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Research to Practice

Focusing on individuals with
autism, intellectual disability and other developmental disabilities

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The ***DADD Online Journal*** integrates research and practice, reflecting the need for evidence-based and practice informed strategies and interventions within this diverse field. Topics include: Autism Spectrum Disorder, Assistive & Adaptive Technology, Early Childhood, Intellectual Disability, Mental Health, Multiple Disabilities, Paraprofessionals, Employment, Post-Secondary, and Transitions.

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Division on Autism and Developmental Disabilities

Council for Exceptional Children

The purposes of this organization shall be to advance the education and welfare of persons with autism and developmental disabilities, research in the education of persons with autism and developmental disabilities, competency of educators in this field, public understanding of autism and developmental disabilities, and legislation needed to help accomplish these goals. The Division shall encourage and promote professional growth, research, and the dissemination and utilization of research findings.

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Research Informed Practice in Autism, Intellectual Disability, and Developmental Disabilities

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On January 20 – 22, 2021, the Council for Exceptional Children Division on Autism and Developmental Disabilities (DADD) sponsored its Twenty-second International Conference: Research Informed Practice in Autism, Intellectual Disability and Developmental Disabilities. The conference was held at the Sheraton Sand Key Resort in Clearwater, Florida. The DADD Board of Directors decided to devote this issue of the *DADD Online Journal* to conference papers. The conference brought together educators from school and college classrooms from all over the world. The conference included pre-conference training institutes and strands on assistive and adaptive technology, autism spectrum disorder, intellectual disability, mental health, paraprofessionals, parental engagement, post-secondary transitions, multiple disabilities and applied behavior analysis. The conference provided many parents, teacher educators, researchers, teachers, and other practitioners an opportunity to gather to learn the most current information related to providing services for individuals with autism, intellectual disability, and developmental disabilities.

This issue of the *DADD Online Journal* can enable those who attended the conference to see expanded papers, prepared by presenters, and also give those who were unable to attend an opportunity to benefit from the thoughtful work done by conference participants. Presenters were asked to submit papers based on their conference presentations. Papers submitted went under a blind review process by the Guest Reviewers and Guest Editors who selected the papers for publication. We think the selection of papers represents an interesting assortment of topics and formats ranging from discussion papers to data based research to descriptions of classroom techniques. The papers selected do not necessarily represent all the topics covered at the conference but they do give a good idea of the variety and quality of the presentations. We would like to thank those authors who submitted papers for their efforts in making this issue of the *DADD Online Journal* possible.

While high and disproportionate rates of sexual abuse of people with intellectual disabilities have been well documented, few studies have explored how people with intellectual disabilities make meaning of both healthy and unhealthy relationships and strategies to prevent or respond to abuse. In their article “You Can Change Your Mind About Who You Can Trust: People with Intellectual Disability’s Understanding About Healthy and Unhealthy Relationships”, Caitlin Mayton, Molly Dellinger-Wray, Elizabeth Cramer, Parthenia Dinora, and Allison D’Aguilar describe a qualitative study conducted as part of a larger efficacy study of the *Leadership for Empowerment and Abuse Prevention* (LEAP) program with 109 adults with intellectual disabilities. Before and after their involvement in the LEAP intervention, participants watched six-video vignettes and responded to open-ended questions about each. Findings are organized into five themes. The authors offer recommendations and implications for future qualitative research to understand how abuse prevention interventions impact people in ways that cannot be exposed quantitatively.

In "Infusing Intersectional Pedagogy into the Cultural Sustaining Classroom," Marcus C. Fuller, Lynn Stansberry Brusnahan, and Elizabeth A. Harkins Monaco outline an intersectionality pedagogy framework to help educators understand their social identities and that of their students to promote introspective reflection to improve practice. They discuss the guiding questions that educators must ask themselves to better serve all students, including those from diverse backgrounds. These questions include: who am I as an educator?; who are my students?; what do I teach?; how do I teach?; and how does my climate and classroom interactions affect learning?. They explain that these questions help educators move towards creating culturally sustaining classrooms as they become more reflective about their practice. They also delve into Bell et al. (2016) five dimensions of diversity and equity in the classroom to assist educators in making connections between pedagogy and student learning. They conclude with an explanation of the reality of special education classrooms and explain why it is important for educators to understand cultural identities.

Friendships plays an essential role in obtaining high quality of life outcomes. Unfortunately, many individuals with ASD present with difficulties in establishing and maintaining these important relationships. In their article, "Understanding Friendship from the Perceptions of Individuals with ASD: A Synthesis of the Literature" Melissa Sreckovic, Tia Schulz, Christine Kenny, and Brooke Winchell describe their review of literature on studies conducted with individuals with ASD that examined their perceptions of friendship. From their findings, they identify five powerful themes that help us understand how individuals with ASD experience friendship. They conclude by challenging established narratives around ASD and friendships and provide practical recommendations for practice and future research.

Video modeling and video prompting have been used to teach individuals with intellectual disability independent living skills, but research on its use specific to vocational skills is limited. Sonya Mellerson in "Analytical Review of Using Video Technology to Teach Independent and Daily Living Skills to Students with Intellectual Disability" reviewed literature on the efficacy of video-based technology (i.e., video modeling, video prompting) meant to increase daily living and vocational skills for secondary and post-secondary students with intellectual disabilities. The author shares implications for using video-technologies specific to skills taught (e.g., vocational, daily living), type of tasks (e.g., multistep, sequential), the process used (e.g., continuous video-model, self-directed video prompting), and training needed on the use of the technology as part of instruction.

Appropriate transition specific assessments are critical to ensuring students' transition plans and resulting learning activities are well aligned with student needs, strengths, and interests. Few validated and reliable assessments exist for students with significant cognitive disabilities preparing for transition to adult life. This lack of assessment tools is particularly concerning given the poorer postschool outcomes experienced by those with significant cognitive disabilities in comparison to other groups with disabilities. In their article, "Building a Transition Assessment for Students with Significant Cognitive Disabilities," Tracy Sinclair, Kendra Williams-Diehm, Maeghan Hennessey, Christopher Sanford, Renee Cameto, and Lori Hodge report data from the validation process of the *Transition Assessment and Goal Generator – Alternate* specifically designed to assess this group of students. The resulting constructs represent both the research base and skill areas that transition practitioners have identified as important for future success for youth with significant cognitive disabilities.

Gifted students with ASD often face barriers to social and emotional learning (SEL). As a result, they are less likely to graduate from college than their peers without disabilities and at an increased risk for anxiety, depression, and social isolation. In their article, **"**Project for the Advancement of Gifted and Exceptional Students: How are Secondary Teachers Infusing SEL and Executive Functioning into Instruction?" Melissa Spence, Ting-Lan Ma, Amy Nguyen, and Amy Tseng describe an innovative program for supporting twice exceptional students to develop social emotional and executive functioning skills. They present a model of integrating SEL and executive functioning supports within the school day and within academic instruction. They also report findings from semi structured focused groups of teachers in relation to their perceptions of the program and its impact.

Researchers have investigated how the delivery and parameters of reinforcement impact communication responses for individuals with significant developmental delays and complex communication needs. Kavya Kandarpa, Rachel Cagliani, and Joel Ringdahl, in "Evaluating the Impact of Reinforcer Magnitude on Response Allocation across Two Communication Modalities", extend this research by focusing on reinforcer magnitude. Their study used an ABA reversal design with a young male participant to evaluate the impact of reinforcer magnitudes on communication response through picture exchange and spoken word. Results indicate that individuals with intellectual disabilities show a preference for reinforcer magnitudes and can change responses to access the greater magnitudes of reinforcer. The researchers provide recommendations for extending the evaluation of reinforcer efforts on communication variability across various augmentative and alternative communication systems.

In the article entitled "Culturally Competent Educational Practices: Supporting Students with Disabilities and Their Families," the authors, Megan-Brette Hamilton, L. Lynn Stansberry Brusnahan, and Jamie N. Pearson, examined some key culturally competent practices that educators may adopt when working with families who are culturally diverse. The article seeks to give educators a peek view into the way families from diverse backgrounds understand disability, employ coping mechanism, and select interventions for child with disability. The authors highlight a case study to demonstrate the authentic use of the recommended culturally competent practices. They detail specific strategies that educators and school professionals may utilize to increase culturally sustaining service delivery. They recommend that educators seek to understand and use families' perspectives and experiences to foster a culture where all parties can engage meaningful collaborative special education partnerships.

The next article came about as a result of congress' investment into inclusive postsecondary programs to improve employment outcomes of students with intellectual disabilities. Margo Izzo, Jessie Green, Andrew Buck, Eric Anderson, Diane Weinbrandt, Jan Goings, and Kayla Porter investigated the extent to which postsecondary programs in Ohio's Statewide Consortia (OSC) implemented processes to sustain their programs beyond federal funding. In their article, "Ohio's Statewide Consortia: Promoting Sustainability of Transition and Postsecondary Programs for Students with Intellectual Disabilities," they used the Think College Standards for Inclusive Postsecondary Education framework to examine the data gathered from five OSC partners who had received funding and graduated a first cohort. Results indicated that inclusive postsecondary programs for students with ID improves post-school outcomes. Programs that are able to balance the financial needs of their program with the financial resources available to their potential students will ultimately sustain the longest. The authors make recommendations such as planning for fiscal sustainability and building relationships with key allies as critical steps to sustaining programs. Lastly, they discuss the implication of the results and ways to justify and maintain inclusive postsecondary education.

Bonnie L. Ingelin, Seyma Intepe-Tingir, and Nannette C. Hammons discuss literature from 2015- 2020 that compare males and females with autism spectrum disorder (ASD) to promote equitable treatment and diagnosis across genders. In their article, "A Literature Review on Autism Spectrum Disorder and Gender Differences," they discuss research articles that compared male and female students with ASD and found nine main areas that addressed gender differences, including difference in diagnostic or categorical qualifications, academic and functional skills, speech and language, social emotional, mental health, neurological, medical, sexuality, and gender identity. They found that in most research studies, the majority of participants were more likely to be boys except in the diagnosis area. Finally, they share the challenges with understanding gender differences of students with ASD, implications for practice; and suggestions for future research.

As some teachers enter the field unprepared to provide evidence-based practices to support their students with ASD, they may seek assistance from digital communities of practice. In their article, "Professional Development Needs of ASD Practitioners: A Content Analysis of Listserv Communication," Xiaoning Wang and Veronica Fleury describe a content analysis of three years of email posts by ASD service providers to a special educator listserv. Their findings offer rich detail into the content, responsivity of listserv members, and alignment of recommendations to evidence-based practice in ASD within member postings. They conclude with valuable recommendations for personal preparation and professional development.

PANDAS/PANS is an autoimmune disorder that can produce changes in motor, behavioral, and cognitive functioning. Individuals with PANDA/PANS syndrome often present with characteristics similar to those with ASD which may confound diagnostic efforts. In their article, "Is it PANDAS/PANS or is it Autism?", Jo Nell Wood, Amanda Wood, and Nikki Murdick provide an overview of the syndrome, detailing its history, symptoms, diagnosis, and treatment. They also discuss its potential impact on the prevalence on ASD.

In her article entitled, “The Foundation for Inclusion: How to Support Students with Autism Spectrum Difference in General Education,” Katherine A. Fowle shares lessons learned from research and lived experience of a professional with autism spectrum difference (ASD) and attention deficit disorder. With a life time of experience of living, learning and working in a world designed for neuro-typical development, she discusses the need for a paradigm shift in thinking about autism. She elaborates that the foundation to creating an inclusive environment where those who have autism can be truly and authentically autistic without worry of being misunderstood includes sensitivity training, understanding the differences between males and females, using positive personality traits, engaging in open communication, establishing growth mindset, utilizing evidence-based strategies based on individual needs, and being lifelong learners. She concludes that without a firm foundation and intentional planning and execution, inclusion of students with ASD will fail to meet the learning and emotional needs of students. She calls for further research in the specific learning needs for students with an ASD neurodevelopment pathway and implores teacher preparatory programs to include more intensive autism sensitivity training.

The conference provided educators and researchers with the opportunity to explore current research, topical issues, and best practices relating to autism, intellectual disability, and development disabilities. We hope readers of this research to practice issue of the *DADD Online Journal* find the information valuable and timely.

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“You Can Change Your Mind About Who You Trust”: People with Intellectual Disability’s Understanding About Healthy and Unhealthy Relationships

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Abstract: This qualitative study explores people with intellectual disability’s understanding of healthy and unhealthy relationships and potential actions to prevent abusive or exploitative relationships. A total of 109 women and men with varying levels of intellectual disability participated in responding to pre and post-video vignette interview questions based on scenarios of healthy and unhealthy relationships. Researchers used conventional content analysis to examine responses. Five themes emerged including agency to solve a problem, identifying unhealthy relationships, identifying healthy relationships, staff roles versus friend roles, and blaming the victim. In addition to addressing compliance and rule-based behaviors, the LEAP intervention design provides real-world examples of unhealthy relationships and a safe place for exploring nuances within the relationships.

People with disabilities are disproportionately vulnerable to physical and mental abuse and exploitation, which can have a profound and long-lasting impact on their quality of life (Hughes et al., 2012). People with intellectual disability (ID) are even more at risk to experience abuse compared to people with other disabilities (Office of Justice Programs, 2018). The forms of abuse that people with ID might experience include physical, sexual, emotional, financial, restrictive actions, among others (Araten-Bergman, et al., 2017; Beadle-Brown et al., 2010). For people with ID, abuse typically starts in childhood and persists throughout their lives (Catani & Sossalla, 2015). Most perpetrators of abuse are known to the victim with ID, and often include people on whom the victims are reliant for care and support, such as paid staff (Harrell, 2017; Stevens, 2012). People with ID who live in residential settings are at an exceptionally high risk of abuse, which may be compounded by the fact that people with ID are generally not taught to recognize and report abuse (Araten-Bergman et al., 2017).

Structural barriers to help-seeking and help-receiving, along with stigmatization of and paternalism toward people with ID and abuse victims, create additional challenges for abused people with ID (Hughes et al., 2012; McGuire & Bayley, 2011). Sobsey (1994) suggested that the key to understanding the victimization of people with ID is their lack of autonomy over their lives. Sobsey contended that people with ID lack the opportunities and the support to decide how they can live their lives. They often must rely on others, over whom they have little or no control, to meet their physical, psychological, or economic needs. People with ID want to have friendships and close relationships with others (Hurd et al., 2018; Scott & Havercamp, 2018); yet, people in their circle, including family members and staff, frequently control access to potential friendships and close relationships and can make it challenging to maintain connections with others (Scott & Havercamp, 2018). Research further suggests that for people with ID, the service system has a history that systematically reinforces compliance. Compliant behavior is an additional risk factor when people with ID comply with requests that result in abuse (Mazzucchelli, 2001; Saxton et al., 2001).

Abuse Prevention Programs for People with ID

In recognition of the abuse risk for people with ID and the need for programs that are tailored to their experiences and learning needs, a number of abuse prevention programs have been developed and evaluated, as demonstrated by systematic and scoping literature reviews of abuse prevention programs for people with ID (Araten-Bergman & Bigby, 2020; Araten-Bergman et al., 2017; Barger et al., 2009; Doughty & Kane, 2010; Lund, 2011; Mikton et al., 2014). These reviews show that most abuse prevention programs for people with ID are geared toward males and females with mild to moderate ID and are grounded in a theoretical model. Sociodemographics of program participants besides ID level and gender are largely missing. Most programs use in-person sessions facilitated by people who do not identify as having a disability, and the sessions incorporate verbal and textual modes of knowledge transmission. Some of the programs involved people with disabilities in the development of their curricula. They generally do not include or report ways that the curricula have been adapted, such as for participants who communicate in ways other than verbally or for participants with varying support needs. The curricula can be grouped into cognitively-based, behaviorally-based or psychoeducational, and they typically include strategies to enhance participants' skills to avoid or respond to abusive situations.

The most typical evaluation designs reported in the systematic and scoping reviews noted above (Araten-Bergman & Bigby, 2020; Araten-Bergman et al., 2017; Barger et al., 2009; Doughty & Kane, 2010; Lund, 2011; Mikton et al., 2014) were pre-post quantitative assessments, primarily of attitude and knowledge changes although some of the studies included a measure of skills acquisition. Some of the studies reported in the reviews incorporated follow-up assessments, ranging from 1 week to 3 months after the intervention. Randomized control studies have been rare as have been measures of actual abuse incidents or frequency. Even though implementation fidelity has been raised as an important component to community-based interventions (Breitenstein et al, 2010), the systematic and scoping reviews typically did not report on whether implementation fidelity was assessed in the studies. Additionally, the reviews typically did not involve an assessment of the validity of the measures for people with different levels of ID; this is an issue because of barriers to full participation in research by people with ID due to inaccessible consent processes and measures, for example (Dryden et al., 2017; Kidney & McDonald, 2014).

Qualitative Studies on Abuse Prevention for People with ID

In one of the few qualitative studies of abuse prevention with people with ID, Ottmann et al. (2016) asserted that abuse-oriented safety training "should focus on situations that are less readily identifiable" (p. 47). The nuances in some situations of potential abuse and exploitation can be difficult to identify and respond to. The authors noted that common strategies presented in abuse-focused safety training, such as disclosing or reporting the abuse to someone, were typically not the strategies that their participants reported (12 male and female Australians with mild to moderate intellectual disability). Rather, most participants engaged in behavioral strategies to avoid or leave an encounter that felt unsafe and they did not report the encounter to authorities. The majority of participants, however, did report that they would engage the assistance of family caregivers or service providers when needed to enact their safety strategies. The authors conclude that people with mild or moderate ID should be involved in assessing risk and making their own decisions about situations that they may face in their daily lives. Additionally, because some study participants did not have trusted persons in their circle, people with ID may need to reach out to formal support systems when familial and other informal support persons are not available.

In a qualitative study on sexuality, sexual abuse, and self-protection skills, Eastgate et al. (2011) explored how nine women with ID understood sex, relationships, sexual abuse, and preventive actions. Findings indicated that most women with ID reported their understanding of sex was limited, had experienced unwanted or abusive sexual experiences, and lacked the self-protection strategies and the skills to obtain appropriate support independently.

In sum, few studies have explored people with ID's conceptual understanding of both healthy and unhealthy relationships and potential abuse prevention actions. The Ottmann et al. (2016) study is one of the few that offers insight into people with ID's perceptions on what they can do to keep safe from abuse and neglect and what others can do to help them stay safe. The authors of this study pointed out that the participants' responses, "grounded in their own lived experience" illustrate that they have the "capacity to develop strategic responses to perceived risk" (p. 58).

Further exploration is needed on the ways in which adults with ID understand healthy and unhealthy relationships and the potential strategies that they would enact to prevent or respond to abuse (Mikton et al., 2014). Additionally, there were no qualitative studies that the authors found that specifically address ways abuse prevention programming can impact participants' understanding of healthy and unhealthy relationships and their potential help-seeking strategies. By listening to people with ID's understanding of healthy and unhealthy relationships and potential help-seeking strategies, researchers and practitioners will be better able to develop and evaluate abuse prevention programs for this population that will be in tune with their lived realities, including presenting relationship scenarios that embody the nuance and ambiguity that people with ID face in their relationships with others.

In this article, we present findings from a study of people with a range of levels of ID, who participated in a four-session abuse prevention program, which was assessed at pre and posttest using quantitative and qualitative methods. The authors present the findings from the qualitative data.

About Leadership for Empowerment and Abuse Prevention (LEAP)

LEAP, *Leadership for Empowerment and Abuse Prevention,* is an evidence-based healthy relationships program designed for adults with mild, moderate, and severe intellectual disability. The LEAP Training Program was developed with input from people with disabilities along with a multidisciplinary team of professionals and family members. LEAP also employs people with disabilities as co-trainers in its presentation. The training is held in four highly interactive sessions. Families and staff who support participants of the LEAP Training Program are given access to an online partner guide and video-based summary of each LEAP session.

Theoretical Framework for LEAP

Bandura's (1978) Social Cognitive Theory (SCT) is the theoretical framework that informed the development of the LEAP curriculum. In SCT, self-efficacy is related to people's beliefs about their capabilities, which then influences their motivation and actions. People's self-efficacy beliefs can be enhanced when they have experiences where they are able to master an activity and through social modeling. When people believe they will be able to perform an activity successfully, they feel greater self-efficacy and are more motivated to engage in that behavior (Bandura, 1997).

Self-efficacy of people with ID, as related to health promotion activities, is connected to fostering motivation at the individual, contextual, and interactional levels (Michalsen et al., 2020). On the individual level, motivation to engage in the health promotion activity is enhanced when the activity is viewed as fun and is done in a social setting or incorporates technology. On the interactional level, motivation increases when the activity is done with others and when rewards are available for participation. On the contextual level, involvement of support persons in the activity as well as the ways in which the activity is presented can impact motivation. Support persons can increase or decrease motivation depending on their level of involvement or lack thereof (Michalsen et al., 2020). Thus, motivation for people with ID needs to be viewed as a relational experience influenced by contextual factors, which can support or deter individual involvement in health promoting activities. Self-efficacy beliefs of people with ID can also be enhanced through positive feedback and enjoyment (Nota et al., 2010).

Building on the tenets of SCT, the LEAP intervention offers opportunities to build individual capacity to recognize and respond to unhealthy relationship scenarios through the use of engaging, multimodal, group-based teaching and learning strategies. Participant learning is reinforced by observing and practicing desired behaviors. The LEAP Power Statement builds confidence and self-efficacy among participants and is reinforced in every session and through LEAP bracelets, which are given to participants as a visual cue from the program. Certificates of completion are also given to participants. Recognizing the importance of staff and other support persons in their role of reinforcing the core concepts of the curriculum (see Table 1), the project developed a companion guide, which is designed to complement the key points of the LEAP curriculum and to support LEAP participants in using their new knowledge and skills.

Method

Aim

This study aims to explore participants' responses before and after the LEAP intervention when presented with video vignettes (see Table 2) on healthy or unhealthy relationship scenarios.

Table 1. *LEAP session core concepts*

Session title	Key concepts
People in your life	The meaning of respect, what it means to deserve respect, internal and external strength The meaning of trust and how it relates to the relationships each person has/ encounters - using a map to show levels of relationships The different relationships in the participant's world - very good friends, trusted family members, friends, paid staff, acquaintances, strangers, love interests, and those who people no longer wish to have in their lives Exploration of the question: "Are all staff your friends?"
Healthy relationships	Reinforcement of the key concepts from session one Characteristics of healthy, unhealthy, or confusing relationships Correct names for private body parts and why it is necessary to use them Rules surrounding consent and the meaning behind "saying yes", "saying no", or "saying nothing" Experiential activities to model the complexities of consent and practice different ways to deny consent
Healthy touch	Reinforcement of the key concepts from sessions one and two The meaning of healthy, unhealthy, or confusing touch Activities that allow participants to practice distinguishing between the different types of relationships and touch through example scenarios Rules for healthy touch are explained
How and when to get help	Reinforcement of the key concepts from the three previous sessions How to get help if someone is in an unhealthy or confusing relationship How to get help if someone is in immediate danger of abuse Who to contact in confusing and unhealthy situations

Additionally, researchers wanted to better understand what participants identified as next steps when viewing an unhealthy scenario.

Design and recruitment of participants

This is a qualitative study that used a conventional content analysis approach as detailed by Hsieh and Shannon (2005) and other scholars (see, for example, Vaismoradi et al., 2013). The present research is part of a larger efficacy study conducted in one mid-Atlantic state that received approval from the supporting university's Institutional Review Board. This study used purposive sampling techniques and recruited participants from 15 community, day and residential support agencies that serve people with ID. These agencies provided the physical space for the larger research project that included the following: consent, pretest, four 90-minute LEAP sessions, a posttest and a 3 month follow up posttest. For the current study, qualitative responses to the pretest and posttest were included in the analysis.

The LEAP intervention, vignettes, and open-ended pre/posttest questions were created in partnership with adults who have a disability, family members, community and university professionals in fields including health, domestic violence, child advocacy, and social services.

Data collection procedure

To be included in this study, participants had to complete the consent process, pretest, four LEAP sessions, and the posttest. Participants

Table 2. *LEAP vignette descriptions*

Vignette storyline	Core concepts	Questions
Supervisor yells at an employee.	Trust, respect, boundaries	1) If someone makes you feel bad you should tell someone you trust? Yes/no? Why?
Assistant asks permission to help a person with counting money.	Difference between staff and friends, trust, respect, ask permission	1) Does Jamal have a healthy relationship with Fred? Yes/no? Why? 2) What should they do next?
Van driver sexually assaults person.*	Trust, unhealthy touch, ask permission, respect,	1) Is it Tomika's fault that Bill tried to kiss her because she rode in the front seat of the van? Why? 2) What should Tomika do next?
Friend betrays trust.	Trust, respect, boundaries	1) Is it ok for Nicole to change her mind about who she can trust? Why? 2) What should she do next?
Person is denied transportation to physical therapy as punishment.	Trust, respect	1) Is it alright that Lisa will not take Rodney to his appointment? Why? 2) What should he do next?
Staff respectfully supports a person putting away dishes.	Difference between staff and friends, respect	1) Staff are always my friends. Yes/no? Why?

* Example of vignette dialogue, "Bill is a van driver. One day, Bill asked Tomika if she would like to sit in the front passenger seat for the ride home. Tomika said 'yes'. When the van got to Tomika's house, Bill leaned over to open the door for her, and his arm rubbed against Tomika's breast. The next day, when Bill reached over to open the van door, he tried to kiss her. Bill told Tomika not to tell anyone because she would get in trouble for riding in the front of the van."

received no compensation for participating in the research.

Research data were collected before and after the LEAP intervention. The pretest and posttest included six-video vignettes presented on a tablet to participants (see Table 2). Each vignette lasted approximately 40 seconds and were offered to research subjects two times. After viewing a vignette, a participant was asked one or two predetermined open-ended questions about the vignette. Each pre and posttest was completed in an area of the agency that provided the most privacy for the participant. The data collection took approximately 25 to 90 minutes per participant to complete, depending on their level of ID and use of a communication device.

To be included in the research, eligible participants had to be 18-65 years old, have an ID diagnosis reported by a community agency, legal guardian, or a family member. The participants either provided informed consent or their legal guardian provided informed consent. Participants with legal guardians provided assent to participate in the study to ensure they understood the study description and risks. All participants were informed they could stop at any time during the research process.

Study participants

The study focused on 109 participants (56 females, 52 males, one missing) who were diagnosed with mild (*n*=49), moderate (*n*=33), severe (*n*=3), unspecified (*n*=4) or "no diagnosis" (*n*=20) level of intellectual disability. Within the study, 67.9% of participants were their own decision makers compared to participants (*n*=35) who had a legal guardian. Participants had a range of housing types, from independent living (*n*=9), parent or relative's home (*n*=57), host/sponsored home (*n*=8), agency with one or two residents (*n*=2), agency with three to six residents (*n*=29) or an agency with seven to twelve residents (*n*=4). The majority of participants were identified as White (50.5%) and Black (38.5%) in addition to 2.8% being identified as Asian, 4.6% "two or more races," 0.9% Hispanic and 4.3% of participants did not have a specified race listed. The mean age of participants was 34.3 (SD=13.5) years old.

Data Analysis

This study used conventional content analysis to analyze the data from the pre and posttest. The methodological approach was inductive and followed patterns within the specific data (Graneheim et al., 2017; Vaismoradi et al., 2013). Data were analyzed using Graneheim et al. (2017)'s inductive content analysis technique.

One LEAP research member entered all the semi-structured interview responses into Microsoft Word then added them to a data management tool, Dedoose (2021). Data were then reviewed to identify emerging themes. Data were read in entirety by one author, making notes of similarities (Hsieh & Shannon, 2005) prior to dividing the data into "meaning units," which were then combined into initial codes (Graneheim et al., 2017). Once initial codes were identified, a second researcher reviewed the codes and assisted in re-organizing and condensing the codes. At this time, codes were compared between the pretest and posttest and placed into 28 categories. The two researchers immersed themselves in the data for approximately 10 months, which allowed for constant reflection and the ability to discuss the identified categories and revisit the data to continue to condense and edit accordingly as recommended by Elo et al. (2014). Throughout the reflection period the categories were discussed with the LEAP team for further input on the identified categories. Finally, through the lumping and sorting process, the categories were reduced to 14 and five themes emerged from the data.

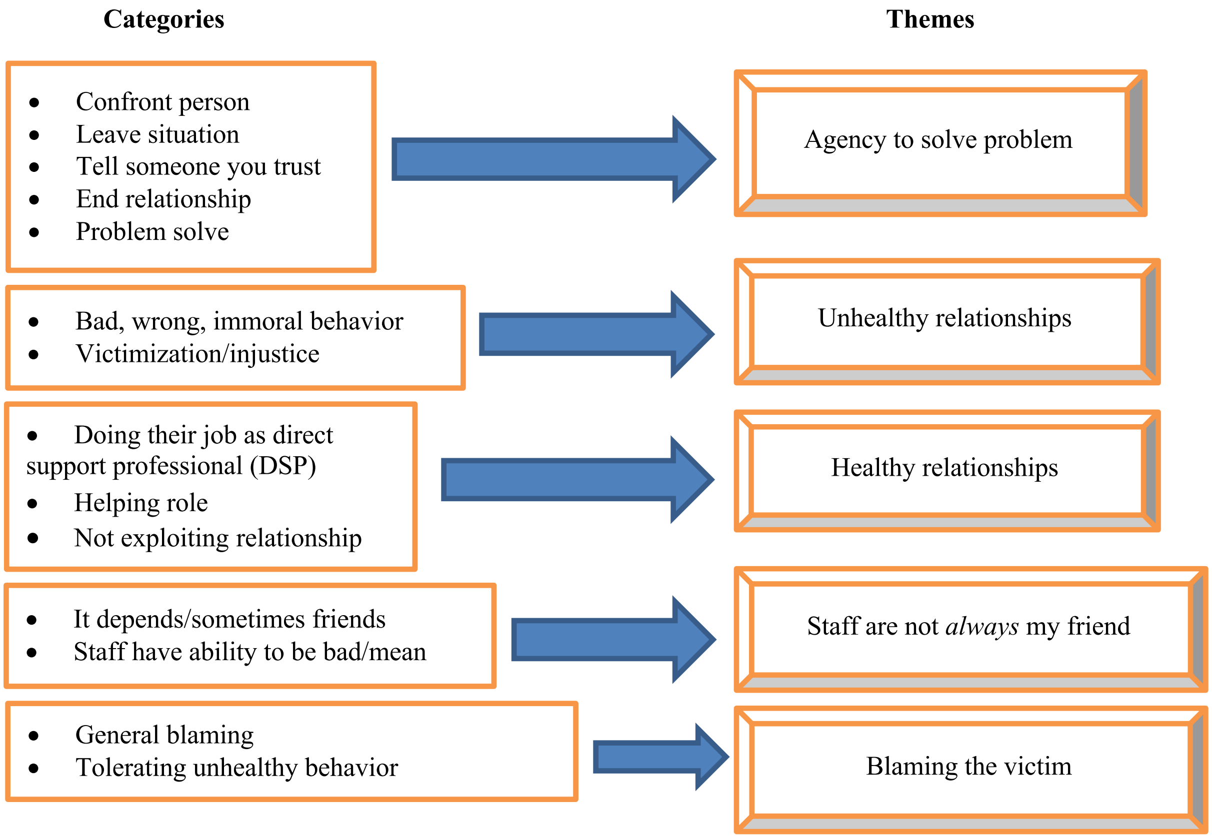
Trustworthiness and credibility

Conducting a conventional content analysis was best suited for this study as it allowed the research team to discover meanings within the data to create the categories instead of using theory to direct the analysis (Hsieh & Shannon, 2005; Lincoln & Guba, 1985). To increase trustworthiness or rigor of the study, the research team incorporated numerous credibility strategies such as member checking, peer debriefing, prolonged engagement, and persistent observation (Hsieh & Shannon, 2005; Lincoln & Guba, 1985). Prior to starting research, people with disabilities were included in the creation of the LEAP curriculum, video vignettes, session implementation and data collection. Member checking did not occur with the participants themselves, but with trainers of the LEAP sessions. The analysis of the data occurred over a 10 month period encouraging prolonged engagement and consistent peer debriefing, which occurred on a weekly basis. Peer debriefing included discussions of the conceptualization and reorganizing of codes, consistency between both coders, and also reflection on any issues of confirmability where there may be researcher bias (Lincoln & Guba, 1985).

Results

This study had five themes emerge from the data, summarized in Figure 1. The themes are agency to solve a problem, identifying unhealthy relationships, identifying healthy relationships, staff are not always my friend, and blaming the victim. A description will be provided for each theme and the categories that fell under each theme. Number of occurrences for each category at pre and posttest is

Figure 1. Summary of the analysis



provided. Illustrative quotes from LEAP participants are included.

Agency to solve problem

In this research, agency to solve a problem was interpreted to mean a participant's ability to proactively find a solution to the vignette scenario. This theme included five categories (see Table 3). For all results' tables, the category with the greatest percentage increase in number of occurrences and the category with the greatest percentage decrease in number of occurrences are noted.

Confront person

This category emerged from participant responses stating a person in the vignette scenario needs to directly interact with a person who caused them harm. There was a slight decline in *confront the person* responses from the pretest to posttest. However, the pretest responses were considerably simpler in how to confront someone that was causing harm. For example, in the scenario where a van driver tries to sexually assault a client, a participant stated, "slap him" compared to a posttest response of "Tell him to 'back off', [and] not to kiss her. She doesn't like it."

Leave situation

Leaving a situation included responses that described hiding, walking away, or avoidance of the situation. The number of responses slightly increased from the pretest to posttest. Sample responses in this category were "walk away" and "they should run" on the preset to answers that suggested things like making new friends and ending unhealthy relationships in the posttest.

Tell someone you trust

This category had significantly more responses on the posttest compared to the pretest. The responses ranged from telling anyone to a parent, legal guardian, case manager or the police. For this theme, participants' responses often got more specific starting with "tell someone" at pretest to "tell somebody who they can trust, an adult or someone they know who can talk about it and fix the problem" after the invention at posttest.

End relationship

Ending a relationship had three main subcategories including stopping a relationship (friend or staff), replacing the relationship (friend or staff), and changing your mind about who you trust. The last concept about changing your mind on who to trust was introduced in the LEAP intervention and this category significantly increased in number or responses at posttest. During the posttest, one participant reported "Not everyone is going to be your friend, some people will be friends, some people won't, and we can change our minds [about them being our friend]."

Problem Solve

The category, "problem solve" had twice as many responses for the posttest. Language in this category described trying to find a solution or negotiating a tenuous situation. In a video vignette that depicted an aide yelling at a person with ID for making a mess and telling him she would not take him to therapy, responses included, a suggestion to "find another aide" on the pretest to suggestions that he could clean up after his therapy session on the posttest.

Unhealthy relationships

The second theme that emerged was identifying unhealthy relationships. This theme had two categories, identifying *bad, wrong, or immoral behavior* and identifying victimization/injustice in scenarios (see Table 4). Both categories had a slight increase in identifying unhealthy relationships on the posttest.

Bad, wrong, immoral behavior

This category included descriptions of identifying unhealthy behavior from staff and friends who were yelling, sharing private information, refusing to take a client to treatment, or identifying sexual assault as abuse. As mentioned, the number of incidences for this category were only slightly higher on the posttest; however, responses were vastly different in the depth of detail after experiencing LEAP. A common series of responses on the pretest for a scenario where a staff member refuses to take their client to a doctor's appointment was "she should take him" or "she should help him out" compared to a posttest response of "Because she's yelling at him, and he has special needs. She's being abusive.

Table 3. *Agency to solve problem (n=109)*

Category	Pretest (# of occurrences)	Posttest (# of occurrences)
Confront person *	58	45
Leave situation	19	26
Tell someone you trust	175	240
End relationship	42	41
Problem solve **	27	67

* = category with greatest percentage decrease pretest to posttest; ** = category with greatest percentage increase pretest to posttest

She needs to be nicer to him and know [the] needs of [a] person with down syndrome." For the scenario with the van driver who tried to kiss the client, the posttest had more responses where participants were able to identify abusive behavior, such as "...it was the guy's fault cause he's being abusive and taking advantage of her."

Victimization/injustice

The second category in this theme was identifying victimization or injustice in the vignette scenarios. Participants did this by focusing on the victim's experience of being innocent and identifying when a scenario had components of people being deceived. The incidences on the pretest and posttest were similar with a slight increase on the posttest. As mentioned before, the depth of response was greatly different on the posttest. For example, a response on the pretest was that the victim did not want to receive a kiss from her van driver, versus an acknowledgement that the victim did not do anything to deserve the assault on the posttest. A participant during the posttest stated, "She didn't say anything, she just got in the van. He's the one who told her to ride in the front seat and trying to use her sexually."

Healthy relationships

This theme allowed participants to discern between healthy relationships with staff and friends. This third theme included three categories, staff appropriately doing their job, helping, and not exploiting (see Tables 5, 6, and 7).

Table 4. *Unhealthy relationships (n=109)*

Category	Pretest (# of occurrences)	Posttest (# of occurrences)
Bad, wrong, immoral behavior	198	209
Victimization/injustice**	18	24

Note. ** = category in this theme with greatest percentage increase pretest to posttest.

Table 5. *Healthy relationships (n=109)*

Category	Pretest (# of occurrences)	Posttest (# of occurrences)
Doing their job as direct support professional (DSP)**	8	27
Helping role	44	73
Not exploiting relationship	43	53

Note. ** = category in this theme with greatest percentage increase pretest to posttest

Table 6. *Staff are not always my friend (n=109)*

Category	Pretest (# of occurrences)	Posttest (# of occurrences)
It depends/sometimes friends	10	15
Staff have ability to be bad/mean**	5	11

Note. ** = category in this theme with greatest percentage increase pretest to posttest

Table 7. *Blaming the victim (n=109)*

Category	Pretest (# of occurrences)	Posttest (# of occurrences)
General blaming	97	76
Tolerating unhealthy behavior*	59	19

Note. * = category in this theme with greatest percentage decrease pretest to posttest

Doing their job as a direct support professional (DSP)

This category highlighted the expectation staff would complete their paid work regardless of how the client is behaving. Not many pretest responses fell into this category of being able to identify and acknowledge that it was the professional responsibility of the DSP to carry out specific tasks. Two varied examples are "it is their job" and "blanket statement, don't know if you like him or not, it's a professional relationship, not a personal one." Posttest responses included specific duties of a paid support staff, for example, "The staff [are] there to get paid and help with independent living, manage money or shopping and stuff …"

Helping role

This category had almost twice as many occurrences on the posttest and highlights the nuance between staff serving in a helping role versus being a friend. Sample responses on the pretest included themes that acknowledged that staff are helpful, "they help you out when you need them," whereas the posttest responses included more detail about staff assisting with problem solving, for example, "Because you can go to staff if you need help or a situation goes on in the community or in the house."

Not exploiting the relationship

The third category within this theme had slightly more incidences on the posttest; however, responses were similar in depth. In this category, participants recognized that staff had an opportunity to exploit someone, but instead proved trustworthy. For example, asking someone to take money from their wallet to pay for something and counting the change with them rather than stealing from them was seen as a healthy relationship because they did not steal money.

Staff are not always my friend

This theme was an advanced concept for participants to report due to the nuance of helpfulness commonly being associated with friendship. This theme had a low occurrence rate, for both the pretest and posttest; however, the depth of responses in the posttest are highlighted below.

It depends/sometimes friends

This category captured the confusing nature of being kind, helpful and still being a paid support. Participants recognized that staff work cooperatively and could develop true friendships with them, but not all staff would. An example of this was on the posttest, "Because staff works with you and are in charge of you. Some are friends but not all. They are paid to support you, not be your friend."

Staff have ability to be bad/mean

Some posttest responses highlighted the realization that paid support have the capacity to be unkind, with replies that recognized that staff could be untrustworthy and not treat people as they should, for example, "they could say stuff to others and break trust, not treat people like they should be treated."

Blaming the victim

The fifth theme, *blaming the victim*, included responses where individuals in the scenarios were blamed for being sexually assaulted because they broke rules or did not stand up for themselves. It also included blaming individuals who were in unhealthy relationships and encouraged victims to either be quiet and suffer or tolerate the behavior. This theme declined in occurrences from the pretest to the posttest.

General blaming

General blaming of the victim was higher in the pretest than posttest. This category had a high number of responses in both the pretest and posttest that reported victims could have prevented abuse if they would have followed rules. Examples of pretest responses suggested that the victim broke a rule by sitting in the front seat and could have avoided the assault had she obeyed the rules, "I think that she should have stayed in the backseat to avoid sexual assault and rape." A response on the posttest that suggested that the victim should have set limits on the perpetrator is "cause it's wrong if you let him kiss [you]. You didn't say anything to stop him, didn't do anything, he's doing his job."

Tolerating unhealthy behavior

Responses that indicated the victim needed to stay in the unhealthy situation drastically decreased from the pretest to posttest. On the pretest, a participant stated that the victim should allow herself to be assaulted by following the perpetrator into his house so that he could "do what he wants to do with her." Similarly, on the posttest, a respondent stated that it was the victim's fault for trusting someone who did not behave honorably.

Discussion

The LEAP intervention was developed to support people with ID in distinguishing the differences between healthy and unhealthy relationships/situations, understanding how unhealthy relationships may lead to being a target of abuse, and knowing how to respond when in an unhealthy relationship/situation. We believe this information is essential for decreasing their risk of abuse and exploitation.

In some post-intervention responses, people with ID demonstrated an ability to understand the nuances between healthy and unhealthy relationships. As highlighted by Ottmann and colleagues (2016), it is critical that abuse prevention programs address complex scenarios that mirror real-world, often unclear scenarios that people with ID often encounter with unhealthy relationships.

In other responses, research subjects focused on organizational rule-based behaviors that took precedence over affirming that a relationship was unhealthy or abusive. Reliance on compliance or rule-based behaviors and actions may pose a barrier to people with ID developing deeper understandings of abusive and exploitative relationships and their ability to change their behaviors and take action when presented with abusive situations (Mazzucchelli, 2001; Saxton et al., 2001). Abuse prevention intervention designs need to acknowledge and address the issue of compliant or rule-based behaviors directly so that people with ID are exposed to and empowered to take action when confronted with challenging and often confusing unhealthy situations.

After completing the LEAP sessions, participants began to adopt the language and tools presented in the training to describe and address healthy and unhealthy relationships. The LEAP training provided a framework and vocabulary for characterizing relationships and specific tools that can be used when confronting unhealthy relationships/situations. For example, "tell someone on her trust card" was reported by multiple individuals as a way to solve a problem. The "trust card" was provided during the first LEAP session and included participant-completed and general emergency contact information for quick reference in case of a questionable or unhealthy situation. Promoting an abuse prevention vocabulary (e.g., "tell someone you trust") and providing concrete tools for practicing that vocabulary and action like completing a "trust card" seemed to be an effective strategy for reinforcing the core concepts of the curriculum.

For several scenarios, participants focused on irrelevant details instead of the core component presented in the scenario. In those instances, many participants did not answer the question asked, but instead focused on the immaterial details within the story, which seemed to derail them from being able to assess the more relevant aspects regarding the relationships in question. Another issue that evoked ongoing comprehension problems was confusion regarding pronouns. Responses were recorded verbatim, and therefore could not be coded because the researchers were unclear about whom the participant was describing.

Given these challenges, future researchers are encouraged to balance rigor in their study data collection protocols with flexibility to ask probing or follow up questions based on participant responses. Building in the flexibility to probe and ask follow up questions may increase data quality, allow research participants to focus their attention on the key elements of study rather than on extraneous details, and help to clarify responses that are unintelligible without further explanation.

Limitations

Recruitment for participants in our study was through formal ID service systems (agencies that provide ID support & advocacy organizations). As a result of our recruitment methods, people who are not connected to formal ID support systems were not included in the study. Future research is needed to better understand the experiences of this group of people, the relationships in their lives, and if interventions such as LEAP are able to improve their understanding of healthy and unhealthy relationships.

Additionally, the study relied heavily on communication to understand how people with ID view healthy and unhealthy relationships. While we provided visual aids and some individuals used communication devices, our only window into understanding the perspectives of people with ID was through responses from research participants. Many people with ID who are victims of abuse, neglect, and exploitation do not have communication systems. While people with ID with limited communication can and should be included in abuse prevention interventions, we still know little about the benefits of abuse prevention interventions, like LEAP, for this group.

