ANCOVA models are displayed below in Table 13. Descriptive data for the covariates utilized in ANCOVA models (i.e., ABAS-II scores) are depicted below in Table 14. After adjusting for the effects of adaptive behavior skills, there was a significant difference between initial eligibility classification on the number of IEP goals that are categorized in the social communication and/or social interaction autism symptom cluster, $F_{(1, 60.3)} = 6.37, p = 0.014$. Results suggested a moderate relationship between eligibility classification and the number of social communication and interaction IEP goals, as indicated by a partial eta squared value of 0.09. Initial IEPs for ASD contained more IEP goals targeting social interaction and communication than initial IEPs for SDD. There were no significant differences between initial eligibility classification on the number of IEP goals that are categorized in the areas of expressive and/or receptive communication, or total IEP goals associated with autism symptoms, after adjusting for the effects of adaptive behavior skills.

As mentioned, no Nonverbal Communication Goals (Model 3) were present for students who initially classified with SDD. Due to violations of the assumptions of normality and homoscedasticity, an ANCOVA model was not run to explore group differences by classification for nonverbal communication goals. Significance testing was also not completed due to expected cell count challenges. While not able to complete inferential statistical analysis exploring this goal, the difference in means is notable and worth mentioning. A total of twelve IEPs for students initially classified with autism included Nonverbal Communication goals (M

Goals Provided = 1.08), whereas no IEPs for students initially classified with significant developmental delay contained Nonverbal Communication goals ($M = .00$). Regarding Model 4 (Restricted/Repetitive Patterns of Behavior), a total of 10 IEPs for students initially classified with significant developmental delay included goals (M *Goals Provided* = 1.2) and 23 IEPs for students initially classified with autism included goals in the area of restricted/ repetitive behavior patterns (M *Goals Provided* = 1.2).

Table 13.

One-way ANCOVA Models Comparing IEP Goal Inclusion by Initial Classification.

Model	<i>n</i>	<i>minimum</i>	<i>maximum</i>	<i>F</i>	<i>p</i>	<i>LSMeans</i> <i>DDSDD</i>	<i>LSMeans</i> <i>ASD</i>
Model 1 – Social Communication / Interaction Goals	77	0	4	6.04	.02	1.48	2.11
Model 2 – Expressive/Receptive Communication Goals	77	0	4	1.29	.26	1.75	1.46
Model 5 – Total IEP Goals	77	0	7	2.19	0.14	3.56	4.13

Note. All models account for adaptive behavior skills in the areas of Communication, Self-Care, Social, and Motor as reported by the ABAS-II. The minimum and maximum columns denote the range for the dependent variable included in each model.

Table 14.*Descriptive information for covariates (ABAS-II ratings) used in ANCOVA models.*

<i>ABAS-II Skill Area</i>	Initial Eligibility Classification							
	Initial SDD eligibility				Initial EA Eligibility			
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>range</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>range</i>
ABAS-II	33	71.06	9.16	55 - 90	51	64.4	10.33	55 - 95
Communication								
ABAS-II Self	34	71.62	7.95	55 - 90	48	65.83	9.19	55 - 90
Care								
ABAS-II Social	33	78.48	14.28	55 - 110	50	67.90	10.74	55 - 100
ABAS-II Motor	33	87.12	13.98	60 – 120	45	79.89	9.80	65 - 100

Note. All models account for adaptive behavior skills in the areas of Communication, Self-Care, Social, and Motor as reported by the ABAS-II. “n” refers to the number of eligibility determination records per eligibility classification that included the respective ABAS-II domain.

Table 15.*Homogeneity of Variance Test for ANCOVA Models in Research Questions 3 and 4.*

<i>Model</i>	<i>AIC Assuming All Variances are Equal</i>	<i>AIC Assuming Different Variances at Each Classification</i>
Social Communication / Interaction Goals	242.3	242.2

Expressive/Receptive Communication Goals	241.9	243.9
Total IEP Goals	292.1	292.3
Total Specialized Instruction	1098.3	1093.9

Note. All models account for adaptive behavior skills in the areas of Communication, Self-Care, Social, and Motor as reported by the ABAS-II.

Table 16.

Homogeneity of Regression Assumption Testing for Covariates.

Model 1 – Social Communication/Interaction Goals			
Covariate	<i>n</i>	<i>F</i>	<i>p</i>
ABAS – Communication	77	.64	.43
ABAS – Self-Care	77	.02	.91
ABAS – Social	77	.03	.78
ABAS – Motor	77	.08	.77
Model 2 – Expressive/Receptive Communication Goals			
Covariate	<i>n</i>	<i>F</i>	<i>p</i>
ABAS – Communication	77	.52	.47
ABAS – Self-Care	77	.92	.34
ABAS – Social	77	.12	.73
ABAS – Motor	77	.10	.77
Model 5 – Total Goals			
Covariate	<i>n</i>	<i>F</i>	<i>p</i>
ABAS – Communication	77	0	..95
ABAS – Self-Care	77	.24	.63

ABAS – Social	77	.02	.89
ABAS – Motor	77	.03	.86
Model – Total Specialized Instruction			
Covariate	<i>n</i>	<i>F</i>	<i>p</i>
ABAS – Communication	77	1.76	.19
ABAS – Self-Care	77	.53	.47
ABAS – Social	77	.11	.74
ABAS – Motor	77	1.40	.24

Amount of Specialized Instruction by Eligibility Classification

To investigate Research Question Four, a one-way ANCOVA was conducted to explore potential differences in the total amount of specialized instruction included in students' IEPs by eligibility classification. Specialized instruction listed in IEPs was denoted by duration in minutes-per-week. Assumption testing for the model was completed and results regarding tests of variance and homogeneity or regression are depicted in Tables 13 and 14, respectively. After comparing AIC values for a model that assumes equality of variance versus different variance by eligibility classification, an equal slopes model with a Satterthwaite approximation was fit. After adjusting for the effects of adaptive behavior skills, results revealed no significant difference between eligibility classifications and the amount of specialized instruction included in a student's IEP, $F_{(1, 65.6)} = 1.29, p = 0.26$.

Discussion

The current study compares IEPs for over 100 children enrolled in a large urban district who classified for special education initially between 2013 to 2015 with autism or SDD (who were later re-classified with autism) to explore initial levels of autism symptom support. During

the target years of the current study, 31% ($n = 35$) of children in the final sample were classified with significant developmental delay initially and were reclassified with ASD later on either after aging out of SDD eligibility and/or after re-evaluation. Children classified with SDD initially were perceived to have stronger adaptive behavior skills across communication, self-care, social, and motor domains as assessed by ABAS-II parent ratings. Most children in both eligibility classifications did not participate full-time in a regular education setting. Results indicate some differences in autism-symptom support between eligibility classifications but also highlight many support similarities specific to autism regardless of classification.

Results indicate that the initial eligibility determination of autism is significantly associated with the provision of certain IEP goals and supplementary aids and services in specific autism symptom areas. Children classified with autism initially are more likely to have at least one IEP goal related to nonverbal communication, and at least one supplementary aid and service provided to support RRB symptoms. An initial autism eligibility classification is also significantly associated with more IEP goals in the area of social communication and interaction. However, results also suggest that the level of support in IEP goals in the area of RRBs, the provision and amount of school-based therapy or related services, and supplementary aids for social communication and interaction support do not significantly differ by initial eligibility classification. In the area of expressive and receptive communication IEP goals, a significant developmental delay classification is actually associated with significantly higher odds of the inclusion of one IEP goal targeting expressive and receptive communication.