Finally, the theoretical framework of LEAP is predicated on the idea that changes in beliefs will influence self-efficacy and action. For this study, the way that we examined participant changes in understanding and action was through responses to vignette scenarios. We did not include abuse incidence rates or data collection on how participants reacted to real-life unhealthy encounters after the LEAP intervention as outcome measures. Since the central purpose of LEAP is prevention of abuse, our research team, and others examining outcomes of abuse prevention interventions may want to consider direct follow-up measures on incident reduction to evaluate impact.

Implications

Although participants in the LEAP intervention had improved outcomes regarding responses to questions about a video-based scenario, there is much work to be done regarding complex conversations surrounding abuse, neglect, and exploitation. It's important to note that the participant's responses improved after a relatively short intervention of just four 90-minute LEAP sessions. Further conversations about these complex and nuanced issues should be held regularly with trusted support providers. Furthermore, special attention should also be focused on the avoidance of teaching people with disabilities compliance based behaviors, such as obediently following verbal commands from paid staff, which may inadvertently be reinforcing requests to comply with demands that result in sexual assault (Kim, 2016). It is critical that we provide safe environments and set aside time so that people may discuss complex feelings and relationships with peers and support staff.

Although support staff may develop close relationships and develop reciprocal friendships over years of supporting a person with a disability, many with little history or experience step into their care provider role with the expectation of immediate trust and friendship. This lack of professional boundaries and inaccurate assumption may foster ongoing confusion for people using support services regarding whom should be trusted. Although the current health pandemic has caused many to be lonely and isolated, it is essential that people with disabilities develop community connections with others who are not paid staff or family members.

Further qualitative research is needed to understand how abuse prevention interventions impact people with disabilities as revealed in their own words and responses, which would typically not be captured in quantitative studies. Qualitative research posits itself to empower individuals who are considered marginalized by giving voice to their experience (Hash & Cramer, 2003).

Lastly, the LEAP intervention was provided to adults, many of whom disclosed abuse that had occurred earlier in their lives. To truly address prevention of abuse, information regarding the core concepts of LEAP should be instructed at a younger age so that youth and adults are equipped with strategies to undertake steps to accessing help that will be well rehearsed and practice

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Infusing Intersectional Pedagogy into the Cultural Sustaining Classroom

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Abstract: All students can experience challenges based on their social identities such as race, ethnicity, sexual orientation, religion, language, socioeconomic status, and others. Students in special education also face challenges, stigmas, and stereotypes due to having a disability. The term intersectionality is used when a student has multiple social identities. To meet the needs of students who experience intersectionality, educators must first examine their own and their students' social identities. Next steps include evaluating how those socially identified characteristics and teaching roles affect education within the school environment. This article outlines a framework to support the process of gaining cultural competence by asking questions including who you are personally and in your role as an educator, who are your students, what do you teach, how do you teach, and how does your climate and classroom interactions affect learning. These questions help equity focused educators move towards creating culturally sustaining classrooms.

Our world is experiencing unprecedented times with Covid-19 spring boarding us into a digital realm that much of society was previously unfamiliar with. This springboard was coupled with an increasing call for social justice accompanied by protests, both in the United States and worldwide, sparked by police officers killing Black and brown people with minimal recourse (Cohen et al., 2020). Access to the digital realm is not equally available by all; this digital divide is defined as patterns of unequal access to information technology based on factors such as income, race, ethnicity, gender, age, and geography (Mossberger et al., 2003). The digital divide and these social justice crises have spotlighted the disparities that plague our educational system including the need for more equity focused educators. Educational equity ensures all students have access to the resources they need to be successful, regardless of their race, gender, sexual orientation, ability, ethnicity, language, religion, family background, or family income (The Aspen Institute, n.d.). Focusing on equity means being fair and impartial without bias. Adopting intersectionality pedagogy as a framework in the classroom can help educators focus on equity. Educators need to move beyond having conversations about social justice and recognize multicultural differences; then they need to move beyond that to engage in cultural critical consciousness and personal reflection.

Intersectional pedagogy

Teaching with a focus on intersectional pedagogy requires educators to engage in introspective reflection and interrogate their role in systemic injustices (Niles & Harkins Monaco, 2019). To ensure equity in the classroom, educators must understand the unique challenges and barriers faced by students and provide support, so every student has equal opportunities for success.

To begin to understand the experiences of students with diverse social identities in classrooms, educators should first reflect upon their own social identity, personal perspectives, biases, and roles (Lindo & Lim, 2020).

Across societies of the world, individuals view themselves as part of defined social groups or identities (Levine & Campbell, 1972). Social identities are constructed through values, practices, and beliefs thus defined by the individual cultures one subscribes to (Brewer & Yuki, 2007). Social identity deals with the individual's self-concept based on their knowledge and emotional ties in a social group (Tajfel, 1981) and are not just a label of who one is, it describes the importance an individual places on membership in the social groups and their willingness to adopt the norms of the group (Haslam, 2000; Unsworth & Fielding, 2014).

Social identities are created and accepted by society and can vary between societies and subcultures. Special educators are faced with educating students who experience multiple social identities in addition to their disability. This refers to intersectionality, or the multidimensionality of disability and at least one other social identity such as race, ethnicity, religion, economic class, language, gender, and/or sexual identity (Garcia & Ortiz, 2013; Kumashiro, 2000).

All educators have conscious and unconscious biases, widely held and oversimplified beliefs, attitudes and prejudices, or stereotypes about individuals based on social identity (Niles & Harkins Monaco, 2019; Staats et al., 2015). These unconscious or hidden biases influence the way educators act toward students, often with unintended discriminatory consequences (PBS, 2020). Implicit bias is a cause of unintended discrimination that leads to inequalities (PBS, 2020). Educators with biases can keep students from reaching their full potential by limiting the students' opportunities and resources based on the assumptions and expectations related to the bias.

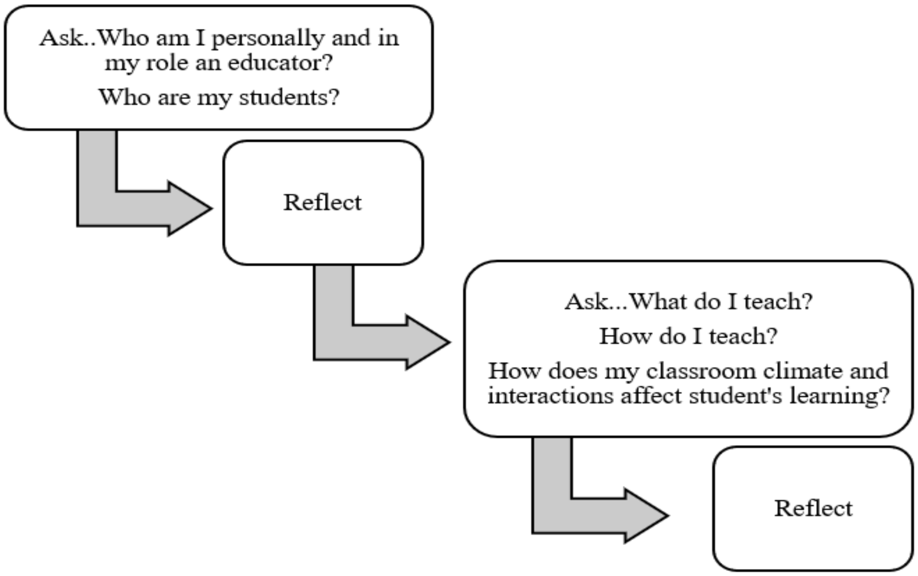
Figure 1 presents a helpful framework for identifying both educators and their students' social identities and evaluating how these identities play into what educators teach, how they teach, and how these identities impact learning. In the following sections, we break down each step of the framework.

Who am I personally and in my role as an educator?

Within the United States, the education workforce is 79-85% non-Hispanic White. Our Black community represents 13% of the population, but only 3-7% of the educational workforce. Hispanics represent 18.5% of the population, but only 7-9% of educators (NCES, 2020; U.S. Census, 2019). These statistics illustrate the disparity between the education workforce and the student population. Educators are overwhelmingly European American, monolingual, middle-class, White females who have had little sustained or substantive interaction with people of color (Gay & Kirkland, 2003; Shah & Coles, 2020; Ullucci, 2012).

Educators who are aware of these disparities and seek to be culturally competent, engage in activities to gain a deep understanding of their own social identities, beliefs, values, assumptions, and perspectives. Effective teaching requires activities such as personal reflection and critical analysis of an educator's own cultural lens, life experiences, and membership in various identity groups (Muniz, 2020). Routine engagement in self-awareness activities is foundational to culturally sustaining teaching and learning (Irish & Scrubb, 2012).

Figure 1. *Guiding questions for understanding intersectionality in the classroom*



Educators need to ask themselves how their personal identities, backgrounds, and experiences influence their beliefs and behaviors and thoroughly analyze and monitor how this impact their instruction. Becoming self-aware can be difficult and uncomfortable for educators who have never previously engaged in this type of exploration. Educators need to examine these factors so they can understand internalized biases that shape their instruction and effectively meet the needs of students with multiple social identities.

Research documents that the American identity is more strongly associated with European Americans than with other ethnicities (Dasgupta & Yogeeswaran, 2011; Devos & Banaji, 2005). White Americans tend to lack the ability to recognize their own culture or social identities. However, if one does not understand their own social identity and who they are, how can they understand the social identities of other people? Educators need to critically consider how their cultural identities have socialized the beliefs they have of others (Delpit, 1988). We use the term diverse very broadly in this article to describe groups of individuals from a range of different social identities.

Many White educators have had few, if any, interactions with people of color (Gay & Kirkland, 2003; Shah & Coles, 2020; and Ullucci, 2012). Without being critically conscious or self-reflective, they have no means to becoming culturally competent or to infuse intersectional pedagogy using culturally sustaining practices. Self-reflection is an important first step because it allows educators to diligently work on understanding their unconscious biases which develops cultural competency, “understanding, sensitivity, and appreciation for the history, values, experiences, and lifestyles of others” (Muniz, 2020, p. 4).

Identity is a framework for understanding who we are personally and individually and how we see ourselves (Garmston & Wellman, 1997; York-Barr et al., 2016). Identities and roles are different. In our lives, we assume multiple roles such as friend, son/daughter, sibling, parent, spouse/partner, leader, and educator. Roles define relationships, functions, or classes of responsibility (York-Barr et al., 2016). Individual identities refer to what one believes, how one thinks, and how one behaves in different contexts. Once educators have determined their roles, they then need to explore how their identities play out in the roles in which they assume. What are the effects of personal identities on the roles an educator assumes in a school and classroom environment? How does the influence of social identities on the educator role impact teaching, learning, and interactions with students in schools? Educators need to answer the question: Who am I in my role as an educator?

Who are my students?

As educators begin to develop an understanding of themselves, they should then seek to understand their students and their school context to recognize and redress bias both personally and in the system. Every student possesses a unique background and experiences based on various cultural traditions, norms, and values that inform their ways of knowing and learning (Irish & Scrubb, 2012). An educator's effort to have a thorough understanding of their own social identity, their students' social identities, and how these differences affect learning can influence them to make teaching more relevant to diverse students. Students come with more than what's in their backpack and each child is more than just a student. They are a collection of their social identities. Understanding who the students are in a classroom is a big part of having a culturally sustaining classroom.

Cultural competence is more of a journey than a destination or something that can be achieved. Educators should always be learning more about every culture or social identity they encounter. Each interaction with a new culture provides another opportunity to gain more cultural competence. To increase one's cultural competence, educators must understand the sociopolitical constructs that impact students with disabilities. Educators with greater cultural competence employ practices that support students to "honor their own cultural beliefs and practices while acquiring access to the wider culture, where [students] are likely to have a chance of improving their socioeconomic status and making informed decisions about the lives they wish to lead" (Ladson Billings, 2008, p. 36).

Many of the students in today's classroom are a part of multiple social identities and thus deal with the issues, experiences, and advantages/disadvantages that come with membership of these groups. For example, a student with autism, who identifies as Black, nonbinary, and Muslim might have to deal with the stigmas and stereotypes about race, cultural, and gender identity along with disability. This student is also affected by how their family views disability through the lens of their Muslim culture. To some educators, these factors may seem abstract or not significantly impacting the educational experience of the student, but these social constructs create real and lasting consequences. For example, African American and Latino children with autism are diagnostically evaluated later than their White peers with autism (AADM, 2020; CDC, 2016; Furfaro, 2017).

To understand who our students are, educators must understand what their students bring into the classroom. Students deal with a hybrid of issues that require educators to understand multiple cultures as well as the student's personal experiences (Harris & Leonardo, 2018) Understanding multiple cultures involves developing deep and intention relationships from members of those cultures. This is not a linear or one-time process, as students develop and move out of the class educators are introduced to new cultures that warrants understanding.

There are several strategies that help educators understand the diverse cultures of their students. One strategy is to collaborate with families and the local community (Muniz, 2020). A way to do this that offers more of a long-term relationship is by developing cultural informants. Cultural informants are knowledge members of a particular culture that are willing to answer questions about the culture and can communicate the answers to understanding (Carrero et al., 2019). These persons could be community members, family members of students, or co-workers. It's important to note that members of a particular culture may not want to be a cultural informant, nor might they be qualified; educators should be explicit in communicating their expectations of the relationship with a potential cultural informant beforehand.

A more direct strategy of understanding students is to have them share and showcase their personal experiences. Perspective-taking activities allows the educators to acquire an understanding of norms, values, and traditions that have informed students' worldviews and learning behaviors. Becoming knowledgeable of the experiences students share allows the educator to understand and analyze how these experiences could affect the student's education. These opportunities can be formal through journal prompts and discussions that are incorporated into the instruction, or they can be informal like sharing interests and recent events during transitions and down time. Another idea is to have students reflect on the value of tradition, religion, independence, education, work, values (e.g., respect, honesty, timeliness), and to have meaningful conversations in class about the personal perspectives (Irish & Scrubb, 2012). These types of activities encourage students to engage in critical reflection on deeply held assumptions, values, and beliefs. Research has noted that in intentional groupings of racially diverse groups of students, students are more likely to discuss racial issues and have been shown to have a positive impact on especially White students (Chang, 1996; Lorenzo, 2021, Myers et al. 2020). As educators consistently incorporate opportunities for students to share their experiences, their understanding is broadened, and they can relate more to student concerns.

Another strategy is to create a space that is welcoming to students' communication styles. Educators want to communicate in linguistically and culturally responsive ways (Muniz, 2020). Culturally competent educators engage in intercultural communication that considers linguistic and cultural differences and utilizes active listening, elaboration, paraphrasing, and restatement techniques (Irish & Scrubb, 2012). Active listening, where both the sender and receiver are focused with distractions minimized, is helpful when different languages are involved.

What do I teach? How do I teach?

Educators must engage in critical reflection of who they are and who their students are to really understand and dislodge tightly held cultural assumptions, misconceptions, and stereotypes before they examine what and how they teach. Once educators are in touch with their own and their student's social identities, they can promote respect for their students' differences and draw on students' culture to shape curriculum and instruction (Muniz, 2020). Educators should examine what they teach, how they teach, and assess the current classroom climate for peer interactions, social justice, and inclusive behaviors.

Educators can start shaping personal reflections directly into daily practices by reviewing Adams et al.'s (2010) *Pedagogical Framework for Social Justice Education,* which suggests prioritizing relationships and personal growth through emotional and cognitive learning, individual student experiences, and student-centered learning. Educators can answer the questions in Table 1. The answers to these questions can be shaped into norms to actively infuse the intersectional concepts into culturally sustaining pedagogies and daily practice. These practices help students understand 1) the power of social influences and structures, 2) intergroup communications, and 3) how to constructively deal with conflict. In addition to building cultural competence, educators can also work to identify assumptions and areas that need reshaping within the broader systems and settings to improve equity in the classroom and ensure they are meeting the intersectional needs of students. Answering these questions allows educators to examine *What is currently happening in the classroom that takes into consideration the students' social identities? Where are areas of improvement?*

In situations where beliefs about learning vary, without understanding there may be misunderstandings. When a student comes from a community where timely arrival is not part of their culture, they may arrive to class consistently late. They do not link their learning to timely arrival to class whereas the educator may view punctuality as a sign of respect. Another example is a class that has a student who blurts out questions loudly during class as they come from a culture that has a direct communication style. Another student from a different culture may remain quiet and not ask a question even when they are wrestling with content. Without cultural understanding, these students may be viewed as disruptive, quiet, disrespectful, or respectful.

Special education is designed to ensure that all students receive a free appropriate education, but students with disabilities and their families from minority communities experience cultural biases (Pearson et al., 2021). These biases have significant consequences including oppressive interactions with students, a lack of or misrepresentation in the curriculum, and unfair discipline practices (Gaffney, 2019). The reality is that when students are not members of desired societal constructs (e.g., White, male, cis-gender, heterosexual, etc.), they are more likely to be treated as incapable or problematic (Broderick & Leonoardo, 2016). For example, boys of color are treated differently than their White peers, which results in academic disparities, opportunity gaps, and impacts how they are viewed by peers and adults (Fish, 2019; Liang et al., 2020). This has significant consequences for students with disabilities.

Special education practitioners often advocate to combat injustices on behalf of their students, but they tend to center only on their students' disabilities. When educators use singular social frameworks to define their students, they are erasing the experiences of certain people (Cooper, 2006; Crenshaw, 1989), ultimately contributing to systematic marginalization. While this does not mean that all special education practitioners are ineffective, the reality is that they are at high risk to perpetuate systems of inequalities, specifically with special education identification, placement, and discipline practices (Nielsen Gatti et al., 2021; Skiba et al., 2016). Many special educators are

Table 1. *Inclusive Social Justice Questions and Teaching Approaches for the Classroom*

Questions	**Basic Teaching Approach Examples**
Do you balance the emotional and cognitive elements of your students' learning?	To balance the emotional and cognitive components of the learning process, pay attention to personal safety, classroom norms, and guidelines for expected behaviors when teaching.
Do you highlight individual student's experiences alongside illuminating any systemic issues?	To acknowledge and support individual student's social identities and experiences while illuminating the systemic call attention to the here-and-now of the classroom setting and ground the systemic or abstract in an accumulation of concrete, real-world backgrounds, and experiences when teaching.
Do you support social relationships and communication within the classroom?	To attend to social relations within the classroom, help students name behaviors that emerge in classrooms, understand group processes, and improve interpersonal pro-social communications, without judging when teaching.
Do you have and utilize a wide variety of tools for student-centered learning?	To utilize reflection and experience as tools for student-centered learning, begin from the student's worldview and experience as the starting point for dialogue or problem-solving when teaching.
Do you value awareness, personal growth, and change as outcomes of students' learning?	To value awareness, personal growth, and change as outcomes of the learning process, balance different learning styles and explicitly organize around social awareness, knowledge, and social action in relation to student interest and readiness when teaching.
Do you use inclusive language?	To ensure the use inclusive language, have students put preferred pronouns on name tents and referred to as "she", "he," as well as the singular "they" when teaching
Do you avoid use of phrases that exclude some students?	To avoid using phrases that exclude some, avoid using phrases such as "It's easy to see…" or "I'm sure you all know the answer..."? when teaching.
Do you use terminology that is respectful for social groups?	To use respectful terminology, avoid using and avoid outdated terms when teaching.
Do you respect students' social identities, backgrounds, and heritages?	To respect student's backgrounds, use their names and pronounce them correctly, use strategies like mnemonics, when teaching.
Do you address diversity issues in class discussions?	To address diversity issues in class discussions, provide numerous opportunities for students to share their perspectives, knowledge, and personal life experience when teaching.
Do you treat students equally?	To treat students equally include them in classroom decision making and provide diverse opportunities when teaching.
Do you respond consistently to students?	To respond consistently to students, ensure when you notice that a student is unprepared for class, that you respond the same regardless of any social identities they ascribe to when teaching.

Do you acknowledge your students' different communication styles?	When asking students' questions, allow them to answer through various modes of expressions such as orally, written, through illustrations, and/or nonverbal gestures when teaching.
Do you give consistent and positive feedback to all students?	When giving feedback, use praise consistently by acknowledging not only correct answers but also effort when teaching.

Adapted from Adams et al., 2016

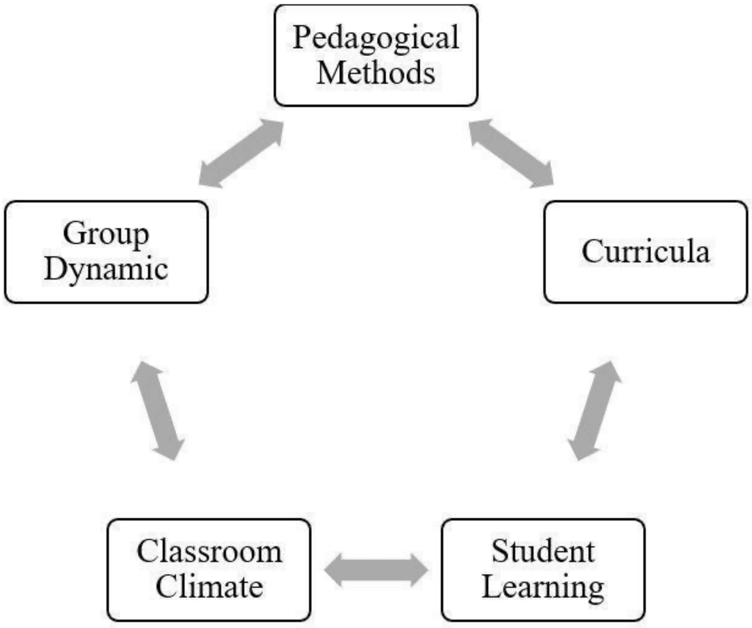
unaware of their biases (Gay & Howard, 2000; Owen, 2010); others are not willing to engage in this work (Darling-Hammond, 2002); and others claim to treat all children the same (Owen, 2010).

There are other issues that also contribute to systems of inequality in special education. First, families and caregivers with more resources tend to seek out labels such as autism over other disability categories (Eyal, 2013; Liu et al., 2010; Ong-Dean, 2009). This not only influences the process of how students are sorted into different disability categories, but it reinforces racialized categories of disability (Domina et al., 2017; Fish, 2019). Second, the delay of an accurate diagnosis affects the results of early intervention services, and it limits long term access to services (Hartlep, 2009; Hosking, 2008; Pearson et al., 2021). This disproportionally affects students from minority communities. Third, students of color who are labeled with a disability are more likely to be educated in separate special education classes as compared to their White peers with the same disability label (Fierros & Conroy, 2002). This means that White students are more likely to be treated as capable of being educated in general education environments, while students of color are treated as problems who need remediation and segregation (Walton et al., 2016). This ultimately reinforces unjust special education practices (Neilsen Gatti et al., 2021).

All these issues impact how families or caregivers feel about their students' schools; families and caregivers of color report a lack of trust in their student's school (Brandon et al., 2010), citing experiences of estrangement, alienation, and discrimination (Adelman, 1994; Lovelace & Robertson, 2018). For example, African American families of students with autism report challenges in accessing school support and question if special education professionals are trustworthy or responsive (Pearson & Meadan, 2018). As a result, they do not access support at the same rate as their White peers; only 2% of Latino and 5% of African American families utilized formal support, while 87% of White families participated in them (Mandell & Salzer, 2007; Pearson et al., 2021).

It is important for educators to thoroughly analyze and carefully monitor personal beliefs and instructional behaviors and the best ways to teach ethnically different students for maximum positive effects (Gay & Kirkland, 2003; Shah & Coles, 2020; Ullucci, 2012). Bell et al., (2016) *Five Dimension of Diversity and Equity in the Classroom* serves to identify the connections between pedagogy and student learning, student relationships, and classroom climate. It emphasizes the importance of considering course design alongside facilitation and suggests evaluating the following five dimensions: 1) pedagogical methods; 2) curricula; 3) student learning; 4) classroom

Figure 2. *Five Dimensions of Diversity and Equity in the Classroom*



climate; and 5) group dynamics.

Each dimension is interrelated and interconnected and offers a point of entry for considering how classrooms may be shaped to be more culturally sustaining (Adams, et al., 2016).

How does my climate and classroom interactions affect learning?

A welcoming space, which is a critical component of effective teaching, is a classroom that demonstrates respect for the students. In addition to pedagogical and subject matter knowledge, effective educators relate to their students and possess dispositions such as compassion, fairness, and respect for diversity (Irish & Scrubb, 2012). This fairness involves an environment that provides individual accommodations. Learning about the cultures of individual students provides a foundation for implementing effective accommodations that facilitate learning. Learning about students involves listening to them, interacting with them, and modeling for them.

In the section of who are my students, we offered strategies for learning about students. These strategies, along with others, should be implemented intentionally and become a regular part of the educational experience. Student focus is a big component of learning, and a distracted mind decreases a student's ability to retain information (Paul, 2013). Educators who create a safe and welcoming environment provide the opportunities for students to debrief and discuss the issues that are distracting them, thus allowing them to better focus on instruction. Another benefit of a welcoming environment is that students are more willing to ask questions. These questions offer the educator insight into their level of understanding as well as personal experience of their students. Educators can incorporate these insights into instruction and rapport building.

Reflection

As educators progress through the steps presented in Figure 1, there are places to stop and reflect. This is because “where there is no reflection, there will be no learning”

(Wahlstrom & York-Barr, 2011, p. 32). Reflective practice is considered a powerful norm in supporting educators' competence and helping inform, improve, and achieve high levels of student learning (Bright, 1996; Kruse et al., 1995; Senge et al., 2012; Steffy et al., 2000; York-Barr et al., 2016). In Figure 1, the suggested reflections or continuous critiques are imperative for educators to have a thorough understanding of who they are, understand the students they teach, question their knowledge and assumptions as well as how all of this affects teaching and learning behaviors. Self-reflection is deemed to be as important as the mastery of instructional techniques and can lead to cultural critical consciousness, which is imperative to improving the educational opportunities and outcomes for students (Gay & Kirkland, 2003; Shah & Coles, 2020; Ullucci, 2012). The explicit goal of reflection, an act of self-conscious consideration, is to lead to a deepened understanding and profound awareness of ourselves and others and how social contexts influence us so we may change our thoughts and behaviors (Danielewicz, 2001; Gay & Kirkland, 2003; Ullucci, 2012). To be reflective means intentionally choosing ways of thinking, being, and doing while aware of our thoughts and actions, and committing to continuous growth as a person and educator.

Conclusion

The reality is that special education professionals do not necessarily understand the diverse complexities of students who are from cultural backgrounds that are different from their own. Unfortunately, evidence suggests that they are also not seeking to understand their students' cultural identities. Special education professionals must come to terms with how bias, racism, and ableism influence their daily professional practices. While personal and inner reflective dialogues are imperative, they need to be accompanied by similar dialogues and critical conversations with other educators about diverse social identities, classroom climates, and learning opportunities in education (Gay & Kirkland, 2016). This manuscript discusses how special educators can foster cultures where students' multiple identities are welcomed into their schooling.

To do this, we presented a framework that requires educators to ask themselves, and reflect upon, a series of questions designed to help better understand their students. These questions challenge educators to think critically about their own identity as well as the identities of their students. This framework also pushes educators to think about their teaching and how the classroom climate may create unequal opportunities for success among their students. A key part of this framework is reflection. Answering these questions superficially will not lead to the understanding about intersectionality that is crucial to having a culturally sustaining classroom. Taking time to look deeply and analyze how these concepts affect student success is paramount. Finally, educators should frequently revisit these questions as a way to check-in with themselves and reflect on curriculum, instruction, and current classroom practices that may add to the inequalities that students with multiple-marginalized identities face. Changes in the classroom environment such as new students entering the classroom or introducing new curriculum or instructional strategies, present a good opportunity to revisit these questions and ensure a climate that supports and uplifts all the social identities of the students is maintained.

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Understanding Friendship from the Perceptions of Individuals with ASD: A Synthesis of the Literature

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Abstract: Despite inclusion efforts, research consistently documents the low quality and quantity of friendships of individuals with autism spectrum disorder (ASD; e.g., Petrina et al., 2014). What is less clear from the literature, is how individuals with ASD describe their friendships, what characteristics they value in a friend, and what they enjoy doing with their friends. Understanding how individuals with ASD view friendship can aid in developing interventions to help individuals with ASD foster and maintain positive relationships with their peers. This article synthesizes the literature on friendships from the perceptions of individuals with ASD. Recommendations for practice and directions for future research are provided.

Friendships are critical building blocks for connection and belonging (Hartup & Stevens, 1999). Friendships are also complex and difficult to define (Bagwell & Schmidt, 2011). Traditionally, friendship includes three components: (a) reciprocity, (b) a relationship that derives from mutual affection, (c) and a relationship that is voluntary (Bukowski et al., 1996; Rubin et al., 2006). Friendships are based on choice and personal preference, which are often driven by personality characteristics (Fein, 2015). The longevity of authentic friendships is maintained through shared experiences (Fein, 2015).

The influence of friendship is powerful and impacts several areas of development (Bauminger-Zviely & Agam-Ben-Artzi, 2014). Specifically, meaningful friendships early in life can promote prosocial behaviors like mutual caring, companionship, and empathy (Barry & Wentzel, 2006). For boys, early friendships may also improve social skills in elementary school (Engle et al., 2011). Authentic friendships provide opportunities for children to develop emotional regulation, resiliency, problem-solving skills, and strategies for resolving conflicts (Dunn, 2004). Moreover, research has shown that the presence of friendship can be a protective factor against peer victimization (Hodges et al., 1999; Bollmer et al., 2005), loneliness, and depression (Parker & Asher, 1993; Vitaro et al., 2009). The impact friendship has over the lifespan should not be underestimated. Unfortunately, developing and maintaining friendships is not easy for everyone. This is especially true for individuals with autism spectrum disorder (ASD), as key characteristics of ASD can make it difficult to foster and maintain friendships.

Characteristics of Individuals with ASD that Impact Friendships

The defining features of ASD as outlined in the Diagnostic and Statistical Manual of Mental Disorders (APA, 2013) highlight several characteristics that may make fostering and maintaining friendships difficult. For example, individuals with ASD have a preference for focusing on special interest topics (APA, 2013). This can become problematic in friendships if the individual with ASD will only engage in conversation and play around their preferred interests. The defining features of ASD also include difficulties with social interaction and verbal and non-verbal communication (APA, 2013) making engaging in reciprocal conversations difficult. Moreover, individuals with ASD may have significant deficits in social-emotional reciprocity and deficits in developing, maintaining, and understanding relationships (Bailey & Baker, 2020).

Individuals with ASD may have additional traits that influence their ability to form friendships. For example, cognitive skills may play a role in quantity of friendships for individuals with ASD. Mazurek and Kanne (2010) found that children with ASD who have higher IQs tend to have more friends than children with ASD who have lower IQs. Bauminger-Zviely and Agam-Ben-Artzi (2014) found that individuals with high functioning ASD (HFASD) demonstrated poorer cooperative skills, less positive affect, and less well-developed conversational skills, as well as a more rigid conversation style than neurotypical individuals. Fein (2015) cited additional challenges for individuals with ASD related to understanding others' actions and interpreting the meaning behind those actions. For example, participants had difficulty understanding nonverbal cues, challenges with self-regulation, and a preference for focusing on one task or activity for long periods of time rather than multitasking.

Research indicates communication skills and gender of individuals with ASD may influence friendships (Dean et al., 2014; Orsmond et al., 2013). For example, Orsmond et al. (2013) found individuals with significant impairments related to communication and functional cognitive skills were less likely to receive phone calls from or get together with friends. Further, Dean and colleagues (2014) examined the social relationships of elementary aged students with HFASD and found the social exclusion of boys with ASD is more overt than girls with ASD, who appeared to be overlooked, rather than rejected.

Barriers to the inclusion of individuals with ASD can also impact friendship development. Possible barriers to the inclusion of individuals with ASD include differences in communication style with peers and adults, preferences for working alone versus working in groups, challenges in imaginary role-play, and a propensity to become overwhelmed in highly stimulating environments or chaotic situations (Bailey & Baker, 2020). These differences can present themselves as barriers to inclusion during school activities, in that misunderstandings in communication, increased sensitivity to change or the unknown, and an increase in anxiety and negative reactions can occur throughout various social interactions. Additional barriers to inclusion might include structural factors (e.g., educational placement in more segregated settings with limited opportunities to interact with peers without disabilities), limited teacher training on autism and how to facilitate friendships, and lack of understanding from students without autism on communication and behavioral differences. Taken together, these characteristics of individuals with ASD and barriers to inclusion make fostering and maintaining friendships difficult.

Friendships of Individuals with ASD

The lack of meaningful friendships and social connections for individuals with ASD is well-documented through longitudinal follow-up studies as well as research examining quality of life in adulthood (Orsmond et al., 2013). Overall, researchers have concluded that fewer children with ASD have meaningful friendships than their neurotypical peers (see Bauminger-Zviely & Agam-Ben-Artzi, 2014). Recent research indicates approximately one-half to two-thirds of individuals with ASD do not have any meaningful friendships (Bailey & Baker, 2020; Dean et al., 2014; Orsmond et al., 2013; Shattuck et al., 2011). Moreover, when compared to neurotypical peers, the friendship networks for children with ASD are smaller and weaker (Chamberlain et al., 2007). Research also indicates students with ASD spend less time playing with peers than their neurotypical peers (Locke et al., 2016). Though, it should be noted that at times, solitary play is preferred for those with ASD.

Furthermore, individuals with ASD seem to have more difficulties forming and maintaining friendships than individuals in other disability categories. Adolescents with ASD have been shown to have higher rates of social isolation over adolescents receiving special education services in the areas of intellectual disability, emotional disturbance, and learning disability (Orsmond et al., 2013). More specifically, 40% of students with ASD reported they never get together with friends, which is twice that of individuals with intellectual disability. Nearly half of the individuals with ASD never received phone calls or invitations to activities by friends (Orsmond et al., 2013).

Individuals with ASD can develop friendships, but they often look different than friendships for individuals without ASD. Recent studies (see Bauminger-Zviely & Agam-Ben-Artzi, 2014) indicate students with HFASD maintain authentic friendships which can last between six months and four years. These friendships usually are formed with same-age, same-sex peers, and may develop with typical peers (i.e., mixed friendship) or with peers with HFASD (i.e., nonmixed friendship; Bauminger-Zviely & Agam-Ben-Artzi, 2014). Once the friendships are formed, they do not appear to be as intimate and supportive as neurotypical friendships (Bauminger-Zviely & Agam-Ben-Artzi, 2014; Orsmond et al., 2013).

For individuals with ASD, less focus should be on evaluating the quality and meaning of friendship from an outsider's perception, and more focus should be on individual perceptions and the benefits of that friendship for each person (Winchell et al., 2018). Research has consistently documented that compared to typically developing peers, youth and adolescents with ASD have fewer friends, lower frequency of contact with peers outside of school, shorter duration of friendships, lower level of reciprocity in friendships, and lower levels of friendship quality (Petrina et al., 2014). What is less clear is how individuals with ASD describe their friendships, what characteristics they value in a friend, and what they enjoy doing with their friends. How individuals with ASD define and view friendship may be different from the "traditional" view of friendship (i.e., reciprocal, derives from mutual affection, voluntary; Bukowski et al., 1996; Rubin et al., 2006) but that does not make the friendship any less meaningful. Understanding how individuals with ASD define friendships, what they look for in a friend, what they enjoy doing with their friends, and how they feel they benefit from friendships, can help guide future research and interventions to increase friendship development and support maintaining friendships of individuals with ASD. However, there is limited literature summarizing how individuals with ASD perceive their friendships. The purpose of this review is to synthesize the extant literature on studies conducted with individuals with ASD that examined their perceptions of friendship.

Method

The authors conducted a search of the literature for published studies documenting the perceptions of individuals with ASD on friendship using a multiple-gated process. The process included the following steps: (1) electronic search, (b) title and abstract review, (c) ancestral search, and (d) application of inclusion criteria to potential articles. To identify potential articles a search was conducted in education databases. Search terms included all possible combinations and derivatives of the following terms: (a) autism or Asperger*, (b) friend*, and (c) perspective OR opinion OR belie* OR experienc*. The search was limited to peer reviewed journals and the first two search terms were limited to abstracts. A total of 138 articles were identified through the electronic search.

To identify if articles met the inclusion criteria the first and second authors independently read the titles and abstracts of all 138 articles and retained articles with the potential to meet inclusion criteria. Articles were included in the review if they (a) included participants with ASD, (b) included perceptions from participants with ASD (not peers, caregivers, or teachers), (c) one of the research aims was related to friendship, (d) not an intervention study, and (e) included qualitative analysis. Twenty-four articles were identified as possibly meeting inclusion criteria and interrater reliability was 88%. Then, the first and second author read all 24 articles in full, discussed if the articles met inclusion criteria, and came to a consensus. Ancestral searches were conducted of all articles that met the inclusion criteria stated above. Thirteen studies met the inclusion criteria and are included in this review.

Thematic analysis was used to identify themes across the qualitative data of the identified studies (Braun & Clarke, 2006). While quantitative data are important, for the purposes of this literature review the authors wanted a deeper understanding of friendship, and Bölte (2014) argues that qualitative data are imperative “to gain a deeper understanding of human behavior and experiences” (p. 67). Therefore, the authors only examined the qualitative data of the included articles. To gain a deeper understanding of friendship from the perceptions of individuals with ASD, only data collected from individuals with ASD were examined. To begin analyzing the studies, the first and second authors read the articles independently and looked for patterns across the studies. Once initial patterns were identified the first and second authors reread all articles, abstracted data from the articles into a table, and categorized the data by pattern. Themes were then discussed and solidified.

Results

Five major themes were identified from the 13 studies (see table 1): (1) individuals with ASD have friends and/or want friends, (2) characteristics individuals with ASD seek in friendships/characteristics of their friends, (3) activities individuals with ASD do with friends/shared interests, (4) challenges individuals with ASD experience establishing and maintaining friendships, and (e) bullying. Table 2 provides descriptive information and themes present in the included articles.

Participants

There were 167 participants (112 males and 55 females) across the 13 included studies.

Table 1. *Major Themes Across Included Studies*

1) Individuals with ASD have friends and/or want friends
2) Characteristics individuals with ASD seek in friendships/characteristics of their friends
3) Activities individuals with ASD do with friends/shared interests
4) Challenges individuals with ASD experience establishing and maintaining friendships
5) Bullying

Age of the participants ranged from five to 21 years of age. Across the studies, the diagnosis of the participants included autism, Asperger syndrome, and HFASD. Some participants had comorbid diagnoses including severe learning disabilities, speech and language difficulties, anxiety, global developmental delay, ADHD, dyslexia, OCD, facial tic disorder, depression, epilepsy, and moderate learning difficulties. Not all studies reported race and/or ethnicity. Those that did, reported participants were Caucasian, African American, Latino, White Other, White British, Black African, and Asian. Participant diagnosis and race and/or ethnicity is reported in Table 2 as it was reported in the original study.

Have Friends/Want Friends

The most prevalent theme across included studies was most participants indicated they have friends or want friends with most reporting they have friends. This was mentioned in 10 of the included studies. Participants across studies clearly articulated they have friends (Calder et al., 2012; Cook et al., 2016; Daniel & Billingsley, 2010; Gallup et al., 2016; Howard et al., 2006; Potter, 2014; Rossetti, 2011; Sedgewick et al., 2016; Vine Foggo & Webster, 2017). For example, Rossetti (2011) reported that both participants with ASD had friends, engaged in inside jokes, and were excited to see each other. These friendships were not defined by the researcher, rather participants with ASD identified and described their friendships. For example, in a study examining video game play and social interactions, one participant with ASD shared, "…I can have more friends online and socialize just like you do…" (Gallup et al., 2016, p. 232). These friendships were meaningful to the participants. Of the friendships reported across studies, some participants reported friendships that were stable. For example, four of the seven participants in Daniel and Billingsley (2010) reported stable friendships that maintained over time. Some studies, such as Vine Foggo and Webster (2017) reported benefits of said friendships, such as happiness and emotional support. One participant shared, "Yes, I think having friends around to make you happy is awesome. If you didn't have friends around, which was the case with me for awhile, you feel all alone and feel as though the whole world is against you" (p. 78).

Some participants were unable to identify a friend but articulated they long for friendship. For example, a participant in Cook et al. (2018) shared, "I look towards myself and wish I could get along better with other people, but that's just not the way I function (p. 307)." This yearning for friendship was echoed by the participant in Potter (2014) who shared his desire for a good friend, "David used to be good friends with me…he's not anymore. Why did he *used* to be good friends with me?" (p. 213).

Table 2. *Descriptive Information of Included Studies*

Article	Participant Characteristics (sex, age, diagnosis, race and/or ethnicity)	Educational Setting	Research Aim	Themes Present
Carrington et al. (2003)	4 males, 1 female; 14-18 years old; Asperger syndrome 100% Caucasian	Secondary school which provides support services to students with different learning needs	Identify perceptions of friendship for secondary school students who have Asperger syndrome	2, 3, 5
Howard et al. (2006)	1 male; 12 years old	NR	Understand one adolescent with Asperger syndrome's experience of friendship	1, 2
Locke et al. (2010)	4 males, 3 females; mean age = 14.71 years old; ASD 72% Caucasian, 14% African American, 14% Latino	Regular high school with an autism spectrum program	Examine friendship quality, social networks, and feelings of loneliness of adolescents with ASD	2
Daniel & Billingsley (2010)	7 males; 10-14 years old; 5 Asperger syndrome, 2 autism	Included in general education classes with special education support and/or instruction	Understand the perspectives of youth with ASD about establishing and maintaining friendship	1, 2, 3, 4, 5
Rossetti (2011)	1 male, 1 female; one participant in 12th grade, one in early 20s; autism	One participant attended general education classes with therapies and sensory breaks, the other participant finished high school	Understand the contexts and dynamics of successful friendships	1, 3, 4
Calder et al. (2012)	8 males; 4 females; ASD; mean age = 10 years old 2 White Other, 6 White British, 4 Black African	Mainstream primary school	Examine the functional role of friendship for children with ASD, and their experiences, and satisfaction with their peer interactions and friendships	1, 2, 4, 5
Potter (2014)	1 male; 10 years old; autism and severe learning disabilities	NR	Explore the participant's experience of friendship, perceptions of friendship, and the dimensions of his friendships	1
Cook et al. (2016)	11 males with ASD; 11-17 years old 8 White British, 1 White, 1 Asian, 1 White Other	5 participants were educated in mainstream secondary schools; 6 were educated in special secondary schools	Explore the experiences of males with ASD on learning, social relationships, and bullying	1, 2, 4, 5

Gallup et al. (2016)	3 males; 16-21 years old; high functioning ASD	1 participant educated 70% of day in inclusive classroom; 1 participant educated 100% of day in inclusive classroom; 1 student did not attend high school	Identify the social identities, agendas, and interactions for individuals with ASD playing a MMORPG; describe social interactions that occur between individuals with ASD and their friends during game-play	1, 3, 4, 5
Sedgewick et al. (2016)	10 males, 13 females; 12-16 years old; autism = 19, Asperger syndrome = 4	Special schools	Examine gender differences of adolescent girls and boys with and without autism related to social motivation and friendship experiences	1, 2, 3
Petrina et al. (2017)	62 males; 15 females; 5.81 – 10.42 years old; autistic disorder or Asperger's disorder	NR	Examine friendship satisfaction of children with ASD and their friends, compare level of satisfaction of mixed and non-mixed dyads, and examine features of friendship related to satisfaction	2, 3
Vine Foggo & Webster (2017)	7 females; 13-17 years old; ASD = 3, Asperger's syndrome = 4	Participants were educated for over 90% of their school day in regular class programs and curriculum	Explore how females with ASD understand and make sense of expectations and qualities they and their female peers bring to social interactions and friendships	1, 2, 3, 4
Cook et al. (2018)	11 females; 11-17 years old; ASD = 3, autism = 3, Asperger's syndrome = 5; 6 participants had comorbid diagnosis (i.e., speech and language difficulties, anxiety, global developmental delay, ADHD, dyslexia, OCD, facial tic disorder, depression, epilepsy, moderate learning difficulties)	6 participants were educated in mainstream secondary schools; 5 participants were educated in special secondary schools	Examine the experiences of learning, friendships and bullying in girls with autism	1, 2, 4, 5

Note. ASD = Autism Spectrum Disorder; ADHD = Attention Deficit Hyperactivity Disorder; OCD = Obsessive Compulsive Disorder; 1 = Have Friends/Wants Friends; 2 = Characteristics of a Friend; 3 = Activities with Friends/Shared Interests; 4 = Challenges; 5 = Bullying

In other studies, most participants with ASD reported they felt having friends was important (Sedgewick et al., 2016; Vine Foggo & Webster, 2017).