Implications of these findings in the context of previous research cautioning the risk of a loss of autism-specific services when using broader classifications is discussed in the following section. Initial IEPs provided for both autism and SDD included autism-specific support in many

areas at an early age and offered comparable levels of school-based therapy services. It remains unclear if differences in the provision of more than one social communication and interaction IEP goals or support in the area of restricted and repetitive behaviors and sensory differences, albeit significant, produces different proximal or distal outcomes.

Patterns Of and Age at Initial Identification

Results of the current study indicate an earlier age for the classification of ASD than is reported nationally. Most children included in the study sample initially classified for special education before they turned four-years-old (*Median Age at Initial Classification SDD = 2; Median Age at Initial Classification ASD = 3*). Estimates suggest that the median age for diagnosis of autism in the United States in health settings is around 4-years-old (Esler et al., 2022) and the median age in educational settings is around 5-years-old (Pettygrove et al., 2013). Results also highlight that many children who classified with SDD initially were re-classified with ASD when they were 6-years-old. Re-classification ranged between 11 months to 111 months after an initial classification of SDD and children ranged in age from 4-years-old to 13-years-old when they were re-classified with ASD. The components of IEPs offered early on are ideally linked to practices and strategies which are commonly included in empirically supported early intervention packages (Kanne et al., 2008; Yell et al., 2003). Therefore, the earlier median age of identification in the current study should be regarded as positive due to earlier access to early intervention practices and strategies. Most IEPs, regardless of initial eligibility classification (i.e., ASD or SDD), offered autism-specific support at an early age. Further, many children who were initially classified with SDD were re-classified with ASD by 6-years-old. Similarities in the support offered in IEPs will further be discussed in the following section.

Correlational analyses reveal significant associations between initial eligibility classification and previous ASD evaluations in health settings. While the analyses do not allow for causal inferences, many more children classified with ASD initially received an evaluation for ASD (51%, $n = 40$) and/or autism-related diagnosis (77%, $n = 31$) in health settings, compared to children classified with SDD initially who received an evaluation (12%, $n = 4$) and/or autism related diagnosis after the evaluation (12%, $n = 4$). Records indicate that the 23% of children classified with SDD initially were provided a diagnosis of autism in health settings multiple years after their initial classification (*Median Years After Initial Classification* = 4 years). The rate of previous evaluations/diagnoses of ASD in health settings and initial classifications of ASD in educational settings may suggest that a previous diagnosis in health settings helps inform an initial autism classification in educational settings. However, this finding may also be associated with differences in autism presentation and symptom severity (i.e., children with more impairing symptoms may be recognized and diagnosed earlier in health settings compared to children with more nuanced presentations). Interestingly, most children in the study also received a secondary classification of Speech/Language Impairment regardless of their initial classification (Initial ASD: 61%, $n = 47$; Initial SDD: 66%, $n = 23$).

Evaluation records also highlight that 31% of children classified with SDD initially were considered for a classification of autism, but the classification was rejected. The reasons for classification rejection were not always explicit but this finding may be explained by multiple co-occurring phenomena. It is likely that that one blanket phenomenon or hypothesis cannot explain all the cases that are classified with SDD initially instead of ASD and/or are initially considered and rejected for ASD. As mentioned, children who received classifications of SDD initially were perceived and rated to have stronger adaptive behavior skills by their caregivers

than children classified with ASD initially. Differences in adaptive behavior skills may yield an entirely different presentation for this specific subgroup of children (i.e., those who are not classified with ASD initially). Adaptive behavior skill differences in this investigation suggest that the symptoms of children classified with SDD initially may not have had similar educational impacts and/or impairment across settings. If a child's adaptive behavior skills in the area of communication or socialization are perceived to be lower average and/or not as significantly delayed, these ratings may inform an initial classification of SDD instead of ASD for example.

It is also plausible that the number of symptoms necessary to classify a child with ASD initially in the educational setting were not present, reported, and/or impairing during the year of their initial SDD classification, and differences and symptoms specific to an autism spectrum disorder became more obvious over time as the child aged. For nearly one-third of all children who were classified initially with SDD, the special education team considered ASD. The pattern of considering and rejecting ASD may also be informed by some of the re-classification decisions that occurred shortly after the SDD initial classification decision was made. As mentioned, the median age at re-classification to ASD for children classified initially with SDD was 6-years-old. Re-classification at 6-years-old occurred before the "aging out" window applied to SDD within the target district (i.e., 9-years-old) and potentially suggests that the district obtained newer and/or more information to inform a classification of ASD during a later re-evaluation.

As part of a comprehensive evaluation, research explains the importance of parent and/or caregiver report and participation during an ASD evaluation (Hunsley & Mash, 2005; Ozonoff et al., 2005). The parent and/or caregiver role and participation during placement decisions may also account for some of the children that were eventually classified with ASD that are

classifying with SDD initially instead. While adaptive behavior skills were reported by parents and/or caregivers in 69% of the evaluations included in the final sample, 35 evaluations across both classifications did not report parent rated adaptive behavior skills. In addition, although parent and/or caregiver participation in the eligibility process (e.g., completing rating scales, attending eligibility determination meeting) is not a variable accounted for in this investigation, a lack of involvement is possible during some eligibility determination decisions included in the sample which may also impact an initial eligibility classification. Special education teams may be cautious in classifying and labeling ASD initially early on if parent and/or caregiver participation in the eligibility process is variable, particularly considering the cautions regarding the potential stigma of a more-specific ASD label (Hadadian & Koch, 2013; Danaher, 2011).

For some children who were initially considered and rejected for ASD and were classified with SDD, a need for comprehensive autism assessment may also explain the absence of a more-specific autism classification initially. Other researchers note variability in assessment practices and that a lack of comprehensive tools (e.g., Autism Diagnostic Observation Schedule, Second Edition (ADOS - 2; Lord et al., 2012) included in an evaluation can significantly impact the sensitivity and specificity of a diagnostic decision (see for example, Stichter et al., 2021; Volkmer et al., 2012).

To demonstrate the potential advantage of more comprehensive assessment approaches with young children who present with ASD symptoms, an exemplar impairment “Considered and Rejected” reason section for a two-year-old (child’s name changed), is included below:

Jack demonstrates many strengths in the area of social reciprocity. He follows one-step directions as related to his daily routines with adult support, gives an object to an adult upon request, enjoys bubbles, and a balloon being blown and requested the actions with

an adult prompt (i.e., “Do you want more?”) while shaking his head yes but did not give eye contact when the request was prompted. While sitting during morning-circle-time he clapped and ‘sang’ along with the group while remaining seated. His mother reports that he is very affectionate, likes to be with people on a 1:1 basis, and enjoys his computer and learning new things. Continued concerns include: he does not consistently respond to his name, he does not distinguish between familiar/unfamiliar people and will walk up to anyone with a calm/happy affect for a hug, and limited engagement. He uses extremely limited eye contact with people. He is observed to use peripheral gaze when, excessive squishing or blinking of his eyes. His facial expressions are not directed at others. The examiner did not see him play with peers or near peers. He does not request objects/items or show items to anyone. Parent reporting per ABAS reports that Jack’s social skills are not an area of concern. Parent feels he is affectionate towards familiar people. The team has discussed and determined that Jack’s observed and reported social skills are varied and his social skills do not warrant determining that his social skills are consistent with those on the autism spectrum.

Jack’s evaluation battery included an autism-specific rating scale (i.e., CARS2-ST), observation, Birth-to-Three record review, and a parent interview but did not include other sensitive autism-specific assessment instruments (e.g., ADOS-2) to make the determination. Per the consideration and rejection section, he displays differences in his social communication (e.g., integration of communication and nonverbal communication strategies) and a pattern of sensory differences but autism was rejected initially. He was re-evaluated and re-classified under the classification of autism five years after autism was considered initially and rejected.

Research Question One: Sociodemographic Factors and Initial Eligibility Classification

The first research question investigated whether children classified with educational autism initially differ significantly in race and/or sex from children classified with significant developmental delay initially. Sociodemographic data (i.e., race and/or ethnicity) are available for 32 of the 35 children who were classified with significant developmental delay initially in both academic years. The results reveal a significant association between race and eligibility classification. Of the 32 children classified with SDD, 69% were identified as Black and/or African American and 31% were identified as Hispanic and/or Latino. All children identified as White ($n = 13$) or classified under the “Other” category (i.e., Asian, Hawaiian and/or Pacific Islander, and Indian) ($n = 6$) were classified initially with autism. While sociodemographic data are not available for 16% of all children ($n = 19$) included in the final sample and the analysis for research question one is not causal, this finding may underscore previous caution indicating that significant developmental delay criteria and initial eligibility determination practices can impact ethnically minoritized groups (Morrier & Hess, 2012). Cardinal and colleagues (2021) also recently indicate that children of color may be less likely to be identified with autism in educational settings compared to non-Hispanic White peers (Cardinal et al., 2021).

It is important to highlight that of the 28 children who identified as Black and/or African American in the current study and were classified initially with ASD, forty-six percent ($n = 13$) also had an ASD diagnosis in health settings. Comparatively, only three of the twenty-two children who identified as Black and/or African American who classified with SDD initially also had a diagnosis of ASD in health settings. Autism prevalence data in the United States collected by both the IDEA Child Count and the Common Core of Data during the target years in the current study indicate that African American children are more likely to have a clinical diagnosis of ASD than an educational classification of autism (Barnard-Brak, 2019). While this study

demonstrates a higher rate of ASD diagnoses for Black and/or African American children that classified with autism initially, the scope of this study does not allow for a comparison of the total number of children identified as Black and/or African American in the target district who were diagnosed with ASD in health settings but did not classify for autism in the educational setting during the target years. This comparison would have contributed to the previously mentioned research conducted by Barnard-Brak (2019).

In this section, sex regards a child's biological assigned sex at birth and gender references social behaviors, attitudes, and feelings typically associated with a child's sex assigned at birth (American Psychological Association, 2020). The final sample included a 4.22:1 male-to-female sex ratio, similar to recent research conducted by Esler and colleagues (2021). Results do not yield a significant association between sex and eligibility classification. Children identified as male or female are not any more likely to receive a classification of ASD or SDD in the current study.

There are a variety of factors that may contribute to an individual who is female sex assigned at birth not receiving a diagnosis or classification of ASD. Autism-specific assessment instruments have been critiqued due to sex-specific sensitivity limitations and norming issues (Beggiato et al., 2017). In addition, social behavior in males and females is thought to vary dependent upon gender (Gould, 2017) and autism in female assigned sex at birth is often diagnosed later than autism in male assigned sex at birth (Rubenstein et al., 2018). Significant developmental delay classifications may also be used when presentations are less clear (e.g., demonstrating stronger perceived adaptive behavior skills) and/or a child demonstrates delays in multiple areas (Esler et al., 2015). Thus, a lack of sensitive instruments in concert with

differences in social behavior may create ambiguity in a child's presentation. However, results do not support initial eligibility determination differences on the basis of assigned sex at birth.

It is important to note that other confounding factors may also speak to the lack of association between sex assigned at birth and eligibility classification in the current study. Girls in the target district may also be *missed* (i.e., not receiving a special education classification or not receiving an autism classification) in the educational setting. In addition, it is possible that girls within the district that had a diagnosis of ASD in health settings did not present with an educational impact significant enough to warrant special education services through an IEP.

Research Question Two: Autism-Related Goals, Services, and Support

Research question two explores the extent to which IEP goals, supplementary aids and services, and related services (e.g., occupational therapy) may differ by eligibility classification. Researchers report significant differences in the documentation of repetitive behavior, interests, activities, and/or sensory differences (RRBs) in the eligibility determinations of ASD versus SDD classifications (Esler et al., 2022). The Division of Early Childhood (2009) also notes concern regarding the risk for a loss of autism-specific services in the school setting for children with autism spectrum disorder who classify initially with SDD instead. Findings from this investigation provide a significant contribution to special education discourse that has historically cautioned the loss of autism-specific services for children with ASD. To this researcher's knowledge no previous investigations have explored how the level of initial support may differ between classifications for children who are all eventually classified with ASD.

Results show that IEPs for children classified with autism initially are not more likely to include at least goal in the area of social communication and interaction. IEPs for children with ASD initially are also no more likely to include at least one supplementary aid and/or service

related to social communication, social interaction, and language than compared to children classified with SDD initially. However, IEPs for children classified with SDD initially are more likely to include at least one goal related to expressive and receptive communication than those classified with EA initially. The difference in expressive and receptive communication IEP goals is noteworthy and may corroborate previous research suggesting the use of SDD classifications can lead to broader goals (Hadadian & Koch, 2013). Characteristics cardinal to ASD include social communication differences (American Psychiatric Association, 2022). While marked expressive language difficulties often co-occur with ASD (Patten et al., 2013), expressive and receptive communication goals may be less specific to ASD. Weismer et al. (2010) indicate that early profiles of language between children with ASD perform higher on expressive language measures compared to children diagnosed with SDD. Similarities between the offering of at least one goal related to characteristics cardinal to ASD (i.e., social communication and interaction differences) emerges as an unexpected but positive finding. Although children may be classified with SDD initially instead of ASD, the provision of some IEP support specific to ASD early on does not differ between eligibility classifications in the target district.

Current study findings reveal that no goals were included in the area of nonverbal communication for children classified with significant developmental delay initially. Comparatively, IEPs for 15% of all children classified with autism initially included at least one goal related to nonverbal communication. These include, for instance: goals related to eye gaze, facial expression, body posture, and gestures to regulate social interaction. The most common nonverbal communication goal included in IEPs for children classified with autism initially are goals related to eye gaze and/or joint attention, followed by goals related to gestures. Early

nonverbal communication skills are markedly important in terms of developmental outcomes (Franchini et al., 2018).

In the current study, IEPs for children classified with EA initially are not more likely to include at least one goal related to restricted/repetitive behavior, interests, activities, and/or sensory differences compared to those classified with SDD. This finding was unexpected and differs from other research findings. For example, Esler et al. (2022) highlight differences in the documentation of RRBs during the evaluation process between ASD and SDD evaluation processes. IEPs between classifications in the current sample included at least one RRB-related goal at similar rates. Despite the findings in the current study, comprehensive evaluation practices and the documentation of RRB symptoms during evaluation remain important to ensure consideration is given to all symptoms that may impact academic, behavioral, and/or social functioning (Azad & Mandell, 2017).

Interestingly, though results indicate initial IEPs for autism and SDD are not significantly different in the provision of at least one RRB-related goal, initial IEPs for autism were 3.86 times more likely to include supplementary aids and services that support RRB-related symptoms. These supplementary aids and services include, for example, visual schedules to support transitions and sensory strategies (e.g., headphones, quiet place for work). This finding is also important because other researchers note differences in repetitive behaviors and sensory reactions are significantly associated with emotional dysregulation for individuals with ASD (Samson et al., 2013). Supports and strategies that children are entitled to through an IEP can address aspects of the core features of autism that can contribute to learning challenges (e.g., visual supports to attenuate dysregulation when transitioning between tasks) which impact their ability to access the educational environment.