While most participants in the 10 studies that mentioned individuals with ASD have friends or want friends, not every participant indicated they had friends or wanted friends, some participants indicated they did not have friends and it would be remiss not to mention that (Calder et al., 2012; Cook et al., 2016). As one participant in Cook et al. (2016) expressed, “I usually just have friends in my head…It gets useful at lunchtime…there is this girl that claimed to be my friend, I just, I didn’t know what she was talking about” (p. 258).

Characteristics of Friends

Participants in 10 studies shared a variety of characteristics they look for in a friend or characteristics of their friends. Companionship and emotional support were evident as characteristics individuals look for in a friend. Participants frequently mentioned a friend as being someone who supports them, such as helping them, sticking up for them, looking after them, and being there for them (Carrington et al., 2003; Howard et al., 2006; Locke et al., 2010; Petrina et al., 2017; Sedgewick et al., 2016; Vine Foggo & Webster, 2017). For example, when defining a friend, a participant in Sedgewick et al. (2016) said, “they would always look after me” (p. 1302). This was reiterated by a participant in Howard et al. (2006) who shared, a friend is “someone that looks out for you, and you have to look out the same” (p. 623). This was further captured by a participant in Vine Foggo and Webster (2017) that said a friend is “someone who stands by your side in time of need” (p. 79).

Participants also mentioned seeking out friends they could relate to, who were like them, understood them, and/or accepted them (Cook et al., 2016; Cook et al., 2018; Locke et al., 2010; Vine Foggo & Webster, 2017). In Cook et al. (2016) the participants, who were all male, were more likely to befriend other peers with autism, peers who accepted them, peers with a matched level, or peers who shared the same interests as them. Similarly, participants in Cook et al. (2018), who were all female, most often established friendships with other peers with disabilities or peers who were different in some way. As one participant shared, “So they kind of just resemble me, in a different way, so that’s probably why I got along with them so much” (Cook et al., 2018, p. 307). Participants experienced a sense of belonging and acceptance in these friendships, which was articulated by a participant in Vine Foggo and Webster (2017): “I feel good around my friends all the time because they understand me” (p. 78).

Additional attributes individuals with ASD sought in friends included someone who is trustworthy (Carrington et al., 2003; Locke et al., 2010; Vine Foggo & Webster, 2017), respectful (Cook et al., 2016; Daniel & Billingsley, 2010; Vine Foggo & Webster, 2017), kind (Vine Foggo & Webster, 2017), patient (Locke et al., 2010), tolerant (Locke et al., 2010), someone who keeps secrets (Carrington et al., 2003), someone they keep in touch with, play with, and see regularly (Calder et al., 2012; Carrington et al., 2003; Howard et al., 2006; Sedgewick et al., 2016), someone who has shared interests and they can relate to and talk to (Cook et al., 2016; Howard et al., 2006; Locke et al., 2010), and someone they can laugh with (Sedgewick et al., 2016).

Participants also explicitly stated characteristics they did not look for in friends. This included students who do not follow the rules (e.g., sent to the office), students who are rude or inconsiderate, students who are “thieves" and students who are “stuck up” (Carrington et al., 2003, p. 214). The participant in Howard et al. (2006) also expressed that someone who does not call you back is not a good friend.

Activities with Friends/Shared Interests

In seven of the reviewed studies, participants shared their experiences doing activities with their friends or having shared interests with their friends. One study found boys talked about doing things with their friends and girls’ descriptions focused on shared talk more than shared activities (Sedgewick et al., 2016). Participants across several studies shared a wide variety of activities they enjoyed doing with their friends. Examples of activities included going to birthday parties, hanging out on the weekend, working on school projects, riding bikes, playing football (Carrington et al., 2003), video games, sports, playground games, board games, drawing and playing Legos (Petrina, et al., 2017), shopping, parties, and sleepovers (Vine Foggo & Webster, 2017), playing computer games (Carrington et al., 2003; Petrina et al., 2017), and watching movies or TV (Petrina et al., 2017; Vine Foggo & Webster, 2017). Some students focused their activities with their friends on their restrictive interests (e.g., Dungeons and Dragons; Carrington et al., 2003), and one participant attended a dance class with her friend (Rossetti, 2011).

The virtual world provided a unique opportunity for participants to engage in a shared activity. In virtual environments, participants had more control over who they interacted with and how they interacted (Gallup et al., 2016). Virtual environments provided both a shared interest and activity. Participants mentioned that playing video games with friends gave them something to talk about. One participant shared that because of the relationships he built online he had the courage to meet people face to face: “I like to play with my friends in a virtual environment, then at school we have something to talk about.” (Gallup et al., 2016, p. 233).

In two studies participants described friendship in terms of shared interests, as opposed to activities. For example, one participant said friends, “like stuff that I like a lot” while another participant said, “One thing that I like is that if we have the same interests” (Daniel & Billingsley, 2010, p. 226). Another participant summed up the importance of having something in common with friends, “They’re really nice people who have got the same interests as me…They’re usually weirdos as my parents call them. Yes, so my friends are a bunch of freaks, as they say, and so am I.” (Carrington et al., 2003, p. 215).

Challenges

In seven of the studies, participants discussed challenges they experienced establishing and maintaining friendships. Many participants reported friendships were confusing and they had difficulty maintaining friendships (Calder et al., 2012). Some participants shared specific areas that were difficult for them, such as difficulty identifying who might be a good friend, failing to initiate, not wanting to bother others, and being hesitant in fear of being bullied (Daniel & Billingsley, 2010).

Fitting into friendship groups was difficult for most of the participants (Cook et al., 2018). The participants reported they were picked last for teams in Physical Education, invited friends to social events more than their friends invited them, and no longer got invited to parties (Cook et al., 2018). One participant explained the difficulty within groups. “They talk in their private little groups and I’m not in it. I don’t really care…I don't mind if they do that…actually, I get a bit upset…" (Calder et al., 2012, p. 306). Conflict with peers, difficulties dealing with disagreements, and socializing in groups were all challenges, too. One participant described it as, "Too many people, too many opinions" (Vine Foggo & Webster, 2017, p. 80). Participants shared they would try to fix the friendship by apologizing or by acting as a peacemaker, "I apologize to them even if it's not my fault" (Vine Foggo & Webster, 2017, p. 80).

Participants identified specific difficulties they experienced in social interactions. For example, spontaneous interactions were too quick to formulate a response. As one participant explained, "I talk to you in my brain even though my legs carry me away" (Rossetti, 2011, p. 27). Other challenges included difficulty initiating conversations and social anxiety (Rossetti, 2011). For others, social rules, like knowing what topics were appropriate for conversation, were a challenge for participants in engaging in social interactions (Gallup et al., 2016). Negative self-perceptions increased challenges with socializing and developing friendships (Gallup et al., 2016). Not surprisingly, some participants reported a preference for being alone and feelings of exclusion and loneliness (Calder et al., 2012). When school placement was examined, special schools helped facilitate friendships more than mainstream schools (Cook et al., 2016).

Bullying

Six of the studies identified bullying as a theme. Participants shared examples of their experiences being bullied. One participant said, "They'll put me in a situation-like I say something and then they'll say, 'Ha! Just joking!'" (Carrington et al., 2003 p. 214). Another participant shared, "In Physics, this boy chucks leaves at my face when we were going outside. And then the same boy, he put glue on my face. And then, there's a group of boys that always call me [hurtful name] …or they call me other names that they know I don't like, like 'Frankenstein'" (Cook et al., 2018, p. 309). Experiences of bullying negatively impact establishing friendships (Cook et al., 2016). As one participant explained, "You've got to like closely watch what they're doing or else they'll probably exploit you later on" (Daniel & Billingsley, 2010, p. 226).

Participants could not necessarily count on schools to address bullying (Cook et al., 2016). Instead, participants identified their own ways to handle bullying. One way was to make friends online. The virtual environment prevented them from being bullied, because if someone was not nice, they could delete them (Gallup et al., 2016). Another was finding friends who would stand up for them. "Being a friend is someone who cares for you and protects you when someone is picking on you" (Calder et al., 2012, p. 306).

Summary of Findings

Researchers have consistently documented that youth and adolescents with ASD have fewer friends compared to their typically developing peers, tend to have less contact with peer groups outside of the education setting, and lower levels of reciprocity in friendships (Humphrey & Symes, 2011; Petrina et al., 2014; Wagner et al., 2004). Within the literature, it is stressed that friendships are critical for connection for all individuals, but often difficult to define and study (Bagwell & Schmidt, 2011; Bukowski & Sippola, 2005). This review of extant literature revealed five themes which help to further elucidate the complex nature of friendship for individuals with ASD.

First, and perhaps most important, is the narrative of friendship and ASD is shifting and must continue to do so. There remains a long-standing narrative that individuals with autism do not have friends or have limited friendships compared to their neurotypical peers (Petrina et al., 2014), have fewer meaningful friendships than their neurotypical peers (Bauminger-Zviely & Agam-Ben-Artzi, 2014), and that their friendships may not be as strong (Chamberlain et al., 2007). In contrast, according to the findings in this review, many students with ASD reported *having friends or a desire to make friends*. This review focused on the perceptions of individuals with ASD on friendship and many participants depicted a lived-experience contrary to what has been portrayed within the literature about them in the past. Therefore, perhaps a more nuanced examination of friendships and autism is necessary.

Findings from this review revealed a second theme where many participants were able to articulate desirable and undesirable *friendship traits and characteristics*. Traits articulated coincide with how the literature typically defines friendship in the areas of reciprocity, mutual affection, and the friendship being voluntary (Bukowski et al., 1996; Rubin et al., 2006). This highlights that individuals with ASD not only understand what makes a good friend, they also recognize characteristics that do not equate to solid and beneficial friendships.

Similarly, reciprocity was echoed in the third theme of *activities and shared interests*. Having friendships which stem from mutual interests seemed to be key for the participants in the reviewed studies. The male participants focused more on what they do with their friends and females concentrated more on shared talk rather than shared activities. This difference in how female and male participants describe their friendships is an interesting area for future research; however, mutual interests appear to be something that brought friends together.

According to the results of this review, individuals with ASD have friends and want friends. However, that is not to say that all individuals with ASD experience positive friendships or that they no longer need support in establishing and maintaining friendships. The fourth study theme highlights *challenges* surrounding friendship and ASD. Many of the findings coincide with challenges articulated within the literature surrounding the difficulties individuals with ASD face in the areas of building and sustaining friendships (Bauminger et al., 2003; Humphry & Symes, 2011; Petrina et al., 2004; Wainscot et al., 2008). Interestingly, one study in this review pointed to the importance of families (Howard et al., 2006). Families have long expressed worry over the inadequate opportunities for out-of-school socialization for youth with ASD (Bauminger et al., 2003; Kasari et al., 2011). According to Howard and colleagues (2006), families can provide a variety of opportunities for individuals with ASD to meet and engage with people and use teachable moments to help their children foster and maintain friendships.

Finally, *bullying* was a prominent theme in this literature review. Study participants recounted experiences of bullying and in some cases a hesitancy to form friendships in fear of bullying. Other participants articulated the importance of friendships to combat bullying (Calder et al., 2012) or the convenience of forming friendships in the virtual space (Gallup et al., 2016). Preventing bullying to nurture friendships for individuals with ASD is key (Winchell et al., 2018). Unfortunately, some participants mentioned their school environment was not as supportive around instances of bullying.

Recommendations for Practice

Given that many individuals with ASD desire friendships, the need for training in how to foster such friendships is essential. This is an area of need especially given 44% of youth with ASD never see friends outside of school (Wagner et al., 2004). Families in particular have greater opportunities to extend friendships as they are in closer proximity to engage in the natural, teachable moments surrounding friendships that occur outside of the educational context. For example, Howard and colleagues (2006), demonstrated how a mother scaffolded friendship initiation with her son with ASD. A focus on training in family-led friendship building interventions is important. If the goal is for individuals with ASD to have reciprocal friendships that extend beyond the school environment, additional training for family members and peers outside of the educational setting will yield immense benefits.

Unfortunately, bullying is still present and prevalent in our society which was evident in the review. Bullying inevitably affects individuals with ASD and their friendships which was displayed in the findings of this review. For true friendships to form, it is essential that bullying is addressed in the educational system and that schools foster learning communities that are inclusive, empathetic, welcoming, and caring to all individuals. Cultivating a sense of awareness and advocacy for social justice and equity issues surrounding individuals with disabilities is also an area for future work. Peer networks can be powerful voices in demanding change, but only if students are taught at a young age about tolerance, social justice, and their role in advocating for disability rights.

When establishing friendship supports/ interventions it is essential to look at shared interests as this was mentioned by numerous participants in the reviewed studies as being key to friendship building. In addition, as a research and education community, it is important to ask if there is too much focus on fostering friendships between students with ASD and their peers without ASD. Participants in select studies mentioned the importance of friendships with people with ASD and friendships with people who were "weird" or different "like them" (e.g. Carrington et al., 2003). Participants mentioned how they enjoyed such friendships because people understood them, and they did not feel judged. With this understanding, ASD friendship supports and interventions should focus on nurturing relationships with others, both with and without disabilities, with a key emphasis on shared interests and activities.

Future Directions for Research

Findings from this systematic review are a promising start. Nonetheless, more research must be done on perceptions of friendships from individuals with ASD. This is especially true given what is known about the benefits of friendships for all individuals and that many participants in the studies reviewed expressed the importance of having friends and have the desire to form friendships. There is simply not enough research capturing the voice of individuals with autism regarding their friendships. Their voices on this topic should be the driving force for further research, interventions, and training.

While the scope of research in this area is increasing, there are clear gaps in knowledge in need of addressing. The subjects for this study included 112 males and 55 females. Given that results specify there are differences in how males and females in the sample perceive friendships, additional consideration of the female perspective and perception on friendships is warranted. Further, not all studies reported demographic information about participants, including race and/or ethnicity. Research teams are encouraged to not only report demographic information, but increase the involvement of culturally and linguistically diverse participants when examining friendships of individuals with ASD (Aceves et al., 2015).

This review also revealed a need to better understand the participants with ASD and their experiences in social skills training. At times, it was difficult to ascertain the amount of social skills training, if any, and the type of training participants had in reviewed studies. Any social skills training would likely impact an individual's ability to foster and maintain healthy friendships. Research teams are encouraged to contextualize the efforts and exposures participants have to social skills training and the perceptions of individuals with ASD participating in such training.

Finally, data from this review indicate there may be differences between friendship perceptions of students participating in inclusive settings, those in self-contained settings, and those in center-based settings. For example, Cook et al. (2016) found differences in friendship experiences among males in mainstream school settings and special school settings. Not enough is known about the qualitative differences in friendships between students in inclusive settings and self-contained settings. Therefore, further research on friendship experiences of individuals in various educational settings is necessary.

All in all, the narrative surrounding how individuals with ASD perceive friendship is changing. Simply stated, friendships are occurring. This synthesis clearly highlights that many individuals with ASD have friends or desire to have friends. Individuals with ASD seek a variety of characteristics in their friends, including companionship and emotional support. They also engage in a variety of activities with friends, sometimes around their perseverative interests, and other times in more "traditional" friend activities, such as birthday parties and playing computer games. While it is encouraging that these friendships are occurring, there is more work to be done to create a space where all individuals with ASD can engage in successful friendships and enjoy the benefits of positive and nurturing friendships, if desired. However, the outlook is bright that according to individuals with ASD, many value friendships, desire to make friends, and are often experiencing comradery and companionship in a way that feels right for them.

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Analytical Review of Using Video Technology to Teach Independent and Daily Living Skills to Students with Intellectual Disability

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Abstract: The purpose of this document was to analytically review the literature on the use of videotechnology in teaching independent living skills to students with intellectual disabilities. Sixteen empirical studies were identified and summarized. This review specifically focused on the use ofvideo prompting and video modeling as a video technology strategy.

One of the principal goals of special education is to prepare students with disabilities for postsecondary success through independent living, education, and career opportunities (United States Department of Special Education, 2017). However, young adults with disabilities participate less in postsecondary employment and education (United States Department of Labor, 2018). This disparity is more significant for people with intellectual and developmental disabilities (Newman et al., 2010). Intellectual disabilities (ID) indicate significant limitations both in intellectual ability and adaptive behavior, occurring before the age of 18. Developmental disabilities refer to severe, chronic disabilities resultant to mental and/or physical impairments, established before age 22.

Developmental disabilities are followed by considerable limitations in three or more areas of major life activities: independent living capability, economic independence, learning, mobility, receptive and expressive language, self-care, and self-direction (Brown et al., 2017).

Many individuals with ID manifest adaptive and daily skills deficits. In turn, these deficits can affect their ability to live independently and participate actively within their community (Cannella-Malone et al., 2011). Personal development and self-determination are correlated with positive post-secondary outcomes for students with ID. Personal development skills typically includeseeking educational opportunities, enhancing personal skills, and displaying adaptive behaviors.

Skills associated with self-determination are demonstrating independence, setting goals, and making decisions (Verdugo et al., 2012). Teaching vocational, independent and daily living, and adaptive skills to students with ID can increase their independence, self-determination, and involvement within their environment as well as lessen the necessity for direct care services (Cannella-Malone et al., 2013). Accessible and personalized instruction and assistance through technology offers an additional approach for educational professionals to support students with disabilities (Heider et al., 2019). Video-based instruction has shown to be effective in teaching various adaptive and transitional skills to students with severe intellectual and developmental disabilities (IDD; Cannella-Malone et al., 2018).

Two general methods that can be used to deliver video-based instruction are video modelingand video prompting. When video modeling or video prompting are used to teach daily living skills, there is a greater chance for skill acquisition and maintenance, and therefore improving overall quality of life and community integration (Cannella-Malone et al., 2011). Video modeling consists of making a video of someone demonstrating the complete target skill. The individual watches the entire video at the start of each training session. After the conclusion of the video, the individual is given the chance to execute the skill in its entirety (Cannella-Malone et al., 2011). Alternative methods of video modeling have developed recently. One of those methods is continuous video modeling (CVM). CVM involves the person having access to the video while completing the task as the video plays on a continuous loop (Mechling et al., 2014b). Video prompting consists of an individual watching a video segment of one step of a task or skill and then providing that person the chance to perform that step before watching the next step (Cannella-Malone et al., 2011).

Several studies have examined the effectiveness of video technology in teaching functionaland daily living skills to students with ID. Video prompting and video modeling has been successfully used to teach a variety of independent living skills, such as using an ATM (Cihak et al., 2006; Mechling et al., 2003), grocery shopping (Hutcherson et al., 2004; Mechling et al., 2002) , purchasing food from a restaurant (Mechling et al., 2005), preparing food, cleaning (Shipley-Banamou et al., 2007), and using vocational skills (Bereznak, et al., 2012; Cullen et al., 2017) to people with disabilities. Payne et al. (2012) used video prompting to teach cooking skills to two students with severe IDD. As a result, both students increased their cooking skill task completion. Al-Salahat (2016) used video modeling to teach students with Down Syndrome how to prepare sandwiches. Additionally, Ayres and Cihak (2010) used video modeling to teach independent living skills to students with ID. Results of both studies revealed growth in task performance. Therefore, the purpose of this paper is to review and analyze the effectiveness of video technology in increasing daily living and vocational skills for students with ID in the published literature and compare the effectiveness of video prompting and video modeling on teaching independent living skills to students with ID.

Method

Before the preliminary search, the author incorporated seven criteria for including studies in this review of literature. The inclusion criteria included the following: (a) study used a single-case design; (b) study used students in secondary and post-secondary education; (c) study used students diagnosed with ID; (d) study used video modeling or prompting as the intervention method; (e) study focused on teaching transition, independent, and/or daily living skills; (f) study published within the past 10 years; and (g) study published in the United States. Academic Search Complete, Education Source, ERIC, PsychARTICLES, Psychology and Behavioral Sciences, and Research Starters: Education were used via EBSCOhost to search for articles. The search terms included: (a) intellectualand developmental disabilities, (b) intellectual disabilities, (c) autism, (d) video technology, (e) video prompting, (f) video modeling, (g) transition skills, (h) vocational skills, (i) independence, and (j) daily living skills. The search terms were used both individually and concurrently with other search terms. The search returned 16 relevant articles.

Results

A total of 16 studies were identified and included in this review. Table 1 presents a summaryof the studies. In addition to the summary, the articles presented in this literature review examined the effects of

Table 1.

Summary of Studies Reviewed on using Video Technology to Teach Independent and Daily Living Skills to Students with ID

Authors (Year)	Research Design	Participant Demographics	Video Technology	Skills Taught	Results
Canella-Malone et al. (2011)	Multiple probe across participants design with alternating treatment design	6 male and 1 female middle school students with moderate to severe ID	VP andVM; Cannon ZE 850 CinemaCamera; MacBook Pro 13'	Cleaning: Washing dishes and doing laundry	VP was more effective than VM atteaching daily living skills to middle school students with significant ID; All students increased cleaning skills.
Taber-Doughty et al. (2011)	Alternating treatment design	2 female and 1 male middle school students with mild ID	VM and VP; iPod Nanos andiMovie	Cooking skills	All students demonstrated improvements in cooking skills when using both VP and VM. 2 outof the 3 students showed higher levels of independence in cooking skills using VM as opposed to VP.
Bereznak et al. (2012)	Multiple probe across behaviors design	3 male high school students with moderate ASD and mild to moderate ID	VP; iPhone(running iOS 4.2.1)	Vocational and daily living skills: using a washing machine, making noodles, and using a copy machine	Self-directed VP was effective in teaching daily living and vocationalskills to secondary students with autism and ID. All students increased target skills.
Cannella-Malone et al. (2013)	Multiple probe across participants design	3 male and 1 female high school students with moderate to severe ID	VP; iPod Touch/ *Impromptu*App	Living/Cleaning Skills: washing a tableand vacuuming carpet	All students were able to completeboth cleaning tasks independently with the iPod Touch.
Johnson et al. (2013)	Multiple probe across behaviors design	1 male high school student with moderate ID and autism and 1 male high school student with ID and cerebral palsy	VP; iPod Touch/ *Picture Scheduler*	Food preparation skills	Both students learned to execute three distinctive cooking tasks when using VP. Additionally, bothstudents increased their ability to independently complete cooking tasks when using VP on the iPod.
Taber-Doughty et al. (2013)	Multiple baseline across settings design	2 male and 2 female high school students with moderate ID	VM; iPad/ *Keynote* app	Community related tasks: shopping and office tasks and working at a bowling alley	3 out of 4 students increased their task independence among all tasks.All participants increased task independence in at least two out of the three tasks assessed.

Mechling et al. (2014b)	Multiple probe across participants design	1 male and 2 female high school students with moderate ID	CVM; Laptop	Home living tasks: Cleaning kitchen, living area, and bicycle	CVM was effective in improving completion in cleaning tasks for 2 out of 3 students. CVM paired witherror correction promoted skill completion in the other student.
Mechling et al. (2014a)	Multiple probe across behavior design with alternating treatment design	1 male and 2 females high school students with moderate ID	VM, VP,CVM; Laptop	Home living tasks: putting away items, cleaning, and folding clothes	VP followed by CVM were the most effective methods in improving task completion among all students.
Gardner and Wolfe (2015)	Multiple probe across participants design	2 males and 2 females middle school students with ID	VP; iPad/ *iMovie*	Cleaning tasks: washing dishes	All students were able to learn howto wash dishes using VP with error correction.
Cullen et al. (2016)	Multiple probe across participants design	3 young adult males with IDD - 22yo with AU; 20yo with ID and VI; 24yo with ID and TBI	VP; iPad/ *MyPicsTalk*app	Cleaning tasks: cleaning a table, countertop, and microwave	All students increased accuracy of completing cleaning tasks. 2 were able to generalize their accuracy of completing 3 different cleaning tasks, while the remaining participant was able to generalize his accuracy with completing one different cleaning task.
Spivey & Mechling (2016)	Multiple probe design across settings	3, 21yo students with mild to moderate ID	VM; Laptop	Safety skills: verbally responding to and walking away from a perpetrator	All students improved their safetyskills when using VM. 1 student was able to generalize those skills in another community setting.
Cannella-Malone et al. (2018)	Multiple probe across participants design	3, transition aged (18-20yo) with severe to profound ID	VP; iPodTouch	Daily living tasks: folding shirts, making lemonade, loading dishwasher	All students increased their performance across all types ofskills using VM. However, all students reached mastery of the multicomponent task in fewer sessions than the multistep andsequential tasks.
Gilson and Carter(2018)	Multiple probe across participants design	3 female and 2 male high school students with ID	VM; iPad/*ONEder* app	Employment-related social skills	All students increased their employment-related social skillswith the implementation of VM

Wynkoop et al. (2018)	Adapted alternating treatments design	3 male and 1 female middle and high school students withID	VM and CVM; iPad Mini and iMovie	Independent living skills: cleaning, food preparation, and laundry	3 out of 4 students increased or mastered independent living skills using video-based instruction. The remaining student increased task completion independence using VM. 2 students responded best to CVM with prompting and reinforcement. VM with promptingand reinforcement was the best treatment for one student in the study.
Kanfush & Jaffe (2019)	Single-subject AB design with three replications	3 male and 1 female high school students with moderate ID	CM; DVD player	Food preparation skills	All students mastered specific cooking tasks without prompting.
Heider et al. (2019)	Multiple probe across behaviors design	1 male and 1 female transition aged (21yo) students with moderate ID	VP; iPhone	Vocational skills: creating a nametag, making coffee, and wrapping a box.	An increase in vocational task acquisition when using self-directed VP for both students.

Note: ID = Intellectual Disabilities; ASD = Autism Spectrum Disorder; VI = Visual Impairment; TBI = Traumatic Brain Injury; VM = Video Modeling; CVM = Continuous Video Modeling; VP = Video Prompting video prompting and video modeling in teaching the following independent living skills: food preparation, cleaning, community, and job-related skills. The results are categorized as follows: (a) using video prompting; (b) using video modeling; and (c) a comparison of the effects of video prompting and video modeling.

Using Video Modeling

Six studies examined the effectiveness of video modeling to teach independent living skills to students with ID. Gilson and Carter (2018) evaluated the use of video modeling to enhance employment-related social skills among five high school students with severe ID. Video modeling was provided through an iPad via an application called *ONEder*. The employment-related social skills included: ask for help when needed, verbally acknowledge others, non-verbally acknowledge others, initiate conversation, listen carefully without interrupting, respond appropriately to directions,initiate the end of a conversation, and remained engaged while talking. A set of three behaviors were selected for each student based on their need for personal growth. During baseline, students were provided an opportunity to use the targeted skills and observed on whether or not they exhibited the skills, and their task engagement and proximity to others in the social environment. Instructors could provide support in employment skill instruction as normal without any training. During intervention, students were provided with an introductory video summarizing all three target videos. After the introductory video, each student was instructed to watch the modeling video in its entiretyand complete the task. They were not allowed to watch the video more than once; however, they were provided with verbal and physical prompting for task errors. All students increased their employment-related social skills with the implementation of video modeling.

Spivey and Mechling (2016) investigated the effects of video modeling on teaching safety skills to three transition-age students with mild to moderate ID. All three students participated in a county-funded transition program for students with disabilities. The safety skills taught were verballyresponding to a perpetrator’s questions, requests for money, and physically walking away from a perpetrator. Video modeling was delivered using a laptop. During baseline, each student was taken toa community setting to assess their ability to respond to social safety situations. Prompts were not given during baseline. During intervention, students were presented with the video model of three social safety skills and the correct response to each situation. After watching the video, the participants were asked to respond to each situation. Video and physical prompting were provided fordelayed responses. All students improved their safety skills when using video modeling. One student was able to generalize those skills in another community setting.

Wynkoop et al. (2018) compared the effects of two video modeling interventions (i.e., video modeling and continuous video modeling) on enhancing independent living skills with four middle and high school students with ID. An iPad Mini was used for both video modeling interventions. Students were required to demonstrate an independent living skill task from each of the following areas: cleaning, food preparation, and laundry. During baseline, students were provided an opportunity to execute each skill with no feedback and up to two verbal prompts only to initiate steps. During video modeling with prompting and reinforcement, students watched the video in itsentirety and was instructed to complete the task without having the opportunity to watch the video again. Prompting was offered in the presence of errors or non-initiation. Reinforcement was provided after the completion of the task.

During continuous video modeling with prompting and reinforcement, students watched the whole video once and was asked to complete the skill, while thevideo resumed and continued to play on loop. The students had access to the video while completingthe task in this intervention phase. Prompting and reinforcement was delivered the same as the previous intervention phase. During the prompting and reinforcement phase, students were directed to complete the skill with only prompts and reinforcement and without viewing any form of video modeling. Three out of the four students increased or mastered independent living skills using video-based instruction. The remaining student increased task completion independence using video modeling. Two students responded best to continuous video modeling with prompting and reinforcement. Video modeling with prompting and reinforcement was the best treatment for one student in the study.

Mechling et al. (2014b) examined the effectiveness of continuous video modeling delivered via a laptop on completing home-living cleaning tasks with three high school students with moderateID. During baseline, each student was instructed to complete the cleaning task with physical prompting for incorrect critical steps or no response. Positive reinforcement was also provided for completion. During intervention, each student viewed the video and was asked to complete the skill with the availability of the video on continuous loop. No prompts were given during the interventionphase with the exception of directions to watch the video. Continuous video modeling was effective in improving completion in cleaning tasks for two out of three students. Continuous video modeling paired with error correction promoted skill completion in the other student.

Kanfush and Jaffe (2019) investigated the use of video modeling on a DVD player to teach meal preparation skills to four high school students with moderate ID. Students performed cooking tasks without prompts during baseline condition. During intervention condition, students watched the entire video of a model completing the cooking task and were directed to complete the task. Video prompting was available if students did not initiate steps or through scene selection to show errors. All students mastered specific cooking tasks without prompting.

Taber-Doughty et al. (2013) examined the effectiveness of video modeling to teach community-related tasks to four secondary students with moderate ID. Video modeling was distributed via iPad using the *Keynote* application. Students were given a task analysis comprising of visual symbols and printed instructions and instructed to complete the series of tasks during baseline. During intervention, students were provided with the iPad and advised to complete the tasks. A system of least prompts was provided during baseline and intervention phases for incomplete steps or transitioning to the next task. Results demonstrated that three out of the four students increased their task independence among all tasks. All participants increased task independence in at least two out of the three tasks assessed.

Using Video Prompting

Seven studies evaluated the use of video prompting in teaching independent living skills to students with intellectual disability. Cullen et al. (2016) examined the effectiveness of video prompting delivered through an iPad on the acquisition and generalization of cleaning tasks among three young adult males between the ages of 20 and 24 with ID and autism. During baseline condition, the participants were asked to clean a surface using a cleaning solution and cleaning tool. During preintervention training, the participants were trained on how to use the iPad and the *MyPicsTalk* app that comprised of powering on the iPad, retrieving the home screen, choosing the application, routing the indicated task, playing the video segment until the task was completed, exiting the application, and powering off the iPad. During intervention, debris was placed on the table prior to the participants entering the room. Once the participant entered the room, he wasdirected to clean the table using Mr. Clean and a sponge. The cleaning task consisted of 12 steps.

During generalization, the participants were asked to complete one of three generalization cleaningtasks. Results showed that when the participant viewed the self-directed video prompts, their accuracy of completing cleaning tasks increased. Results also indicated that two of the participants were able to generalize their accuracy of completing three different cleaning tasks, while the remaining participant was able to generalize his accuracy with completing one different cleaning task.

Cannella-Malone et al. (2013) investigated the use of the iPod Touch to teach cleaning skills to four high school students with moderate-to-severe ID. The students were taught to wash a table using a spray bottle and vacuum carpet. During baseline, students received verbal prompts to complete the task. If the student did not initiate a step in the task, the researcher completed the step without the participant seeing the step and asked the participant to move to the next step. The students were taught how to operate the iPod Touch and use the *inPromptu* application. During intervention, students accessed video prompts through the *inPromptu* application on the iPod Touch.Findings revealed that the students were able to complete both cleaning tasks independently with theiPod Touch.

Bereznak et al. (2012) evaluated the effects of using an iPhone as a self-prompting tool to increase independent living and vocational skills for three high school students with autism and ID. The intervention included video prompts delivered via iPhone for three tasks: using a washing machine, making noodles, and making copies. During baseline, the students were instructed to complete all three tasks. Verbal prompts were given, as well as, any non-attempt was completed outside of the view of the student. During intervention, students were given the iPhone and instructed to press play to begin the task. Verbal prompts were not presented during the intervention phase however, task completion was provided in the same manner as it was in the baseline phase. Results of the study demonstrated that self-directed video prompting was effective in teaching daily living and vocational skills to secondary students with autism and ID.

Heider et al. (2019) also examined the effects of using self-directed video prompting delivered via an iPhone to help two students with moderate ID acquire vocational skills. The students in this study participated in their school district's transition program for students with ID,between the ages of 18-22, who defer graduation to attain supplementary vocational and independent living skills. The vocational skills measured in this study were creating a name-tag, making coffee, and wrapping a box. During baseline, the students were presented with a verbal prompt to begin the task and provided with a transcript of the task steps. The iPhone was not available during baseline. During intervention, students were provided an iPhone and verbally directed to complete the task. Students were given a verbal prompt for an initial error or non- initiation of a step. They were provided a model of the step if an error and failure to initiate occurred in the second attempt. During maintenance, the iPhone was placed in sight of the studentand the student was instructed to complete the task. Verbal prompts or error correction were not provided in this phase. Results showed an increase in vocational task acquisition when using self-directed video prompting for both students.

Johnson et al. (2013) investigated the effectiveness of video prompts conveyed through iPodTouch to teach food preparation skills to two high school students with concurrent autism and moderate ID. The cooking tasks in this study consisted of preparing macaroni and cheese, pizza, anda smoothie. Prior to baseline, the students were brought to the kitchen area and the teacher reviewed the materials needed to make each food item. During baseline, the teacher instructed the student to perform the cooking task. Error correction was provided in the form of correctly modeling the incorrect step and directing the student to move on to the next step. Prior to intervention, students were taught how to operate the iPod Touch and access the video prompts from the *Picture Scheduler* application. During intervention, the students were given video prompts on the iPod. They were required to start the video prompt by touching the picture or text related to the task. After each prompt, the students were expected to perform the step exhibited in the video. Verbal and physical prompts were provided in the intervention phase in the event the student did not initiate a step or began a step incorrectly. Both students learned to execute three distinctive cooking tasks when using video prompts. Additionally, both students increased their ability to independently complete cooking tasks when using video prompts on the iPod.

Gardner and Wolfe (2015) evaluated the effectiveness of video prompting with error correction to teach daily living skills to four middle school students with mild and moderate ID. The students were taught to wash dishes. During baseline, students were instructed to complete the dishwashing task. No prompts or error correction were given during baseline. During intervention, students completed the dishwashing task using video prompts and a system of least prompts hierarchy. All students promptly and independently increased their dishwashing skills with the implementation of the video prompting intervention.

Finally, Cannella-Malone et al. (2018) compared the effects of video prompting across different types of daily living tasks with three young adult students with severe ID. The daily living tasks encompassed making lemonade, folding shirts, and loading the dishwasher. These types of daily living tasks included multistep, multicomponent, and sequential tasks. A multistep task was was described as finishing a single task comprised of several discrete steps (e.g., making lemonade). A multicomponent task was described as a single, multistep task done repetitively (e.g., folding shirts). A sequential task was described as finishing a collection of tasks that constitute a larger task (e.g., loading dishes in the dishwasher). An iPod Touch was used as the video prompting method through a pre-installed video application. During baseline, students were requested to complete the task. If the student did not begin the step or began incorrectly, the examiner completed the step outside of the view of the student. During intervention, students were placed in front of the supplies needed to complete the task. The instructor directed the student to watch the video. After each video clip, the student was asked to complete the step demonstrated in the clip. The instructor used video and physical prompts for error correction. All students increased their performance across all types of skills using video prompting. However, all students reached mastery of the multicomponent task in fewer sessions than the multistep and sequential tasks.

Comparison of the Effects of Video Modeling and Video Prompting

Three studies investigated the comparison of video modeling and video prompting on teaching vocational skills to students with moderate to severe ID. Canella-Malone et al. (2011) examined the effects of video prompting and video modeling on teaching daily living skills to seven middle school students with significant ID. Students were taught how to complete two daily living skills tasks: starting a load of laundry and washing a cup, spoon, and plate via video modeling and video prompting. For video prompting for each task, there were 18 separate video clips that showed each step. For video modeling for each task, a single video showing all 18 steps of the task being completed from beginning to end was showed in its entirety. All video technology was filmed using acinema camera and shown on a MacBook Pro laptop. During baseline, each student was separately transported to the laundry basket for the laundry task or to the sink for the washing dishes task. Then, they were told to do the laundry or wash the dishes. During the intervention phase, students were brought to the laundry basket or sink and were instructed on using either video prompting on videomodeling. During the training sessions for video prompting, the student was required to complete each step after watching the step. During the training sessions for video modeling, the student was required to complete the daily living skill task after watching the full video. The students were required to carry out both tasks (laundry and washing dishes) using either video prompting or videomodeling. The results of the study found that video prompting was more effective than video modeling at teaching daily living skills to middle school students with significant ID.

Taber-Doughty et al. (2011) investigated the effects of video modeling and video prompting on teaching cooking skills to three sixth grade students with mild ID. A total of 23 recipes were used in this study. Short videos were produced using iMovie and showed how to complete each recipe from start to finish. Video modeling and prompting were delivered via iPod Nanos. During baseline, students were provided with a paper version of the recipe and directed to make the recipe. During intervention, when using video modeling students viewed the entire video of the cooking task five minutes prior to being requested to prepare the recipe. During intervention, when using video prompting students viewed individual steps by pausing after each step and completing each step before viewing the next step. The results of the study found that all students demonstrated improvements in cooking skills when using both video prompting and video modeling. However, two out of the three students showed higher levels of independence in cooking skills using video modeling as opposed to video prompting.

Mechling et al. (2014a) compared the effects of video modeling, continuous video modeling, and video prompting on completing home-living tasks with three high school students with moderateID. The home-living tasks included putting away items, cleaning, and folding clothes. All video-based methods were administered through a laptop. During baseline, students were notified to complete task, with physical prompts provided for not initiating steps or missing a critical step in thetask. During the video modeling intervention, students were instructed to watch the entire video and execute the task. During the video prompting intervention, students viewed each step on the laptop and asked to complete the step after each video prompt. During continuous video modeling, the video continuously played while the student was instructed to complete the task. Reinforcement was provided during all intervention phases. Video prompting followed by continuous video modeling were the most effective methods in improving task completion among all students.

Discussion

There have been several studies that have examined the use of video technology in teaching various skills to students with disabilities. Specifically, video technology has been shown to be effective in developing daily living and functional skills to students with IDD. However, research in video technology is limited in regard to teaching vocational skills to students with ID. Therefore, theobjectives of this paper were to: (a) review and analyze the effectiveness of video technology in increasing daily living and vocational skills for students with ID in the published literature; (b) compare the effectiveness of video prompting and video modeling on teaching independent living skills to students with ID; and (c) provide recommendations for future research in using video technology to teach daily living and vocational skills to students with ID.

This review revealed significant findings for researchers and experts in the special education field. First, video technology appears to be an overall effective strategy for teaching vocational and daily living skills to students with ID. All participants (*N*=57) in the included studies responded positively to the use of video technology. They all enhanced or mastered target skills.

Second, based on the three comparative studies, it appears that video prompting may be moreeffective at teaching vocational skills to students with moderate to ID (Canella-Malone et al., 2011). Cannella-Malone et al. (2013) discovered video prompting to be more effective than video modeling at teaching independent living skills to elementary and secondary students with severe disabilities.

Whereas, video modeling may be more effective at teaching vocational skills to students with mild IDD (Taber-Doughty et al., 2011). Sancho et al. (2010) and Taber-Doughty et al (2008)'s research supports the use of video modeling in increasing the independence of students with ID. Moreover, inthe study conducted by Taber-Doughty et al. (2011), the only student who responded better to the video prompting method had significantly lower adaptive skills (below 1st percentile) than the other two students in the study. Video prompting may be more effective in students with moderate to severe ID because of the absence in the delay of performing the task. With video prompting, students watch a short clip and are immediately required to imitate the step. Whereas, with video modeling, students are required to complete the task after video the entire video. This delay could impact a student's ability to retain details of the video (Canella-Malone et al., 2011). The efficiency of either video modeling or video prompting may be reliant on individual characteristics or tasks (Mechling et al., 2014a). However, the amount of data is insufficient to determine which type of video-based instruction is more effective.

Third, continuous video modeling could be a possible alternative to video modeling alone. Continuous video modeling (CVM) consists of a video model playing "continuously" as the student completes the task (Mechling et al., 2014b). CVM also eliminates the drawback of time delay in video modeling. CVM may be more appropriate for longer tasks where memorization would be a factor or for tasks with multiple repetitions. However, the pacing of the video is important as viewers can lose their place trying to follow along. Therefore, slower pace videos are recommended when using CVM for students with ID (Mechling et al., 2014a).

Fourth, the type and characteristics of the tasks being performed can impact the effectiveness of video-based instruction. Cannella-Malone et al. (2018) found that video prompting was more effective with multicomponent independent living tasks than with sequential or multistep tasks. The repetitive nature of multicomponent tasks could explain the positive response of students with intellectual disabilities. Multicomponent tasks allow students to practice the skill with multiple opportunities (Cannella-Malone et al., 2018). Additional research is needed to explore how task characteristics can affect task acquisition in students with ID.

Fifth, self-directed video prompting is a video prompting strategy that can further increase the independence in students with ID. It allows students to independently direct short video clips of task steps. This can enhance the generalization of task acquisition as students are able to navigate their own personal devices in various settings. Self-directed prompting also reduces the need for individual support from staff for prompting tasks (Cannella-Malone et al., 2013). In turn, this method of video prompting can be very useful and discreet in work settings because students can refer to their mobile device instead of the assistance from a vocational coach (Heider et al., 2019).

Finally, training participants on how to navigate video technology and applications is essential to the success of the intervention and skill acquisition. All of the studies provided pretraining to ensure the accurate use of the video technology as well as to allow the students to familiarize themselves with the applications and device. Students were provided training either afterbaseline, but prior to the intervention phase or before the baseline phase. Pretraining increases the internal validity of the studies by reducing the likelihood that a lack of independence in using video- based instruction could be a confounding variable.

Limitations

While this review thoroughly examined current data, there are three limitations that should be addressed. The first limitation is that this review of literature considered visual analysis when determining whether or not the intervention was effective. Although every participant improved or mastered skills, this literature review did not consider the level of effectiveness for each study in relation to percentages of non-overlapping data (PND) scores. The second limitation is that the total amount of studies included in this review was 16, comprising of 53 participants. The overall quantity of studies and participants might not be adequate to produce comprehensive analysis and interpretation. The third limitation in this review is the focus on ID. While researching ID is vital to special education, excluding other developmental disabilities may have reduced the likelihood of finding other studies that would benefit students with ID.

Suggestions for Future Research

Future research should investigate the comparison of the various types of video-based instruction on students with ID. video technology. Researchers should examine the pairing of video technology with other instructional strategies to teach transitional and vocational skills. Wynkoop et al. (2018) and Gardner and Wolfe (2015) found video prompting with reinforcement and error prompting to be effective in increasing daily living skills in adolescents withID. Overall, based on the total number of studies found in this literature review, researchers should investigate the use of video technology in enhancing daily and independent living skills in studentswith ID.

In conclusion, video technology appears to be an effective method for teaching daily and independent living skills to students with ID. Various methods of video technology among differenttypes of tasks can be used to increase independence in students with ID. In addition, video technology can be useful for teaching a wide range of independent and daily living skills, such as cooking, cleaning, clerical, social, safety, community, and employment skills. The convenient and inconspicuous nature of video technology, such as cellphones and tablets support generalization and use across school, home, community, and employment settings.

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Building a Transition Assessment for Students with Significant Cognitive Disabilities: *Transition Assessment and Goal Generator-Alternate*

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Abstract: Students with significant cognitive disabilities (SWSCD) historically have fewer appropriate transition assessments with sufficient evidence of validity and reliability as compared to other populations of students with disabilities (Deardorff et al., 2020). The Transition Assessment and Goal Generator – Alternate (TAGG-A) is designed to be a transition assessment for SWSCD providing suggested annual transition goals to enable Indicator 13 compliance. The purpose of this paper is to report on the initial exploratory factor analysis of constructs that occurred during Field Test 1 for the Professional version. During this process, the TAGG-A assessment was decreased from 103 to 39 items and resulted in 10 constructs reconfigured to account for participants' perceptions of item wording. This manuscript reports on the analysis conducted for this important first step in the validation process for TAGG-A. The implications of which drive the discussion of next steps in the research process.

The *Individuals with Disabilities Education Act* clearly states the purpose of special education is to "provide a free and appropriate public education" designed to allow students with disabilities to attain further success in postsecondary education, employment, and independent living (IDEA, 2004). Because of the targeted focus on "postsecondary education, employment, and independent living," IDEA (2004) further mandates transition planning to occur for all students who receive special education services to begin at least by age 16 using a coordinated approach to help students plan for and attain their postsecondary goals. IDEA (2004) further delineates transition planning must use transition assessment(s) to identify individual student strengths, needs, interests, and preferences thus, making transition assessment the cornerstone of transition planning (Pulos & Martin, 2018).

Prince et al. (2014) provided guidance on transition assessment and specifically linked the lack of appropriate transition assessment to a denial of IDEA's Free and Appropriate Public Education (FAPE) mandate. This denial of FAPE occurred because appropriate goals and objectives could not be individualized to student needs without an appropriate transition assessment (Deardorff et al., 2020). Prince et al. (2014) went on to make clear recommendations for transition assessment: (a) it is necessary to use more than one transition assessment, and (b) at least one measure should have sufficient reliability and validity evidence (i.e., a formal assessment). These results should be clearly incorporated into the transition plan.

In 2005, the U.S. Department of Education released a State Performance Plan including 20 State Performance Plan (SPP) indicators (DOE, 2005). These indicators are specifically designed to help states/districts ensure compliance with IDEA requirements. Indicator 13, referred to as the transition indicator, further outlines the importance of transition assessments. Districts are required to report "the percentage of youth aged 16 and above with an IEP that includes coordinated, measurable, annual goals and transition services that will reasonably enable the students to meet postsecondary goals" (National Secondary Transition Technical Assistance Center [NSTTAC], 2012). Indicator 13 requires the connection of transition assessment to services aligned to promote successful outcomes—essentially ensuring annual transition goals must be based on accurate and recent transition assessment results. However, a disconnect exists between available transition assessments, connection to annual transition goals, and Indicator 13 compliance (Deardorff et al., 2020).

Students with significant cognitive disabilities (SWSCD) have limitations in intellectual functioning and adaptive behavior (American Association on Intellectual and Developmental Disabilities [AAIDD], 2021) often expressed through limitations in communication, independent living skills, social skills, and employment (Kurth & Hall, 2019). These limitations result in SWSCD achieving poorer postschool outcomes than students with other disabilities (Grigal et al., 2011). These poorer outcomes are found in education, employment, and integration in the community. Appropriate transition planning has the potential to overcome gaps and poor outcomes, but in order for this to occur, an appropriate transition assessment for SWSCD must have occurred.

A gap currently exists in appropriate transition assessment for this population (Deardorff et al., 2020). Morningstar and Pearson (2008) identified SWSCD do not have a transition assessment that (a) is specifically developed for this population; (b) demonstrates appropriate validity and reliability evidence; and (c) results in information that can easily be incorporated into necessary IEP documents. These findings were confirmed by Deardorff et al. (2020)**;** 80% of participating educators reported not having an appropriate transition assessment for students with more significant needs.

In response to the identified need for an appropriate transition assessment for SWSCD, the *Transition Assessment and Goal Generator—Alternate* (*TAGG-A*) was developed and modeled after the *Transition Assessment and Goal Generator—High School* (*TAGG-HS*; Martin et al., 2015). *TAGG-A* will become the first transition assessment for SWSCD to (a) have sufficient validity and reliability information to be considered a formal assessment (Prince et al., 2014) *and* (b) provide recommended annual transition goals and coordinated activities to promote IEP compliance (Landmark & Zhang, 2013) based on the identified needs. *TAGG-HS* was developed to accurately assess nonacademic skills and experiences associated with post-school success including both employment and postsecondary education for students with mild to moderate disabilities (McConnell et al., 2013). *TAGG-HS* is an online transition assessment (tagg.ou.edu) available in three versions (Professional, Student, and Family). Through the triangulation of these three perspectives, students' relative strengths and areas of need are determined. The *TAGG-HS* system then provides recommended annual transition goals based upon the assessed needs.

The *TAGG-A* project began in 2016 to provide a transition assessment focused on the nonacademic skills and experiences specifically for SWSCD. The purpose of this paper is to report the development and testing of a formal assessment of transition skills, experiences, and expectations related to more positive post-high school education, employment, and independent living outcomes for SWSCD.

Development of Initial Constructs

The development of *TAGG-A* constructs began with an in-depth review of the literature on the postsecondary transition of SWSCD (McConnell et al., 2021). The purpose of the review was to identify the Skills, Behaviors, Expectations, and Experiences (SBEEs) associated with positive employment, further education, and independent living outcomes for SWSCD following high school. The SBEEs were then organized into constructs which were reviewed by an external panel of special education transition experts and pilot tested with a group of professionals, students, and teachers.

Students with Significant Cognitive Disabilities Literature Review

After the research team established a process to identify research studies to include in the literature review, a group of doctoral students conducted an extensive online search using "EBSCOhost" with search terms such as "students with significant disabilities," "follow-up," "employment," and "post-school." In addition, a list of secondary analyses of NLTS-2 data prepared by the National Technical Assistance Center on Transition (NTACT, 2016) was reviewed to identify additional studies including SWSCD. An additional search of articles citing the already identified articles was conducted to ensure the search was vast. The literature review process resulted in a total of 161 possible studies for review. All identified studies were entered into a spreadsheet to report authors and date, title, journal, population included in the study, study design, whether the study included employment, education, or independent living indicators, and a brief synopsis of the relevant skill(s), behavior(s), expectation(s), or experience(s) identified in the article and the relationship to the associated outcome.

The research team reviewed and applied the inclusion and exclusion criteria to each study to determine the relevance of the information in the article to the postsecondary needs of SWSCD. Studies were included if they: (a) clearly identified student behaviors associated with post high school employment, education, or independent living; (b) identified either academic or nonacademic indicators associated with improved post-school outcomes; and (c) included individuals identified by the authors as having significant cognitive disabilities. Excluded studies were those that: (a) only included individuals with mild disabilities and high incidence disabilities; (b) only identified in-school student success indicators; or (c) only specified a disability category (e.g., students with intellectual disabilities) without providing information related to the significance or level of severity of the disability. After the literature review process was completed, 52 articles which aligned to the postsecondary needs of SWSCD were identified. To help identify the most relevant research, the research team divided the final set of articles into two groups: primary and associated. Primary articles were defined as meeting the full inclusion criteria set by the research team, whereas associated articles included individuals identified as having significant cognitive disabilities but met only one of the two other inclusion criteria.

The literature review resulted in the identification of 94 Skills, Behaviors, Experiences and Expectations (SBEEs) that, after careful analysis, the research team determined represented 10 constructs (see Table 1). Several SBEEs included multiple skills, behaviors, experiences, or expectations, resulting in 103 assessment questions designed by the research team. The assessment questions asked the respondent specific information related to the SBEE. Each SBEE was categorized into one of three types: (a) individual skill (includes behaviors); (b) prior experience/service delivery (includes expectations); or (c) support need. Only one SBEE across all the constructs is categorized as a support need. In addition, each SBEE was aligned to an associated postsecondary outcome (i.e., employment, postsecondary education, and/or independent living).

Expert Panel Review and Pilot Test

The constructs and assessment items were reviewed by a panel of 10 experts in the field of special education with a primary focus on transition skills and services for youth with significant cognitive disabilities. These experts agreed to serve on the study advisory panel prior to the study being funded. Assessment items were reviewed for: (a) clarity, (b) content, (c) connection to the construct, and (d) ease of understanding. Revisions were made to assessment items based on panel recommendations. A pilot test of the revised assessment items was conducted with 68 education professionals, 56 students within their classrooms, and 23 of the students' family members. In addition to answering the assessment items, pilot test participants were asked to provide feedback on the appropriateness of the content of the question and the language used. Item responses and answers to the feedback questions were used to revise the assessment questions. Below, each construct is described in more detail.

Initial Assessment Construct Descriptions

The Academics construct (A) includes five SBEEs associated with positive outcomes in postsecondary education and/or employment, with two specified as prior experience/service delivery and three as individual skill. The experience/service delivery SBEEs provide information related to the amount of inclusion and integration experienced during the school day. The individual skill SBEEs address basic and functional academic skills. Each of the SBEEs is associated with a single assessment item except for functional academics which has five separate items.

Table 1. *TAGG-A Initial Constructs Identified by the Literature Review*

	Construct	Number of SBEEs	Number of Items
1	Academics (A)	5	8
2	Agency Assistance (AA)	13	15
3	Employment Savvy (ES)	13	13
4	Family Home Expectations and Support (FHES)	17	17
5	Personal Experiences (PE)	10	10
6	School Experiences (SE)	9	9
7	Self-Determination (SD)	8	8
8	Self-Care (SC)	3	6
9	Social Savvy (SS)	10	11
10	Technology (T)	6	6
	Totals	94	103

Agency Assistance (AA) consists of 13 SBEEs representing the types of experiences or services that lead to better employment outcomes for SWSCD. The SBEEs in this construct are associated with community- and/or school-based programs offering a range of services to help SWSCD obtain and retain employment (e.g., job readiness training, job search assistance, on-site support services, vocational rehabilitation and counseling). The AA construct also includes employment-related experiences such as collaboration between agencies and family members or having a paid co-worker who has received training in providing support to an individual with an intellectual disability. One SBEE, related to job-readiness training, included several behaviors and was separated into two items as a result.

The Employment Savvy (ES) construct also consists of 13 SBEEs associated with positive employment outcomes; however, each is categorized as an individual skill. The skills in this construct represent the things SWSCD can do to find and retain a job (e.g., where to look for a job and how to apply for jobs, work efficiently, and maintain reasonable work attendance).

Family Home Expectations and Support (FHES) includes 17 SBEEs that represent the ways in which family members can help SWSCD achieve more positive post-school outcomes. The large majority of the SBEEs in this construct (15) are categorized as experience/service delivery (e.g., family expectations for employment high school, family involved in transition planning with school staff, and siblings that advocate for disability rights). The two skill SBEEs are connected to this construct as each requires caregivers to expect the skill can be performed and support its development (i.e., engage in household responsibilities and independence away from home). The outcomes associated with this construct are more diverse than previous constructs with eight aligned to employment, four to education, and five to both employment and independent living.

Personal Experiences (PE) has 10 SBEEs which represent a range of experiences and skills related to employment, training, behavior, and getting around the community. The majority of the SBEEs (8) are categorized as experience/service delivery. While all SBEEs are associated with employment outcomes, two are associated with independent living as well.

School Experiences (SE) has nine SBEEs representing a range of experiences and services related to vocational training, employment, and expectations while in high school. The majority of the SBEEs are associated with positive employment outcomes except for participating in personally meaningful activities and receiving life skills instruction which are both associated with independent living.

Self-Determination (SD) has eight SBEEs, all of which are categorized as individual skills (e.g., demonstrates autonomy or empowerment, has self-advocacy skills, and is not afraid of looking for work). Like FEHS, this construct is diverse in its associated outcomes and is grouped as followed: (a) three employment; (b) two education; (c) two employment and independent living; and (d) one education and independent living.

Self-Care (SC) is the construct with the fewest SBEEs (3). Each of the SBEEs are categorized as individual skills associated with independent living outcomes. One SBEE (i.e., demonstrates independent living skills), with multiple skills divided into several items, is also associated with positive employment outcomes.

Social Savvy (SS) has 10 SBEEs associated with employment and/or independent living outcomes (two employment, two independent living, and six both). The individual skills in this construct identify behaviors related to social interactions at school, at work, and in the community (e.g., appropriate classroom social skills, maintains an appropriate personal appearance, and communicates well with others). One SBEE (active participation in community and political life) included multiple behaviors and was separated into two items.

The final construct, Technology (T), has six SBEEs associated with technology use. The first two SBEEs are related to whether or not an individual needs (support) or has access to (experience/service delivery) technology to participate in instructional and social activities. The remaining SBEEs are individual skills associated with a student's ability to use technology to participate in classroom activities (e.g., complete tasks). The outcomes associated with this construct are diverse. One SBBE is associated with employment, one with education and independent living, and four with one with education and employment.

Method

Participant Recruitment

Recruitment of participants for the initial development of *TAGG-A* occurred on multiple levels. Targeted email campaigns through national listservs resulted in recruitment flyers being sent to over 10,000 education professionals across the United States. Professional organizations in the field of transition, intellectual and developmental disabilities, and technical assistance centers distributed recruitment information via social media platforms. Members of the *TAGG-A* research team also conducted multiple national presentations to provide an overview of the *TAGG-A* assessment and to recruit participants within the field of special education.

Efforts resulted in recruitment from 30 states and participation by at least one transition professional from 26 states. Data was collected from 257 transition professionals, 292 students with significant cognitive disabilities, and 84 associated family members. Looking at the connection across assessment formats, 49 triads were completed and 182 dyads of professional and student assessments were completed. The initial stage of assessment and construct development is presented here, and only data collected from the professional version of *TAGG-A* will be discussed.

Inclusion and Exclusion Criteria

Participation in this initial *TAGG-A* development study was based primarily on student demographics. Students must be enrolled in high school and estimated to be between the ages of 14-26 with a diagnosed disability considered a "severe cognitive disability." In addition, the student must be a current high school student covered under IDEA, have a qualifying IEP, and participate in the state's alternate assessment program. Students attending postsecondary programs for individuals with an intellectual disability or having already completed high school were excluded from this study. The requirement for professionals was the professional must have worked with the student long enough to adequately and accurately answer assessment items about the student—approximately 6 months or more. The requirement for family participation was they must be the parent of the youth or have lived with the youth as a caregiver for approximately 6 months or more.

Initial Development Sample

Selected demographics are listed in Table 2 for professional participants and their associated students. The majority of education professionals were white females (~92%), and the majority of students were white males (~60%). The length of the relationship between educators and students averaged two years or more (~51.8%) with 24.8% of educators having known the student less than one year. There was fairly even distribution of students in grades 9 – 12 while 32.3% of students attending a transition-focused 18+ program. The vast majority of students served qualified under IDEA with an intellectual disability (55.0%) followed by autism (26%).

Assessment Distribution

The University-approved Qualtrics survey platform was used to distribute and collect data on assessment items. Professionals, family members, and students each received a unique individualized link to the appropriate version of the *TAGG-A* assessment. Participants accessed the assessment online, and responses were submitted automatically. Over the course of six weeks, the project coordinator sent out biweekly reminder emails to participants to complete assessments. When an assessment was completed, an auto-generated thank you email was sent to the participant as confirmation of assessment completion. Professionals, family members, and students received compensation for participation and full completion of the assessment. Professionals received $30.00 for each completed professional/student dyad, family members received a $10.00 gift card, and students received a $10.00 gift card. Professionals were tasked with collecting all IRB-approved consent and assent forms, completing the professional version of the *TAGG-A* (*TAGG-A-P*), assisting students in completing the student version (*TAGG-A-S*), and recruiting family members; accounting for the increased compensation over students and family members.

Data Analysis

Data analysis proceeded in three general steps. Because we assumed professional educators would exhibit a holistic and less biased view of students' skills, initial construct and assessment development analyses presented here are from only *TAGG-A-P*. First, due to the large number of items in the original *TAGG-A-P* assessment (*n*=103 items), it was preferable to reduce the number of items in the overall assessment. Simply put, we wrote a large number of assessment items at the beginning of the *TAGG-A-P* development so we could assess each factor using the best items. To initially reduce the number of assessment items for further analysis, we investigated correlations between items and the total scores for each construct they were originally designed to assess. Second, a series of exploratory factor analyses were run to further investigate the relations among items and factors and to further reduce the number of items in the assessment. Third, confirmatory factor analyses, including a bifactor model, were run in service of the exploratory purposes of this study to confirm that the structure of the reduced assessment appropriately fit the data. Bifactor models were also investigated to ensure the best model-data fit.

Correlation Analysis of the *TAGG-A-P*

We began our analysis by submitting the items on the *TAGG-A-P* to a correlation analysis to initially reduce the number of items designed to assess each construct. The thought behind this process was that items with scores not adequately correlating with the designed construct were not performing in the way designed and should be eliminated from further consideration.

Composite scores for each participant on each of the 10 designed constructs on the *TAGG-A-P* were constructed by adding the

Table 2. *Professional Demographics and their Students*

Demographic Category	**Professionals**		**Students**	
	N	**%**	***N***	**%**
Gender				
Male	19	7.6%	140	55.8%
Female	230	92.4%	111	44.2%
Race/Ethnicity				
Hispanic/Latino	0	0%	43	16.9%
American Indian/Alaskan Native	8	3.3%	3	1.2%
Asian	4	1.7%	7	2.7%
Black/African American	8	3.3%	46	18.0%
Native Hawaiian/Pacific Islander	0	0%	0	0%
White	241	92.0%	156	61.2%
Age				
11 – 14			41	16.35
15 – 16			70	27.9%
17 – 18			68	27.1%
19 – 20			53	21.1%
21+			19	7.6%
25 – 30	22	9.1%		
31 – 35	51	21.0%		
36 – 40	33	13.6%		
41 – 45	25	10.3%		
46 – 50	35	14.4%		
51 – 55	19	7.8%		
56 – 60	36	14.8%		
61 – 65	22	9.1%		
Students' Grade Level				
9th Grade			36	15.7%
10th Grade			45	19.7%
11th Grade			34	14.8%
12th Grade			40	17.5%
18+ Program			74	32.3%
Length Known Student				
Less than 1 year	54	24.8%		
1 year	51	23.4%		
2 years	40	18.3%		
3 years	43	19.7%		
4 years	15	6.9%		
5+ years	15	6.9%		
Students' Disability Category				
Autism			66	26.7%
Deaf-Blind			1	0.4%
Emotional Disturbance			2	0.8%
Hearing Impairment (inc. Deaf)			1	0.4%
Intellectual Disability			136	55.0%
Orthopedic Impairment			4	1.6%
Specific Learning Disability			21	8.5%
Speech/Language Impairment			1	0.4%
Traumatic Brain Injury			3	1.2%
Multiple Disabilities			3	1.2%
Other Health Impairment			9	3.6%

Note. All questions were optional, therefore not all totals will be equivalent due to missing data points.

scores for each of the items designed to assess that construct. Correlations between each of the composite scores and the items contributing to those composite scores were calculated. Between theoretically defined constructs, correlation ranges varied substantially. Therefore, decisions were made about which items to keep within each construct instead of using an absolute correlation cut-score across all constructs. Because the goal of this step was to eliminate potential items not closely associated with theoretical factors and to significantly reduce the number of included items, the content of each specific item was also investigated. Items designed to assess a primary skill included in each construct were preferred over those assessing skills less closely associated with the construct definitions. Because items with lower correlations were theoretically more related to the core of the construct definition, there were instances that items that were more highly correlated with a construct were eliminated in favor of items with lower correlations. After a thorough look at all item-factor correlations and the specific content of each item, 51 items were eliminated, leaving a total of 52 items across the 10 theoretically-defined constructs.

Structural analysis of the *TAGG-A-P*

We then submitted the 52 remaining items in the *TAGG-A-P* to a series of Exploratory Factor Analyses using maximum likelihood (EFA-ML) estimation and promax rotation using the PROC FACTOR program in SAS®. Specifically, we investigated factor solutions ranging from seven to ten factors and then compared Akaike Information Criterion (AIC; Akaike, 1974) and Schwarz's Bayesian Information Criterion (BIC; Schwarz, 1978) for each solution to determine the optimal number of factors (Preacher et al., 2013). Because this study represents only a first step in the development of the *TAGG-A* and multiple data sources and independent samples will eventually be collected and used to cross-validate our solution, we chose to use the AIC as the primary method for determining the number of constructs and to look to the BIC to help us appropriately choose among acceptable solutions.

Both the AIC and BIC appeared to stop changing drastically with a 10-factor solution, suggesting that 10 constructs were the best fit to the data. Subsequent examination of the factor reference structure matrix showed two items did not substantially load on any of the 10 constructs. Moreover, an examination of the content items included in the analysis revealed one item, asking about the percentage of time a student was enrolled in general education courses, assessed the student's placement, not skills or behaviors displayed by the student. An EFA-ML with a 10-factor solution was again investigated after removing these three items from analysis. All 49 items loaded appropriately onto only one construct with few cross loadings.

To further reduce and refine the number of items on the *TAGG-A-P*, we submitted the 49 retained items to Confirmatory Factor Analytic techniques using maximum likelihood estimation procedures (CFA-ML) using the PROC CALIS program in SAS®. Items were allowed to load onto only the factor identified in the EFA-ML analysis. We then examined the overall fit of the model using a number of indices of fit (i.e., RMSEA: Steiger & Lind, 1980; CFI: Bentler, 1990; TLI: Tucker & Lewis, 1973; SRMR) to determine model-data fit by assessing different aspects of the model. Results of this analysis showed less than optimal model-data fit (χ^2 = 2272.3248, *df* = 1082, RMSEA = .0710, SRMR = .0949, CFI = .8335, TLI = .8190) with two items not loading well on the designated factor. Those two items were deleted, and the reduced model with 47 items was investigated using the same CFA-ML procedures (χ^2 = 2007.1217, *df* = 989, RMSEA = .0687, SRMR = .0796, CFI = .8534, TLI = .8397). Again, model-data fit was less than optimal.

At this point in the analysis, we investigated the content of the specific items included to determine which were most appropriate to keep and which could be eliminated. This investigation had dual purposes. We were first interested in ensuring adequate model-data fit so that items appropriately matched the purposes of the assessment and the assessment would provide usable and interpretable results. Secondarily, we were interested in reducing the overall length of the assessment both to simplify the task for respondents and to potentially maintain the simple factor structure. Upon closer examination of the asymptotic standardized residuals (Landis et al., 2009; Mulaik, 2009), two items appeared to share variance with multiple other items not accounted for in the model. A look at the content of those items indicated that the behaviors in those items were encompassed by behaviors in other items, so they were eliminated from further consideration.

Five additional items appeared to address services the student has or has not received instead of skills that can be taught, and they were eliminated from further analysis because they did not meet the purposes of the assessment. For example, one item targeted for elimination read, “The student has received services from an assigned job placement specialist.” Though an important consideration when developing educational programming for a specific student, items such as this are not teachable skills or behaviors and were thus eliminated. Finally, an examination of groups of items assessing each factor showed that one item did not align with other retained items in the factor and was eliminated from further consideration. Upon this closer look at item content, eight items were targeted for elimination from further consideration. Results of this analysis showed improvement but only approached optimal levels of model-data fit (χ^2 = 1236.8416, *df* = 657, RMSEA = .0618, SRMR = .0665, CFI = .8976, TLI = .8845).

Finally, to model the potential for an overall factor, a bifactor model was employed. The purpose of testing a bifactor model is to simultaneously model a single general trait and, at the same time, to model common variances in groups of items that may exist above and beyond what is modeled across all items (Reise et al., 2010) particularly when both are of equal importance to score interpretation. Essentially, bifactor models are tested when we can safely assume all items measure a common latent trait, but groups of items may be able to differentially model aspects of that trait. Bifactor models differ from second-order factor models in that the target is not what a sample of domains have in common but rather a modeling of common variances in items both generally and according to specific dimensions of the trait. For example, in language testing, bifactor models are appropriate because the general trait measured would be language ability, but groups of items may exhibit common variance such as those testing speaking ability, listening comprehension, or writing capabilities. Results of this bifactor analysis showed adequate model-data fit (χ^2 = 1146.1732, *df* = 666, RMSEA = .0559, SRMR = .0654, CFI = .9152, TLI = .9057) for the remaining 39 items included on the *TAGG-A-P*. Loadings on both the general and specific factors, as well as R^2 values, are given in Table 3.

Table 3. *Standardized Factor Loadings and Reliability Coefficients*

Item[a]	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	R^2
SS	.62										.41	.56
PE	.67										.29	.54
SS	.64										.59	.76
SS	.59										.42	.53
SS	.50										.69	.72
AA		-.74									.15	.57
AA		-.84									.14	.72
SE		-.40									.15	.19
A			.60								.66	.79
A			.51								.72	.78
A			.31								.78	.70
A			.40								.74	.71
A			.12								.77	.60
SC				.66							.42	.61
SC				.72							.59	.86
SC				.56							.67	.76
T					-.94						-.24	.95
T					-.83						-.26	.75
T					-.66						-.14	.46
T					-.59						-.20	.39
FHES						-.72					.67	.96
FHES						-.35					.66	.56
FHES						-.25					.61	.44
SD							-.47				.73	.74
SD							-.68				.69	.94
SD							-.22				.64	.46
SE								-.47			.39	.37
FHES								-.64			.31	.51
FHES								-.47			.15	.24
ES									-.63		.50	.65
ES									-.48		.74	.77
PE									-.13		.72	.54
PE									-.14		.31	.11
ES										.53	.53	.56
ES										.49	.68	.70
ES										.39	.57	.49
SD										.18	.75	.60
SD										.23	.73	.58
SD										.21	.58	.37
a	.90	.71	.92	.88	.87	.82	.85	.62	.73	.87	.92	

Note. F1 = Dispositions and Social Skills, F2 = Job Skill Training and Support, F3 = Academic Skills for Independent Living, F4 = Self-Care Skills, F5 = Technology Usage, F6 = Family and Friend Expectations, F7 = Self-Advocacy for Independent Living, F8 = Community Engagement and Familial Support, F9 = Contributing Factors for Employment Success, F10 = Academic Self-Advocacy, F11 = General Factor; A = Academics, AA = Agency Assistance, ES = Employment Savvy, FHES = Family Home Expectations and Support, PE = Personal Experiences, SE = School Experiences, SD = Self-Determination, SC = Self Care, SS = Social Savvy, T = Technology

[a] Abbreviations for items reflect the initial theoretical constructs listed in Table 1

Reliability Analyses for TAGG-A-P factors

Finally, Cronbach's alpha analyses were investigated for each of the 10 *TAGG-A-P* constructs as well as the general factor (see Table 3). Alpha values for the 10 constructs ranged from .62 (Community Engagement and Familial Support) to .92 (Academic Skills for Independent Living). Alpha for all 39 items, representing the general factor, was .92.

Construct Reconfiguration

Professional educators working with SWSCD viewed the items included in the *TAGG-A-P* differently than the theoretically derived initial 10 constructs. Specifically, data from the 39 items remaining in the assessment were restructured into 10 different, though not unrelated, constructs; however, items were somewhat dispersed across initial SBEEs. Moreover, an overall, general factor was present in this analysis. In other words, professional educators participating in this study viewed the items included in the *TAGG-A-P* as assessing a larger, overarching trait representing the skills, experiences, and expectations for SWSCD upon leaving high school and the specific dimensions of those skills simultaneously. To further define the reimagined constructs of the general factor operationalized by the content of the items resulting from the above analyses, the *TAGG-A* research team consulted with an expert in assessment development and an expert in SWSCD. Construct names were then presented to two educators of SWSCD to confirm the revised construct names matched the content of the included items. In the following paragraphs, the phrase "initial construct" will be used to refer to constructs originally defined by the research team, and the term "construct" will be used to refer to the newly defined factors while simultaneously recognizing the presence of the general factor across all items.

Three constructs identified by the present analyses were markedly similar to those originally defined by the research team. First, to reflect the skill-based nature of the *TAGG-A*, the construct of Self-Care Skills (SCS) was renamed from Self-Care (SC). Only items appearing in the initial Self-Care construct are included in the resulting construct, and no items factored onto other constructs. The resulting EFA decreased from six to three items with little change to its overall definition.

Technology Use (TU) was renamed from Technology (T). Again, this construct aligned with the originally developed initial construct. Results of the exploratory analyses decreased the number of items to four which focused heavily on actual student use of technology to facilitate communication, scheduling, learning, etc., with no items from other initial constructs present.

Finally, the original Academics construct (A) was rethemed into Academic Skills for Independent Living (ASIL) based on data provided by participating professionals. The resulting construct included only a portion of the items (*n*=5) from the initial construct, each focusing on a necessary academic skill implemented within community living situations.

The remainder of the constructs included either items from multiple initial constructs or multiple constructs which resulted from splitting an initially defined construct. For example, the data collected from professional educators participating in this study showed those participants categorized items related to the initial construct of Self-Determination (SD) in two ways. First, items representing individual self-advocacy (*n*=3) factored into a construct named Self-Advocacy for Independent Living (SAIL). Three other items in the initial SD construct were viewed by participating education professionals as being more similar to items originally defined by the research team as evidencing Employment Savvy (ES; *n*=3). Because items from both initially defined constructs contained focused skills like (a) following directions, (b) asking for assistance, and (c) actively participating in planning and other tasks, the resulting construct was renamed as Academic Self-Advocacy (ASA).

Similar to the two constructs described above, both Family and Friend Expectations (FFE; *n*=3) and Community Engagement and Familial Support (CEFS; *n*=3) resulted, in part, from items initially defining the Home Expectations (HE) construct. Items from FFE constitute only those initially related to the importance of financial independence and having friends who support themselves, items in the CEFS construct stress the importance of high familial expectations and community integration and combine two items initially defined as HE and one item initially defined as School Expectations (SE).

Three other *TAGG-A-P* constructs resulted from data collected from professional educators. The new construct of Disposition and Social Skills (DSS) resulted from items operationalizing the initial constructs of Social Savvy (SS; *n*=4) and Personal Experience (PE; *n*=1). The five resulting items for this construct focus heavily on attitudes, behaviors, and social dispositions displayed by students.

Job Skill Training and Support (JSTS) was a newly configured construct built from items originally operationalizing in Agency Assistance (AA; *n*=2) and School Experience (SE; *n*=1) SBEEs. The resulting items are all associated with support in obtaining job skills and employment with additional emphasis on vocational goals written in students' IEP documents.

Finally, the new construct of Contributing Factors for Success (CFS) was based upon the initial constructs of Employment Savvy (ES; *n*=2) and Personal Experiences (PE; *n*=2). The resulting items are focused on knowledge of how to obtain employment and actions related to obtaining employment.

Discussion

Through the iterative data analysis process, *TAGG-A-P* items were carefully considered for retention or elimination based upon statistical and content analysis by experts in the field of psychometrics, special education, SWSCD, and transition. As highlighted in the previous sections, the SBEEs and initial constructs were thoroughly reviewed and revised at different stages by both experts and practitioners. Model-data fit statistics specified in the results section provide the necessary statistical support and indicate the professional constructs are accurate representations of the specified transition areas. The updated construct names better reflect the SBEEs represented in the initial literature review, the nuanced interpretation by practitioners, and the transition-focused content. See Table 4 for an overview of SBEEs by updated constructs. The updated constructs also accurately reflect the specific areas both the research base and the active transition practitioners see as critical for promoting more positive postsecondary success for SWSCD. The target population of this assessment continues to demonstrate the poorest of postsecondary outcomes (Grigal et al., 2011). Providing transition educators with research-identified constructs rooted in SBEEs associated with positive postsecondary outcomes will promote more intentional instruction of skills identified as deficit areas and more opportunities to further develop skills identified as strengths.

Table 4. *Professional Skills, Behaviors, Expectations, and Experiences by Updated Construct Grouping*

Professional Skills, Behaviors, Expectations and Experiences (SBEEs)	
Disposition and Social Skills (DSS)	**Family and Friend Expectations (FFE)**
• Gets along well with co-workers, customers, and supervisors • Has a positive attitude • Has no social problems [at work] – Temperament • Has no social problems [at work] – Character • Has appropriate classroom behavior	• Expectations from family of having paid employment • Expectations from family of being self-supporting after HS • Interacts with peers who have goals and aspirations for career and independent living
Job Skill Training and Support (JSTS)	**Self-Advocacy for Independent Living (SAIL)**
• Community/school-based job readiness training (non-work) • Community and/or school-based job readiness training (work) • Received on-site support services • Participates in vocational/training/work study experiences • Has a vocational goal in their IEP	• Demonstrates empowerment • Demonstrates autonomy • Does not feel afraid of looking for work
Academic Skills for Independent Living (ASIL)	**Community Engagement and Familial Support (CEFS)**
• Demonstrates ability to read • Demonstrates functional academic skills (tells time) • Demonstrates functional academic skills (phone/email skills) • Demonstrates functional academic skills (read common signs) • Demonstrates functional academic skills (money skills)	• Has family that gets information about postsecondary education options from a variety of resources • Engages in the community and participates in personally meaningful activities • Has family members that encourage and support engagement in social and community acquaintances separate from families
Self-Care Skills (SC)	**Contributing Factors for Employment Success (CFES)**
• Has independence in self-care (feeding independently) • Has independent in self-care (activities of daily living) • Has independence in self-care (personal self-care needs)	• Knows how to apply for jobs • Knows where to look for jobs • Has community mobility skills • Has access to transportation
Technology Usage (TU)	**Academic Self-Advocacy (ASA)**
• Uses technology (completing tasks) • Uses technology (learn new things) • Uses technology (follow a schedule) • Uses assistive technology (communicate)	• Has self-advocacy skills (participation) • Demonstrates ability to work efficiently • Demonstrates ability to show initiative • Has self-advocacy skills (accommodations)

Limitations and Future Research

As with any large-scale research project there are limitations that warrant mention. First, this manuscript only describes the initial development procedures for the *TAGG-A-P* version. Though additional data sets not explored in this paper exist (e.g., student and family), they were excluded from this manuscript because the professional version serves as the starting point of analysis. The research team posits practitioners with transition experience and expertise are more reliable evaluators of the students' current performance relative to transition. Moreover, this dataset represents only an initial consideration of the *TAGG-A-P*; subsequent data collection and analysis are warranted, coupled with Confirmatory Factor Analysis and Item Response Theory analyses, to ensure an assessment with ample reliability and validity evidence is able to robustly measure transition strengths and needs for SWSCD. One of the prominent features of the *TAGG-HS* assessment, the model for *TAGG-A*, is its ability to produce specific goal models teachers can modify to individual student needs for use on IEP and transition plans. Future papers will describe not only the analyses of subsequent data but also the process for developing goals aligned to each of the SBEEs specified in *TAGG-A*.

A second limitation of this paper is related to the participants. Though recruitment efforts spanned multiple states, not all recruited educators chose to participate leading to a less representative sample. During subsequent data collection, efforts will be made to recruit from all states and territories and from a broad range of racial and ethnic categories and to increase compensation for teachers, students, and family members to reflect the ever-challenging environment of school and teacher budgets and expenditures.

Conclusion

Though this manuscript is only one step in the larger process of the development and validation of a new online transition assessment for SWSCD, it is a critical first step. This contribution to the field of both transition and significant cognitive disabilities is much needed as highlighted in the introduction. Once complete, the *TAGG-A* will become a tool for teachers to help them: inform instruction; develop Indicator-13 compliant transition plans; write clear and specific goals, objectives, and coordinated activities; decrease chances of litigation; and promote more positive postsecondary outcomes for SWSCD.

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Project for the Advancement of Gifted and Exceptional Students: How are Secondary Teachers Infusing SEL and Executive Functioning into Instruction?

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Abstract: Gifted and twice-exceptional students with autism often experience asynchronous development (Eddles-Hirsch et al, 2010; Peterson, 2009) and diminished post-secondary success (Anderson et al., 2017; Cai & Richdale, 2016). To address these challenges, California Lutheran University is collaborating with LA Unified's Academy of Integrated Arts and Technology to create the Project for Advancement of Gifted and Exceptional Students (PAGES). PAGES aims to increase postsecondary success for gifted and twice-exceptional students with autism by increasing their SEL and executive functioning skills. Specifically, PAGES is coaching secondary teachers to incorporate these skills into their core curricular instruction. This article provides specific examples of how teachers are integrating both SEL and executive functioning strategies into their instruction. Examples of SEL strategies include Zones of Regulation, size of the problem, and expected/unexpected behaviors. Strategies for executive functioning instruction include SOAPStone analysis, using key vocabulary, and sentence starters/graphic organizers. Results from a teacher focus group discussion show increased positive thinking and confidence in implementing SEL instruction. Further, informal student surveys demonstrate that students feel they have progressed in their executive functioning skills.

There are several challenges with educating gifted and talented students, including twice-exceptional (2e) students with autism as these students require specialized instruction. Primarily, there are two overarching challenges with instructing the gifted and 2e student populations. First, there may be a disconnect between a student's academic capability and academic performance. Gifted and 2e students often experience asynchronous development (Eddles-Hirsch et al., 2010; Peterson, 2009). Cognitively, these students' skills may exceed that of their peers; however, they may simultaneously display delays in nonacademic skills such as social and emotional learning (SEL) and self-advocacy, resulting in increased anxiety, depression, and social isolation (Blaas, 2014; Peterson, 2009). Further, 2e students with autism inherently exhibit challenges related to SEL (American Psychiatric Association [APA], 2013) and self-advocacy (Anderson et al., 2017) creating real educational challenges that potentially mask the giftedness of these students. This masking may drive the central focus of instruction away from needed academic intervention and towards an increased focus on behaviors (Anderson et al., 2017; Assouline et al., 2012).

The second challenge is diminished post-secondary success for gifted and 2e students with autism (Anderson et al., 2017; Cai & Richdale, 2016; Mendaglio, 2013; Shmulsky et al., 2015; Tsai & Fu, 2016). Despite equal academic abilities, students with autism are less likely to graduate from college, at a rate of 38.8%, than other students with disabilities (40.7%) and their general education peers (52.4%; Newman et al., 2011). When they do attend college, 2e students experience higher amounts of anxiety, loneliness, depression, social isolation/marginalization, and struggle with becoming independent learners advocating for their unique instructional needs (Gelbar et al., 2014; Shmulsky et al., 2015; Yager, 2016).

The presence of these instructional challenges creates a need for gifted programs to take a holistic approach to instruction. Traditionally, gifted programs in high schools are comprised of Advanced Placement (AP) classes that do not address support for the holistic development of gifted and 2e students (Cai & Rihdale, 2016; Shmulsky et al., 2015). While targeting advanced curricular content, AP courses do not address the non-academic challenges. The inclusion of SEL and executive functioning strategies are two ways in which gifted programs can address non-academic challenges to improve outcomes for gifted and 2e students with autism (Anderson et al., 2017; Durlak et al., 2011). However, there are several obstacles to incorporating both SEL and executive functioning into the instructional day. Teachers feel they do not have the time, resources, or skills to successfully implement direct instruction in these areas due to the academic rigor of today's secondary academic environment. Limited instructional time seems to be a particularly sizable barrier with teachers citing time constraints created by pacing plans, mandated district assessments, and state testing (Durlak et al., 2011). Finding a way around such constraints is important as targeting the non-academic areas of SEL, self-advocacy, and executive functioning has a direct impact on promoting academic achievement and success in post-secondary institutions (Blaas, 2014; Cai & Richdale 2016; Durlak et al., 2011; Pinder-Amaker, 2014; Shmulsky et al., 2015).

To address these instructional challenges, California Lutheran University's Graduate School of Education (GSOE) has collaborated with the Los Angeles Unified School District (LA Unified) to create PAGES: The **P**roject for **A**dvancement of **G**ifted and **E**xceptional **S**tudents. The GSOE is one of 14 recipients of the 2017 Jacob K. Javits Gifted & Talented Students Education Program Grant from the United States Department of Education. Over a period of five years, the PAGES team aims to address the needs of LA Unified's Academy of Integrated Arts and Technology (Academy) to increase appropriate identification and development of skills for gifted and talented students, including 2e students with autism, ensuring both student populations are better prepared for postsecondary success.

The Academy is the only school of its kind within LA Unified, operating as a truly integrative instructional setting for both gifted and 2e students with autism. Opening in August of 2016 with 100 students, the Academy currently has 189 enrolled students across two separate campuses: one middle and one high school. All Academy students receive integrated instruction where both gifted and 2e students are together for every subject and across all grade levels. As such, each class is led by a collaborative teaching team consisting of one general education and one special education teacher. The Academy currently includes grades 6-11, adding a new grade each academic year so that by the 2021-2022 academic year, the school will span grades 6-12.

The PAGES team is working with Academy teachers to implement explicit SEL and executive functioning instruction within their core curricular content in order to better prepare their gifted and 2e students for post-secondary success. While the overarching goals of PAGES are to increase identification and address instructional fidelity, the current article will focus solely on the instructional component of the project, providing examples of SEL and executive functioning teaching strategies utilized by Academy teachers and sharing preliminary qualitative data about Academy teachers' perceptions regarding the inclusion of SEL into their instructional day.

Social and Emotional Learning

Incorporating SEL into daily instruction yields several benefits (Bridgeland et al., 2013; Durlak et al., 2011; Jones & Kahn, 2017). Several research findings demonstrate increased post-secondary readiness in students exposed to SEL within their instructional day (Johnson & Wiener, 2017; Jones & Kahn, 2017). A meta-analysis of 213 studies, found an 11 percentile-point increase in academic achievement for those students participating in SEL programs (Durlak et al., 2011). Further studies have found higher graduation rates (Fink & Geller, 2013), increased student engagement (Durlak et al., 2011), reduced emotional distress (Bridgeland et al., 2013; Durlak et al., 2011), and increased academic knowledge (Bridgeland et al., 2013) in students who have received direct SEL instruction.

PAGES provides Academy teachers direct training and coaching in SEL covering the areas of general social skills, self-advocacy, navigating socially challenging behavior, and social skills tied to academic competence (e.g., collaborative work). The project utilizes the Collaborative for Academic, Social, and Emotional Learning (CASEL, 2020) framework in its SEL coaching process. This framework is also endorsed by the California Department of Education so it is familiar to Academy teachers. CASEL (2020) highlights five competencies necessary for SEL development: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (see Table 1). To target these five competencies, Academy teachers are trained and coached in the following tools: expected/unexpected behaviors (Garcia Winner, 2008), Zones of Regulation (Kuypers, 2011), and size of the problem (Garcia Winner, 2008). Table 2 provides a brief description of these instructional tools.

Integrating Social and Emotional Learning into the Instructional Day

Through their work with PAGES, Academy teachers have adopted many strategies to infuse SEL instruction into their instructional day. Both middle and high school Academy teachers do quick morning check-ins with their students utilizing the Zones of Regulation. Some teachers simply employ Google forms while others use a more visual representation within their Google Classroom. Whatever the format, students are engaging in the following questions:

1. What Zone am I in?
2. What does it feel like?
3. What triggered this Zone?
4. What can I do to help get myself into the Green Zone OR what can I do to remain in the Green Zone?

Students then have 5 minutes to choose and complete an activity to accomplish Question 4. Teachers report that the utilization of this daily strategy has yielded positive outcomes for students. A huge advantage with this strategy is time. Five minutes is a very manageable block of time within the school day. Students are able to complete the check-in and engage in their chosen activity

Table 1. *Five Core Competencies of SEL*

Competency	Skills
Self-awareness	Learning to identify one's thoughts, feelings, and emotions. Acknowledging that thoughts, feelings, and emotions influence behavior.
Self-management	Engaging in impulse control and self-discipline. Motivation, goal setting, and organizational skills.
Social awareness	Respecting others Perspective taking Empathy
Relationship skills	Effective communication Social engagement
Responsible decision making	Analyzing situations to identify and solve problems. Reflecting

Note: CASEL, 2020

Table 2. *SEL Instructional Tools*

Instructional Tool	**Description**	**Example**
Expected/unexpected behaviors (Garcia Winner, 2008)	Expected behaviors are behaviors that are expected at that particular time and/or environment. Unexpected behaviors are behaviors that are unexpected at a particular time and/or environment.	It is *expected* to quietly stand in line at the grocery store. It is *unexpected* to scream and run around the grocery store.
Zones of Regulation (Kuypers, 2011)	Teaches students how to identify and self-manage emotions.	Green Zone: regulated baseline; ready to learn Blue Zone: feeling below baseline (sluggish, sick, sad) Yellow Zone: slightly elevated (frustrated, worried, anxious) Red Zone: Heightened state of alertness (rage, terror, physical outbursts)
Size of the problem (Garcia Winner, 2008)	Teaches students how to manage social behaviors and problem solve.	My pencil breaking is a small problem, requiring a small reaction such as asking for a new pencil. Vs. My pencil breaking is a small problem. My reaction of screaming and throwing the pencil is a big reaction.

without feeling like more time is needed. Further, the daily check-ins are private; students cannot see what their peers are reporting. This gives students the freedom to answer honestly and without judgment. As all students will be engaging in an activity for the 5 minutes, there is no way for students to know which of their peers is self-reporting that they are not in the Green Zone. Lastly, these check-ins provide students with agency, offering a chance to develop and practice self-determination and self-advocacy as students are able to choose the activities that they think will positively impact them. High school Academy teachers build upon this check-in time by incorporating Social Emotional Wellness (SEW) Labs into their instruction. SEW Labs transpire twice a week with each session, a brief 5-10 minutes in length. The Labs incorporate explicit, direct instruction in mindfulness, Zones of Regulation, giving and receiving social feedback, and the size of the problem. These skills are then generalized and infused into other parts of the instructional day.