Previous researchers report that children who have IEPs for SDD are less-likely to receive school-based therapy than those who have an IEP for ASD (Lindley et al., 2015). However, the Lindley et al. study did not compare the initial IEPs for students who all eventually received special education services under the classification of EA. The current study may be the first of its kind to compare initial differences in the provision of school-based therapy services between initial eligibility classifications for ASD and SDD. Results from the sample demonstrate that children classified with autism initially are no more likely to receive psychological, speech, occupational, or physical therapy services than children classified with SDD initially. The current researcher's findings also show that services for occupational therapy emerge as the most common therapeutic, related service included in IEPs (included in 50% of IEPs for children with initial EA classification, included in 43% of IEPs for children with initial SDD classification). IEPs for most children included in the final sample did not provide physical therapy or psychological services. The similarities between the provision of related services are striking considering the previously reported significant differences in parent-perceived adaptive behavior skills in the current study. Although parents of children classified with ASD initially report significantly lower adaptive behavior skills across communication, self-care, social, and motor skills, school-based therapy services that likely target adaptive behavior skills are similar between eligibility classifications. Comparable levels of school-based therapy services should be considered a positive finding, as it suggest that children will receive similar school-based therapy services before regardless of ASD or SDD initial classification and the increasing trend of an initial SDD classification.

Research Question Three: Amount of IEP Goal Support and Eligibility Classification

Research question three investigates whether the number of autism-specific IEP goals differs by eligibility classification. IEP goals are separated by symptom area, including social communication and interaction, expressive and receptive communication, nonverbal communication, and RRBs. This research question seeks to inform the knowledge gap that exists comparing the content of IEP goals for children classified with ASD versus children classified with SDD initially. The quality of IEP goals/content included in the target IEPs is outside of the scope of the current investigation but is discussed in the future directions section. Recent research has begun to explore IEP goal content for children classified with EA but has focused on older “transition age” students (Findley et al., 2022) or adolescents (Kurth and Master George, 2010). Kurth and Mastergeorge (2010) note that many IEPs for adolescents classified with EA are designed to support the core symptoms of autism (e.g., communication, social). This study seeks to add to the current research base by exploring IEP goal support for younger children classified with EA initially and comparing that to children classified with SDD initially. To this researcher’s knowledge, this direct comparison has not been previously done.

Parent-perceived adaptive behavior skills as measured the ABAS-II adaptive behavior ratings were controlled for while exploring this research question to account for impairment in communication, self-care, social skill, and motor skill domains. Parents for children classified with SDD initially reported significantly stronger communication, self-care, social, and motor adaptive behavior skills than parents of children classified with autism initially. While these children are all re-classified with autism after re-evaluation, this finding denotes significant differences in parent-perceived adaptive behavior skills for children classified with SDD initially. The adaptive behavior skill differences may support the challenges previously discussed regarding the use of significant developmental delay classifications when presentations

are less clear (e.g., stronger skills early on and/or less clear impairments). Although causality cannot be inferred, higher perceived adaptive skills in children classified with SDD initially may suggest that clear impairments across settings may not emerge or be identified until the behavioral, social, and academic demands increase as children age. Stronger adaptive behavior skills in this subgroup of children also underscores need for comprehensive autism evaluation practices in the schools for children who may display ASD symptoms that are impairing at the time of the evaluation but are perceived to have stronger skills. If a child's adaptive behavior skills are perceived as less delayed or less impaired, evaluation practices that are able to capture presentation nuance and that are sensitive to less severe early challenges are important (Esler & Ruble, 2015).

The results of the ANCOVA models reveal a significant difference between the number of social communication and/or social interaction goals documented in IEPs for children classified with ASD initially compared to those classified with SDD initially. Children classified with ASD initially have significantly more IEP goals in the area of social communication and/or social interaction than children who are classified with SDD initially. There are no differences between initial eligibility classification for the total number of autism-related IEP goals and expressive and/or receptive communication goals. While inferential models are not conducted to investigate differences in the provision of nonverbal communication goals, no IEPs for children classified with SDD initially include nonverbal communication goals. The mean number of IEP goals specific to RRBs when an IEP included goals related to RRBs are similar between classifications (*M Significant Developmental Delay RRB Goals = 1.2; M Educational Autism RRB Goals = 1.2*).

Although these findings do not inform the quality of IEPs between eligibility classifications, the results may highlight many similarities and some preliminary differences in initial IEPs for children who all eventually qualify for special education through a classification of autism. In line with previous research regarding common goals related to the core features of autism (Kurth & Mastergeorge, 2010), most IEPs included in the sample have at least one goal related to social communication and social interaction (96% of IEPs for EA; 88% of IEPs for SDD) and expressive and/or receptive communication (75% of IEPs for EA; 94% of IEPs for SDD). As mentioned, although the inclusion of at least one IEP goal related to social communication and social interaction does not differ between eligibility classifications, differences exist for the number of social communication and interaction goals between eligibility classifications for IEPs including at least one goal in the symptom area.

The question “is more always better?” remains and should be asked. The number of IEP goals may not always equate to quality. IEPs for both eligibility classifications were similar in providing at least one goal related to social communication and interaction, and the impact of providing more social communication and interaction goals for IEPs that often included at least one goal is unknown. Further, the impact may be even less clear for children who were re-classified with ASD a shortly after their initial SDD classification. Considering the adaptive behavior skill profile differences between eligibility classifications and the use of a more specific label for children who classified initially with ASD, differences in the number of social communication and interaction goals included in IEPs may also be informed by differences in child presentation and impairment. It may not be the case that IEPs for SDD initially are “missing” support or not providing support commensurate to a child’s presentation and

symptoms but can be a child who classifies with SDD initially may be presenting with less symptoms at the time of an initial evaluation.

Kanne and colleagues (2008) discuss the importance of including IEP goals specific to verbal, non-verbal, and behavioral functioning. The results exploring research question two highlight a reduced likelihood of children classified with ASD initially being provided at least one IEP goal supporting expressive and receptive communication. However, findings in research question three reveal no significant differences between classification for the number of IEP goals in the area of expressive and receptive communication for IEPs that included at least one expressive and receptive communication goal. In addition, despite the difference between classification providing an IEP goal supporting nonverbal communication, the number of IEPs including this goal for children classified with EA initially (i.e., 17%) is likely far below what Kanne et al. (2008) recommend.

Researchers caution that IEP RRB-related content may differ by eligibility classification due to differences in eligibility evaluation practices (Esler et al., 2022). The number of IEP goals specific to the RRB symptom area was comparable between eligibility classifications in the current study, although different evaluation tools and practices and the documentation of symptoms by classification are not accounted for in the analysis. Considering the importance of using assessment data to inform the inclusion of specific IEP goals (Yell et al., 2003), it is reasonable to believe that the IEPs that included an RRB IEP goal for children classified with SDD initially documented those symptoms during the evaluation process. It is also important to note that although the number RRB goals did not differ by classification, the majority of IEPs both eligibility classifications did not include a goal related to RRBs.

Research Question Four: Specialized Instruction Support by Eligibility Classification

Research indicates that specialized instruction is a critical component of IEPs for children classified with autism and SDD labels (Morse, 2010). A review of specialized instruction provided in IEPs in the current study highlights the inclusion of explicitly defined specialized instruction support and broader generalized specialized instruction. IEPs in the current study include specialized instruction support in the areas of receptive, expressive, and/or social language skills; preacademics; behavioral and/or attending skills; and self-help skills. IEPs often included more global specialized instruction statements (e.g., “Specialized instruction in academics and social skills for six hours per day”).

Research question four compares the amount of grouped specialized instruction between eligibility classifications. Grouped specialized instruction was chosen as the method to compare the IEPs due to the way specialized instruction statements were written and to ensure all instruction was accounted for. After accounting for potential differences in parent-reported adaptive behavior skills, the amount of grouped specialized instruction did not significantly differ by eligibility classification. Considering the importance of specialized instruction in IEPs, comparable specialized instruction time that does not differ between eligibility classifications may be a positive finding. Regardless of ASD or SDD eligibility classification, children may receive a comparable amount of specialized instruction.

As mentioned, any differences that are evident in the level of support offered through specialized instruction especially during critical intervention windows may underscore the importance of early and specific eligibility classifications. However, this finding provides preliminary evidence that eligibility classification may not significantly affect the amount of specialized instruction in minutes-per-month. While the current study is not able to speak to how special education teams provide specialized instruction and/or the quality-of-service provision,

many of the specialized instruction areas map directly onto broader treatment approaches in early intervention packages (e.g., instruction in self-help skills, instruction in social communication).

Implications

The current study contributes to the understanding surrounding the type and amount of support provided in IEPs between children who initially qualify for special education with autism and SDD classifications. The sample and findings are representative of children attending a large urban public school district located in the Midwest. Children classified with SDD in the sample were all eventually re-classified with autism. Previous research also highlights that children who are diagnosed with an autism spectrum disorder in health settings may receive special education services instead through a classification of significant developmental delay initially (Delgado et al, 2006; Rubenstein et al., 2018). Furthermore, many children who have autism will only ever receive a classification of autism in educational settings and receive intervention services in the school and not in health settings (see for example, Esler et al., 2022; Wiggins et al., 2020).

The school setting serves as a critical and sometimes the sole setting for intervention for children with autism. There exists a critical window for intervention to best support children who have an autism spectrum disorder and who may benefit from the structured, enriched environments that early intervention provides (Cioni et al., 2015). Any difference between the initial support and intervention provided in school settings to children who are all eventually classified with autism, especially for children only receiving intervention in the school setting, may be significantly impactful for the child's outcome. As discussed, there is significant variation between states in terms of the mandatory components that must be included in autism evaluations (Barton et al., 2016). Further, geographic location and training is significantly

associated with autism assessment practices in schools (Aiello et al., 2017). The components of an evaluation and information gathered through testing should ideally inform what is included in an IEP (Yell et al., 2003). Thus, while the focus and findings of this study are believed to be unique and contribute to the growing expanse of literature exploring autism evaluation and support in schools, the differences in IEP support by classification in the current study may not be widely applicable to all school districts nor states in the U.S.

Within the district of interest during the target years, 31% of children who eventually classified for special education services with an ASD classification received a classification of significant developmental delay initially instead. Many of the children who received a SDD initial classification did not also have a diagnosis of ASD in health settings. Results of this study inform the potential impact on IEP support for children who do not receive autism classifications initially. Findings may be of interest to special education teams, particularly team members making clinical decisions and those in “assessment expert” roles (e.g., school psychologists) (Brunson McClain et al., 2021).

Support Similarities and Differences. The use of a broader label like significant developmental delay to initially support children who eventually classify for special education with ASD has been cautioned to lead to a loss of autism-specific services (see for example, Morrier & Hess, 2012). However, results from the investigation highlight many similarities in autism-symptom support regardless of initial eligibility classifications in the target district, and an early age of detection and support. The provision of at least one IEP goal dedicated to social communication and interaction was not significantly different between initial eligibility classifications. The inclusion of supplementary aids and services supporting social communication and interaction differences were also similar between eligibility classifications.

Social communication and interaction differences are a cardinal feature of autism spectrum disorders that may negatively impact a child's capacity to build relationships with peers in the educational setting (Carter et al., 2013; Stichter et al., 2021, Zablotzky et al., 2014). Support, opportunities, and intervention dedicated to fostering the development of social competence and social-emotional reciprocity with peers and adults may significantly affect the trajectory/outcome of relationships with peers (Stichter et al., 2021).

Importantly, results in the current study suggest that classification may not initially impact the type of related therapeutic services that are provided in IEPs. In the current investigation, the provision of psychological services, speech therapy, physical therapy, and occupational therapy services does not differ by eligibility classification. The total amount of specialized instruction (e.g., preacademic, social/behavioral, attending) provided in IEPs was also not different between eligibility classifications. Again, although the quality of the services provided in the IEPs is not a focus in this investigation, this finding may imply that children who receive either classification initially are provided similar types of related services and amounts of specialized instruction.

While similarities between IEPs for initial eligibility considerations should be considered positive, some differences between eligibility classifications are also evident. IEPs for some children classified with ASD initially included nonverbal communication goals, whereas no IEPs for children classified with SDD initially included nonverbal communication goals. This finding suggests that initial eligibility classification may significantly impact the early nonverbal communication skill support provided to children with ASD. Some of the early intervention strategies often offered through IEP goals in the area of nonverbal communication skills may be a feasible strategy approach to ameliorating risks associated with deficits in nonverbal

communication (Francini et al., 2018; Zablotsky, et al., 2014). Despite the chance that some of the children classified with SDD initially may also display differences in nonverbal communication skills, support and intervention offered in their IEPs specific to nonverbal communication is not provided early in their development in the educational setting in their initial IEPs in the target district. However, various reasons may explain the lack of nonverbal communication goals included in IEPs for children classified with SDD initially (e.g., symptoms/impairments less evident, nonverbal communication). IEPs for children classified with ASD initially in the target are also more likely to provide supplementary aid and service support in the area of restricted and/or repetitive patterns of behavior, interests, and sensory differences. This difference may also be explained by not presenting differences in the RRB symptom area at the time of the evaluation, however.

Age at and Identification of Eligibility. Positive results regarding the median age of identification of ASD are evident in the current study. Results indicate that the median age of identification is earlier than extant research noting later ages of identification in school settings (Pettygrove et al., 2013). The earlier age of identification may lend credence to the sensitivity of eligibility determination practices early on in the target district. Students who are identified as eligible for special education services through a classification of autism within the target district are identified earlier than the national sample. Children identified as eligible for special education services with a classification of SDD initially were identified early as well and often received support and services related to ASD. Most of the sample included in the current investigation are also children of color. In consideration of the lower rates and later access to early intervention services for children of color (Smith et al., 2020), this study highlights that the

children of color in the target district that are determined eligible for special education services by classification of autism or SDD initially are receiving services earlier than national samples.

Children classified with educational autism initially also have a significantly higher rate of diagnoses of ASD in health settings in the current study. Directionality of this relationship is not a focus in the current study but findings highlight the need for collaboration between school and clinical settings. A lack of collaboration between professionals and settings can negatively impact the support that is offered to autistic students (Gardner et al., 2021). For children in the current study who are classified with developmentally delay initially and are eventually diagnosed with ASD in health settings, the children are given a diagnosis of ASD in health settings a median of four years after eligibility classification. An emphasis on collaboration between settings, and one where the onus is not placed entirely on a family or caregiver, can help the consistency of identification of ASD across settings (2021). Gardner and colleagues (2021) explain that targeted training in school psychology graduate programs can help support pre-service professionals to collaborate with professionals in clinical settings upon entering the workforce.

With respect to factors like race and/or ethnicity, results reveal significant differences between eligibility classifications. Although the quality of IEPs between classifications is not a focus of this investigation, this finding brings awareness to differences in eligibility determinations by factors of race. Attention should be given to the previously discussed factors which can impact the degree to which an early, specific, and accurate classification of ASD can be made in educational settings (e.g., cultural sensitivity in autism assessment instruments, Golson et al., 2022; low degrees of confidence in assessment for ASD in culturally and/or linguistically diverse children, Harris et al., 2019). Children that had sociodemographic data

available in the current study, and who identify as white, did not receive eligibility classifications in the area of significant developmental delay initially.