English Language Arts instruction is another forum in which Academy teachers target SEL skills. Class discussions about literary characters can incorporate and model all three of the SEL tools targeted by the PAGES training team:

1. Expected/unexpected behaviors: Was the behavior of running outside at midnight while singing at the top of their lungs expected or unexpected in their environment?
2. Zones of Regulation: What Zone was the main character in when they decided to leave home for good?
3. Size of the problem: Do you think the character's response of smashing a vase matched the problem of her son coming home late from work?

Academy teachers also utilize modeling in creating student work grouping. With such a diverse student population, teachers are able to engage in purposeful grouping of their students by SEL strengths and needs. In doing so, student collaborative work becomes an avenue of modeling appropriate SEL behaviors and actions. For example, a student with a low frustration tolerance can observe how a student with self-calming strategies is able to remain calm and/or calm themself down when a frustrating situation presents itself. This strategy is particularly popular amongst teachers as it takes zero time away from instructional minutes.

Teachers' Perceptions of SEL Instruction

Academy teachers report several benefits to infusing SEL into their instructional day. Teachers report student growth in choice-making, self-determination, social awareness, self-management, and confidence. Growth in student choice making is evidenced by the types of choices students are making throughout the day. Not only are students making choices with greater ease but they are engaged in making appropriate choices. A high-school teacher describes one of her student's progress with appropriate choice making. In the beginning of the year, the student entered each school day in the Yellow Zone with a lot of pent-up energy. When the daily check-ins first began, the student chose more passive activities to return to the Green Zone such as playing on his phone or reading. The student soon realized that these activities did not, in fact, return him to the Green Zone. Over time, he started to make the choice to leave the classroom to run around the building. His teacher reports that once he engaged in running, he was able to return to the Green Zone and was more engaged at the start of each instructional day.

Students are demonstrating increased social awareness and using more socially appropriate vocabulary to discuss their experiences. Teachers report that more students are able to ask for help or communicate their needs when they are in the Red Zone. It may not always be 100% socially appropriate (e.g., yelling vs. keeping a calm voice) but they have begun to articulate their needs and self-advocate.

Another student asked his teacher for help in responding to a text from a peer. This student communicated that he wanted to respond appropriately in order to effectively build a relationship with his peer. That is, he did not want his response to be inappropriate and thus block the ability for that relationship to grow. Students are also utilizing more SEL vernacular to articulate their experiences and feelings. One student used the term ‘cognitive distortion’ to describe a social experience she was having with another classmate, giving her opportunity to more effectively express how she was feeling and better able to manage her emotion.

The students are not the only ones making gains. For the past 2 years, Academy teachers participated in 1-hour semi-structured focus groups. Participants were asked to reflect on the following main areas:

1. The first impression of the PAGES project when first getting involved, including thoughts about excitement and apprehension.
2. How participants’ ideas about SEL have evolved during the training.
3. In what ways do participants think differently about their teaching.
4. Changes participants made to their instruction after participating in the program.
5. Pressing challenges participants experienced during training and implementation.

Responses were coded using qualitative coding and thematic analysis techniques. Coding was first performed at three levels – open, axial, and selective (Strauss & Corbin, 1990). The open coding encompassed several coding methods noted by Saldaña (2013). Coding methods included, but were not limited to, in vivo coding (the code refers to a word or short phrase from the actual language found in the data), process coding (a set of codes that use gerunds exclusively to connote action in the data), and values coding (codes that reflect a participant’s values, attitudes, and beliefs). The focus group data was open-coded until it reached the saturation point (Padgget, 1998).

Table 3 shows the four themes and quotes from focus group data with the Academy teachers. A common theme extracted showed that teachers’ ideas about SEL have evolved since their participation in the project. Quite a few teachers mentioned that participation in the program has prompted their instruction to focus more on the students’ emotional status and not just the behaviors. These teachers indicated that they: “shifted away from [a] behavioral focus,” and had “more focus on emotional status.” Teachers also experienced a change in behavioral level, such that they experienced a “raised sensitivity to students’ emotional need[s].” Further, involvement in PAGES allowed Academy teachers to be more flexible in teaching SEL competencies, with several teachers stating they had increased flexibility in their evaluation of students’ abilities, changed their instruction to increase opportunities for students to demonstrate their abilities, and were more reflective of their instructional practice. The fourth theme showed that teachers perceived a need to learn more and be able to share PAGES lessons with teachers who do not participate in the project.

Executive Functioning

At its most basic definition, executive functioning is the ability to plan and execute (Yermish, 2012). However, various models of executive functioning demonstrate its incredibly complex nature, incorporating a myriad of skills that assist in daily functioning (Kofler et al., 2019). Such skills include working memory (Baddeley, 2007), impulse control (Alderson et al., 2007), focus (Brown & APA, 2017), and emotional

Table 3. *Themes and Quotes from Focus Group Data*

No.	Theme	Quotes
1	A shift of thinking	"shifted away from [a] behavioral focus, and more focus on emotional status" "I feel stronger everyday how important social emotional learning is for all students…It's overall more important than the academic needs for living life as an adult" "The program's training helped me focus on their non-academic and more important areas of development" "…showed me how integral their social-emotional needs are in order for them to be academically successful" "It made me more reflective of the ways I am intentionally incorporating SEL into my classes"
2	More empathetic and sensitive to students' emotions	"raised sensitivity to students' emotional need[s]." "I learned to be more empathetic and understand our students' social emotional learning" "I have begun to be more compassionate for students…" "I have been more sensitive to their emotions and frustrations than I did before"
3	Involvement in PAGES allowed Academy teachers to be more flexible in teaching SEL competencies	"I have been thinking outside the box much more, also offering more options than I usually would" "As a result of the participation ….I have used strategies such as size of the problem in the management of my classroom." "Teaching students strategies to deal with their emotions by identifying, to decreasing the negative emotions, to advocating or themselves"
4	A need to do more, and share lessons learned in PAGES	"The largest difficulty is how different teachers have implemented their learning from the PAGES program differently. Also, not all teachers attended the training and meetings" "We were not able to share our learning with non-participants because there was no designated time to disseminate the information from our trainings" "The co-teaching dynamic [PAGES' model] is critical. These relationships must be established early on and paired intentionally based on pedagogical beliefs and planning styles…"

regulation (Kaplan & Berman, 2010). These skills are pivotal in helping students complete assignments, produce and demonstrate knowledge, and maintain attention and focus; all skills that students need for academic success.

There are several reasons why gifted and 2e students may struggle with effective executive functioning skills. First, fast processing skills may cause gifted students to bypass learning more seemingly basic skills such as attention and emotional regulation (Brown, 2005; Kaplan & Berman, 2010). Further, teachers may not think to explicitly target executive functioning skills as students' other skills outpace, and subsequently mask, these missing skills (Xiang et al., 2011). Lastly, a 2e student's identified disability may be the reason behind underdeveloped executive functioning skills (Assouline & Whiteman, 2011). Challenges with executive functioning are particularly evident in the area of English Language Arts where gifted students show a decline in scores from elementary to high school (See Table 4; Xiang et al., 2011). Xiang et al. (2011) found that 47.6% of high-performing students in elementary school were no longer considered high-performing by the end of high school. This finding mirrors Plucker et al.'s (2011) findings of decreasing NAEP

Table 4. *Percent Scoring Advanced Reading Scores by Ethnicity*

Ethnicity	Grade 4	Grade 8
Asian/Pacific Islander	16.8%	7.8%
African-American	16.8%	.7%
Latinx	2.7%	1%
White	10.9%	4.7%

Note: Plucker et al., 2011

(National Assessment of Educational Progress) reading scores amongst gifted students.

A lack of direct reading instruction, and in particular reading comprehension instruction, may account for such decreases in achievement. The National Reading Panel has identified reading comprehension as an essential component of reading instruction (Nation et al., 2006). Continued academic success is built upon students mastering the transition from learning to read to reading to learn. Reading comprehension also requires the successful execution of executive functioning skills: the ability to focus on pertinent information (i.e., attention) and engage in self-monitoring one's comprehension (i.e., self-regulation; Carnahan et al., 2011). Yet, these skills are difficult for gifted and 2e students (Yermish, 2012) making it more challenging to identify a purpose for reading, engage in inferential thinking, and employ comprehension repair strategies when needed (e.g., generating questions, comprehension monitoring; Carnahan et al., 2011).

Gifted students may further struggle with reading comprehension as they are not explicitly taught how to represent their knowledge (e.g., writing down and organizing assignments, taking notes). Teachers may observe the aptitude for developing knowledge in these students and assume successful output naturally follows (Xiang et al., 2011; Yermish, 2012). This instructional "hands off" approach from teachers may indicate that academic decline is not due to a lack of content knowledge, but rather difficulty knowing how to engage effectively in the output of knowledge (Yermish, 2012). For example, a student may memorize facts and have all the relevant background knowledge to answer an essay prompt but not know how to pick and choose the most pertinent information to make a compelling and concise argument.

Difficulty with reading comprehension and effective knowledge output is not restricted to English Language Arts. All secondary subjects require students to effectively read and demonstrate their knowledge. Further, it may be easier to target skill development in classes other than English, such as history, as these courses focus more on concrete details and linear thinking; whereas, the literature in English classes is often less predictable, non-linear, and replete with complex characters with emotions. Therefore, the PAGES team is targeting executive functioning in both reading and writing instruction throughout all subject areas.

Integrating Executive Functioning Skills into Reading & Writing Instruction

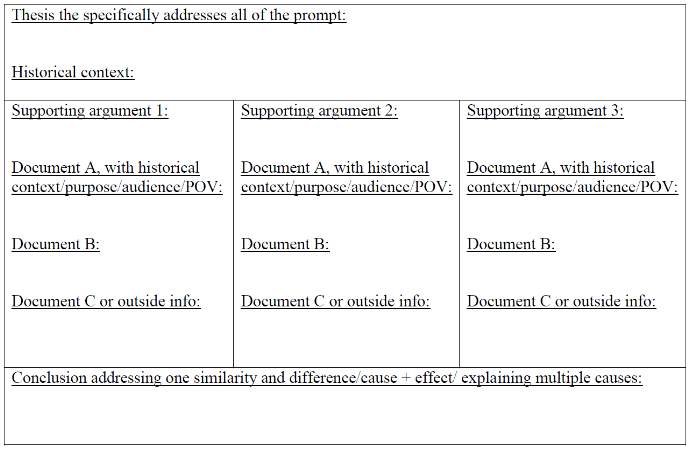
Academy teachers are focusing on instructional strategies such as teaching high value vocabulary, sentence starters, and graphic organizers. Teachers present these three strategies in the form of visual supports, identified as an evidence-based practice for students with autism (Wong et al., 2014). High value vocabulary is used as both a comprehension strategy and as an aide for student output. The teachers are instructing students to look for key vocabulary within the text that is connected to the information students are expected to produce. Specifically, what type of response is expected when certain vocabulary is used? (see Table 5). This strategy increases students' reading productivity, aiding in the finding of pertinent details and better organizes their responses to text. The use of sentence frames and graphic organizers creates a writing formula for students, also allowing students to focus their information output (see Figure 1 for an example of a graphic organizer). Highlighting key vocabulary, sentence frames, and graphic organizers have resulted in a more effective output of student knowledge as teachers report that written responses have increased in accuracy and focus.

A subject specific graphic organizer is the SOAPStone, utilized by the AP History teaching team. The SOAPStone is a series of questions aimed at facilitating students' analysis of historical documents (see Figure 2). The specific questions, especially those regarding purpose, audience, and tone require students to engage in inferential thinking and tap into Theory of Mind processes. Students must answer all of the SOAPStone questions before they begin further analysis, forcing students to slow down and organize their thought process. The AP History teachers feel this has allowed both their gifted and 2e students to approach complex comprehension tasks with greater focus and purpose, resulting in decreased student anxiety and frustration.

Table 5. *Key Vocabulary and Sentence Starters*

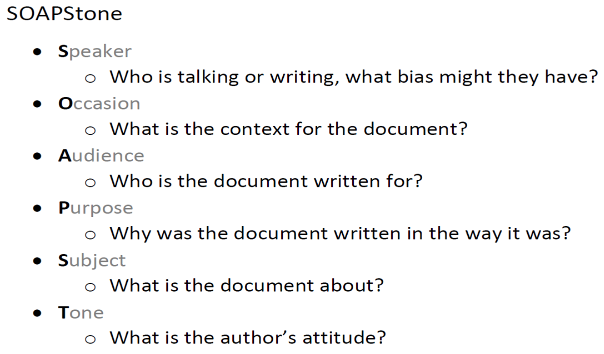
Look for	Words to Use
Documents use the same information or language	Corroborate Authenticate Confirm Validate
Documents have conflicting information or language	Disputes Challenge Contends Contradicts
Document doesn't outright say something; uses "hinting" words: -suggest -may, might -possibly, probably -could	Infers Deduce Guess Derive
Document shows possible bias; uses "strong" words -always; all the time -never -definitive -best, worst	Lacks credibility Unreliable Unsure Improbability

Figure 1. *Graphic Organizer for AP History*



Thesis the specifically addresses all of the prompt: Historical context:		
Supporting argument 1: Document A, with historical context/purpose/audience/POV: Document B: Document C or outside info:	Supporting argument 2: Document A, with historical context/purpose/audience/POV: Document B: Document C or outside info:	Supporting argument 3: Document A, with historical context/purpose/audience/POV: Document B: Document C or outside info:
Conclusion addressing one similarity and difference/cause + effect/ explaining multiple causes:		

Figure 2. *SOAPStone Questions*



SOAPStone

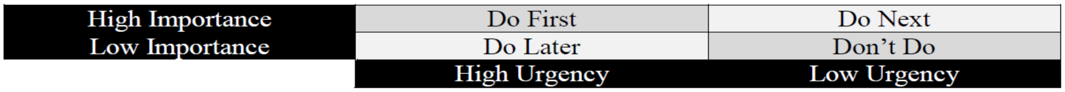
- **S**peaker
  - Who is talking or writing, what bias might they have?
- **O**ccasion
  - What is the context for the document?
- **A**udience
  - Who is the document written for?
- **P**urpose
  - Why was the document written in the way it was?
- **S**ubject
  - What is the document about?
- **T**one
  - What is the author's attitude?

Lastly, the SEW Labs used for SEL instruction are also utilized to target executive functioning skills. Specifically, teachers are capitalizing on SEW Lab time to explicitly teach planning and scheduling using the Eisenhower Priority Matrix (see Figure 3). The matrix helps students understand and prioritize their time to more effectively complete school activities. Students are learning to discern academic tasks that need to be completed with urgency (i.e., right away), which tasks they have more time to complete, and which tasks can wait until more urgent tasks are completed. By doing so, students are practicing and strengthening two important components of executive functioning: planning and executing.

Outcomes of Executive Functioning Instruction

Two Academy high school teachers worked with students to set executive functioning goals at the beginning of the academic year. From a choice of 10 skills, students chose three skills they wanted to develop in the upcoming school year. The list of skills included: planning, task initiation, time management, organization, self-control, working memory, metacognition, attention, flexibility, and perseverance. Every 5 weeks, students reflect on their goals, considering their strengths and challenges and honestly report if they think they are making progress towards their goals. A survey of students at the end of fall semester showed that the

Figure 3. *The Priority Matrix*



High Importance	Do First	Do Next
Low Importance	Do Later	Don’t Do
	High Urgency	Low Urgency

Figure 4. *Percentage of Students Reporting at Least Some Improvement in Executive Functioning Skills*

majority of students (93.8%) felt that they had made at least some improvement in their executive functioning skills (see Figure 4). This is important as not only does it demonstrate that students believe their skills are increasing but by engaging in self-reflection, students are practicing important SEL (e.g., self-management) and executive functioning (e.g., perseverance) skills in tandem.

Conclusion

The instructional needs of gifted and 2e students with autism require gifted programs to include more holistic instruction in both SEL and executive functioning skills. Taking minimal time away from core instructional contact, Academy teachers are able to infuse both SEL and executive functioning into their instructional day using instructional tools such as expected/unexpected behaviors, Zones of Regulation, size of the problem, key vocabulary, and sentence starters/graphic organizers. Both students and teachers report positive outcomes, demonstrating the importance of incorporating essential SEL and executive functioning skills into the instructional day. Further, it is possible to do so without sacrificing valuable academic time. It therefore becomes imperative to build upon these strategies in other schools and with more grade levels to ensure the best possible post-secondary outcomes for gifted and 2e students.

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Evaluating the Impact of Reinforcer Magnitude on Response Allocation Across Two Communication Modalities

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Abstract: The purpose of this study was to evaluate the impact of reinforcer magnitude on response allocation across two different communication modalities (vocalizations and picture exchange). A reversal design was used to evaluate the effects of altering the magnitude of requested items with one male participant with a significant development delay diagnosis who engaged in limited and inconsistent vocalizations. This study took place in two contexts: a classroom that served kindergarten to second grade students with intellectual disability and autism spectrum disorder and a teachers' workroom. In the first intervention, the participant received the larger magnitude reinforcer or vocalizations and small magnitude reinforcer for picture exchange. In the second intervention, the participant received small magnitude reinforcer for vocalizations and the large magnitude reinforcer or picture exchange. The results showed that the participant allocated responding to the communication modality that received the larger magnitude of the requested item.

Individuals with significant developmental delays (SDD) often experience deficits in communication. Learning alternative modes of communication may help augment these barriers (Light & McNaughton, 2015). Individuals with complex communication needs (CCN) may rely on assistive technology such as augmentative and alternative communication (AAC) to become an active participant in their school, home, and community (Light & McNaughton, 2015). Binger and Light (2006) estimated that more than 12% of preschoolers eligible for special education services required the use of AAC. Some examples of AAC commonly used with individuals with SDD and CCN include Picture Exchange Communication Systems (PECS; Bondy & Frost, 1994), speech generating devices (e.g., Proloquo2Go), and manual sign. Given the communication diversity amongst individuals with SDD, AAC implementation is based on an ongoing AAC evaluation and widely varies across the user's specific needs, environment, and characteristics (Binger & Light, 2006). Individuals with SDD may solely rely on AAC to communicate or rely on AAC to augment existing vocal abilities. Similarly, individuals with SDD may rely on AAC for a short period of time or for a lifetime. Caregivers express concern (Romski & Sevcik, 2005) that early AAC use may hinder speech development despite existing literature refuting these claims (White et al., 2021; Schlosser & Wendt, 2008).

Researchers demonstrated how a reinforcer is delivered or the parameters of reinforcement (i.e., delay, magnitude, quality, rate) can impact the communication response exhibited by individuals with SDD and CCN.

For example, Cagliani et al. (2017) and Carbone et al. (2010) evaluated the effects of delay to reinforcement when transitioning or shifting response allocation from AAC to vocalizations. Reinforcer magnitude is another parameter of reinforcement that may be considered to impact communicative response variability (Trosclair-Lasserre et al., 2008). Magnitude is the intensity, quantity, or duration of a reinforcer provided for engaging in the target behavior (Hoch et al., 2002; Trosclair-Lasserre et al., 2008). Hoch and colleagues (2002) evaluated the effect of magnitude on play area selection for a participant with autism. Following an evaluation where the researchers determined the participant(s) preferred playing alone, the researchers set up two play settings with identical toys that were highly preferred by the participants. The participant's peer was in one of the two play areas, and there was no peer in the second play area. If the participant selected the play area with the peer, he received 90-s access to the play area; if he selected the play area without the peer, he received 10-s access to the play area. The results of this study demonstrated that participants may allocate responding to a less preferred activity if the magnitude of reinforcement is greater than the higher preferred activity. Trosclair-Lasserre et al. (2008) extended these findings by demonstrating that children with IDD may demonstrate a preference for larger magnitudes and engage in greater response resistance when reinforcer magnitude is larger. Researchers have evaluated the effects of reinforcement magnitude on adaptive behavior (Volkert et al., 2005), academic or skill acquisition (Fiske et al., 2014; Lovitt & Curtiss, 1969; Ward-Horner et al., 2014), and Functional Communication Training (FCT; Ferguson et al., 2019; Vollmer et al., 1999). Additional research is necessary to evaluate the effects of reinforcer magnitude in the context of communication training especially for individuals that communicate with multiple modalities (e.g., AAC and spoken words). The purpose of the current study was to evaluate the effect of altering reinforcer magnitude on response allocation across two communication modalities: AAC (picture exchange) and spoken words. The research question we sought to answer was: What are the effects of reinforcer magnitude on response allocation of picture exchange and spoken words for one individual with an educational eligibility of significant developmental delay (SDD) in the context of the classroom?

Method

Participant, Materials, and Setting

One 5-year-old male with SDD, Jacob, participated in this study. Jacob was recruited based on his proficiency with Phase I of PECS and his slow progress with occasionally emitting spoken words. Jacob attended a university-operated special education classroom located in an urban public school. Prior to the study, the legal guardians provided written permission for Jacob to participate. A basket containing a timer, data sheets and procedural fidelity sheets, and two bags (one with larger magnitude reinforcers and the other with smaller magnitude reinforcers) of three edible reinforcers (barbecue chips, Doritos, and Skittles) was placed in the workroom, where the study took place. Sessions were conducted during morning snack time, immediately after lunch, and at the end of the day snack time. The amount of food provided during sessions did not exceed the amount that would have been provided during typical snack/mealtime.

Dependent Variables, Data Collection, and Reliability

The current study measured two dependent variables: targeted vocalizations and picture exchanges. Researchers defined targeted vocalizations as a full spoken word corresponding with the available reinforcer following the stated contingency. The secondary dependent variable was picture exchange and defined as placement and release of a picture card by Jacob on the researcher's hand. A 5-s changeover delay (COD; adapted from Herrnstein, 1961, and Krageloh & Davidson, 2003) was added to the protocol. Specifically, no reinforcement was provided when Jacob emitted both responses simultaneously (e.g., Jacob handed the picture while vocalizing).

The researchers collected data to calculate interobserver agreement (IOA) data during a range of 30%-60% of all sessions within each condition. IOA coefficients were obtained by conducting a point-by-point agreement comparison of the observers' records. Agreement averaged 100% across all sessions. The researchers collected IOA for the magnitude assessment and paired-stimulus preference assessment for 33% of sessions, and the data agreed 100% across all sessions.

Experimental Design, Procedure, and Procedural Fidelity

An ABA (A = large magnitude for vocalization/ small magnitude for picture exchange; B = large magnitude for picture exchange/small magnitude for vocalization) reversal design was used to evaluate the impact of reinforcer magnitudes within the context of a concurrent schedule. The concurrent schedule comprised two components, with one component programmed to produce large magnitude reinforcer and the other programmed to produce low magnitude reinforcer.

The researchers calculated procedural fidelity data for an average of 60% of all sessions within each condition. The procedures of the intervention were implemented with 95% (90%-100%) fidelity. The researchers collected procedural fidelity data for the magnitude assessment and paired-stimulus preference assessment for 33% of all sessions; both assessments were implemented with 100% fidelity.

Intervention A: Large Magnitude Vocalization

During Intervention A, Jacob had the ability to concurrently communicate with vocalizations and picture exchange. Prior to the start of a session, the researcher presented an array of three snack items to Jacob and offered an opportunity to pick one. After Jacob picked an item, the researcher vocally labeled the item for him and placed the corresponding picture card in front of him. Following the preference assessment, the researcher ensured the picture card was available to Jacob and the 3 min session began. At the start of each session, the researcher held up both a smaller magnitude and larger magnitude of the requested item, and stated the contingency, "If you say [name of item], you can get a big [name of item]. If you hand me the picture, you can get a small [name of item]." During the session, the therapist repeated a vocal prompt to communicate (e.g., "Let me know if you want something") every 30 s. Throughout the session, the researcher reminded Jacob to let her know if he wanted something. If Jacob vocalized, he received a large magnitude of the requested item. If Jacob exchanged the picture, he received a small magnitude of the requested item. The timer was paused when Jacob consumed the requested item. The session ended at the completion of 10 trials, or when 3-min of session time (exclusive of consumption) elapsed.

Intervention B: Large Magnitude Picture Exchange

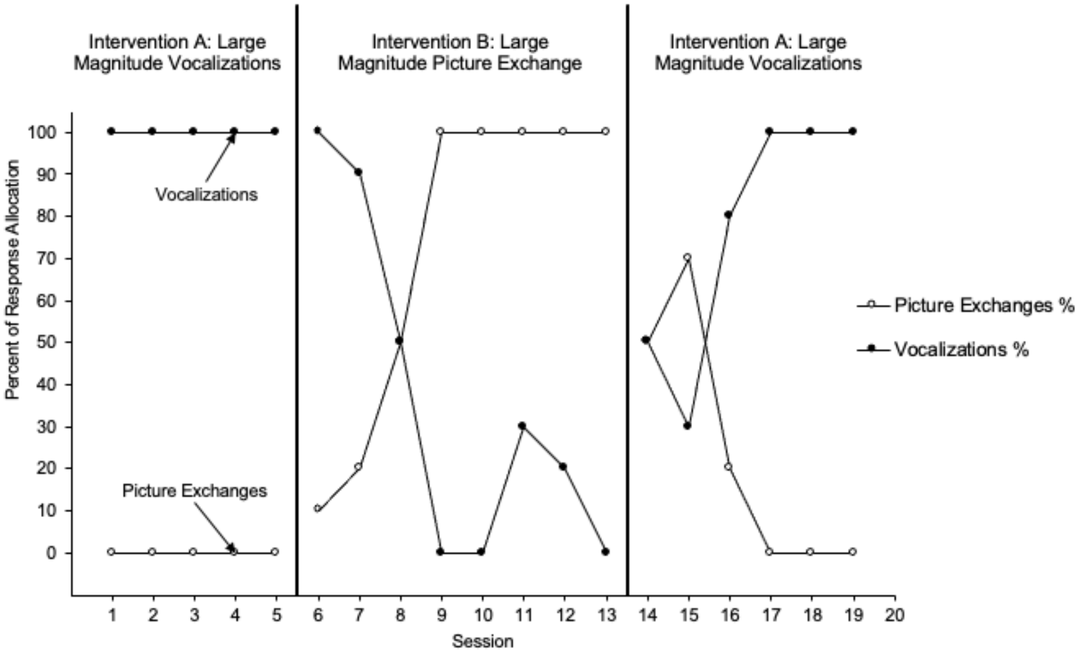
The methods of Intervention B were analogous to the methods of Intervention A.

The difference between the two interventions was the contingency statement and reinforcer delivery. When the researcher held up both a small magnitude and large magnitude of the requested item, the researcher stated the contingency, “If you say [snack item], you can get a small [snack item]. If you hand me the picture, you can get a big [snack item].” If Jacob vocalized “chip,” “Skittle,” or “Dorito,” he received a small magnitude of the requested item. If Jacob exchanged the picture, he would receive a large magnitude of the requested item. Copies of the intervention script, data sheets, and fidelity checklists are available from the first author upon request.

Results

Figure 1 displays the percentage of trials with response allocation to each communication modality. Session numbers are displayed on the x-axis of the graph, and the percentage of trials with response allocation to each communication modality is displayed on the y-axis. Vocalizations are represented by closed circles, and picture exchanges are displayed by open circles. Each intervention (intervention A and intervention B) is separated by a condition change line. For Intervention A (large magnitude for vocalizations), Jacob vocalized for 100% of trials across all five sessions, demonstrating a clear allocation of responding to vocalizations. He did not exchange the picture card during any of the sessions and received the large magnitude reinforcer

Figure 1. *Percentage of Response Allocation Across Sessions*



Note: Percentage of vocalizations per session and percentage of picture exchange during Intervention A (large magnitude vocalization) and Intervention B (large magnitude picture exchange). The closed circle data points represent percentage of vocalizations and the open circle data points represent the percentage of picture exchanges.

throughout. In Intervention B (large magnitude for picture exchange), Jacob engaged in vocalizations for 100% and 90% and exchanged the picture for 10% and 20% of trials for the first two sessions respectively. For the third session, Jacob allocated his responding to vocalizations for 50% and picture exchanges to 50% of all trials. For the remaining five sessions, Jacob reallocated his responding to picture exchange (large magnitude response) for 100% of all trials. Researchers returned to intervention A (large magnitude for vocalization) and Jacob vocalized for 50% and exchanged the picture for 50% of the trials during the first session. In the second session, Jacob vocalized for 30% and exchanged the picture for 70% of trials. For the third session, Jacob vocalized for 80% and exchanged the picture for 20% of trials. In the last three sessions, Jacob vocalized for 100% of trials.

Discussion

The purpose of this study was to evaluate the impact of reinforcer magnitude on response allocation across two communication modalities, spoken words and picture exchange, for one individual with CCN and SDD. Researchers found that the individual allocated his responding or communicated with the communication modality that received the greater magnitude reinforcer. These findings provide preliminary support and necessitate further evaluation for reinforcer magnitude as a variable that can lead to variability within communication for individuals with SDD.

These findings extend the work of Trosclair-Lasserre et al. (2008) by demonstrating that individuals with IDD not only show a preference toward various reinforcer magnitudes but may also change their responding to access larger reinforcer magnitudes when both behaviors access reinforcement. Hoch and colleagues (2002) demonstrated that children may engage in less preferred behaviors when the reinforcer magnitude is greater than that of the more preferred behavior. These findings extend this work by demonstrating that an individual may allocate their responding to a behavior they are generally less likely to engage, such as one communication modality when the reinforcer magnitude is greater than the other modality. Finally, these findings contribute to the overarching evaluation of parameters of reinforcement on communication and may be helpful in developing a systematic protocol for transitioning individuals who primarily communicate with AAC but have some spoken word ability from AAC to spoken words.

Some individuals with SDD and CCN can echo vocalizations or only speak after prompted. For these individuals, practitioners often rely on AAC as a functional means of communication allowing the individual to live a more independent life. AAC is a completely adequate means of communication, but when individuals with SDD and CCN demonstrate readiness or interest in communicating with other modalities besides their primary AAC, reinforcer magnitude may encourage exploring multiple forms of communication. These findings provide preliminary support for another parameter of reinforcement, magnitude when teaching multiple modalities of communication.

Researchers should continue to evaluate the effects magnitude and other parameters of reinforcement on communication variability. Researchers should consider incorporating other types of preferred items including activities and evaluate the effects with individuals with varying ages and communication abilities. Researchers should also evaluate the effects of magnitude on response variability across various AACs (e.g., low-tech, high-tech). Finally, future research should include collecting data on vocalizations or approximations both prior to the implementation of the study, throughout the study, and after the study ends.

Although these findings provide preliminary support for altering the magnitude of a reinforcer to encourage response allocation of manding, some limitations may have impacted the internal validity of the study. The researchers did not include baseline data nor program for or evaluate generalization and maintenance of spoken language outside of the research sessions. Additionally, Jacob's continuous use of PECS outside of the study may have resulted in a history threat. Researchers attempted to mitigate this issue by mimicking the contingency of the study during the naturalistic setting. When the researchers were implementing Intervention A (large magnitude vocalizations) and the individual exchanged a picture to communicate in the naturalistic setting, it was reinforced with less attention and a smaller magnitude of reinforcement. Finally, researchers used food as a reinforcer for this study which could be a concern due to health issues, poor nutrition, and contribution to childhood and/or adult obesity (Shevin, 1982). However, this study took place in the context of a normal snack and mealtime and the food provided did not exceed the portion size provided during the classroom snack time. Future research could replicate these findings using different types of reinforcing stimuli.

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Culturally Competent Educational Practices: Supporting Students with Disabilities and Their Families

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Abstract: This article provides culturally competent educational practices to meet the needs of families, including those who identify with traditionally underrepresented racial and ethnic groups, who have children with autism, intellectual, or other developmental disabilities. Educators should utilize strategies that honor families' cultural beliefs and practices and promote positive student educational outcomes. This article prepares school professionals to consider intersectional social identities, including disability, and the identified priorities of families, to better address the multi-layered needs of students participating in special education.

This article focuses on introducing culturally competent practices to improve outcomes for students who experience the intersection of disability and other marginalized social identities. The purpose of this article is to provide fundamentals of culturally competent educational practices to meet the needs of families. To do this, school professionals must consider the intersectional experiences and identified priorities of families, and better address the multi-layered needs of students' participating in special education. This article is relevant to practitioners who wish to better understand intersectionality and how to work with families when the educator's race, culture, or other social identities are different from the families they serve. Guided by a framework for supporting the experiences of families (Pearson et al., 2018), the authors highlight some fundamental culturally competent practices that educators can adopt when working with families.

Culturally Competent Practices

Many families of children with disabilities, such as autism, intellectual and other developmental disabilities, have multiple, layered social identities and share commonalities with several communities (e.g., an African American male with autism; Garcia & Ortiz, 2013). In education, there is an ongoing journey to be more culturally competent by utilizing strategies that honor families' cultural beliefs and practices (Ladson-Billings, 2008). While the majority of special education teachers are White females from middle-class backgrounds who speak English (Taie & Goldring, 2020), many students served in special education experience dual social identities or intersectionality. Family strategies are not one size fits all. Educators need to develop strategies by taking into consideration a variety of social factors related to families' perspectives of disability. Then, educators need to implement these strategies by considering the families' background and practices. While working with families from various cultural backgrounds, there is a need to understand critical factors about culture in general, and then the specific culture of the student and their family. It is important to note cultural differences are not just about race and ethnicity.

Culture is dynamic, multidimensional, and ever-changing values, traditions, attitudes, perspectives, behaviors, and worldviews created, shared, and transformed by a group of people bound together by a social identity. Culture sets the tone for ways individuals think, act, and feel. Culture is imbued with power and complexity (McKinney et al., 2021). Culture cannot be reduced to a month, holidays, cuisine, and artistic expressions of music and dance, although these are elements of culture. Everyone has a culture we participate in through social and political relationships. Culture is informed by a common history as well as by our social identities and experiences. To be effective, educators must acknowledge the socio-political context of culture. For example, individuals who are White may express that they do not "have" a culture because as a group, White individuals participate disproportionately in a culture of power based simply on their race and access to this power (Nieto, 2008).

Intersectionality is the multidimensionality of disability and at least one other marginalized social identity (Seng et al., 2012). Intersectionality theory acknowledges how multiple overlapping social identities impact and oppress certain populations (Crenshaw, 1989) based on ability, race, ethnicity, religion, socio-economic class, language, gender, sexual identity, geographic location, religion, family structure, and/or immigration status (Kumashiro, 2000). An intersectionality framework focuses on the interconnectedness and interdependencies of multiple systems of power and oppression, discrimination, prejudice, bias, stereotyping, racism, and marginalization on students who identify with more than one social construct. An example of a student experiencing intersectionality is a student with a disability who also identifies as gay or Black or Hmong. When an individual is marginalized**,** they can be treated as insignificant or peripheral due to a social identity label that has been juxtaposed on them (Messiou, 2012). Social identities are constructions with social meaning rather than biological phenomena (Hartlep, 2009; Hosking, 2008).

Case Study

The following case study provides an opportunity to explore the implications of culturally competent practices. The information in the case study is a combination of information obtained from cultural informants and investigations by previous researchers (Buckless, 2017; Liamputtong, 2000; Moua, 2014; Thao, 2018).

Fundamentals of Culturally Competent Educational Practices

Educators can utilize the following four fundamentals of culturally competent practices when working with families from different backgrounds and experiences:

1. Understand how a family makes meaning of the disability (Avdi et al., 2000).
2. Understand how a family describes their child's characteristics.
3. Understand how a family copes with the disability (Gray, 2003).
4. Understand how and where a family decides to seek intervention or not seek intervention for the disability (Hilton et al., 2010).

How Families Make Meaning of Disability

An important component of providing culturally competent practices is determining how families make meaning of disabilities in general, and more specifically, how they make meaning of their child's disability.

During an early childhood screening, Alang's parents, Mr. & Mrs. Cha, provided very specific details on his developmental history through a Hmong interpreter. When asked to share Alang's birthday, his father replied with the birth date and exact time. Alang had been born early in the morning on an odd day of the month. Alang's father shared that his son's birth had been on a day destined for good health and not on a day destined to not grow properly. Alang's mother mentioned that she had been cautious and not taken him out during the first 30 days. Alang had been breastfed to ensure good health, and had initially shared a bed with his parents until his younger sister was born. The family shared that they were very close to their extended family, grandparents, aunts, and uncles. Alang's parents also mentioned that they had noticed their son was "quieter" and did not play with his cousins. Based on a family member's insistence, they had gone to a shaman to see if there was anything he could do to help Alang. The shaman stated that something had occurred during pregnancy that shouldn't have happened and recommended a spiritual healing ceremony. The family expressed, through their interpreter, that their Hmong community believes the physical world of the living and supernatural world coexist and sickness has a natural or spiritual cause. For example, a person can be sick because their soul has been unable to find its way back home to the physical body. Later in the interview when asked if they reinforced Alang when he was engaging in positive behaviors, Alang's parents mentioned that they do not praise any of their children when they are newborns due to some Hmong cultural beliefs. When asked if Alang engaged in any challenging behaviors, his mother quietly responded that perhaps she was to blame for her son's behaviors. After the screening was completed, the early childhood screener told Alang's parents that Alang had passed the vision and hearing tests and that she had enjoyed screening him for enrollment in school. The screener then noted some social and communication delays that the team noticed during the screening. The screener said that the school would like the parent's consent to conduct an initial evaluation to see if Alang would meet the criteria for special education services. Alang's mother and father sat silently with no response. They stopped making eye contact with the interpreter and lowered their heads. Alang's parents suggested that perhaps it was the cold weather during the winter that had caused his sickness, or that Alang didn't like his name. The educator explained that she wasn't saying that Alang was sick, but that his development was delayed. The screener realized that the interpreter was having difficulty translating the special education terminology and made sure to take the time to explain difficult concepts in language easier to comprehend. Through authentic dialogue and listening to the parents' concerns, the screener learned Alang's parents had brought up some behavioral concerns with their family but didn't realize that their son might be eligible for support within the educational setting since he was only three years old. The family was unfamiliar with how the educational system works in the US. Alang's family hadn't realized that the screening information they were providing might lead to further evaluation. Alang's parents stated that they thought that eventually, their young son would grow out of the behavioral differences and that this would be a temporary childhood phase that he was going through. Alang's parents were doing everything in their power to protect their son's educational trajectory, but they lacked knowledge. The parents asked the screener if the school would be providing services to fix Alang. The screener explained that Alang was young and could receive services and benefits either under the broader label of developmental delay, or a more specific educational label if he met the criteria. These services and supports would be based on remediating his identified areas of need. The screener mentioned that given Alang's social communication and behavioral needs, the team might include some autism spectrum disorder assessments in the evaluation. The parents were shocked. Alang's father stated he thought children with autism were non-verbal and didn't make eye contact or acknowledge others. The mother said, 'My son speaks and makes eye contact. Can we just wait and see if he gets better? He is not a naughty boy. He is a good boy.' The screener provided Alang's parents some accessible resources that presented the full spectrum of autism characteristics from the local Autism Society affiliate. The screener explained that the educational label would get their son special education services at no cost. She explained to them that research shows more positive outcomes with early intervention. While the parents wanted to protect their son from the stigma that might come with a special education label, they also wanted him to have the support he needed. Because Alang's parents were struggling with their son at home, the screener suggested some visual supports to help organize home routines. These suggestions were flexible and family-centered based on parent identified areas of need. Alang's father asked if they should be seeing their medical doctor about Alang's challenges. The screener said a medical doctor could provide disability specific interventions available in the community with a more specific medical identification of areas of needs. The screener ensured that the parents knew their educational rights and provided them information on the state's Parent Training and Information Center. As a result of this screener's communication with the family about special education and providing them resources, Alang's parents felt well equipped with skills and resources to ensure that their son's needs were met.

Not all families will view disabilities the same way. While there are some families who embrace the educational label and the support and services that a label may bring, there are others who may reject the notion entirely. This rejection can be due to stigma within their cultural community (e.g., Dababanah et al., 2018), misalignment with their own cultural beliefs, or denial as can be seen across cultures (e.g., Pearson, 2015; Pearson & Meadan, 2018).

Some families' faith shapes how they view and interpret disability. In other words, some may view the disability as a punishment for sins while others see it as a blessing from God (Hebert & Koulouglioti, 2010). For instance, some Chinese American families who believe in reincarnation may think that autism is punishment from a previous life, while those in the Ultra-Orthodox Jewish community living in Israel may view a child with the same diagnosis as having high spiritual status (Hebert & Koulouglioti, 2010). In Australia, explanations for autism may be attributed to the interaction between a parent and child during infancy (Gray, 2001). Subsequently, the way a family makes meaning of the disability will beget either negative perceptions of the child and situation or positive perceptions of the child and situation.

It is also important to identify the role that the family ascribes to the educator and to understand that this view may often align with the way the family makes meaning of the disability. For example, if the family thinks of the disability as temporary, as with some Chinese families (Herbert & Koulouglioti, 2010), then they may believe the educator is there to help "fix", counsel, and assist during this stage. Other families may think that the disability developed as a result of chemical exposure, genetics, biochemical imbalance, diet, or God's destiny, and their understanding may determine how they choose to approach the child's challenges (Desai et al., 2012; Gray, 2001; Riany et al., 2016).

Given the role of culture in how families make meaning of disability, educators must work to determine if the family views their child's diagnosis as a medical issue, an educational issue, or a non-issue (as with some Indian parents; Desai et al., 2012). As the case study illustrates, families may seek consultation beyond the traditional Western sources of a doctor or educator. Regardless of the variability in how families make meaning of their child's disability, the most important role of the educator is not to judge or make light of the family's perspectives. The educator's role is to listen to the family's story, pay attention to the words they are using, validate their concerns, make collaborative decisions with the family about what the educator's role should be, and implement culturally competent practices. Let's examine one example of how the Cha family made meaning of Alang's disability:

> *When asked to share Alang's birthday, his father replied with the birth date and exact time. Alang had been born early in the morning on an odd day of the month. Alang's father shared that his son's birth had been on a day destined for good health and not on a day destined to not grow properly.*

The Cha family's cultural beliefs indicate that their son should be in "good health" and "grow properly." These beliefs are juxtaposed to the reality in which they find themselves. As a result, they view the evaluation of their son Alang, as temporary, even offering up an explanation as to why Alang is being perceived in such a way. Because the Cha family makes meaning of ability based upon cultural beliefs, helping them understand the potential areas of need that Alang may experience, are not only unexpected, but also deterring. Therefore, educators need to understand and validate families' perspectives in order to deliver the information in a sensitive and caring manner. The use of an interpreter helped the Cha family understand the results of the screening. However, interpreters are also essential in helping educators fully understand the family's views. Allowing adequate time for the family to process the information is also an essential component for culturally competent practice.

How a Family Describes a Child's Characteristics

When working with families from backgrounds that may differ from the practitioner, it is critical to listen intently with cultural awareness when families describe their child's characteristics. Although practitioners often use special education terminology to describe a child's behaviors or support needs, not all families readily use such terminology. White families have been found to use more medical jargon to describe their child's characteristics than Black families (Bussing et al., 1988). For example, if a child is not speaking by the age of three, a family from a White middle-income background may use words such as "language delayed" or "speech delayed" to describe their child's characteristics. However, if a child with similar characteristics comes from a family of Asian background and heritage, they may use words such as "quiet" to describe their three-year-old child not speaking.

Additional differences seen across cultures include Indian families noticing and describing their child's social characteristics before any speech or language differences (Mandell & Novak, 2005). Asian/Pacific Islander and African American parents are less likely than White parents to agree with teachers that a child's behavior is indicative of an underlying disorder (Mandell & Novak, 2005). This may be due to differences in description in addition to differences in meaning. Aligning these differences is critical for educators and parents/caregivers. Understanding that families may use different words is key to building a strong rapport with family members and implementing culturally competent practices.

Conversely, educators should also be attuned to words that families use that may not be readily identifiable as red flags or cause for concern, like the word "quiet" or "naughty." Because families from various cultural-linguistic backgrounds may use different terminology to describe the behaviors they notice in their child, it is up to the educator to discern what the words actually mean for each family by asking clarifying questions. It is important to ask for specific examples rather than making assumptions as to what the family member means when they say terms such as "good" or "bad."

When it comes to language, there are many concepts in other cultures that may not readily translate into English (Sharifian, 2017). Let's examine two examples of how the Cha family described their child's characteristics. After the screener mentioned that Alang had behaviors that could be indicative of autism, his mother said:

> *'My son speaks and makes eye contact. Can we just wait and see if he gets better? He is not a naughty boy. He is a good boy.'*

In the case study, the Cha family offers up a statement in response to their shock at a possible autism identification. In this case, the mother could have interpreted the word "behavior" as something negative and felt the need to defend her child's behaviors. Delving deeper into understanding what terminology, such as "behavior," "speaks," and other words, mean to the family will help the educator explain the difference between the family's interpretation of the word and how the practitioner is utilizing the term. For example, the practitioner could provide the family with culturally relevant developmental milestones for "speaks" at their child's age. Using opportunities like these will assist in the educators and family members having the same level of comprehension when describing the characteristics of the child and knowing what steps are needed moving forward.

> *Later in the interview when asked if they reinforced Alang when he was engaging in positive behaviors, Alang's parents mentioned that they did not praise any of their children when they were newborns due to their Hmong cultural beliefs. When asked if Alang engaged in any challenging behaviors, his mother quietly responded that perhaps she was to blame for her son's behaviors.*

In the case study, the parents were asked if they "reinforced" the child's "positive behavior," making the implication that this is a desirable action. Alang's mother responded with a common behavior that was rooted in her own family culture and used the word "praise." Alang's mother noticed her child's behavioral challenges and subsequently blamed herself for the behaviors. Culturally, some families may not believe in the behavioral principles that are often utilized within schools. For example, some Hmong believe that praising a newborn may cause harm to the baby from spirits (Liamputtong, 2002). It is important for educators to pay attention to the words they use in an effort to provide accurate information about child behavior. "Reinforcement," "positive behaviors," and "praise" may all look very different depending on the cultural background of a family. Another way for the educator to have addressed this area would be to ask, "What behaviors does your child do that you like/want to see more of?" "How do you respond when your child does something you like/don't like? Please give me an example."

In order to understand how a family describes their child's characteristics", ask clear questions and gather information through "tell me" or "talk to me about" prompts rather than making assumptions. Mrs. Cha blamed herself for Alang's challenging behaviors, one response to this could be "Tell me why you think you are to blame for Alang's behavior." This is a great opportunity to determine how the family describes their child's characteristics, *and* how they make meaning of their child's disability. It is also another opportunity to educate the family on the etiology or cause of the child's areas of need. It is important to use words that are familiar to the family to demonstrate your understanding of what they have communicated to you; you can gradually incorporate special education terminology as long as you explain what it means and ensure that the family understands.

How a Family Copes with the Disability

Coping strategies come in a variety of forms. Coping may be manifested as problem-focused coping-- seeking to manage the problem itself; positive coping-- using humor, positive reframing, and acceptance; or religious/denial coping-- praying, denying reality, or refusing to believe the current situation (Ang & Loh, 2019). Nevertheless, how a family copes with disability is an integral part of their cultural background. While all families use various external and internal resources to provide solace and stability during challenging times, not all families find these resources in the same place.

Many African American families find guidance from the church community, the people at the head of the church, and God as a means to cope with a child's disability (Allen & Marshall, 2010; Rogers-Dulan, 1998). Research has also found that many African American families cope with challenges by having a strong resilience and being able to rely on themselves (Harry, 2002) in addition to their spirituality. Similar to African American families, Mexican American families have also been found to have a greater resilience, particularly in comparison to European American families (Harry, 2002). Conversely, families of Chinese descent may choose to avoid challenging thoughts and situations as opposed to outwardly expressing their emotions (Wang et al., 2011). While coping strategies may look different across racial and ethnic cultures, there are also cultural differences in regard to gender. In Singapore, it has been reported that mothers often carry the "burden" of caring for the child and coping with the diagnosis, oftentimes carrying much higher levels of stress than the fathers (Ang & Loh, 2019).

Regardless of how a family chooses to cope with a child's disability, their coping styles have emerged as a result of factors such as tradition, comfort, familiarity, trust, convenience, and/or loyalty. As an educator, it is critical to learn about families' coping styles and assist them by validating their use of culturally embedded, internal and external resources, asking if there are any mechanisms or resources they may need moving forward, and providing additional support in a form that is culturally relevant.

As an example from our case study, the Cha family mentioned that they were, "were very close to their extended family, grandparents, aunts, and uncles." Many families from different cultural backgrounds garner support from their family members, be this blood members or fictive kin (Ebaugh & Curry, 2000; Jarrett et al., 2015). Family members may be a resource for coping and educators should be aware of the significant role that an aunt, or uncle, or cousin may play and not just dismiss them as a long-distance relative. Aside from seeking support from their extended family members, we also learned about the Cha family's other coping strategies:

> *The family expressed through their interpreter that their Hmong community believes the physical world of the living and supernatural world coexist and sickness has a natural or spiritual cause. For example, a person can be sick because their soul has been unable to find its way back home to the physical body.*

This information is critical to the educator in understanding the religious and spiritual factors that may be playing an integral role in the family's coping strategies. While the educator and family may not share the same religious and/or spiritual backgrounds, it's important to be sensitive to these differences and ask questions for clarification about families' beliefs.

In another instance from the case study, we learned how the Cha's cultural beliefs influenced their perceptions of "sickness" in their son, Alang.

> *The parents then offered up that perhaps it was the cold weather during the winter that had caused the sickness in their child or the child didn't like his name.*

While this response might lead educators to believe that the parents are in denial about their child's disability, these responses are linked to Hmong cultural beliefs. While the family may understand that their child requires help in some way, they may not understand the extent of support that may be needed. For educators working with families with social identities different from their own, it is important to recognize the various coping strategies that families may be using in order to provide the most culturally competent intervention. Asking family members directly about the people and places they may be using/seeing to cope with their situation will be helpful.

How and Where Families Seek or Don't Seek Interventions for Disability

The final strategy for implementing culturally competent practices is understanding how and where a family decides to seek intervention for the disability (Hilton et al., 2010). While there are many families from White, middle-income backgrounds who would readily seek out intervention services for their child with a disability, this is not the case for all families. In the United States, many families from racially and ethnically minority communities are less likely to seek out intervention services for their child when compared to their White counterparts (Andrews et al., 2011; Gourdine et al., 2011; Ward & Besson, 2012). The reasons vary from interpretation of the disability, trust/mistrust of the medical or education institution(s), or using alternative mechanisms for support (Harry, 2008; Pearson & Meadan, 2018).

Due to the history of marginalization and discrimination in educational settings, many families from racial/ethnic minority backgrounds (Hispanic and African American) and low-income status have developed a mistrust of the educational system and educational providers (Harry, 2008). For example, American Indian and Alaska Native families may rely on traditional healers in their communities for support, while African American families may rely on ministers, counselors, or other resources as an alternative to seeking intervention services (Avent et al., 2015). We saw the role that culture played in the Cha family's decision to seek support:

> *Based on a family member's insistence, they [the Cha family] had gone to a shaman to see if there was anything he could do to help their child. The shaman stated that something had occurred during pregnancy that shouldn't have happened and recommended a spiritual healing ceremony.*

In regard to seeking intervention, the Cha family chose to seek assistance outside of a medical doctor or educational professional, a decision that should be recognized and respected. Educators can use this information as an opportunity to learn more about the family's concerns and goals. Ask questions such as "Tell me what you were wanting the shaman to do for your child." or "Did your experience with the shaman provide the outcome you were hoping for?" "Why or why not?" Asking these types of questions may help to remove any stigma that the family may feel is associated with going to an alternative source such as a cultural healer. Moreover, it builds knowledge among educators about how culture influences families' decision-making.

Another example from the Cha family helps to highlight the importance of building trust between families and the educational institution.

> *The Cha family was unfamiliar with how the educational system works in the US. The family hadn't realized that the screening information they were providing might lead to further evaluation.*

The Cha family shared information before they clearly understood the purpose of the educational screening. Alang's screening was both to determine academic readiness to enter school *and* to identify any delays. These types of misunderstanding could cause families to mistrust the educational process and lead to objections for further evaluations. As a culturally competent educator, it is important to be clear about why you are collecting information from the family, what purpose this information will serve, how the information will be used, and what each step of the process will look like for the family. Laying out the process beforehand may help to mitigate the mistrust many families from varying cultural backgrounds have with educational and medical institutions.

Researchers have identified needs that lay the foundation for culturally competent practices rooted in empowering families of children with disabilities to participate and collaborate in their educational roles (Chadiha et al., 2004; Cox & Parsons, 1996; Dunst et al., 1988; Freire, 1983; Gutierrez, 1994; Kieffer, 1984; Parsons, 1991; Rappaport, 1987). Strengthening family involvement and collaboration is particularly important because of the social injustice that makes families from marginalized communities more susceptible to vulnerability (Whitley et al., 2011). When families feel powerless, they may face challenges with participating and collaborating in the complex educational process. Moreover, families may struggle to advocate successfully to affect change and ensure adequate support for an appropriate education for their child with a disability (Ewles et al., 2014; Pearson et al., 2018). Perceptions of not being understood or empowered can lead to feelings of self-blame and hopelessness, further inhibiting families from taking action to address their child's needs (Kieffer, 1984). Family cultural differences, stigma, discrimination, lack of knowledge and access, and poor communication are some of the many potential barriers in accessing the services children need to reach their full potential (AADM, 2020; Pearson, 2015).

Table 1 highlights some fundamentals of culturally competent practices for educators. These are important to understand because the strategies that educators may be most comfortable and familiar with and deemed as "correct" are those that reflect their own cultural lens. Once educators have a foundational understanding of the role of culture in shaping families' views, perceptions, and decisions, they will be better prepared to implement culturally competent practices to support families. Given the nature and impact of developmental disabilities on the needs of students in both home and school environments, caregiver-professional collaboration in educational planning and service delivery is critical (Azad et al., 2016). Culturally competent practices can support positive parent-professional collaborations.

Conclusion

Recommendations from both parents and educators have consistently highlighted the need to increase culturally sustaining service delivery (Harry, 2008; Pearson & Meadan, 2018). The challenges and needs that families of children with disabilities face are often exacerbated among historically marginalized racial and ethnic groups in the US. Therefore, to strengthen outcomes for children with intersecting identities, special educators and related service providers must engage families using culturally competent practices designed to support families.

School-based professionals must employ practices that amplify the voices of students with disabilities and their families. Educators must seek to understand families' perspectives and experiences, and then use those perspectives and experiences to foster a culture where families can engage meaningfully in collaborative special education partnerships. Despite the challenges that both school-based professionals and families face in establishing effective special education partnerships, utilizing culturally competent practices is critical for ensuring family engagement and strengthening student outcomes.

Table 1. *Culturally Competent Practices for Educators*

Educators should understand how families ...		**Prompt Examples**
make meaning of disability	Culture may influence the way a family makes sense of disability. Educators need to… ● get to know the students and their families ● practice responsive, multimodal communication and communicate with parents in ways that are accessible and convenient for them ● provide written and oral information in the family's language and/or dialect as necessary ● use an interpreter to explain difficult concepts; be sure the interpreter speaks the same language and dialect of the family ● collaborate with cultural liaisons and train them in the special education process ● seek ways to build trust with family members by being dependable, authentic, consistent, and respectful ● create collaborative dialogue to gather authentic information from the families ● ask questions that you do not know the answers to and listen to what the family members have to say ● develop an understanding of who comprises the family unit ● recognize the value or stigma the family attaches to disability in general ● examine the family's view of the child's disability ● identify the role in which the family views educators ● provide accurate information to the family, including how a special educator can assist in a child's development, while also respecting their cultural beliefs ● ask families about their cultural and linguistic background ● provide developmental milestones that are relevant to that family's cultural and linguistic background by talking to them about what patterns they've noticed in their community in regard to children and development	● Describe how children typically develop. ● Tell me how you think your child is developing. ● I understand that you feel your child's condition is a result of (use their words). In education, we talk about (disability) as being a result of (share your expertise). ● Describe the role you see educators playing in your child's development. ● Describe the role you see medical doctors playing in your child's development. ● Talk to me about who the child interacts with on a daily basis.

	● provide typical developmental milestones checklists such as those produced by the Centers for Disease Control and Prevention	
describe child's characteristics	Culture may influence the way a family describes their child's characteristics. Educators need to... ● be on the same page with the family when determining the child's needs ● engage in culturally competent conversations with the families ● recognize the way a family member describes their child's characteristics ● address family concerns, while showing respect for cultural perspectives ● listen to how the family discusses their child's needs and what words they use ● use the same words as the family	● Describe your child's skills and abilities. ● Talk to me about your child's strengths. ● Talk to me about any challenges your child experiences. ● Describe your child's behaviors. ● Describe changes, if any, you would like to see in your child.
cope with disability	A variety of cultural factors can influence how a family copes with a child's disability. Educators need to... ● understand how families cope with distressing factors in their lives ● understand that families may need time to accept child's special needs before being able to dive into the intricacies of their expected involvement ● identify what role families may desire and/or expect educators to play in order to establish a positive connection ● collect information about a family while developing strategies, and prior to implementation ● present families with easy to read literature (e.g., less jargon) that discusses the disability area - talk them through the literature ● define new and unknown terminology ● provide information on resources such as a Parent Training and Information Center ● help parents understand their rights by providing families resources that highlight due process & IDEA ● suggest that families prepare for meetings by writing down concerns and questions and taking notes at the child's educational meetings	● Tell me what you do to cope with your child's challenges. ● Describe the people you talk to or places you go to find out more about your child's challenges. ● Describe what you do to help yourself. ● Talk to me about ways you connect with other people, learn about different places, or learn new information to better cope with your child's disability.
decide how and where to seek or not seek interventions for disability	Cultural background can influence views of "right" and "wrong" or "effective" and "ineffective" interventions. Educators need to... ● develop strategies to support families based on the families' background and not from the educator's own cultural lens ● make sure to not juxtapose educator's culture against the cultures of the families	● Talk to me about any past services your child may have received. ● Talk to me about any current services your child is receiving. ● Talk to me about any areas of concern that you feel you may need assistance with for your child.

	● find out who families are reaching out to for intervention and support ● work with families to agree on the best ways to support their child ● acknowledge that the educator’s role is to respect the choices that families make ● support families with best practices, to the extent that it aligns with the families’ preferences ● ensure that families know their educational rights and how to equitably advocate for their children ● support family-centered goals by talking to parents about their families’ experiences, priorities, needs, and goals ● do not focus on strategies to “fix” challenges not seen as a problem ● co-construct strategies for children with disabilities. ● highlight the benefits of special education services and importance of early intervention ● teach and coach family members about what they can do in the home in a variety of ways such as demonstrations, videos, or literature ● offer tangible and culturally relevant resources, such as literature that has photos that resemble their family identity and is written in their language, not just simply translated from English ● implement strategies that are family-centered. ● work on areas that the family identifies as an area of needed support.	● Discuss your daily routines that they already have in place. - Do not assume that they implement the same routines you do or that it looks the same. For example, is dinner eaten around a table? As a family? Or does it look different? Create strategies accordingly. ● Describe how we can best support you and what you need in order to feel fully supported. For example, Is it access to a computer, transportation, understanding what the parent can be doing at home, need of specific materials to use at home, etc?

Adapted from Pearson et al. (2021)

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Ohio's Statewide Consortium: Promoting Sustainability of Transition and Postsecondary Programs for Students with Intellectual Disability

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Abstract: Congress invested approximately $11 million annually since 2010 to establish inclusive postsecondary programs that improve employment outcomes of students with intellectual disabilities (ID). The purpose of this study was to examine the extent to which postsecondary programs in Ohio's Statewide Consortia (OSC) were implementing processes to sustain their programs beyond federal funding. Using the Think College Standards for Inclusive Higher Education as the framework, we collected data using survey and case study research. Results indicated that programs are implementing a number of processes and strategies, both as individual programs, as well as a consortium that are aligned with the "Sustainability" Think College Standard.

Congress has invested approximately $11 million annually since 2010 to establish and enhance inclusive postsecondary programs for students with intellectual disabilities (ID) across the United States. Through three separate federal competitions conducted by the U.S. Department of Education, Office of Postsecondary Education (CFDA 84.407A), a total of 74 grants were funded to institutions of higher education in 2010 (*n*=27), in 2015 (*n*=25), and most recently in 2020 (*n*=22), to develop model "Transition and Postsecondary Programs for Students with Intellectual Disabilities" (TPSID). These TPSID programs are supported by the Think College National Coordinating Center (Think College NCC) awarded to the Institute of Community Inclusion at University of Mass, Boston (CFDA 84.407B). As of July 2021, this investment has resulted in 310 inclusive postsecondary programs nationally (https://thinkcollege.net/college-search).

The need for TPSID programs is critical. When compared to other students with and without disabilities, students with intellectual disabilities are at risk for some of the poorest post-school outcomes (Baer, et al. 2017; Carter et al., 2011; Hart et al., 2010; Mazzotti et al., 2016; Newman et al., 2010; Sanford et al., 2011; Trainor et al., 2020). American Community Survey results found 28% of adults with a cognitive disability ages 21-64 were employed compared to 37% of persons with any disability (Erickson et al., 2017), and Siperstein et al. (2013) found that one-third of adults with ID were working compared to 76% of adults without disabilities. The Ohio Longitudinal Transition Study (OLTS) found that 28% of students with ID were working full-time (i.e.,

>35 hours/week) in the year following their school exit, 25% were working part-time (i.e., 20-34 hours/week), and 12% were involved in other work (i.e., <20 hours/week) or sheltered work (Baer et al., 2017).

The improved employment and independent living outcomes for students with ID who complete college programs clearly justify sustaining current programs while expanding new program development. The 2019-2020 data from the Think College NCC Annual Report (Grigal et al., 2021) indicated that 59% of college graduates who completed the program between 2015 and 2019 had a paid position in the community one year after graduation. Follow-up data indicated that 66% of respondents had paid employment two years after completing a TPSID program. Finally, 92% of graduates reported that they were satisfied or very satisfied with their social life. Clearly, it is critical to sustain this federal investment in students with ID who attend TPSID programs.

Ohio's Statewide Consortium

Ohio's Statewide Consortium (OSC) is a consortium of 10 inclusive postsecondary programs for students with ID: seven received TPSID funding from the OSC's grant and two obtained funding from other grants or donor support. Table 1 provides an overview of characteristics for each OSC program. As required by the funding agency's Absolute Priorities, plans for sustaining model TPSID programs must be described in the grant application (Transition Programs, 2020). Program directors from each partner TPSID program (referred to as partners for the remaining of the article) are implementing a variety of strategies to sustain their programs beyond federal funding. The OSC's research team works together with local TPSID partners to share information through three strategic communication methods. First, monthly partner calls to review program and student data, plan an annual statewide conference, and share strategies to improve the quality of programs including sustainability strategies. Second, quarterly OSC Postsecondary Advisory Council (PAC) meetings that include representatives from state agencies such as Opportunities for Ohioans with Disabilities (Ohio's Vocational Rehabilitation), Ohio Department of Higher Education, Ohio Department of Education, Department of Developmental Disabilities, state disability organizations, parent and consumer representatives and program directors from all OSC programs. Third, individual technical assistance meetings are coordinated with individual programs and their IHE administrators, as needed.

Table 1

Overview of OSC-TPSID Programs and Characteristics

Program	City	Start Date	Type	Length (Years)	Student Housing	VR Provider
BGSU-F	Sandusky	FY19	CTP	2	N	N
CSCC	Columbus	FY16	CTP	1	N	N
KSU	Kent	FY10	CTP	4	Y	N
MC	Marietta	FY14	Secondary	2/3	N	N
OSU	Columbus	FY11	CTP	2/4	Y	Y
SCC	Dayton	FY20	CTP	2	N	N
SSCC	Hillsboro	FY20	CTP	2	N	N
UC	Cincinnati	FY10	CTP	4	Y	Y
UT	Toledo	FY12	CTP	2	N	Y
YSU	Youngstown	FY14	Dual	2/4	N	N

OSC Sustainability Subcommittee

In addition to program specific action planning completed within each individual program, the OSC PAC developed a smaller sustainability subcommittee made up of five program directors and members of the research team. The mission of this subcommittee was to not only support individual TPSID programs with sustainability, but to also sustain the statewide network to support continued quality improvements beyond the life of the federal grant. The "Survive and Thrive Sustainability Tool" (Hutchinson, 2016) was used to plan for OSC sustainability in addition to program sustainability. During both monthly partner meetings and quarterly PAC meeting, this subcommittee discussed the sustainability planning process, including the results of the sustainability assessment and action plan.

Alignment with Standards

During monthly OSC partner meetings, the Think College Standards for Inclusive Higher Education (Think College, 2020) developed by the Think College NCC, were used to guide our discussions. The eight standards, each with multiple benchmarks that provide both essential practices and the data/evidence, can be used to document progress towards meeting each standard. The eight standards are: 1) Alignment with College Systems and Practices, 2) Coordination and Collaboration, 3) Sustainability, 4) Evaluation, 5) Self-Determination, 6) Academic Access, 7) Career Development & Employment, and 8) Campus Membership. The quality indicators and benchmarks of the sustainability standard follow.

Quality Indicator 3.1. The program has a plan for fiscal sustainability.

> 3.1A: The program has the financial resources needed to meet obligations to students, staff and other contractual parties.
>
> 3.1B: The program has diversified funding streams that support its core operations.
>
> 3.1C: Students in the program have access to federal student aid.
>
> 3.1D: Students have access to diverse sources of funding to cover program costs Quality Indicator 3.2. The program maintains relationships that support programmatic sustainability.
>
> 3.2A: The program cultivates supportive relationships with key allies on campus.
>
> 3.2B: The program has an advisory team or committee that advises program operations and actively supports sustainability.
>
> 3.2C: The program participates in a state or regional network of college programs for students with ID.
>
> 3.2D: The program engages in policy-related educational efforts with state legislators.

The sustainability benchmarks are designed as indicators of practices vital to the success of the program as well as the student enrolled at the IHE. The purpose of this study was to examine the extent to which OSC programs were implementing practices to sustain their programs beyond federal funding from the perspective of the partner staff. The research questions guiding the study are: Research Question 1: To what degree do the OSC postsecondary programs demonstrate quality indicators, as outlined in the Think College Standards for Inclusive Higher Education associated with the Sustainability Standard? Research Question 2: What are the practices that existing programs implement to sustain their program?

Method

The research team met on a weekly basis to coordinate the OSC evaluation. Two primary data collection techniques were used: 1) Survey of OSC program directors and staff; 2) Emergent design of qualitative strategic OSC sustainability planning.

Program Director/Staff Survey Instrument

An online survey was created to collect information from OSC program directors and staff that was aligned with the Think College Standards for Inclusive Higher Education (Grigal et al., 2020). The online survey was designed to gather information about OSC programs' plans to implement the recommended quality indicators and benchmarks that align with each standard. The 65-question survey had five demographic questions (e.g., What college program do you work; How many years have you worked at this program; What is your current role?). The remaining 60 questions asked to what degree is your program implementing each quality indicator and benchmark. Respondents indicated either 'No- our program IS NOT implementing' or 'Yes- our program is implementing'. If 'Yes- our program is implementing' was selected, the respondent indicated their level of implementation: i) Planning to implement within next year; ii) Initial implementation and piloting currently, or iii) Fully implemented. Although the survey included benchmarks related to all eight standards, this article only reports on the sustainability standard. Eight of the 60 items specifically addressed the sustainability quality indicators and benchmarks.

Survey items were developed by the first two lead authors and reviewed by the remaining co-authors. In addition, several experts in survey development reviewed the survey for face validity. Once revised, the survey was piloted with postsecondary program directors who did not receive funding from the OSC's TPSID grant. Again, the survey was revised to maximize clarity and alignment to the standards.

OSC Strategic Sustainability Planning

A multiple case study approach was used to describe the sustainability planning process involving OSC partners, the OSC Sustainability Subcommittee, and the OSC PAC. A case study approach is a viable option for program evaluation, as well as to develop theory or interventions according to Baxter and Jack (2008). Given we are evaluating the sustainability measures used by the OSC partners, case study design is a valid method of inquiry.

Partners were asked to examine the sustainability standard's quality indicators and benchmarks and to provide examples of how their program is meeting the benchmarks. Benchmarks for this qualitative data became the themes of the research design while the examples of the benchmarks listed above became the original data for each theme within the project. Partners were encouraged to provide examples of their documents, evidence or data used to support their sustainability strategy. The data was compiled by the research team and shared with partners for review.

The OSC PAC Sustainability Subcommittee then refined the list of strategies and organized them by the quality indicators and benchmarks adding new data where appropriate. Again, partners were invited to comment and refine data within the sustainability table (Table 4). The final meeting was a joint presentation to the OSC PAC from all the program directors on how their IHE was sustaining their program.

Sampling Procedures

The program director/staff survey was distributed to OSC partners who met two criteria: 1) received funding from the current

TPSID grant, and 2) had graduated their first cohort of students. Seven OSC partners received funding from the TPSID grant, but two of these funded programs did not have their first cohort of students start until after the data collection phase had concluded. Therefore, the final sample included the program directors and staff of five OSC programs with a total of 12 respondents.

Analysis

Responses to the eight sustainability survey items were compared in tabular form to look for trends among programs. Among the 12 respondents, there were five total missing responses concerning sustainability. Given that our primary analysis method was descriptive, we used pairwise deletion for individual responses with missing data. When examining the survey items for missing data, Little's MCAR test was non-significant (*chi-square* = .617, *df* = 3, *p* = .893), which provides evidence that the data is missing completely at random. When data are missing completely at random, use of pairwise deletion is less likely to alter estimates based on the remaining data (Baraldi & Enders, 2010). For each survey item, we calculated a percentage of responses out of the total number of valid responses. Tables 2 and 3 presents the data for survey responses in both count and total proportion for a given response (e.g., for item 3.1A the total number respondents who answered YES (iii) Fully implemented was five, accounting for 45.5% of the responses).

OSC partners were asked to share all the ways in which they were currently meeting each benchmark for quality indicators 3.1 and 3.2. The examples were compiled and analyzed to determine commonality and incongruities among partner institution (Baxter & Jack, 2008). Where discrepancies appeared between the standard and the partner institutions' response, the research team discussed why the discrepancy occurred. For instance, Table 1 reports that Marietta College does not have CTP status. This is a discrepancy from the findings, but as a program serving only secondary aged students, this discrepancy was acceptable. During the analysis phase, the research team organized the essential practices and examples by the sustainability standard's indicators and benchmarks.

Results

Demographic information of respondents and findings are described for each research question. Whereas only five partners were involved in the program director/staff survey, all 10 partners participated in the emergent research design phase consisting of building a sustainability plan for their program and the OSC. Eleven staff members from five participating OSC partners participated in the survey. The duration the staff worked within their respective programs ranged from one year to more than 6 years, with the majority of the respondents working within their program from 3-5 years. Job roles also varied among the respondents participating in the survey. Primary staff roles were: set priorities, lead, supervise other staff (*n*=5), coordinate employment (*n*=4), coordinate social activities (*n*=1), academic advising/teaching (*n*=1).

Research Question 1: To what degree do the OSC postsecondary programs demonstrate quality indicators, as outlined in the Think College Standards for Inclusive Higher Education associated with the Sustainability Standard?

Quality Indicator 3.1

Regarding indicator 3.1A, funding sustainability, 45% of respondents indicated that their programs have fully implemented funding sustainability, and the remainder are planning to implement or are currently piloting strategies to acquire the financial resources to meet obligations. Given that the majority of the partners have fully implemented diverse funding streams (indicator 3.2B) to support operations, these programs are assisting the other partners to develop their plan to implement strategies for funding sustainability. Students having access to federal student aid (indicator 3.1C) is fully implemented by 90% of programs. Finally, indicator 3.1D, 73% of those surveyed reported that their students have access to diverse sources of funding to cover program costs. Only one program reported that they are in the planning phase and two programs reported that they are not planning to diversify funding sources to cover program costs.

Table 2. *Sustainability Quality Indicator 3.1: The Program has a Plan for Fiscal Sustainability Results*

	Funding			
	Yes, planning to implement within next year	Yes, initial implementation and piloting currently	Yes, fully implemented; all students involved	No, we are NOT implementing this quality indicator and I am not aware of any plans to implement
Standard 3.1 A	18% (*n*=2)	36% (*n*=4)	45% (*n*=5)	
Standard 3.1 B	18% (*n*=2)	36% (*n*=4)	45% (*n*=5)	
Standard 3.1 C			91% (*n*=10)	9% (*n*=1)
Standard 3.1 D	9% (*n*=1)		73% (*n*=8)	18% (*n*=2)

Quality Indicator 3.2

Relationships are important to the sustainability of transition programs, and as such, standard 3.2 addresses having and sustaining relationships with key allies. Regarding 3.2A, “Program cultivates relationships with key allies on campus,” 100% of respondents have relationships with key allies, and 82% feel that this is fully implemented. A majority (92%) of respondents either have or are piloting an advisory committee which advises the program (indicator 3.2B) with one respondent reporting they do not have a plan to implement an advisory committee. All partners reported participating in a state or regional network of peer programs (standard 3.2C). Lastly, standard 3.2D is the level to which the program engages in policy-related efforts. Partners had varying responses to this standard with 83% either piloting or fully implementing engagement with policy-related efforts, and 17% reporting no plans to engage in policy efforts.

Research Question #2. What are the practices that existing programs implement to sustain their program?

Quality Indicator 3.1

Through the case study data collection approach used to capture sustainability strategies regarding quality indicator 3.1, ‘Programs have plans for fiscal sustainability,’ respondents identified 18 strategies across the four benchmarks (3.1A, 3.1B, 3.1C, 3.1D) of this quality indicator. Strategies ranged from operating under a business plan with an annual budget that is monitored monthly (indicator 3.1A) to diversifying funding sources. Many examples of diversifying funding sources (indicator 3.1B) were reported. One example

Table 3. *Sustainability Quality Indicator 3.2. The Program Maintains Relationships that Support Programmatic Sustainability Results*

	Relationships & Advocacy			
	Yes, planning to implement within next year	Yes, initial implementation and piloting currently	Yes, fully implemented; all students involved	No, we are NOT implementing this quality indicator and I am not aware of any plans to implement
Standard 3.2 A		18% (*n*=2)	82% (*n*=9)	
Standard 3.2 B		17% (*n*=2)	75% (*n*=9)	8% (*n*=1)
Standard 3.2 C			100% (*n*=12)	
Standard 3.2 D		33% (*n*=4)	50% (*n*=6)	17% (*n*=2)

all but two OSC programs have implemented was to become an approved Comprehensive Transition and Postsecondary (CTP) program for students with intellectual disabilities (indicator 3.1C). The U.S. Department of Education, Office of Postsecondary Education approves programs based on applications submitted through IHEs' financial aid offices. Once a program becomes an approved CTP, the financial aid office can allocate several financial aid options to TPSID students, including the Federal Pell Grant and Ohio College Opportunity Grant. These federal and state grants provide financial support to students with economic need and diversifies the funding streams to support college programs. Another strategy that approximately a third of programs reported to diversify funding is delivering VR services as a VR provider (indicator 3.1D). Three OSC programs have become VR providers and are establishing open VR cases with authorizations, which can result in reduced costs for students and families while simultaneously bringing in additional funding to operate programs.

Quality Indicator 3.2

The second quality indicator related to sustainability is: The program maintains relationships that support programmatic sustainability (Grigal et al., 2020). OSC partners generated 12 strategies to strengthen support for their TPSID program that ranged from building relationships with key allies across campus to advocating with state legislators for policy amendments that increase support for students with ID attending college. Table 4 lists the two quality indicators and eight benchmarks with examples of strategies that OSC partner programs are implementing to sustain their programs beyond federal funding.

Discussion

The purpose of this study was to examine the extent that OSC programs are implementing strategies and practices to sustain their programs beyond federal funding. The findings are not only important for the ten OSC programs currently operating but also for the nearly 300 TPSID programs serving students with ID across the country. The need for quality transition services including inclusive postsecondary opportunities for this underserved population is critical, as evidenced by the poor post-school outcomes described previously. The data are clear.

Inclusive postsecondary programs for students with ID improves post-school outcomes, similar to how college improves

Table 4

OSC Sustainability Strategies Organized by Quality Indicators and Benchmarks

Sustainability Quality Indicator 3.1: The program has a plan for fiscal sustainability.	
Benchmark	Examples of Essential Practices
3.1A: The program has the financial resources needed to meet obligations to students, staff and other contractual parties	• Program has a business plan and budget that is updated annually • Program monitors the balance of earned income with expenses • Program balances the number of students with the required number of staff • Recruit more students to the program to maximize staff capacity • Submit additional grant proposals to a variety of competitions to sustain existing work • Reduce cost of student worker hours by prioritizing hiring of work study students and partnering with other programs for field experience hours • Develop student worker roles with increasing responsibility to take on low level tasks initially assigned to staff • Signature fundraising event and donor relations to support program
3.1B: The program has diversified funding streams that support its core operations	• Seek donor funds for program scholarship(s) • Increase VR services offered by program • Increase number of students receiving VR services • Continue to work with DD system to expand waiver services to include IPSE • Design summer service offerings for transition age youth
3.1C: Students in the program have access to federal student aid	• Program is an approved CTP • Students who qualify obtain work study positions • College Financial Aid and Bursar offices process students' financial aid and fees
3.1D: Students have access to diverse sources of funding to cover program costs	• Students are eligible for student financial aid • Program has an endowment and/or awards annual scholarship • DD and VR service delivery support students financially
Sustainability Quality Indicator 3.2. The program maintains relationships that support programmatic sustainability.	
3.2A: The program cultivates supportive relationships with key allies on campus.	• Individual Support provided by: - Education Department Chair - College Field Placement Coordinator - College Professors from related disciplines (SpEd, OT, PT, Speech, Psychology, etc.) - Business Manager, Bursar and Registrar offices - Career Services Office - Provost Office, and other University Administrators - Human Resources and Campus Businesses - Accessibly or Disability Services - Admissions and Recruitment/Marketing Offices - Resident Life and Student Affairs
3.2B The program has an advisory team or committee that advises program operations and actively supports sustainability	• Secondary programs supported by LEA funds and provides Transportation to college for the students • LEA provides supporting teacher and paraprofessionals • Practicum students are placed in the program as mentors • Strategic planning with advisory boards made up of members from 3.2A and meets regularly
3.2C: The program participates in a state or regional network of college programs for students with ID	• All programs participate in the OSC - Monthly partner meetings - Quarterly meetings with OSC PAC • Representation on Midwest Inclusive Postsecondary Alliance • Think College Affinity Groups

3.2D: The program engages in policy-related educational efforts with state legislators	• Meetings with state legislators are coordinated to inform them of program accomplishments • State legislators invited to campus for program events • State legislators are invited to present at on-campus conferences • Staff and students participate in DD Advocacy Day and Disability Policy Seminar • Amend state grant (OCOG) to include students in CTP programs

employment outcomes for the majority of degree-seeking students who attend. This is evidenced by the 59% of program completers who have a job one year after completion and the 92% of former students who were satisfied with their social life (Grigal et al., 2021). According to the 2021 OSC annual data, statewide employment outcomes for graduates averaged 82% employment for OSC graduates with an average hourly wage of $12.34 per hour working an average of nearly 26 hours per week. OSC leadership attributes much of these successful outcomes to the work done towards designing sustainable, inclusive postsecondary model programs. The following are considerations for existing or new programs in the development of a sustainability model that might work for their given institution based upon how the OSC partners are using the standards as a guide to implementation.

Quality Indicator 3.1: The Program has a Plan for Fiscal Sustainability

Fiscal accountability within higher education is receiving more attention at national, state and local levels. As federal and state budgets for higher education are cut due to the effects of the 2020 COVID-19 pandemic and/or reduced enrollments, the need for fiscal accountability within higher education and within TPSID programs is critical. Programs that are able to balance the financial needs of their program with the financial resources available to their potential students will ultimately sustain the longest. Programs will need strong budgets and business plans utilizing varied funding sources to maintain and meet all obligations. At the same time, where it is applicable, programs will need to establish CTP status to ensure students have access to federal financial aid. Diversifying funding sources, including grants, scholarships, VR and Medicaid funds, benefits both students with ID and inclusive postsecondary programs (Thelin, 2018).

Quality Indicator 3.2. The Program Maintains Relationships that Support Programmatic Sustainability

Building relationships has been at the heart of every OSC program while developing, strengthening and enhancing services and outcomes for students. These relationships have allowed programs to nest themselves within their respective universities and colleges as an important part of the culture and community. These allies are often critical in furthering program goals, increasing inclusive access on campus and acceptance of students with intellectual disability as members of campus (Raeke, 2020). Table 4 lists a number of advocates within higher education that range from the provost to human resource personnel. Relationships outside of the university are just as important. Local education administrators and teachers can provide quality transition services that prepare students with ID to enter college programs. ~~And,~~ Local businesses can also benefit by hiring a skilled workforce including adults with ID who are self-determined, hard-working, and prepared to enter their chosen career. Finally, parental and familial support is instrumental when advocating with either college administrators or state legislators. Parents and families often have the ability to advocate at local, state or federal levels. For example, OSC invited parents, students and employers to present to legislators so they can see how the fiscal investment results in human capacity that enhances the community at large. The varied strategies with key stakeholders continues to enhance current programs while developing new programs that focus on sustainability from the onset.

Recommendations

In an effort to protect and expand the federal investment in the development of college programs for students with ID, the research team provides recommendations to both consortium and individual inclusive TPSID programs.

First, initiate sustainability planning from your first year of funding. Whether you use a documented and tested process such as the Strive to Thrive resources (Hutchinson, 2016) or work with your college's business office to engage in sustainability planning, examine the benefits and costs of operating a TPSID program on your campus. Justify why you need support, identify stakeholders that support both your program and the host IHE, and develop the strategies needed to operate a fiscally sound and quality program with respectable student employment and quality of life outcomes. The sustainability subcommittee identified 16 stakeholders to whom the OSC is important, including adults with ID and their families, employers, IHE administrators and faculty, and degree-seeking students who increase their awareness of disability. It is important the OSC continues to look at "ordinary experiences and partnerships that might benefit individuals with disabilities" (Trainor et al., 2020).

Second, develop a marketing and communication strategy to share information with your key allies, as well as other stakeholders such as state legislators. Leverage your IHE's Web resources by featuring your program's successes with state agencies, whose mission it is to educate and serve people with disabilities. Share Web resources with family and disability advocacy organizations, such as Down syndrome associations. Share both program outcomes in tables and bar graphs, as well as individual testimonials from students, graduates, and employers with your stakeholders. Develop policy briefs that compare and contrast employment outcomes of adults with ID who benefited from TPSID programs and those who did not attend. Connect your programs on the Internet with the broader Think College network, so stakeholders see that college programs for students with ID is a national trend.

Third, review and implement the Think College Standards for Inclusive Higher Education . Specifically, on an annual basis, review Standard 3: Sustainability. Throughout this study, our partners and the OSC PAC reported that planning for fiscal sustainability and building relationships with key allies are critical steps to sustaining TPSID programs. Although the standards often make programs stretch, and all quality indicators cannot be achieved in a single year, the standards provide a framework for programs to continue to enhance their services and outcomes. If a program's services and outcomes are high quality and the operating budget is fiscally sound, then sustaining the program becomes a reality. Program sustainability is one critical part of ensuring high quality inclusive postsecondary programs (Think College, 2021).

Study Limitations

As with all studies, there are clear limitations to this study. First, generalizability of results is limited due to the small sample of 10

TPSID programs in one state. There are nearly 300 programs across the US and this study involved 3% of the population of college programs. Second, upon completion of the program director/staff survey, it became clear that there was not a “one size fits all’ design to assist programs fully implement each benchmark. For example, Ohio has one secondary program, and as such, this secondary college program will not seek CTP status. The nuances of this are slight but vary based on the benchmark being studied. Each individual student must find the college program that best meets their individual needs. Fortunately, in Ohio, students have many options. While this variety of program models is advantageous for students, it also presents challenges in identifying a single set of strategies, or “one size fits all,” that unequivocally ensures a program’s long-term sustainability. In spite of this limitation, programs in Ohio have found ways to both sustain TPSID programs while maintaining the necessary network of support through the OSC.

The final limitation is the varying length of time the respondents of the Program Director/Staff survey worked with a specific program. In some cases, staff had worked with the program for less than a year when completing the survey. Particularly in a season of COVID, when there have been operational shifts at both the program and institutional level, these newer staff may not have the full scope of the program resulting in inaccurate survey results.

Implications for Future Research

There is a lot to be done in the field of inclusive postsecondary education to sustain the nearly 300 existing programs. This research team examined to what degree do the OSC postsecondary programs demonstrate the TCSIHE quality indicators and identify promising practices the partners are engaging in to promote sustainability. This research contributes to literature from the TPSID program staff perspective; however, more data are needed from a variety of stakeholders including families, employers, local educational agencies, service providers, and most importantly, the students with ID themselves to inform the knowledge base to build sustained quality inclusive postsecondary education programs.

To continue to justify the inclusive postsecondary education programs, all programs, regardless of federal funding status, need to be collecting multiple forms of data, including program level data (e.g. length, credential, housing status, CTP status), student level data (e.g. employment information, housing status, campus engagement metrics) as well as follow-along data for graduates (at a minimum). Grigal and colleagues et al. (2019) report annually on the major trends of the currently funded TPSIDs, but this represents less than 15% of the existing 300 programs. Therefore, replicating this study with a larger cohort of postsecondary programs will increase our understanding of the status of inclusive postsecondary education across the nation. Comprehensive data collection will paint a vivid picture of how a program or consortia of programs are operating and successfully supporting students with ID through college.

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A Literature Review on Autism Spectrum Disorder and Gender Differences

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Abstract: The rate of autism spectrum disorder (ASD) has continued to rise in prevalence to 1 in 54 with males being four times more likely to be diagnosed as having ASD (Maenner et al., 2020). Which leads to questions regarding if females are less likely to have ASD or do females present differently with ASD. This literature review looks at the differences between males and females with ASD in the current literature over the last five years. Articles were coded for demographics information and open coding was used until nine distinct categories emerged. These categories and implications for practice and future research will be shared.

Current information from the Center of Disease Control and Prevention indicates that autism spectrum disorder (ASD) has a prevalence rate of 1 in 54 and is four times more likely in males than in females (Maenner et al., 2020, based on 2016 data). The overall understanding of ASD has increased over the years and this understanding has led to changes in our assessment practices and instructional techniques (Volkmar et al., 2014). It is still unclear what causes ASD or exactly why the prevalence rate has increased over the years. However, there is a strong belief that at least some, if not a majority, of the increase is related to a better understanding of ASD as a spectrum disorder (Russell et al, 2015). At the same time, the number of males to females with ASD has continued to differ leading to questions over gender difference and if this is related to the limited diagnosis of females with ASD.

Many countries and an array of disciplines using multiple research measures continue to investigate this disparity of gender difference for persons with ASD. The disparity appears across age groups, races, and cultures from birth to adulthood. Investigations seek to find a common denominator, a central link, or a universal thread that indicates a cause/reasoning for the differences between males and females relevant to the disproportionate diagnosis of ASD.

A multitude of different diagnostic tools are available for use in the process of determining a diagnosis for persons with ASD. Psychologists, psychiatrists, and/or medical personnel use and administer such tools in medical settings (e.g., Autism Diagnostic Observation Schedule, ADOS – Lord, Rutter, DiLavore & Risi, 2012; Childhood Autism Rating Scale, CARS – Schopler et al., 2010; Social Responsiveness Scale, SRS – Constantino, 2012; Social Communication Questionnaire, SCQ – Rutter & Bailey, 2003). While clinics determine diagnoses based on clinical observations by therapists and/or practitioners (e.g., ADOS, CARS) and/or questioning parents and caregivers (e.g., Autism Diagnostic Interview, Revised - ADI-R) (Barger et al., 2016; Klein-Tasman & Mervis, 2018; Krakowski et al., 2020). Furthermore, survey and checklist tools for self-evaluation are also available for use by parents, guardians, or even individuals themselves (e.g., Autism Spectrum Quotient, AQ - Barger et al., 2016; Kung, 2020; Weiland et al., 2020). Moreover, definitions outlined in the *Diagnostic Statistical Manual* Criteria (e.g., DSM-5 – Spek et al., 2020; Xiong et al., 2019), and/or International Classification of Disease (ICD - Ho et al., 2016) contribute to identification and diagnosis of ASD in accordance with behaviors, characteristics, or traits exhibited by and observed in persons in question for diagnosis.