Evaluation Practices in Schools. Many children classified with significant developmental delay initially instead of autism were considered and rejected for the classification of autism. This practice and finding holds marked importance for practitioners. This researcher believes this is a positive finding that may demonstrate ethical evaluation practices conducted by the district for some children who are classified with SDD initially. As discussed, there are various reasons why children are classified with SDD initially instead of ASD. For some cases, this finding suggests that practitioners within the district are aware that some features of the child's presentation may be explained by ASD but they may not have had enough information for a specific classification of ASD during the initial evaluation and are exercising caution. Many children classified with SDD initially were re-classified with ASD before "aging out" of SDD criteria. This may be due to changes in the child's presentation and/or impairment as the child ages, new information gathered by the school evaluation team, and/or parent/caregiver participation in the evaluation, for example. (i.e., waiting until more ASD-specific symptoms and/or information are present and then initiating a re-evaluation).

There is also significant overlap between SDD and autism classifications. The need for comprehensive evaluation procedures that are sensitive and specific to ASD in school settings also remains paramount considering the similarities between criteria (Bella, 2022). A lack of ASD-specific assessment instruments utilized in evaluations (Esler et al., 2022) as well as variability in evaluation procedures (Barton et al., 2016; Centers for Disease Control and Prevention, 2020) can serve as a confound to the sensitivity and specificity of eligibility determination decisions. While findings in the current investigation highlight many similarities

between the IEP support provided between initial eligibility classifications, evidence for some negative ramifications of electing a broader, less-specific classification of significant developmental delay initially instead of ASD are also evident. The negative ramifications are underscored by more IEP goals dedicated to nonverbal communication, and differences in supplementary aids designed to support autism symptoms for children classified with autism initially instead of SDD initially, although these differences may be explained by child presentation. In light of the overlap in classification criteria between ASD and SDD, the initial eligibility determination decisions the district made were not inaccurate.

Considering the lower rates of access to early intervention services outside of the school setting for children of color (Smith et al., 2020), school psychologists and special education teams who make eligibility decisions must be attuned to the impact that initial classifications have. Preliminary evidence from the current investigation highlights comparable levels of autism-specific support in many of the areas included in IEPs between initial SDD and ASD classifications. Many of the children who received an SDD classification initially were not also receiving ASD services in the health setting at the time of or before their educational evaluation. Although the directionality of the relationship between eligibility classification and the type and number of autism-specific services in IEPs was not explored in this study, professionals may use findings from the current investigation to further weigh the impact of an autism label and the possible lack of cultural sensitivity in available tools against the similarities and differences between IEPs demonstrated in this investigation.

Limitations

Despite the potential contribution that findings from this study may have for special education determination practices early on, this investigation is not without limitations. The

ability to control for confounding factors during the target years that may have influenced evaluation, determination, and support practices (e.g., district trainings) is significantly limited due to the retroactive nature of the study. For research questions one and two, relationships between content of IEPs and eligibility classifications are explored through correlational analyses, which do not allow for causal inferences. In addition, because the number of IEPs of interest within the sample of the current study is limited by previously completed eligibility determination evaluations, achieved power was determined post hoc. Though the achieved power was adequate for estimating small-to-medium effects, future research may benefit from a larger sample of IEPs to detect smaller effects.

Although this serves as a unique exploration examining differences between support offered in initial IEPs, the evaluation practices and IEPs are representative of one district within the Midwest. The district is one of the largest urban districts in the Midwest; however, the eligibility evaluation practices as well as support in IEPs likely do not generalize across districts and/or states. Barton and colleagues (2016) explain that significant inter-state variability for educational evaluation practices exist (Barton et al., 2016) and some states require a clinical diagnosis of ASD before meeting criteria for an educational classification of autism. Research indicates that many school psychology practitioners report a low-usage of best-practice autism assessment measures (2016) and a desire for additional training (Nathan & Rispoli, 2021). Assessment data gathered during educational evaluations should ideally inform IEP services and goals (Yell et al., 2003). The current study demonstrated similarities and differences in the amount of support and types of supplementary services and aids that are offered dependent upon eligibility classification, but the evaluation practices and assessment data gathered within the target district may be different from other districts and/or states.

There is also a limited number of investigations exploring the quality of IEPs for children with autism (Blackwell & Rosetti, 2014). An earlier review exploring the quality of IEP goals indicates that most IEP goals and objectives are “poor” (2014). There has yet to be an investigation comparing if the quality of IEPs between initial eligibility classifications for children who all eventually classify autism varies. The scope of this investigation examines the content and number of IEP goals specific to autism symptoms, and related services and supplementary aids/services included in IEPs. The findings do not explore the quality of IEP goals typically provided by eligibility classification, as well as the quality of the IEP implementation by special education teams. Although the content and amount of IEP goals, and autism-specific support differs by eligibility classification the impact of these differences is unclear because the focus is not on quality. In addition, inferences regarding proximal and/or distal child outcomes across settings is outside the scope of the current investigation due to the focus on initial IEPs.

An effort was made by the researcher to account for child-level presentation differences (i.e., ABAS-II scores). The differences in symptoms likely inform goals and services provided in IEPs. While parent-reported adapted behavior skills likely capture some variation between children regarding symptoms across home and school settings, this method does not account for all differences in the presence or number of symptoms and may be subjected to limitations due to parent perceptions/report. Further, some evaluations did not utilize or report adaptive behavior skills, thus excluding those cases from the analyses and reducing the power of the analyses.

Lastly, and importantly, the scope of this research does not inform the experience of children and/or their family receiving the eligibility classifications. As discussed, some families report concerns regarding the potential stigmatization of their child early on through the use of a

specific autism label. Research indicates that a diagnosis and/or classification may positively impact others' understanding of the at-times unique and observable social/behavioral presentations due to autism. However, this study does not focus on the impact on experience after early initial autism classifications versus peers who received a significant developmental delay classification initially.

Future Directions

This study contributes significant findings to research exploring differences in the services provided through initial eligibility classifications for children with autism. Not without limitations, the findings and foci within this investigation may serve as a building block for future research. Future research should replicate the focus of the current study in other districts and states to increase external validity and inform generalizability. Comparison between districts within the same states can also inform the extent to which IEP support varies within a state. The district or state comparisons may also allow for opportunities to compare how special education team evaluation practices and use of autism assessment instrument differs, advancing similar research conducted by Esler and colleagues (2022). Inclusion of IEPs from multiple districts and/or states will also increase the sample size in future research, which may capture smaller effects.

The inclusion of more recent IEPs in future research can inform the degree to which special education team's evaluation practices are becoming more sensitive/specific with early and accurate autism classifications. There exists a general, increasing trend in the prevalence of autism in schools (Cardinal et al., 2021). In addition, there is an increasing awareness regarding the presentation of autism in children assigned female at birth (Gould, 2017). More recent IEPs comparing the rates of initial eligibility classifications for autism versus significant

developmental delay classifications similar to the focus of the current study may reflect the impact of a larger awareness of autism in schools.

As mentioned, behavioral presentation and impairment was accounted for by parent-reported adaptive behavior skill ratings. While the importance of controlling for presentation differences between initial eligibility classifications is notable, future research may benefit from controlling for child-level differences by accounting for symptom presence through documentation of data gathered during the evaluation by clinicians. Controlling for the clinician-documented presence of symptoms, as opposed to parent-reported ratings, may capture unique data not always accounted for through parent-reported ratings.