So, is it the personnel administering the tools being used to diagnose ASD, is it the sensitivity of the tools themselves, or do females have overall different traits or characteristics which precipitate their lack of diagnosis? A better understanding of why the differences between gender, may lead to better and more effective diagnosis of females with ASD.

Identifying why more males than females are being identified with ASD may be difficult for many reasons. Since there is yet no clear indication of what causes ASD, it is possible that there is something inherently different between the way ASD affects males and females. At the same time, it is clear that it can and does affect females. Subsequently, this leads to the belief that females are being under identified as opposed to it actually being less prevalent in females (Evans et al., 2019). Therefore, if it is true that females are being under identified, then it is important to discuss what current research is discovering in relation to females with ASD and how it differs from males diagnosed with ASD. Identification of these specific differences could then lead to better understanding how female persons with ASD present as well as how to effectively provide them with needed interventions.

One such idea currently being acknowledged in research, that could be attributed to under identification in females, is that of social camouflaging or masking (Pearson & Rose, 2021). Kreiser and White (2014) report that camouflaging occurs in both males and females, but more often in females, especially those who have no cognitive disabilities. Hence, under identification may be occurring as females with ASD, who still struggle with characteristics of ASD, appear to be able to better compensate for many of these characteristics through camouflaging or masking (Hull et al., 2020; Livingston & Happe, 2017). Therefore, this practice of social camouflaging/masking might be making it difficult for families and practitioners to unbiasedly assess females for ASD. Thereby, resulting in the underdiagnosis by medical personnel and/or clinically licensed therapists.

This being said, there has been an increase in studies addressing gender differences in individuals with ASD. Researchers want to unlock the mystery behind the disparity in ASD diagnoses between males and females. The intrigue of this topic along with increasing interest in better understanding of differing characteristics of ASD, this study sought to identify gender differences for individuals with ASD in studies published within the last five years. The following research questions were used to guide this review:

1. What categories regarding gender differences in individuals with ASD are evident in research studies?
2. What sub-categories of gender differences in individuals with ASD are evident in the categories that were identified in research studies?
3. What demographics are represented by the participants with ASD in the categories that were identified in research studies?

Method

Search Procedure

In order to determine articles in the ASD and gender literature, multiple electronic databases were searched (i.e., Education Full Text, ERIC, Academic Search Premier, Professional Development Collection, PsycINFO, and relevant journals) by using the search terms "Autism" OR "Autism Spectrum Disorder" OR "ASD" OR "Asperger's" OR "Asperger's Syndrome AND "gender differences" OR "gender stereotype" OR "gender inequality" from 2015-2020. The databases were inclusive for all fields and provided all significant journals across the databases. These journals, from a variety of fields including medical, psychology, education, and neurology were included in the search. The above search terms yielded 10,456 articles. After the title review and full text review, a. total of 38 studies matched the inclusion criteria. This literature review corresponds to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Tricco et al., 2018) guidelines and screening articles procedures were followed (see Figure 1).

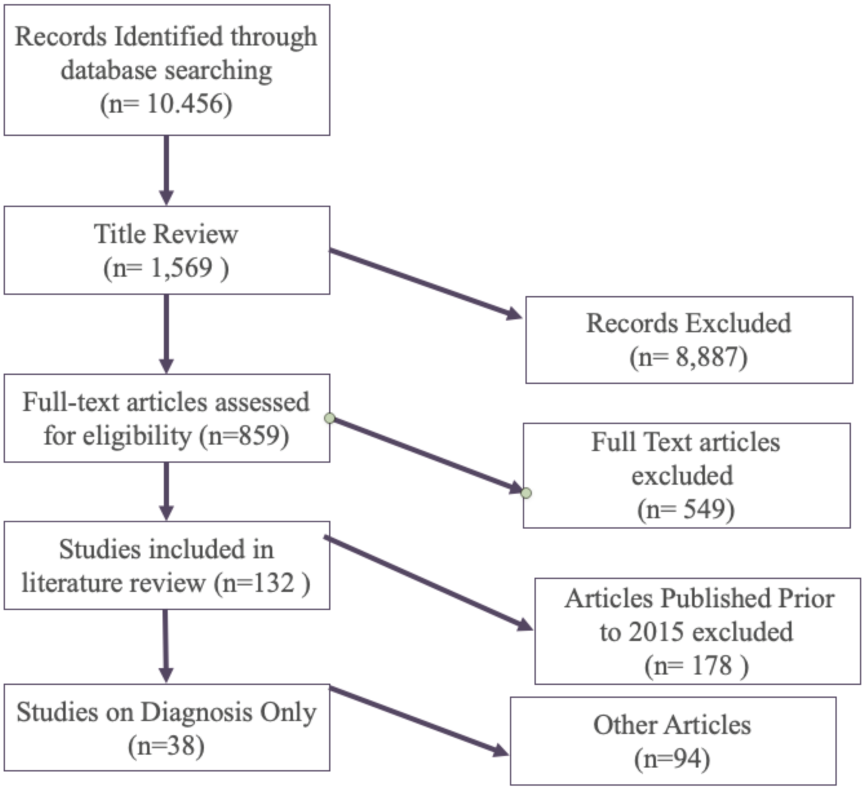
Inclusion Criteria

The following inclusion criteria were used to include final articles: a) published in English in a peer-reviewed journal, b) included results for participants with ASD, c) provided data related to gender differences, d) published in 2015 or after.

Explanation of Gender

Gender is considered a fluid concept and this study does not want to discount this fluid nature. Gender and gender roles are a socially constructed construct which is based on societal normal (Wood & Eagly, 2015). In

Figure 1. *PRISMA Screening*



this review the majority of the studies only included birth assigned gender or cisgender participants and few even excluded participants who identified differently. The way gender is addressed in this review is based solely on sex or reproductive organs individuals had at birth. The reason for this limited view of male and female is based on the amount of information provided within studies included in this review. In two categories (sexuality and gender identity) limited information was provided on gender identity. This information is provided along with birth assigned gender. We acknowledge that birth assigned gender is not an inclusive way to address gender.

This topic of how gender affects ASD needs to be studied more broadly and results for cisgender males and females need to be compared to those who identify differently. The main point of this study is to help identify what differences have been found in the research and not insinuate biases across genders. Overall, none of these results should be used to make assumptions about individuals based on their gender. But rather as a way to become more aware of differences that might occur, to promote equitable treatment and diagnosis across genders.

Coding for Demographics and Categories

Analysis of Demographics

In order to analyze demographic characteristics, articles were coded for the following information: age, number of male and female participants, total number of ASD participants, race, and country of origin. As a majority of the studies did not present information about race, it was not addressed in the table.

In addition, dependent variables' outcomes of the field were coded. Coding discussion, between researchers, identified nine categories (i.e., diagnosis, medical, Neuroscience, social emotional, mental health, education, sexuality differences, language, and gender identity) prevalent in the literature. In accordance with Corbin and Strauss (2014) researchers used open coding for categories until point of saturation was reached.

Results

The results of this literature review reflect research of various disciplines/fields addressing differences between genders for individuals with ASD. The current study identified nine main categories within the literature that addressed gender differences pertaining to diagnosis, academic and functional skills, speech and language, social emotional, mental health, neurological, medical, sexuality, and gender identity. These categories will be described below as well as specific information about the data found within these areas.

Furthermore, research across a variety of countries, as well as several international studies, was evident in the literature. A total of 25 different countries were represented in this review. Research from Australia, Taiwan, United States, Netherlands, Israel, Sweden, Italy, Hungary, Ireland, Cyprus, Sweden, Canada, United Kingdom, Greece, Scotland, Denmark, Norway, Germany, China, Singapore, India, Kazakhstan, Spain, Switzerland, and Poland were specifically identified. There are possibly many more countries also engaging in this research; however, they may not have been identified in our study, as we included only studies available in English. Table 1 provides specific information as to the number of countries represented in each different category.

Table 1. *Demographic Information Across Categories*

Categories	% of studies	Countries	Age	Participants	Gender
Diagnostic Testing	29%	14	Toddler (2.7%) Preschool (10.8%) Elementary (13.5%) Adults (29.7%) Mixed (43.2%)	550,943	62.6% Female 29.4% Male > 1% Trans male >1% Trans female >1% Nonbinary 8% Not Listed
Academic /Functional	11%	8	Toddler (7.7%) Preschool (15.4%) Elementary (23.1%) High School (15.4%) Adult (15.4%) Mixed (23.1%)	25,509	19.4% Female 74.6% Male 6% Not Listed
Speech and Language	4%	3	Elementary (75%) Mixed (25%)	1460	24.3% Female 73.9% Male
Social Emotional	11%	6	Preschool (7.7%) Elementary (23.1%) High School (23.1%) Adult (7.7%) Mixed (38.5%)	4,180	23.5% Female 73.9% Male 0.7% Not Listed
Mental Health	14%	13	Preschool (6.3%) High School (25%) Adult (37.5%) Mixed (31.3%)	378,921	20.8% Female 79.2% Male
Neurological	8%	7	High School (22.2%) Adult (33.3%) Mixed (44.4%)	5,368	18.6% Female 70.2% Male
Medical	14%	9	Preschool 18.8% Elementary 12.5 Middle School 6.3% Adult18.8% Mixed 43.8%	141,989	15.5% Female 55.5% Male 29.7% Not Listed
Sexuality	4%	4	75% Adults 25% High School	1,316	40.3% Female 42.1% Male 7.2% Identify as Male 8.4% Identify as Female 2% Identify as other
Gender Identity	5%	4	Adult 28.6% Mixed 71.4%	5,166	5.7% Female 10.3% Male 66% Not Listed

Table 1 also includes additional descriptive information about participants across categories. Included studies reflect a range of participant ages, from infants and toddlers to adults. The majority of the studies included mixed age groups (43%) or adults (37%), with middle school (<.001%) being the smallest age group addressed. Furthermore, more male participants than female participants were represented, but many studies did make sure that an equal amount of both were addressed. Some studies provided information as to whether gender was birth assigned or specifically chosen by the individual, all percentages provided in Table 1 are based on birth assigned gender unless otherwise indicated. Interestingly enough there were a number of studies that did not provide a clear break down of the genders despite the fact that data was provided about differences between genders.

Diagnosis

The definition for this category is a research study which found gender differences within specific diagnostic, screening, or categorical qualifications for individuals with ASD. In fact, 29% of all articles in this literature review address diagnosis, which comprised the largest category in this review. Overall, results indicate that males are being identified with ASD more often than females with ASD (e.g., Lecciso et al., 2019; McFayden et al., 2019; Niculae et al., 2018; Wilson et al., 2016). Females were also found to be identified at an older age than males and that some of the gender ratio differences in diagnosis become lower with the age of the participants (Rutherford et al., 2016). Mazurek and colleagues (2017) found that females were actually less likely to meet the DSM-V criteria than the DSM-IV criteria. One study addressed that camouflaging during diagnosis testing occurred more often for females (Schuck et al., 2019).

Within this category, the researchers determined subcategories, based on the variety of different diagnostic tests utilized for the diagnosis of ASD in participants. The current literature review found 17 different tests and screeners with the most common being the Autism Diagnostic Observation Schedule (ADOS) and two different diagnostic criteria: *Diagnostic and Statistical Manual* (American Psychiatric Association, 2013) and the *International Classification of Disease* (World Health Organization, 2004). Other tests and screeners evident in the literature are Autism Spectrum Quotient, Autism Diagnostic Interview, Social Communication Questionnaire, Social Responsiveness Scale, Restrictive Repetitive Behaviors, Childhood Autism Rating Scale, Autism Spectrum Screening Questionnaire, Repetitive Behavior Scale, Social Communication Impairment, Empathy Quotient, Systemizing Quotient, Theory of Mind, Questionnaire for Autism Spectrum Conditions, Short Sensory Profile, Sensory Quotient, and Baby Infant Screener for Children with Autism Traits.

This category is the only category in which female participants outweigh the number of male participants and by a large percentage. In fact, 62.6% of the participants in these studies were females and only 29.4% were male (see Table 1).

Academic and Functional Skills

The definition for this category is a research study which found gender differences either in academic or functional skills that were addressed either in a school or clinical setting. This category addresses a few sub-categories within academic and functional skills including differences between adaptive behaviors, employment, symptomatology and developmental functioning, cognition, executive functions, life skills training, and parent expectations and preparatory activities. In this category the trend is that often the female individuals with ASD tend to have a higher level of impairment as opposed to their male counterparts (e.g., Howe et al., 2015; Liu et al., 2019). In addition, parents had lower expectations for daughters than their sons with ASD (Holmes et al., 2018). Furthermore, males were found to have more support on the job (Sung et al., 2015) and to receive more benefits than females (Taylor et al., 2019). Some studies found similar cognitive skills in males and females but higher levels of social communication skills of females (Barbaro et al., 2018; Matheis et al., 2019).

Moreover, this category is one of the two categories that includes the youngest participants, in the infant and toddler age range, while also addressing adults within the larger group of mixed age participants. In addition, middle school students were addressed in this category but always as part of a mixed aged group. Finally, in this category, female participants represented only 19.4% as compared to the 74.6% of male participants (see Table 1).

Speech and Language

The definition for this category is a research study which evaluated gender differences in the speech and language skills of individuals with ASD. The studies within this category addressed sub-categories including verbal abilities or social emotional skills of individuals with ASD. These studies found that females with ASD tended to have higher or equal speech and language skills than their male counterparts (e.g., Conlon et al., 2019; Martin et al., 2018; Parish-Morris et al., 2017).

As can be seen in Table 1, this is one of the two smallest categories, which includes only four percent of the overall articles addressed in this literature review. The majority of the studies in this category were completed with elementary aged students and the only other category was mixed aged groups. This is yet another category where the number of female participants (23.5%) is significantly less than the number of male participants (73.9%).

Social Emotional

The definition for this category is a research study which evaluated gender differences in social emotional skills that were not part of a separate diagnosis of a specific mental health need. The social emotional items addressed in this research are reciprocal behaviors, social participation/friendship, camouflage behaviors, behavioral profiles, first impression responses, temperament, emotional dysregulation, and acceptance of social skills interventions. Within these sub-categories' female participants with ASD often had higher skills or responded to interventions more readily (Neuhaus et al., 2019; Pisula et al., 2015; Sedgewick et al., 2016). In addition, camouflaging behaviors were also more evident within female participants with ASD (Dean et al., 2017).

This category addressed a variety of age groups including preschool, elementary, high school, adults, and mixed age groups, with the high number of participants being in the mixed age groups (see Table 1). As in previous categories, a much smaller population of female students (23.5%) were addressed in this category than males (73.9%).

Mental Health

The definition for this category is a research study which evaluated gender differences in mental health conditions that were identified or addressed within a clinical setting. The specific areas researched in this category were behavioral/emotional, self-injurious behaviors, hoarding behaviors, obsessive-compulsive disorder, camouflaging, gender variance, interaction with the criminal justice system, post-traumatic stress/victimization on mental health, and suicide. Determination as to which gender struggles more with mental health depends on the subcategory being addressed. For example, males were likely to have interactions with the criminal justice system (Rava et al., 2017) and females were more likely to struggle with victimization (Greenlee et al., 2020) or post-traumatic stress (Haruvi-Lamdan et al., 2020). Lai and colleagues (2017; 2019) found that females are more likely to camouflage and experience depression related to this camouflaging.

This category consisted of 14% of the studies (see Table 1) in this review, the second greatest number of studies in a category (tied for second with Medical). Thirteen different countries contributed to the research in this category. The majority of the participants in this category were adults (37.5%) followed closely by mixed ages (31.3%) and high school students (25%). The only other age group addressed was preschool (6.3%). Overall, males were in the majority with the research in this category addressing 79.2% male participants and 20.8% female students.

Neurological

The definition for this category is a research study which specific neurological differences were identified between males and females with ASD. The sub-categories found consist of functional brain connectivity, radiomic analysis of sub-cortical regions, chromosomal microarray analysis, compensatory camouflaging, single pulse transcranial magnetic stimulation-electroencephalogram, inattention and hyperactive/impulsivity, and selective mutism. The research suggests that females' brains show the effects of ASD different when under imaging (e.g., Alaerts et al., 2016; Chaddad et al. 2017; Retico et al. 2016).

Even though this category only covered eight percent of the studies identified, representation of seven different countries was evident (see Table 1). The majority of these studies involved mixed age groups (44.4%) and included adults (33.3%) and high school students (22.2%). The majority of the participants in this category were males (70.2%).

Medical

The definition for this category is a research study which address specific medical conditions or medical differences between individuals with ASD. In hospital mortality the following sub-categories were identified: eye tracking, acid glysocaminoglycan excretion, duplication of 7q11.23, metabolic disturbances using urinary metabolomics, etiology of autistic traits in twins, dental age, risk of emergency department utilization, 2D and 4D digit ratio, timing of puberty, Smith-Magenis, protein translation efficiency, and disembed visual forms. Many of the studies in this category, show that females have higher rates of medical issues, for example in emergency room visits (Liu et al., 2019) and in hospital mortality rates (Akobirshoev et al., 2020). A reverse gender ratio was found within patients with Smith-Magenis as more females also had ASD than males (Nag et al., 2018). Males were found to have a higher dental age than their typically developing peers but females did not (Limeres et al., 2019).

This category included 14% (see Table 1) of the studies in this literature review which is the second highest percentage (same as mental health). The majority of these studies were in mixed aged groups (43.8%) but also included preschool, elementary, middle, and adults. The majority of the participants were male (55.5%), but 29.7% of the participants identified in this category did not have a gender listed in the study.

Sexuality

The definition for this category is a research study which addressed gender differences in the sexuality or sexual activity of individuals with ASD. There were three different sub-categories which are characteristics of sexuality, sexual experiences, and sexual attraction. The differences in gender within this category reflected females as having more negative sexual experiences (Dewinter et al., 2017; Pecora et al., 2019) and females being more likely to not be heterosexual (May et al., 2017).

This category consisted of only four percent of the studies; however, four different countries were represented within those few studies (see Table 1). Studies in this category were conducted with only adults (75%) and high school students (25%). The ratio between females and males is similar, 40.3% and 42.1% respectively. In one of the studies the participants were listed under the gender they identified as, which included 7.2% who identified as male, 8.4% who identified as female, and two percent who identified as others.

Gender Identity

The definition for this category is a research study which addressed differences between those assigned male and female at birth and their current gender identification. There were no sub-categories found for this category, but we felt it needed to be separate category from sexuality as who you are attracted to sexually and which gender you identify with are not comparable. The category consists of 5% of the total studies included in this review. Examples of information found in this category are: (a) adolescent females wished to be the opposite gender more often than males (van der Miensen, 2018); (b) females had lower association with characteristics of a specific gender (Conlon et al., 2019); (c) transgender or nonbinary individuals assigned female at birth were more likely to have ASD (Nobili et al., 2018).

The majority of the studies in this category addressed a mixture of ages (71.4%) and the only other age group was adults. Interestingly the majority of the studies in this category did not list the birth assigned gender of the participants (66%). Participants where birth assigned gender was provided consisted of 10.3% were male while 5.7% were female, the rest were either not provided or birth assigned gender was not provided.

Discussion

Gender differences in diagnosis of ASD have been a question for a number of years. The question being addressed is whether or not ASD is actually four times more likely in males than in females. If it is not four times more likely in males than females, is it that females with ASD are not being correctly diagnosed? Although our research on this topic does not fully answer this question there was clear evidence that more males qualify for ASD across a number of diagnostic testing and screeners as well as diagnostic criteria (Lecciso et al., 2019; McFayden et al., 2019; Niculae et al., 2018; Wilson et al., 2016).

It is also clear from the research that there are many areas in which females do present differently. From the way imagining shows female brains in neurological research (Alaerts et al., 2016; Chaddad et al., 2017; Retico et al., 2016) to the increased use of social camouflaging (Dean et al., 2017; Lai et al., 2017; Lai et al., 2019). As practitioners, doctors, clinicians, and researchers, it is imperative that a profile be created to fully address and understand what it means to be female with ASD. A more accurate profile of females with ASD may lead to early detection and diagnosis at a younger age, access to early intervention and better supports, resulting in long term positive outcomes for females with ASD.

Another unique challenge to supporting females with ASD, is the idea of camouflaging or masking which was found to be a factor in five different categories (diagnosis, social emotional, mental health, neurological, and language). Higher levels of camouflaging were found as a sub-category across the categories of social emotional, mental health, and neurological (Dean et al., 2017; Lai et al., 2017; Lai et al., 2019). Even though not addressed as a sub-category, camouflaging was also found in language skills (Parish-Morris et al., 2017) and diagnosis (Schuck et al., 2019; Hull et al., 2020). This process of camouflaging not only makes it more difficult to identify and support individuals with ASD, it also increases the chances of the comorbidity of mental health concerns (Lai et al., 2017; Lai et al., 2019). Despite the camouflaging that is occurring, it is important to find and support females with ASD, to provide help and assistance, they may need, not only with ASD but other mental health concerns that might arise.

Overall, females tend to be the minority in studies where the ratio of males to females follows the four times more likely discrepancy that occurs in diagnosis. Interestingly, in the category of diagnosis there were more females than males present within these studies. This might have occurred in part because a number of the studies addressed the idea of whether updated testing is more accurate for females now, than it was believed to have been in the past (Mazurek et al., 2017; Pugliese et al., 2015).

The results also indicate that females with ASD are more likely to not be heterosexual (May et al., 2017) and to be transgender/nonbinary (Nobili et al., 2018). Information in this study did not evaluate if the four times more likely difference in diagnosis between genders would still hold true of individuals if gender identity was addressed rather than their birth assigned gender.

Implications for Future Research

Even though research addressing gender differences has been occurring over the last five years there are still very few answers to why these gender differences are occurring or what specific things should be done to support females with ASD. More information is needed to fully understand the intersectionality of these gender differences and how it relates to diagnosis criteria and testing as well as what it means to be female and have ASD. It seems clear more changes and supports are needed to effectively address the needs and diagnosis of females with ASD so that earlier identification can occur.

More research is also needed on camouflaging and why both males and females engage in these behaviors. Even though these behaviors make individuals with ASD appear more “typical,” the research clearly supports that these behaviors mask a person’s true self and leads to comorbid mental health needs. Research is also needed in how to better diagnose individuals, whether male or female, who are camouflaging so that they are given the supports and help they need before these mental health needs develop.

Current evidence-based practices should also be evaluated for their effectiveness with both males and females with ASD. With the current disparity in diagnosis between males and females with ASD, the question should be raised, if current evidence-based practices are effective for females with ASD, then who should be identified but have not been? It is possible the same evidence-based practices will be effective for both males and females with ASD, but more research is needed to establish this fact.

Finally, future research is needed in the area of gender identity. We know that there are differences between those assigned female at birth and those assigned male but does this difference hold true across those who identify with a gender that differs from their birth assignment. Therefore, do individuals whose gender identity differs from their birth assigned identity have characteristics of ASD more similar to their gender identity or their birth assigned identity?

Limitations

One limitation of the current review is that only the last five years of published research was analyzed. Research completed outside of the last five years, might also lead to a better understanding of gender differences for individuals with ASD. The limited time frame was chosen so as to capture the most recent literature available on the topic of ASD and gender; however, this does limit the results specifically to research published within the last five years.

Another limitation to this research is that researchers are experts in the field of special education and have taught and diagnosed individuals with ASD but have limited experiences in the other fields represented in this study. This may have limited the assumptions and understanding gained from these fields. Other experts in these fields may draw new, different, or more detailed analysis of research across their fields of study.

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Professional Development Needs of ASD Practitioners: A Content Analysis of Listserv Communication

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Abstract: Practitioners who provide educational services to students with autism spectrum disorder (ASD) are charged with addressing students' heterogeneous needs. Accordingly, our preparation efforts would benefit from understanding the immediate needs and challenges that practitioners face on a daily basis. In this study, we turn directly to practitioners' voices by analyzing the content of email messages posted on a practitioner listserv. Results revealed themes and issues practitioners encountered during service delivery. ASD practitioners expressed challenges in a range of areas, especially in addressing challenging behaviors and social issues. The professional community often recommend research-supported practices or commercially available materials, though rather limited in scope. The quality of responses/suggestions indicates potential areas for professional development (PD). Future research of a larger and more representative sample is warranted to further explore the particular needs of PD within the ASD practitioner community.

The number of students who qualify for special education services under autism spectrum disorder (ASD) eligibility category has consistently grown over the past decade. Approximately 11% of students eligible for special education services in the 2018-2019 school year qualified under the ASD identification category (U.S. Department of Education, 2020) compared to 5.2% a decade earlier. Many of these students will require intensive and individualized instruction to address social, behavioral, and academic needs. Legal mandates and advocacy groups including the Council for Exceptional Children specifically recommend practitioners use research-based strategies in providing high-quality services to the students (2014).

The empirical literature on educational and developmental interventions for individuals with ASD has grown exponentially over the past few decades. However, most of the ASD intervention research has historically focused on issues related to early years (Steinbrenner et al., 2020). Researchers devoted relatively less attention on developing effective practices for students in middle or high school classrooms (Newman, 2007; Steinbrenner et al., 2020). The field has acknowledged the intense need and importance of extending research efforts to include older populations given ample evidence pointing to suboptimal academic and social outcomes for adolescents with ASD (Newman, 2007; Shattuck et al., 2012). Accordingly, the quantity of research focused on adolescents and adults with ASD has increased within the past five years (Steinbrenner et al., 2020). This gives rise to a multifaceted question regarding whether research is available to address challenges that educators face in their classroom and, if so, whether educators are knowledgeable of such strategies. In this study, we attempted to explore the issues and challenges ASD practitioners face with by analyzing their communications through a listserv (i.e., a group email discussion list).

Preparing Practitioners to Meet the Varied Needs of Learners with ASD

Education is our best hope for improving outcomes for students with ASD. To this end, efforts have been made to improve ASD practitioners' capacity to address a range of educational needs. Several task groups, such as National Clearinghouse on Autism Evidence and Practice (NCAEP; Steinbrenner et al., 2020), and the National Autism Center (2015), have conducted large-scale comprehensive evaluations of existing research. The findings from these efforts have been disseminated at no cost through published technical reports published by the task forces and online modules to increase practitioners' access to current evidence-based practices. In addition, most college and university teacher preparation programs design their curriculum around state issued competencies that typically emphasize research-based strategies and decision making.

Despite these efforts, public school teachers are often limited in their knowledge and use of research-based strategies to address the varied needs of their students with ASD (Paynter et al., 2019; Paynter et al., 2017). There is great variation in the content and quality of training offered across professional preparation programs; many states do not have an established a list of autism-specific teaching competencies (Barnhill et al., 2011). This is particularly concerning given that teachers report low confidence in implementing evidence-based practices for students with ASD (Brock et al., 2014). Data gained from the AFIRM project pretest database revealed that ASD practitioners of all occupations had lowest knowledge on extinction and differential reinforcement across all evidence-based practices (Morin et al., 2020). These results suggest that furthering training for ASD practitioners in specific areas such as addressing challenging behaviors is quite imperative.

Apart from limited knowledge and confidence in using evidence-based practices, many special education professionals have been found to implement unproven practices for years. Through an online survey, Paynter and colleagues (2017) investigated the level of reported knowledge and use of research-based, emerging and unsupported practices among ASD service providers and found that a number of unsupported intervention practices were reported to be used more than once each week; those practices included facilitated communication, multisensory environments and unsubstantiated academic interventions. Unsubstantiated or pseudoscientific practices such as touch therapy were also found to be adopted by special educators and other practitioners in many earlier studies (e.g., Paynter et al., 2019). The use of unsubstantiated practices can not only result in a waste of instructional time and educational resources but also cause other negative consequences such as an increased burnout rate in service providers (Travers, 2017). Lack of training in research-based strategies combined with wide-spread use of unsubstantiated practices (Barton et al., 2015) means that practitioners will likely be unsuccessful in improving outcomes for their learners.

The gap between research and its application in educational settings is well established and has led to the emergence of an entire discipline devoted to understanding drivers and barriers of implementation science (Cook & Odom, 2013; Odom et al., 2019). Promoting optimal outcomes for students relies on reducing the research-to-practice gap as well as critically evaluating whether our research adequately addresses the current needs of learners with ASD and their teachers. As previously stated, there has been a remarkable increase in both the quantity and quality of intervention studies over the past two decades. Large scale systematic reviews of the autism literature, most recently one conducted by the NCAEP (Steinbrenner et al., 2020) allows us to evaluate areas of inquiry that have a strong research base, gaps in the literature that can inform future research, as well as emerging areas. Based on reports, the field is plentiful in studies that include young students with ASD and evaluation—and validation—of strategies to improve outcomes related to communication skills, challenging behavior, and social domains. Other areas, including mental health and vocational skills, were the focus of relatively fewer peer-reviewed studies compared to other domains. Research on self-determination is an emerging area of inquiry that appeared in the most recent NCAEP report of evidence-based practice suggesting that this is a potential area that is ripe for additional inquiry.

Purpose of this Research

Substantial efforts to prepare practitioners who work with learners with ASD have been made through teacher preparation programs and supplemental professional development opportunities. Given the varied needs of learners with ASD, it is improbable for even the most comprehensive preparation programs to fully prepare practitioners for all the challenges they will likely encounter in their classrooms. The lack of research in the aforementioned understudied outcome areas and age groups (e.g., Brock et al., 2020) means that many ASD practitioners will lack empirical guidance to inform their instruction. The potential mismatch between research efforts and practical demands is also directly demonstrated in a recent study by Brock and colleagues (2020). The researchers surveyed 99 teachers in Ohio about their highest priority goals for students with ASD. High school teachers tended to focus less on academic skills and more on adaptive/self-help goals, whereas middle school teachers focused less on social communication outcomes and more on challenging behaviors and cognitive domains (Brock et al., 2020). This research suggests a possible misalignment between outcomes prioritized by teachers versus researchers. Moreover, this begets the question, “if research is not able to guide instruction, where do teachers get their advice?”

Teachers and related service personnel report a preference of consulting one’s colleagues as a common approach for sourcing information and selecting amongst intervention options (Barwick et al., 2014). These findings further highlight the importance of enhancing practitioners’ knowledge and implementation of evidence-based practices because intervention choices of one practitioner can influence the practice of many colleagues. Germane to this study is the growing popularity of online platforms used by the professional community to seek out and share advice. Information shared on these platforms, however, are often not regulated for scientific accuracy. This means that practitioners may gain access to helpful and valid advice, but they may also be advised to implement strategies that are not empirically sound.

In this study, we analyze the content of information sought, and shared, between members of an ASD online professional community. In doing so, we aim to understand persistent issues and challenges practitioners face in their classrooms as well as the quantity—and quality—of advice that is offered by other practitioners to address these challenges. The specific research questions explored are: (1) What topics are practitioners commonly soliciting advice from colleagues? (2) To what extent do members of the online community (a) respond to these inquiries and (b) offer advice that is empirically sound? (3) What training/professional development opportunities are advertised through the list serve? To what extent did the offered resources align with practitioners' expressed needs?

Method

Data for this study were derived from email messages posted to a special educator listserv in 2017, 2018 and 2019. This listserv was established and managed by a state-run autism agency in a midwestern area of the United States. Subscribers of the emailing list are practitioners who provide educational and related services to students with ASD in the state. The listserv was designed to provide a platform for practitioners to exchange ideas about teaching or intervention, seek advice on the challenges encountered and share professional development opportunities. Personal identifiable information of the message senders was not critical to address study aim and was therefore not collected, analyzed, or reported. The practitioner roles of those who posted solicits or advice through the listserv include special education teachers, autism specialists/consultants, behavior specialists/consultants, speech language pathologists, program coordinators, evaluation specialists etc.

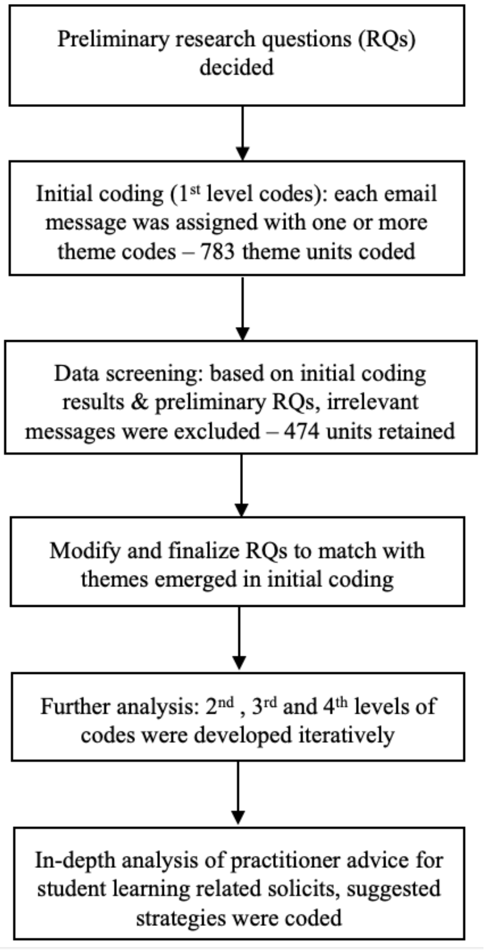
We used a content analysis method to investigate the themes and issues practitioners encountered when providing services to students with ASD. The content analysis method adopted in this study is a mixed-method approach as it includes both organizing and eliciting meaning from data and analysis of frequencies. Clarke et al. (2015) described a six-phased procedure used by many researchers in content analysis consistent with established criteria for trustworthiness (Lincoln & Guba,1985). The six phases are as follows: getting familiar with the data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; and producing the report. Nowell et al. (2017) further argued that this six-phased method should be more an iterative and reflective process that involves a constant moving back and forward between phases. The content analysis procedures of this study generally followed the process presented in the six-phase method while also included an iterative process. However, some procedures typically reflected in the six-phased method were not applicable to this study. Specifically, this study did not include additional data collection modes outside of the listserv communications making data collection triangulation impossible.

Content Analysis Procedures

All the original emails posted on the listserv between January 1, 2017 – December 31, 2019 were imported into the NVivo software and organized into three folders according to year. Two coders worked on the content analytic coding process. The first coder is a doctoral student in special education and has experience in analyzing data using a content analysis method. The second coder is a faculty member who is an expert in autism intervention research and has experience in content analysis research.

The analysis followed an iterative process, which is summarized in Figure 1. We used our preliminary research questions to guide our coding approach and subsequent data analysis. As we finished an initial coding procedure, research questions were revised to better reflect the available information. Individual codes and themes that emerged in the initial coding process led to the development of the upper-level codes and themes (i.e., levels of 2 to 4). Consistent with

Figure 1. *Content Analytic Procedure Flow Chart*



the reciprocal nature of this methodology, first-level codes were modified or reorganized with the development of new upper-level codes. A detailed description of the process is in the following sections. Coders scheduled recurring meetings to discuss about the codes and structure of codes during each step of the content analysis. The first coder documented all the decisions made out of the discussions using memos of the NVivo software to ensure the dependability of the research process (Clarke et al., 2015).

Level 1 Coding: General Description

In the initial coding process, the first coder summarized the main content of each message (e.g., seeking advice about selective mutism). Upon the completion of the initial coding, the two coders discussed about the first level codes and made code modifications by consensus. All messages posted in the listserv were screened for study inclusion. Messages that met the following criteria were included for further content analysis: (a) posted on the ASD email list serve over a 3-year period (January 1, 2017 – December 31, 2019); (b) posts must be created by practitioners or organizations that either serve learners with disabilities or provide professional development; (c) messages must be intended for a professional practitioner audience; and (c) content is intended for the ASD population. Any posts not meeting these criteria were excluded (e.g., email posts for employment opportunities; messages intended for families and other non-practitioner audiences; advice for purchasing materials).

Level 2 Coding: Practitioners Seek Advice for Student Learning Outcome Category

All messages that met inclusion criteria were then coded into a second level code to categorize the specific focus area or learning outcome. All communication that was initiated by a practitioner in search for advice from the community about student needs were categorized. Specifically, we used the operational definitions of the outcome areas identified by NCAEP as a starting point for creating the codes in this study. We revised "social" from the NCAEP report into "social communication and interaction" to also include adolescent romantic relationship topics. The "social communication and interaction" was then defined as "Outcomes related to ability to express wants, needs, choices, feelings, or ideas and/or skills needed to interact with others". We also added the category of "ASD awareness/inclusion" and defined it as "Outcomes related to increasing others' awareness about ASD, promoting inclusive practices, and/or representation of ASD in classroom materials (e.g., books)". Outcome areas identified from the current dataset include: challenging behavior, adaptive or self-help, social communication and interaction, mental health, ASD awareness/inclusion, self-determination, academic and other (see also Table 2). Outcomes related to broad skill improvement was categorized into "Other".

Level 3 Coding:

The coded content was further coded into a third level code to describe the purpose of the message. For example, a practitioner seeking advice about addressing social communication issue of a student was assigned a second level code of "social communication & interaction" and then a third level code of "practitioners seek advice for strategies for student learning". All third level codes are presented in the left column of Table 1. Only information coded under code "practitioners seek advice for strategies for student learning" includes second level codes.

Level 4 Coding: Purpose of the Communication

All messages were then grouped into the fourth level code to categorize whether the information was (a) solicited by a member on the list serve or (b) unsolicited information. Solicited messages were initiated by individual members of the practitioner community who sought advice on a specific topic or issue. In comparison, unsolicited messages were commonly initiated by organizations to advertise professional development opportunities or share information. Information of all codes and code hierarchy will be provided upon request.

Evaluating Quality and Quantity of Advice Offered

We then conducted an in-depth analysis of professional community members' advice for solicited posts focusing exclusively on solicitations for addressing specific student needs. The purpose of this step is to examine the quality and quantity of the advice of professional community members. Excluded were solicitations and advice for information pertaining to general learning (e.g., experience with instructional materials, curricula, technology application recommendations) and queries about educational administration (e.g., licensure requirements, educational determination, classroom placement decisions).

Table 1. *Quantity of Practitioners' Solicitation and Unsolicited Resources on Different Topics*

Topics of Practitioners' Solicitation	Frequency (#)	Topics of Unsolicited Information	Frequency (#)
Soliciting strategies for student learning	Total: 53	Training opportunities about ASD interventions	Total: 28
Academic	1	Academic	6
Adaptive/Self-help	9	Adaptive or self-help	1
Challenging behavior	24	Challenging behavior	3
Mental health	4	Mental health	1
Social communication & interaction	9	Social communication & interaction	6
Self-determination	1	Cognitive skills	1
ASD awareness/Inclusion	4	Un known outcome	1
Other (broader skill improvement)	1	Comprehensive treatment models/curriculum	9
ASD diagnosis/characteristics & placements	20	Information sessions about ASD general knowledge	27
Availability of specific training	12	Assessment training	2
Suggestions about using instructional materials	19	Unsolicited advice on specific interventions	2
Suggestions about curriculum, program or Apps	17	Other resources targeting ASD practitioners	20
Resources for licensure or certification	3		
Other solicits (e.g., seek an ECSE classroom to observe)	3		

Note. ASD=autism spectrum disorder, ECSE=early childhood special education.

All remaining responses were reviewed using the content analytic approach to identify the strategy, or strategies, recommended by the professional community members. The number of strategies varied by post, with some offering only one strategy while others presented multiple suggestions. We evaluated each strategy suggested as either an *evidence-based practice* (EBP) or *unsubstantiated practice*. Specifically, we used the strategies and definitions used in the NCAEP to inform our determination (Steinbrenner et al., 2020). Recommendations aligned with an EBP were coded by practice type based on definitions used in the NCAEP review. Strategy recommendations that did not align with an EBP were coded as an unsubstantiated practice. Two additional categories were created based on our review of practitioners' recommendations: outside expertise and published curriculum. *Outside expertise* included suggestions that were not behavioral or educational in nature, and thus, were not included in the NCAEP and would typically be outside the scope of educational practitioners' training and expertise. Included in this category were advice for a particular medical procedure, drug treatment, or nutritional diet. Recommendations of a commercially available curriculum, set of materials, book or website resources were coded as *published curriculum*. Although it is possible that published curriculum recommendations included EBPs, we created a separate coding category for these suggestions because we did not evaluate the empirical basis of its content.

Intercoder Consensus

The first author assumed the lead role in coding work through step 5, as indicated in Figure 1. The second author led coding efforts related to step 6. Both coders had recurring meetings during the coding and analysis process to discuss about the developed codes. Changes in coding structure and names of codes were made when necessary. In all the coding procedures, the coder who did not lead the original work reviewed all the codes and checked the accuracy of the code assignment and arrangement. The two coders reached 100% consensus on all codes.

Results

Solicited Information and Responses

Practitioners Request Advice from the Professional Community

ASD practitioners posted a total of 127 messages in solicitation of advice. Practitioners solicited information about a range of topics, including specific training opportunities (*N*=12), information about diagnosis/characteristics of ASD or educational settings (*N*=20), and feedback on specific instructional materials (*N*=19), general curricula questions, or technology applications (*N*=17). Strategies to address specific student needs were the most frequently requested topic, accounting for 42% (*N*=53) of all solicitations. Specifically, practitioners sought assistance with challenging and interfering behavior (*N*=24), social communication and interaction (*N*=9), and adaptive or self-help skills (*N*=9). Other less frequently sought advice focused on the areas of mental health, ASD awareness/inclusion, etc. Refer to Table 1 (left column) for a summary of the solicitated topic area by frequency.

Requests for advice on challenging behavior. The challenging behaviors for which practitioners commonly sought advice focused on self-injurious behaviors, aggressive behaviors and/or repetitive behaviors. Challenging behaviors were organized into five categories: (1) Stereotypic or repetitive behaviors (*N*=11), which includes stereotypies or ritualistic body movements that may interfere with learning or even cause physical injuries; (2) Violation of social norms (*N*=4, which includes behaviors that violate typical social norms or standards; (3) Elopement and/or escape behavior (*N*=4), which includes behaviors issues related to attempting to escape from typical instruction or instructional settings; (4) Physical aggression towards others (*N*=3), which includes behaviors that cause or threaten physical harm towards other people; (5) Self-injurious behavior (*N*=3), which includes students' behaviors that result in physical injury to their own body.

Requests for advice on social interaction. In contrast, under the *social communication and interaction* category, practitioners not only presented challenges regarding common social deficits of students with ASD, but also issues concerning general sexual education such as teaching students with ASD on managing romantic relationships or about sexual boundaries. Notably, four out of nine cases in the *social communication and interaction* category were focused on adolescent-related issues.

Requests for advice on adaptive and self-help skills. Solicitations for advice to improve students' adaptive or self-help skills mostly reflects topics relevant to the general population but possibly more challenging in degree for students with ASD, for instance, teaching about hospice and death, graduation, drills exercises, removing wisdom teeth and making phone calls. Akin to the social-related issues, adolescent-related topics also emerged in the adaptive or self-help category (i.e. menstruation)

Requests for advice on other topics. Attempting to create more inclusive environment for students with ASD, practitioners solicited colleagues' advice on teaching to increase peer students' awareness or understanding of autism or disabilities. For example, one special educator sought for resources to help "guide classroom discussions" about ASD and other disabilities. Under the *mental health* category, an educator sought advice to address anxiety in a student who had witnessed bullying and verbal abuse behaviors among other students in the classroom.

Professional Community Responds to Practitioner Solicitations for Advice

Practitioners most commonly sought advice on strategies to support student learning. We focused the professional community's responses to these solicitations in order to describe (a) the extent to which the community provided advice on a given topic, and (b) whether the advice offered was supported by research.

Response quantity. A total of 105 suggestions were offered in response to posts that solicited supports for student learning. The overall number of solicitation and advice posts varied by student outcome area. Solicitations for addressing challenging behavior received the most advice (*N*=18), followed by social interaction (*N*=6), ASD awareness (*N*=3) and adaptive/self-help (*N*=3). In comparison, solicitations for advice about academic instruction, self-determination skills, "other" broad skills development received one solicitation post each. We calculated proportion score to compare rates of responding across outcome areas. The calculation factored in the number of solicitations that received a response divided by total solicitations. Approximately 75% of solicitations for challenging behavior received a response. In comparison 33% of solicitations for adaptive/self-help advice received a response. The number of solicitation and response posts by outcome area can be found in Table 2.

Response quality. Approximately 56% (*N*=59) of the strategies offered in response to advice solicitations were consistent with an evidence-based practice identified by the NCAEP (Steinbrenner et al., 2020).