A primary focus of the study involved exploration of IEP *content*; however, there remains a significant need gap in the research dedicated to comparing the *quality* of IEPs by initial eligibility classification. Although this study provides support that the content of IEPs may differ, the true impact of these differences remains unclear because there is a need to understand quality. Should the IEPs provided in this study all be of low quality, similar to earlier reviews of IEPs for children with autism (see for example Blackwell & Rosetti, 2014), the effect of IEP content differences between IEPs could be negligible. Additionally, research exploring distal outcomes after the receipt of IEPs for different eligibility classifications remains paramount. Research examining distal academic, behavioral, and social outcomes after differences in initial IEPs can inform the importance of early and specific classifications of autism in the educational setting. This is important considering that many children will only receive autism-specific support and/or intervention in the educational setting early on (Wiggins et al., 2020).

As discussed, future research should continue to explore the differences regarding the impact of a child and their family's/caregiver's experience after an early classification of autism.

Although research has explored the impact of an autism label, the impact has been predominantly assessed through the use of vignettes (see for example, Hiruma, 2011; Lalvani, 2015, Bronsan and Mills, 2015). There remains a need to explore the unique experiences and psychological well-being of children and families who receive early classifications of autism in school settings comparatively to children with autism who receive significant developmental delay classifications initially instead.

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5. Health, vision, hearing, motor abilities		
6. Social and emotional status		
7. General intelligence (cognitive)		
8. Overall quality of description of child's performance <i>relative to the general curriculum or developmental status</i> is clear enough to establish well-written goals for the child. Code <i>No</i> if there is no reference to grade, age, or developmental equivalents/performance.		

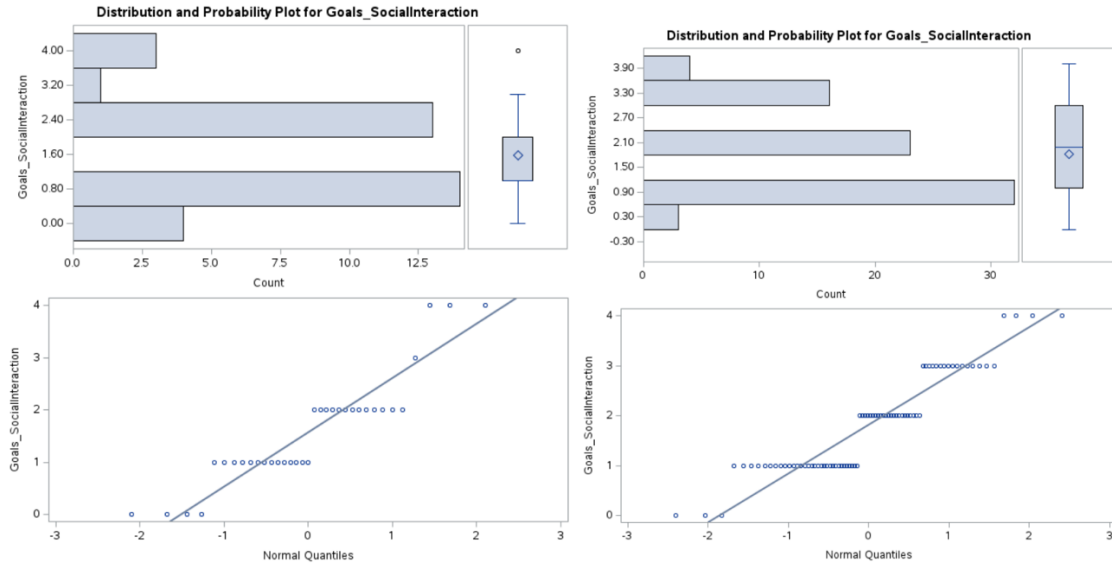
Sub-Indicator Item Rating: 0 = Not included; 1 = Included

Indicator		
<i>Sub-indicator</i>		
Goals Related to the Differences in Social Interaction	Total number of goals/objectives for social skills	
<i>Includes goal related to social or emotional reciprocity (communication related)</i>		
<i>Includes goal related to social or emotional reciprocity through play</i>		
<i>Includes goal related to developing peer relationships appropriate to developmental level</i>		
<i>Includes goals/objectives for engagement in tasks or play which are developmentally appropriate (must emphasize a focus on developmental skills such as attending, sitting in circle, taking turns, etc., rather than academic)</i>		
Goals Related to the Differences in Expressive/Receptive Communication	Total number of goals for expressive or receptive communication skills	
<i>Includes goal related to stereotyped or repetitive use of language or idiosyncratic language</i>		
<i>Includes goal related to following through on instructions or finishing schoolwork, chores, or duties (as it relates to receptive communication after being provided an instruction)</i>		
<i>Includes goal related to development of spoken and/or expressive language</i>		
<i>Includes goal related to asking for help</i>		
Goals related to nonverbal communication	Total number of goals/objectives for non-verbal communication skills	
<i>Includes goal related to eye gaze</i>		
<i>Includes goal related to facial expression</i>		
<i>Includes goal related to body posture</i>		
<i>Includes goal related to gestures to regulate social interaction</i>		
Goals Related to Restricted/Repetitive and Stereotyped Patterns of Behavior,	Total number of goals/objectives for restricted/repetitive and stereotyped patterns of behavior, interests, and/or activities	

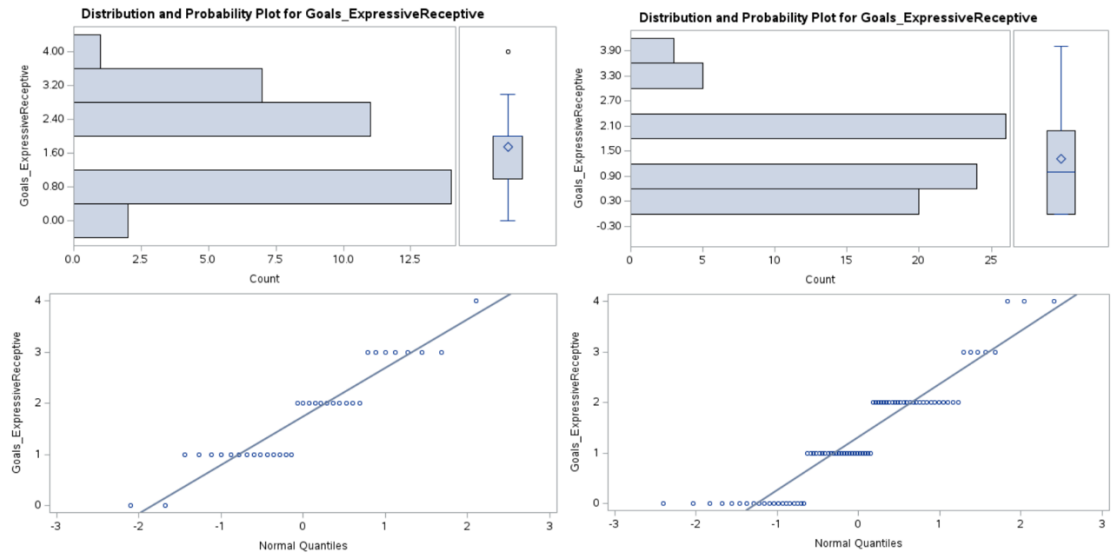
Interests, and/or Activities	
<i>Includes goal related to preoccupation with one or more stereotyped or restricted patterns of interest</i>	
<i>Includes goal related to specific, nonfunctional routines or rituals</i>	
<i>Includes goal related to stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)</i>	
<i>Includes goal related to persistent preoccupation with parts or objects</i>	
<i>Includes goals related to transitions between tasks and/or classroom</i>	
<i>Includes goals related to anticipation of events or tasks in day (e.g., visual schedule, checklists) and/or to complete multi-step assignments or routines</i>	
<i>Includes goals related to sensory differences</i>	

Appendix B: One-way ANCOVA Assumptions for Research Question 3

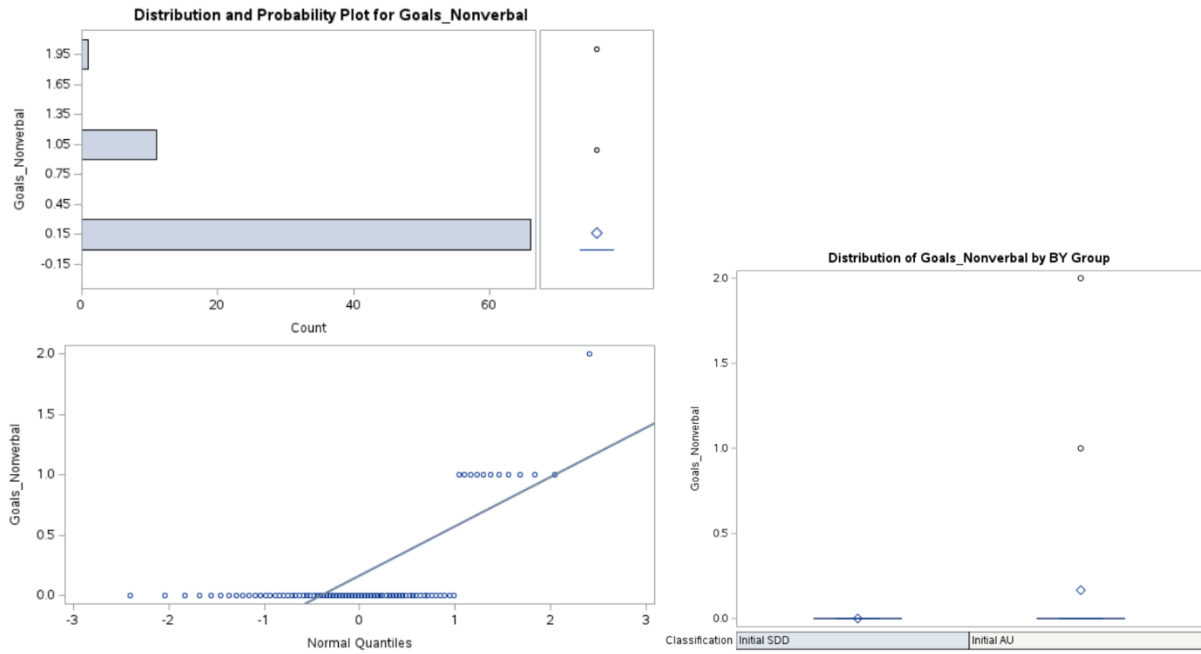
Social Communication and/or Interaction Goals (SDD; ASD)



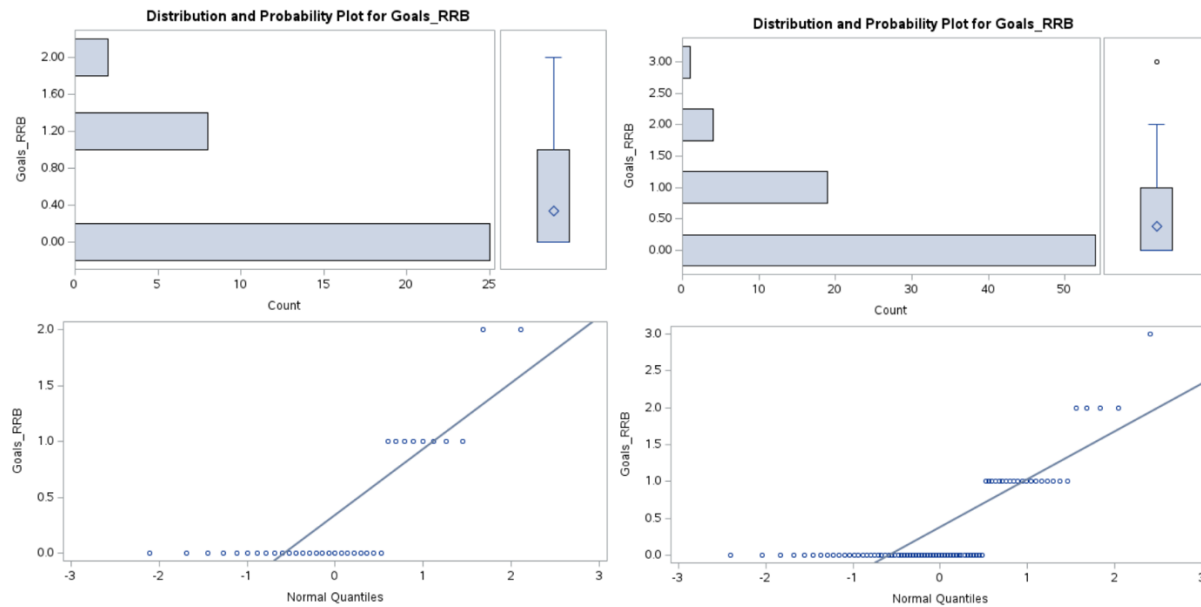
Expressive/Receptive Communication Goals (SDD; ASD)



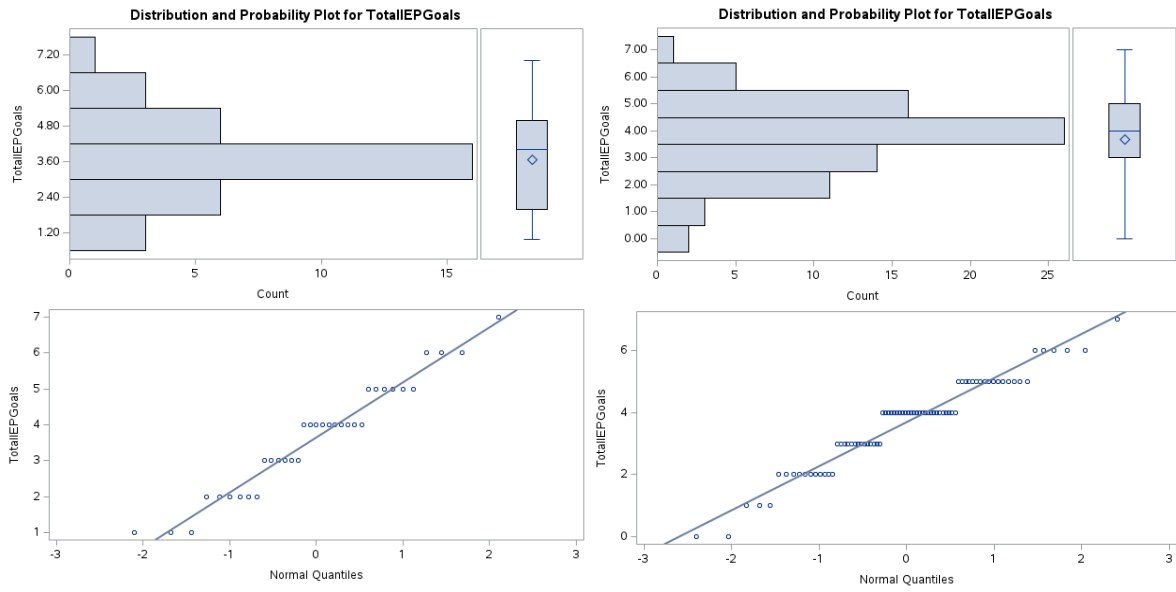
Nonverbal Communication Goals (SDD; ASD)



Restricted/Repetitive and Stereotyped Patterns of Behavior, Interests, and/or Activities (SDD; ASD)



Total Autism Symptom Support for all IEP Goals Included (SDD; ASD)



Appendix C: One-way ANCOVA Assumptions for Research Question 4

Total Amount of Specialized Instruction Support by Eligibility Classification