The most frequently recommended evidence-based practice was antecedent

Table 2. *Quantity of Solicitation and Response Posts by Outcome*

Outcome Area	Solicitation (#)	Solicitations with a response (#)	Strategies/ solicitation (Range)	Proportion
Academic	1	1	1	1.0
Adaptive / Self-Help	9	3	1-4	.33
Challenging Behavior	24	18	1-5	.75
Mental Health	4	2	2-4	0.5
Social Communication & Interaction	9	6	1-3	.67

Self-Determination	1	1	5	1.0
ASD Awareness/Inclusion	4	3	1-6	.75
Other	1	1	4	1.0

Table 3. *Strategies Offered in Response to Solicited Advice*

Recommended Strategy by Topic	Frequency (#)	Recommended Strategy by Topic	Frequency (#)
Published curriculum/material	**Total: 39**	**Extinction (Ext)**	**Total: 6**
“Other” Comprehensive skills	4	Challenging Behavior	6
ASD Awareness/Inclusion	15	**Video Modeling (VM)**	**Total: 6**
Adaptive/Self-Help	3	Challenging Behavior	5
Self-determination	5	Social	1
Social	10	**Social Narrative (SN)**	**Total: 10**
Challenging Behavior	2	Challenging Behavior	6
ABI	**Total: 15**	Social	3
Challenging Behavior	8	Adaptive/Self-Help	1
Social	2	**Reinforcement (R+)**	**Total: 3**
Mental Health	3	Challenging Behavior	3
Adaptive/Self-Help	1	**Self-Management (SM)**	**Total: 3**
Academic	1	Challenging Behavior	3
Visual Support (VS)	**Total: 11**	**FCT**	**Total: 3**
Challenging Behavior	6	Challenging Behavior	3
Social	5	**TAII**	**Total: 2**
Not Supported or Outside Expertise	**Total: 6**	Social	2
Mental Health	2	**CBIS**	**Total: 1**
Adaptive/Self-Help	1	Social	1
Challenging Behavior	3	**PBII**	**Total: 1**
		Social	1

Note. ABI=Antecedent Based intervention, FCT=Functional Communication Training, TAII=Technology Aided Instruction & Intervention, ABIS=Cognitive Behavioral/Instructional Strategies, PBII= Peer-Based Instruction and Intervention.

based interventions (*N*=15), followed by visual supports (*N*=11), and social narratives (*N*=10). Recommendations for commercially available curriculum, books, or web-based sources not aligned with a focused intervention practice represented 37% of responses (*N*=39). Strategies that are either unsubstantiated by current research or advice that was given which exceeds the scope of education practitioners (e.g., medication advice) represented a minority of overall suggestions (approximately 6%; *N*=7). An overview of recommendations offered by colleagues in response to advice solicitations is presented in Table 3.

To describe the extent to which the advice given in this study represented a range of strategies, we created a matrix to depict (a) evidence-based strategies suggested by colleagues in this study compared to (b) the range of evidence-based practices by outcome identified by the NCAEP. The range of advice that colleagues offered to address a given outcome varied by area. Suggestions for addressing challenging behavior consisted of the largest variety of strategies. Notably, no advice was given to conduct a functional behavior assessment (FBA) as an initial step for creating a behavior plan. Advice for teaching skills related to mental health, self-determination, and academics

Figure 2

Matrix of Evidence-Based Practices and Outcomes

	Academic	Adaptive/ Self-Help	Challenging Behavior	Mental Health	Self-Determination	Social
Antecedent Based Intervention	▨ X	▨ X	▨ X	▨ X		▨ X
Augmentative Alternative Communication	▨		▨			▨
Behavioral Momentum Intervention	▨	▨	▨			▨
Cognitive Behavioral/Instructional Strategies	▨	▨	▨	▨	▨	▨ X
Differential Reinforcement	▨	▨	▨			▨
Direct Instruction	▨					
Discrete Trial Training	▨	▨	▨			▨
Exercise and Movement	▨	▨	▨			▨
Extinction		▨	▨ X			▨
Functional Behavioral Assessment	▨	▨	▨			
Functional Communication Training		▨	▨ X			▨
Modeling	▨	▨	▨			▨
Music-Mediated Intervention		▨	▨			▨
Naturalistic Intervention	▨	▨	▨	▨		▨
Parent-Implemented Intervention	▨	▨	▨	▨		▨
Peer-Based Instruction and Intervention	▨		▨	▨		▨ X
Prompting	▨	▨	▨			▨
Reinforcement	▨	▨	▨ X			▨
Response Interruption and Redirection	▨	▨	▨			▨
Self-Management	▨	▨	▨		▨	▨
Sensory Integration	▨	▨	▨			▨
Social Narratives	▨	▨ X	▨ X			▨ X
Social Skills Training		▨	▨	▨	▨	▨
Task Analysis	▨	▨				▨
Technology-Aided Instruction and Intervention	▨	▨	▨	▨		▨ X
Time Delay	▨	▨	▨			▨
Video Modeling	▨	▨	▨ X			▨ X
Visual Supports	▨	▨	▨ X			▨ X

Note. Grey boxes indicate research supporting the use of strategies to improve outcome area according to NCAEP (Steinbrenner et al., 2020). "X" indicates strategies offered by practitioners in current study to address outcome.

were limited by comparison. Refer to Figure 2 for the full matrix.

Unsolicited Information Posted to the Professional Community

We only included unsolicited information which was intended for ASD practitioners. We excluded unsolicited posts about job openings (*N*=48), promoted service resources for ASD families and the community (*N*=60) and other information that were not directly addressing the professional needs of practitioners. Five major topics emerged from the content coding procedures are displayed in Table 1 (right column). A total of 27 opportunities which were offered to disseminate general knowledge about ASD to practitioners. Twenty posts informed practitioners about mentor programs, pre-service training scholarships or other resources not directly addressing ASD-related practice but beneficial to current or future practitioners, which were categorized under the topic of "other resources targeting ASD practitioners." Opportunities for professional development and training on specific ASD interventions constituted 28 posts on the listserv. We describe the focus of these trainings in the following section. A comparison of practitioners' solicitation topics and unsolicited information topics is presented in Table 1. The highlighted rows indicate closely matched topics between solicited and unsolicited information.

Advertised professional development (PD) opportunities

We used training duration as a metric to distinguish between posts intended to disseminate information or bring awareness about a topic (i.e., podcasts about a therapeutic technique) from opportunities to be trained to deliver a strategy or intervention. To be categorized as a professional development opportunity, the training must address a specific practice or approach and last a minimum of three hours. Among all the advertised training opportunities (*N*=28), nine were trainings to implement a comprehensive treatment model or curriculum to address multiple areas of student learning or broad development. The comprehensive treatment models or curriculum being advertised include the LINKS curriculum (Linking Assessment and Instruction for Independence), Strategies for Teaching based on Autism Research (STAR), integration of structured teaching and behavioral systems, etc.

There were also unsolicited training opportunities focused on specific skill areas. Six advertised training opportunities targeted academic skills, primarily focused on literacy instruction (*N*=5). Six trainings addressed social communication and interaction, with a specific focus on social skills (*N*=2), social safety strategies (*N*=1) and sexual education (*N*=3). Three opportunities were aimed to train practitioners to address students' challenging behaviors. There were also opportunities for addressing adaptive or self-help skills, cognitive skills and mental health. In particular, one training about oxygen mask, which is not a research-supported practice for individuals with ASD (Steinbrenner et al., 2020), was also advertised through the listserv.

Discussion

The statewide listserv used in this study served multiple functions in supporting professionals who work with students with ASD. Agencies and professional groups used the platform to advertise available training opportunities and dissemination efforts (i.e., unsolicited information), which is particularly helpful for ASD educators given the constantly evolving knowledge regarding ASD generally, and of best instructional practices, specifically. The listserv also provided a platform for professionals to solicit advice on specific issues from their colleagues who are actively working in the field. Relevant to this study, access to listserv communications provided us with an opportunity to gain insight into pressing issues that educators are currently facing in their practice with students with ASD, the quantity and quality of advice given in response to specific solicitations, and the range of professional development opportunities that are available to the practitioner community.

Practitioners solicited advice on a variety of topics including professional licensure qualifications and maintenance, educational placement determination, reviews of published curriculum, and the availability of specific professional development and training opportunities. Advice for strategies to address specific student issues were the most frequently requested topic, making up nearly one-third of all solicited posts. Practitioners sought advice on handling challenging behavior in nearly half of these posts; particularly prevalent were issues around stereotypic and repetitive behaviors. This may be expected given that the presence of stereotyped, repetitive motor movements, use of objects, or speech and hyperreactivity to sensory input are core behavioral features of ASD (APA, 2013). Accordingly, researchers have conducted numerous studies to develop and evaluate the effectiveness of interventions to decrease or eliminate challenging behaviors. Challenging behaviors were the third most commonly studied outcome in intervention research over the past 27 years according to the NCAEP report, preceded in number by studies that addressed social interactions and communication outcomes (Steinbrenner, 2020). The professional community therefore has an abundance of research that they may draw upon to effectively address challenging behaviors that students may demonstrate in their classrooms. The results of this study reflect this: 75% of the solicitation posts received at least one response from the professional community. Across the responses, practitioners recommended a range of EBPs (refer to Table 3).

The extant literature suggests that training in the use of EBPs varies widely across preparation programs, with many professionals reporting that they were not trained in EBPs (e.g., Hsiao & Peterson, 2018). Based on this, one would expect that strategies suggested by the professional community would vary in terms of research quality and may include a number of unsubstantiated practices. Our findings are not consistent with this expectation. Overall, our analyses suggest that practitioners who were active in responding to posts soliciting advice on student learning were familiar with EBPs and were likely to recommend the use of EBPs over unsubstantiated practices. Suggestions for unsubstantiated strategies, or recommendations that fell outside the expertise of educators, were negligible amounting to only six out of 106 strategies (see Table 3). The professional community instead recommended practices that were either supported by research (61 EBP recommendations) or commercially available materials or published sites (39 recommendations). We are limited, however, in our ability to draw generalized conclusions given that the professionals who were active in posting suggestions on the listserv may represent a biased sample. It is probable that the individuals who are likely to make suggestions on the listserv are not representative of the greater listserv community. Rather, these individuals may comprise a narrow subset of the practitioner community, who may have more experience working with individuals with ASD, and participated in more trainings relative to the average practitioner in the listserv community.

What do teachers say they need? What do they receive?

Our findings allow us to evaluate the extent to which we, as an academic community, are adequately meeting the current needs of practicing educators. As previously discussed, the topic of challenging behaviors represented the greatest number of overall solicitations for advice and responses from the listserv members. There is ample research on challenging behaviors (Steinbrenner et al., 2020), however, the number of posts requesting advice on this topic suggests that this research is either not being accessed or understood by practitioners or is not adequately addressing their specific practical needs. Practitioners specifically sought advice for addressing stereotypic and repetitive behaviors. This topic is well-researched and accessible within the academic community (Steinbrenner et al., 2020). It does not guarantee, however, that practitioners are aware of, or are able to apply, the research in their classrooms without additional training or support which does not appear to be readily available. Our analysis of posts for unsolicited information included a limited number of formal training opportunities in this area. Though professional development support to handle challenging behaviors is available, it appears to be disproportionate to the reported need.

A second area of need based on number of solicitations is advice for teaching adaptive and self-help skills. Specific topics of interest reflected needs across development, ranging from toilet training to hygiene practices associated with menstruation. In addition, practitioners sought advice to prepare students for specific life events, such as getting wisdom teeth removed and the death of a relative. The majority of these topics focus on issues commonly experienced during adolescence or adulthood. This may be anticipated given that the quantity and range of self-help demands increase with age. Research to evaluate effective strategies that address adolescent and adult needs, however, has not historically been the focus of most autism intervention studies (Steinbrenner et al., 2020). Consistent with this trend, we found only one professional development training opportunity in the area of adaptive skills that was advertised.

The data from this study reveal an incongruence between what practicing educators express they need, and the type of training opportunities available to them. Notably, the number of professional training opportunities in the areas of adaptive/self-help skills and challenging behaviors do not meet the expressed needs of teachers. In contrast, we found the opposite pattern for trainings focused on academic skills. The number of professional development opportunities to teach academic topics (*N*=6) are overabundant relative to the needs expressed by the practitioners (*N*=1 post). The area social communication and interaction received relatively balanced attention between practitioner inquiry (*N*=9) and promoted training resources (*N*=6). Though targeted trainings on topics of need were lacking, we found nine advertised opportunities for training in comprehensive treatment models or curriculum. Comprehensive treatment models are designed to address a broad range of developmental needs. It is possible that instruction in a specific area of interest may be included one component of these trainings.

Evaluating Solicitations for Advice: Implications for Professional Development

The volume of requests for advice on challenging behaviors and adaptive skills suggests that additional trainings in these areas will likely be well received by the practitioner community. There is a robust body of research validating strategies to address both challenging behaviors and adaptive skill development for students with ASD (Steinbrenner et al, 2020). It is worth questioning whether the existing research sufficiently addresses educators' needs, including the extent to which the strategies can be implemented in the typical classroom or instructional setting. The field recognizes the need to increase the quality and quantity of research focused on adolescent and adult outcomes (Cervantes et al., 2020). As this research emerges, it will be important that the academic community disseminate research in a manner that practitioners can comprehend and access the research through ongoing professional development.

Academic instruction for students with ASD was a popular focus of professional development opportunities advertised on this listserv. We found this interesting given that practitioners' solicitations for advice on this topic was limited relative to other topical areas. This begets the question, do these posts reflect their student needs or is it more a reflection of practitioners' values or expectations for their students? In recent years, the special education community has emphasized the importance of focusing on academic achievement for students with disabilities (Fleury et al, 2014; Fleury et al., 2015). Research on self-determination has also increased in the past decade, necessitating an additional outcome category in the recently published NCAEP report (Steinbrenner et al., 2020). This may be an emerging shift from, or extension of, a traditional focus on functional skill instruction (Blackorby & Wagner, 1996; Morse et al., 1996). Our analysis, however, reveals that practitioners rarely inquire about academic and self-determination skills. One conclusion may be that practitioners already possess the skills and training to address student needs in this area; additional training is not needed. Another interpretation could be that these are areas are either not valued by practitioners, or more probably, that there are other pressing needs that require immediate intervention. Children with ASD demonstrate significantly higher behavioral excesses such as aggression and deficits including difficulty participating in school routines (Ashburner et al., 2010). These behaviors warrant immediate remediation as it limits students' ability to actively participate, and learn from, instruction provided in the classroom. The disproportional request for advice to handle challenging behaviors may reflect this. Educators will not be able to provide instruction if a student engages in persistent behaviors that interfere with instruction.

Evaluating Responses: Implications for Professional Development

Our evaluation of the quality and quantity of strategies that were offered in response to advice solicitations reveals both strengths and weaknesses, which reflects members' previous training. A clear strength is that the majority of strategies recommended by members consisted of evidence-based practices. Moreover, members offered a range of evidence-based strategies particularly in addressing social skills and challenging behaviors. Other outcome areas, such as adaptive/self-help skills were relatively limited in the types of strategies offered. It is difficult however, to determine if this is a function of a lack of knowledge of strategies. Rather, the limited range of strategies could be attributed to the lack of opportunity to share a range of strategies given the low number of solicitations for advice in these areas.

Though members of the listserv community offered ample advice to address challenging behaviors, we were concerned that no member recommended a functional behavior assessment (FBA) to inform strategies to be included in a behavior intervention plan. The research on the effectiveness of FBAs to reduce, or eliminate, challenging behaviors is robust (Steinbrenner et al., 2020). A formal FBA is not warranted in all cases, yet we expected that this would be offered as a possible strategy. Members typically offered advice for specific strategies to be used in isolation. Strategies used in isolation, especially when it is not aligned with the behavioral function are likely to be ineffective. This presents an opportunity, and need, for professional development programs to increase emphasis on the importance of understanding the function of the behavior to inform the development of comprehensive behavioral intervention plans.

Another area of professional development can focus on professionals' use of technical language when recommending strategies. Members of the listserv community rarely used the technical term of the strategy the recommended (i.e., "ignoring a behavior that previously received a teacher's attention" versus "extinction"). Establishing a shared language among members of the professional community will support effective communication. In doing so, practitioners also acknowledge, and legitimize, the science supporting the practice. This is particularly meaningful given the current socio-political context in which professionals are actively fighting against the spread of misinformation and unsubstantiated treatments for "curing" autism (Paynter et al., 2019).

Finally, we encourage professional preparation and continuing education programs to emphasize the importance of only providing recommendations that are consistent with one's professional preparation. There were some recommendations, albeit a minority, in which a practitioner provided medical or dietary advice (i.e., recommending a specific medication or nutritional supplement). Such advice is beyond the scope of standard educational practice. The Council for Exceptional Children published its code of ethics in which it is clearly states that practitioners should use "evidence, instructional data, research, and professional knowledge to inform practice". Programs that prepare teachers and related service professional (i.e., speech language pathologists, occupational therapists, physical therapists) provide neither opportunities to read and evaluate medically-oriented research, nor training in the application of medical or dietary procedures. It is, therefore inappropriate, and unethical, for an individual who is not trained to give medical or dietary advice to do so. Individuals who inquire about topics that are outside an educators' expertise should instead be referred to a medical professional.

Study Limitations and Future Direction

These findings are derived from an email listserv that is supported by a state agency. Participation in the listserv is open to any practitioner in the state, though involvement in voluntary. This means that the data presented in this manuscript are drawn from a non-probabilistic, or convenience, sample. We are unable to verify the extent to which members are representative of the practitioner population of the state. For this reason, we must interpret the findings as preliminary with limitations in regards to the extent to which our results can be generalized to the practitioner population at large. The external validity of these findings is limited by a number of factors. First, the participants included in the study sample are practicing educators in the same state. Teaching preparation standards, specifically in relation to the education of students with ASD, vary by state. Common challenges and issues that educators face in their practice may reflect an educators' training and background. Challenges related to a lack of training may differ in other locations given that standards vary by state. Second, student and educator needs will likely differ across educational contexts and learner characteristics, such as ASD severity. We are not able to ascertain the educational context, or characteristics of the student population for educators who solicited advice on the listserv. The challenges that a teacher would encounter in a self-contained classroom in a rural setting will differ from that of a teacher in an inclusive classroom in an urban school. Third, our evaluation of the extent to which training opportunities aligned with educators' needs and requests was based on the professional development opportunities advertised through the listserv. It is probable that this represents a portion of available trainings. Additional professional opportunities are likely available to educators, but would not be included in our analyses if they were advertised through other platforms. Future research that includes strategic sampling methods could address some of these issues, and as a result, improve external validity.

Though preliminary, these data highlight important considerations for those involved in educator preparation development. The aforementioned issues limit the extent to which the findings were generalizable; however, it encourages us to reflect upon the extent to which educators receive adequate training and support to meet the current needs of their students with ASD. The research focused on identifying, and developing, interventions to address the educational and behavioral needs of students with ASD has grown dramatically over the past two decades (Steinbrenner et al., 2020). It is highly probable that research in this area will continue to grow in subsequent years. Improving outcomes for students with ASD will require that research and academic efforts are meaningfully aligned with educators' experiences and needs. In other words, it is critical that we "have our fingers on the correct pulse."

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Is It PANDAS/PANS or Is It Autism?

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Abstract: Since 2000, the Centers for Disease Control and Prevention (CDC) have documented a significant increase in the number of children being diagnosed with autism and questions have continued to arise as to why this increase is occurring including the possibility of increased diagnostic testing or misdiagnosis as a result of some unknown causation in which the symptoms masquerade as autism (True, 2020). One suggested cause for this increase is the syndrome known as PANDAS or PANS. This syndrome has been identified in children with symptoms similar to autism especially in those children with a late presentation of autism (Borrell, 2020). This confusion may have resulted in a misdiagnosis or a complication within the diagnosis of autism as a child can have a dual diagnosis of autism and PANS/PANDAS (True, 2020). This paper provides information about PANDA/PANS and its differences and similarities to autism along with information concerning diagnosis and treatment.

Anyone with a serious interest in autism should also be aware of PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections) and PANS (Pediatric Acute-onset Neuropsychiatric Syndrome). These are two syndromes which have acute onset of symptoms very similar to some of those found in autism. (Lloyd-Thomas, 2014, p. 1)

Since 2000, the Centers for Disease Control and Prevention (CDC) have documented a significant increase in the number of children being diagnosed with autism with the number increasing from 1 in 150 in 2000 to 1 in 68 in 2010 and now to 1 in 54 in 2020 (CDC, 2020). Questions continue to arise as to why this increase is occurring including the possibility of increased diagnostic testing or misdiagnosis as a result of some unknown causation in which the symptoms masquerade as autism (Autism/Eye for Parents and Professionals, 2018; True, 2020). One suggested cause for this increase is the syndrome known as PANDAS or PANS. This syndrome has been identified in children with symptoms similar to autism especially in those children with a late presentation of autism (Borrell, 2020). This confusion may have resulted in a misdiagnosis or a complication within the diagnosis of autism as a child can have a dual diagnosis of autism and PANS/PANDAS (True, 2020). Although PANS/PANDAS and autism share many of the same characteristics it is essential to understand that the causation and subsequent treatment are not the same.

So, what is PANDAS/PANS? PANDAS stands for Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections (Antoine, 2020), while PANS is the same disorder not resulting from a streptococcal infection. Both iterations are considered to be an autoimmune disorder with far-reaching movement, behavioral, and cognitive consequences (Autism Exchange, 2016;

WebMD, 2020). Borrell (2020) called PANDAS/PANS a “brain invader” and Swedo at the NIH found PANDAS/PANS “involves antibodies from a streptococcal infection reacting with brain tissue (specifically the basal ganglia), triggering movement and behavioral problems” (O’Hara, 2021, para. 2). Swedo’s research found in children with PANDAS/PANS an “immune response to infection can trigger an improperly diagnosed class of psychiatric conditions” (Borrell, 2020, p. 4). In fact, PANDAS/PANS is thought to be a form of autoimmune encephalitis, a set of brain disorders often characterized by neuroinflammation (ARI, 2019).

When was this disorder first identified? During the 1980s and 1990s Swedo and colleagues who worked at the National Institutes of Mental Health were examining children with obsessive-compulsive and tic disorders which appeared following a streptococcal infection as well as those with a disorder known as Sydenham Chorea, a rare disorder occurring after rheumatic fever (PANDAS Network, 2018). In 1995, the researchers gave this unidentified disorder its first named calling it PITANDs (Pediatric Infection-Triggered Autoimmune Neuropsychiatric Disorders; Antoine, 2020; BNC, 2021; Borrell, 2020). In 1998, Swedo and colleagues identified a set of characteristics that appeared suddenly in children after a streptococcal infection and renamed the disorder PANDAS (Pediatric Autoimmune Neuropsychiatric Disease Associated with Strepcoccal Infections Syndrome; Swedo et al., 2012). Later a similar set of characteristics was identified but its onset was not associated with a streptococcal infection, so it was named PANS (Pediatric Acute-onset Neuropsychiatric Syndrome; Borrell, 2020; Swedo et al., 2012). Although PANS is not preceded by a strep infection it does appear to occur in some instances after influenza (H1N1), Epstein-Barr virus, Lyme disease, or chickenpox (Antoine, 2020; Borrell, 2020). According to Borrell, there were “Two landmark studies, published between 2008 and 2010, [which] found that in 91 percent of all PANDAS cases, there was no association between the timing of strep infections or presence of strep antibodies and flare-ups of OCD or tics” (p. 5), which led to the newer name of PANS. PANS is now considered to be a group of symptoms with an undetermined cause, while PANDAS has a clear trigger with streptococcal infection so is considered to be a subset of PANS (ARI, 2019; O’Hara, 2021).

Prevalence and Onset

In the U.S., PANDAS/PANS is said to be found in 1 of 200 children (Haggarty, 2015; Lloyd-Thomas, 2014; PANDAS Network, 2018) while in the UK that number is said to be 1 in 100 (Autism/Eye, 2018). Boys appear to be 2 to 3 times more likely to be diagnosed with PANDAS/PANS than girls (Antoine, 2020; O’Hara, 2021). According to Porterhouse Medical Group (2018) PANDAS/PANS is not rare; it is most likely under diagnosed. Currently, PANDAS/PANS is typically diagnosed in children between the ages of 3 and 12, but the majority are diagnosed between the ages of 7 and 8 (ARI, 2019). According to NIMH (2019), the reason may be that “strep infections are rare after age 12, but researchers recognize that PANDAS could occur, though rarely, among adolescents” (p. 2). PANS is not limited to younger children but does appear to include children up to the age of 18 (Borrell, 2020). There are questions as to whether PANS might appear in adults but according to NIMH (2019) “it is unlikely that someone would experience these post-strep neuropsychiatric symptoms for the first time as an adult, but it has not been fully studied” (p. 2).

PANDAS/PANS is considered to be an acute onset disorder since it begins with a sudden onset "reaching full-scale intensity within 24 to 48 hours" after an infection (Child Mind Institute, 2021, p. 2), although it may begin up to 4 to 6 weeks after a streptococcal infection (Pietrangelo, 2019). It is identified as an episodic disorder in that symptoms often disappear after medical treatment but may re-occur after another infection with each subsequent re-occurrence often resulting in more severe symptoms (Child Mind Institute, 2021; NIMH, 2019). The result of this sudden onset especially at the younger ages has resulted in many children being identified with autism, OCD, ADHD, anxiety, or sensory processing issues (Centner, 2021; Sima Ash Wellness Center, 2014). In fact, NIMH estimated that "more than 30% of children with autism also have PANDAS/PANS" (Sima Ash Wellness Center, 2014, p. 2).

Symptoms and Diagnosis

According to Ademi (2018) and The M Center for Pediatric Wellness (2019) the major symptoms that first appear often are obsessive and compulsive symptoms similar to OCD (IOCDF, n.d.) and autism, major behavior and mood changes such as severe separation anxiety and mood changes such as increased irritability and emotional lability, and behavior, sensory, or motor skill abnormalities or regressions including vocal or motor tics. Additional symptoms include but are not limited to generalized anxiety, which may progress to episodes of panic and a "terror-stricken look", sensory abnormalities, including hypersensitivity to light or sounds, and distortions of visual perceptions. Occasionally, other symptoms may occur including visual or auditory hallucinations, concentration difficulties, and loss of academic abilities, particularly in math and visual-spatial areas, increased urinary frequency and a new onset of bed-wetting, and developmental regression, including temper tantrums, "baby talk" and handwriting deterioration (Sima Ash Wellness Center, 2014).

Even with the list of symptoms, "obtaining a correct diagnosis can be challenging because PANS and PANDAS syndromes can mimic other illnesses" (Moleculera Labs, n.d., p. 2). Currently PANS/PANDAS is considered to be the diagnosis if at least two of the previously described characteristics appeared suddenly (ARI, 2019; Child Mind Institute, 2021; Swedo et al., 2012). According to Antoine (2020) and Borrell (2020) the first step in diagnosing this disorder should be to talk with family members. Borrell developed a set of standardized questions to assist in diagnosis (See Table 1). Currently, a PANDAS/PANS diagnosis also requires a diagnosis of exclusion that is an elimination of any other causes for the symptoms (Cooperstock et al., 2017; The M Center, 2019). Further, diagnosis includes identifying a relapsing-remitting course of the symptoms (Cooperstock et al., 2017). Some possible early diagnostic testing can include laboratory evaluations of blood work, a strep test using a throat culture, an EEG, an MRI scan, or a sleep study. Along with testing, a comprehensive family history should be completed to identify any possible underlying health or genetic factors. And, a physical examination is essential to identify involuntary movements, dilation of pupils, or behavior issues.

Treatment

Since it is now believed PANDAS/PANS symptoms are the result of a medical issue, ARI (2019) and IOCDF (n.d.) suggested using a three-pronged approach to a treatment decision. First, test for the presence of streptococcal infections, and administer antibiotics to treat any current infections and prevent future infections. Antibiotic

Table 1. *Borrell's Standardized Diagnostic Questions*

1. Did the child develop OCD symptoms over the course of 1 to 3 days? And are the symptoms episodic?
2. Is the child between the age of 3 and puberty?
3. Has a blood test or throat culture tested positive for strep bacteria? (or has a strep infection been confirmed from the past few weeks?)
4. Does the child exhibit other symptoms of PANDAS: a. Vocal/physical tic disorders b. Separation anxiety c. Behavioral regression d. Aggression e. Drop in academic performance f. Trouble sleeping g. Bed wetting
5. Can the symptoms not be better explained by another mental illness such as Tourette syndrome, Sydenham chorea, or ADHD?

treatment has shown long lasting effect when used in conjunction with vitamin D therapy (Borrell, 2020; Cooperstock et al., 2017). Second, address any possible immune system dysfunctions through the use of NSAIDS, steroids, intravenous immunoglobulin (IVIG), or therapeutic plasmapheresis (AKA plasma exchange) for those children with severe immune system issues (Melamed et al., 2021). Finally, behavioral interventions such as cognitive behavioral therapy should be used for those symptoms related to OCD and other behavioral issues. Removal of the tonsils has been suggested but is not considered to be beneficial (Antoine, 2020; NIMH, 2019; Younger, 2016). When PANDAS/PANS occurs in conjunction with a diagnosis of autism, then decisions on which treatments are most appropriate must consider the implications of this co-morbidity. While autism and PANDAS may share many similar behavioral, sensory, and emotional characteristics, "PANDAS is not the same issue as autism, and requires different treatment methods" (The M Center, 2019, p. 2).

Summary

The question then arises, is there a link between PANDAS and autism? Typical symptoms of PANDAS/PANS are often present in children with autism and children with other disorders such as OCD. This similarity of symptomology may result in confusion and sometimes misdiagnosis due to the overlapping symptoms (True, 2020). In fact, Goncalves et al. (2018) posited "misdiagnosis of immunological diseases are not rare events in clinical practice" (p. 52). Although children with autism may also have PANDAS/PANS, it is essential that parents and professionals working with children with autism be aware of this overlapping disorder, so the appropriate diagnosis be made, and appropriate responses and treatment provided.

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The Foundation for Inclusion: How to Support Students with Autism Spectrum Difference in General Education

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The purpose of this article is to share lessons learned from research and from the lived experience of a professional with autism spectrum difference (ASD) and attention deficit hyperactivity disorder (ADHD) with a lifetime of experience in living, learning and working in a world designed for neuro-typical development. The author highlights why thoughtful inclusion is vital for students with ASD in regards to their health, well-being and quality of life. Five foundational components are described in detail with practical ideas for application within schools and classrooms to support students with ASD. However, it starts with a paradigm shift in thinking about autism

What is inclusion and how should it look or feel? Inclusion defined by the Merriam-Webster Dictionary (2021)

> "The practice or policy of providing equal access to opportunities and resources for people who might otherwise be excluded or marginalized, such as those who have physical or mental disability and members of other minority groups" (Merriam-Webster, 2021)

In comparison, the absence of inclusion is the exclusion or marginalization of those who are deemed different from the majority. For example, people who are left-handed were once marginalized. The world was made for the majority—people who are right-handed. It was even common practice for a while to try and force individuals who were left-handed to become right-handed. Today, people who are left-handed are often seen as having an advantage in sports and are valued for this unique characteristic.

To include groups that are in the minority, accommodations are often provided. For instance, to overcome the barrier of a world designed for the majority, equipment was adapted, such as the creation of left-handed scissors, and desks that work well for both right-handed and left-handed learners. What can schools and workplaces do to break down the barriers in their environments so that individuals with ASD can thrive in their settings? This article will offer some suggestions based on research, evidence-based practices and the perspective of a professional with ASD and ADHD in the field of special education.

A Paradigm Shift

The medical model of autism in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–5*, American Psychiatric Association, 2020) describes autism spectrum disorder with a list of deficits and restrictive characteristics. For the full description please refer to the DSM-5. For the purposes of this article a paradigm shift in understanding autism is suggested.

Dr. Jac den Houting (2019) referenced in her presentation with TEDxMacquarieUniveristy, the idea of the Neuro Diversity Paradigm. Instead of using the medical model when thinking about autism, consider autism as a part of the range of natural variation in human neurological development. From this perspective autism is not a problem to be fixed or a tragedy that has happened to someone, but rather a difference or a different valid path in neurodevelopment. The autistic brain develops differently and educators and researchers can focus on how to support the learning needs of this difference.

Dr. Jac den Houting (2019) also shared in her presentation, the social model of disability. That a person is not disabled, but rather the environment is disabling to the person. For example, a mall with no elevator or ramps is disabling in the way of access for a person who requires the use of a wheel chair or crutches. Many environments in our neuro-typically designed world are often disabling for those with autism. In this model the focus is on identifying those environmental barriers for each individual on the spectrum. Once identified, they can be addressed properly, allowing access to learning and employment for individuals with autism

Another paradigm shift in thinking about autism was proposed by Damian Milton (2012), which he named the "Double Empathy Problem". He suggested that those with autism and those who do not have autism have an equally difficult time understanding one another. His idea was tested by Dr. Catherine Crompton (2020). The experiment included three groups: one group with only persons with autism; a second group with only persons without autism; and the third group was a mix of both, those with and without autism. Each group was given the task to play 'telephone' or what was called a diffusion chain. The idea, is that a message is whispered around the circle from one person to another, one at a time, until it went around the whole circle. The results revealed that the first two groups of individuals all with autism and the other group of individuals all without autism, each scored equally accurate. While the third group of mixed participants was significantly lower in accuracy. In conclusion, it was found that both groups, those with and those without autism equally struggled to communicate within a mixed setting. It also, demonstrated that in a setting of only those with autism, there was no social communication or theory of mind deficit.

Why Is Getting Inclusion Right So Important?

It is the law. The Individuals with Disabilities Education ACT 2004 (IDEA) includes the provision of Least Restrictive Environment (LRE), (Kirk et. al., 2015). The LRE refers to the placement of students with disabilities in learning environments with their general education peers to the greatest extent possible, while still meeting their individual educational needs. However, the more important reason for inclusion for students with ASD is about belonging.

Research on the health and well-being of individuals with ASD offers a grim outlook. The mortality rate of the adults with ASD is two to three times greater than the general population and includes lower ages at time of death for the ASD population with or without Intellectual Disability (Hirvikoski et al., 2016; Kirby et al., 2019). The presence of mental health diagnosis amongst the ASD population is significantly higher than the general population (Horowitz et al. 2018). This often includes a mood disorder such as anxiety and depression (Horowitz et al., 2018; Hudson, 2019). The rates of self-injurious behaviors, suicidal thoughts and death by suicide are significantly higher for adults with ASD than the general population (Cassidy et al., 2018). As a result, getting inclusion right is paramount toward gaining and maintaining improved quality of life for all of the ASD population and their families.

Living in a non-autistic world is the author's and every other person with autism's everyday reality. The author of this article has had clinical anxiety and depression from the ongoing series of misunderstandings in the workplace as a result of the lack of understanding by colleagues and administration. The hope is that as students from these thoughtful inclusion schools enter society, they have the potential to start a ripple effect of increased understanding. Building a world where those of us on the spectrum can feel as if we do belong and we are valued as we are, and not by how well we mask who we are.

The Foundation

The desire to be understood is strong amongst the ASD population. How to create an environment where those who have autism can be truly and authenically autistic without worry of being misunderstood was the goal behind the research for this article. The components presented in this article that create a firm foundation to build a successful inclusive program within schools comes from a compilation of years of research combined with the author's lived experiences. These components are autism sensitivity training, mindset, environmental factors, collaboration and communication, and chosing the right pedagogy, tools and strategies.

Autism Sensitivity Training

The first component to a firm foundation for inclusion is to provide current, and accurate information on autism to all staff within a school building or school system. The medical model presented in the DSM-5 (2013) offers a very limited understanding of autism for those who live with or work with or educate those with autism in the way of application of services or effective strategies for educators to use in schools or families to use in their homes. Consider the paradigm shifts presented earlier in this article. The author proposes to use this premise, thinking of autism as a valid variation of neurodevelopment, rather than a list of deficits and behaviors that need to be treated. From Dr. Catherine Crompton's (2019) experiment the results indicated that both those with autism and those without autism are equally challenged in understanding each other.

The reality for those on the spectrum is the everyday expectation to behave and communicate in ways that fit in the non-autistic world. Autism sensitivity training is about building effective communication 'bridges' so that both sides are working at understanding each other. For the lifetime of this author, it is a 24/7 undertaking to interpret the majority, those without autism, in every social interaction. While at the same time masking her autistic characteristics in an effort to not stand out and to avoid being misinterpreted by the general population. This is called masking, hiding the autistic characteristics. This requires a lot of energy both physical and emotional on the part of the person with autism. The author proposes presenting autism with what those with autism would like the general population to know about their 'culture.' With this understanding the hope is that those with autism will not have to mask. The following are some ideas to get started in developing this autism sensitivity training.

Males vs. females with ASD

Females are on the autism spectrum. At present, females are given the diagnosis less often than their male counterparts, but the numbers being diagnosed are slowing rising as more information is discovered on the characteristics of females on the spectrum (Fulton ,et al., 2017; Kreiser & White, 2014). Tony Attwood (2007) wrote in his book *The Complete Guide to Asperger's Syndrome*, Girls with Asperger's syndrome can sound like 'little philosophers', with an ability to think deeply about social situations. From an early age, girls with Asperger's syndrome have applied their cognitive skills to analyze social interactions and are more likely than boys with Asperger's syndrome to discuss the inconsistencies in social conventions and their thoughts on social events. (p. 47)

Another factor would be girls tend to have less motor coordination challenges than the males on the spectrum. This also allows the females on the spectrum to be less conspicuous in regard to motor coordination than the males on the spectrum. These factors and the popular view of autism comes from the research on males with autism, contributes to the reasons why females on the spectrum are often misdiagnosed or do not get diagnosed (Attwood, 2007). The author of this article was not diagnosed until the age of 44. It is important to be aware of the differences of how autism presents in females versus males.

Empathy

Individuals with ASD do feel empathy (Deschamps et al., 2014; Komeda et al., 2015). Empathy from those on the spectrum will often look different than that of those not on the spectrum. For example, when the author of this article was a young mother she found herself very upset one day and could not keep from crying. Her young son with autism had a worried-confused expression. He then went out of the room and quickly returned with a box of tissues. This is what he felt his mother needed and his desire was to help her.

Though the empathy is felt, students with ASD need to learn to read their own emotions accurately as well as the emotions of others. Then learn how to respond correctly to those emotions, and to regulate them. Typically developing children develop many of these skills innately as they grow. These skills are not innate for individuals on the spectrum. These skills need to be learned over time and with the help of explicit teaching.

One of the main challenges for adults and students on the spectrum is when typically developing adults and peers misinterpret their behaviors and intentions. How emotions are expressed and understood are different for those on the spectrum. It is important to recognize the difference but to not respond to it as being wrong. Years of being told how one thinks and feels is wrong can lead to mental strain or illness (Danker et al., 2019; Attwood, 2007). The autistic brain is a neurological difference and with knowledge and validation of this difference, a person with autism has an opportunity to feel valued.

Avoid non-autistic interpretations of behaviors

It is important for the educator, service provider, and family to keep an open mind when a 'behavior' not initially understood occurs for students with ASD. Intent is very important to understand when any student is trying to communicate and particularly important for the student with ASD. The behavior of a student with ASD ought to be interpreted from an autistic perspective. Functional Behavior Analysis (FBA), which is a tool often used to try and interpret the motivation behind unwanted behaviors looks at behavior as avoidance, or attention seeking. It is the experience of this author, that when the person analyzes the behavior of a student or adult with ASD from a neuro-typical perspective, he/she is highly likely to interpret the intent of the behavior incorrectly. For students with autism, behavior is not always as avoidance or attention seeking, but it may be because they do not know how to respond otherwise (Severni et al., 2018).

Students with ASD often get accused of being rude or being a bully and unable to come from under that stigma. These situations repeated over a period of time can lead to mental strain or illness for students with ASD. Remember the statistics of higher rates of depression and anxiety amongst those with autism than the general population. Developing autism sensitivity beyond textbook knowledge for all staff within the education profession is vital for the success and well-being of students with ASD.

Belonging

It is human nature to be social and obtain a sense of belonging. Students with autism want to be social too (each to varying degrees). Helping students with ASD to learn effective social skills to interact successfully with their peers without autism has to be done on their terms and taught explicitly. This can be done during one on one sessions, small group or as a class by embedding social skills goals within the general education curriculum. The method used will depend on the individual learning needs of the student. To not provide explicit instruction in social-emotional learning for students with ASD can have devastating effects in the long and short term for these students (Hirvikoski et al., 2016; Hudson et al., 2018; Zahid et al., 2017). This is a developmental need for all students with ASD.

Sensory processing difference

A typically-developing person′s brain sorts out what is important in regards to sensory stimulus in the environment. So that the person can focus more on what is important, such as softening background sounds in a restaurant so they can hear the person next to them talking. For a person on the spectrum this sorting of sensory input is not automatic. Rather, the person with autism has to allow time for their brains to learn to sort sensory stimulus manually for each new setting and/or circumstance, giving the brain quite a work out (Grandin & Panek, 2013).

To provide a visual understanding, when walking into any environment including classrooms, the students with ASD′s body could feel like a shaken-up snow globe of sensory input requiring the student to take the time and brain energy to sort before appropriate interaction or learning can happen. This in part is why school and any social interaction takes so much energy from the student with ASD. Like any athlete, a student with ASD may need to drink a lot of water or need a protein snack or a break (a space) away from social interaction to reboot at times.

At Temple Grandin′s lecture in Sydney, Australia (2012), she used the analogy of a sound board to describe the autistic brain′s sensory processing difference. She suggested the idea of comparing what the brains does with sensory input to that of what a sound board does with all the sound input. In typical brains the ′sensory board′ works wonderfully in blending all the sensory input for maintaining the person′s attention to what is important. However, the autistic brain′s ′sensory board′s knobs are all over the place. Random sounds, tastes, sights, tactile experiences or smells are amplified or softened, making the experience of everyday life a challenge. The level of sensory challenge is different for each individual with autism. For example, for the author, sounds like crinkling wrappers are very loud to the point of causing pain, even if the person is at a distance.

To support individuals with ASD, it is important to remember to validate the pain and discomfort this difference in process can cause. That to some with ASD a sound meant to be soft, is heard as too loud, or a smell that others hardly notice is too strong, or a gentle hug feels like needles, or the lights are too bright in the classroom. These are just a few examples of the sensory difference. It is not about getting used to it or becoming desensitized. The issue is always there. However, when at base the student may be able to tolerate it, but at any increase of anxiety the discomfort is again heightened. This is a neurological difference. Not a behavioral issue.

Mindset

The second component for a firm inclusion foundation is having a growth mindset. The growth mindset is the belief that intelligence levels can grow if one perseveres, and a fixed mindset is the belief that each person has a fixed level of intelligence once reached cannot be passed (Hochandel & Finamore, 2015). Temple Grandin's (2012) parents had a growth mindset. Temple was diagnosed with autism at a young age. The doctors told her parents to put Temple in an institution; that she would not develop much if any communication skills or be productive. The doctors had a fixed mindset. Temple's mother took her home and worked with her. Her mother believed that if she persevered with the right approach and tools, Temple will make progress and learn to communicate and be productive and have quality of life. Schools, need to have a growth mindset for their students with ASD. Teachers with a growth mindset are more inclined to use effective differentiation practices in their classrooms (Coubergs et al., 2017).

Leaders of the classrooms and of the schools can promote the tone of a growth mindset by "building a climate of acceptance within the classroom through disability [autism] awareness, education, and sensitivity training" (Lindsay et al., 2014, p. 101). In classrooms autism awareness and understanding can be done through stories (e.g., *Blue Bottle Mystery* by Kathy Hoopman; *Can I Tell You About Asperger Syndrome* by Jude Welton; and *Inside Asperger's Looking* Out by Kathy Hoopman). Those who presents a growth mindset in their classroom set the tone and model an example of acceptance and a positive attitude of discovery.

Positive attitude of discovery

Develop an attitude of discovery toward students with ASD. The author′s son was diagnosed with Asperger′s syndrome at the age of 12. When he was 5, at a t-ball practice playing the position of catcher, the coach pitched the ball and asked him to throw it back. The author′s son stood up and turned his back to his coach and threw the ball toward the backstop. He threw it back. This was his very literal interpretation of the world. The coach did not yell at him. Rather, he paused and realized the author′s son did exactly as he was asked.

Generally, students with ASD want to please. If a student with ASD is not doing as he was asked, then the teacher can first reflect on how the request was made. Taking time to try and understand the perspective of the students with ASD. Considering the literal often black and white view of our students with ASD can help educators and administrators become more effective in serving these students.

Investigate with an open mind. Some examples of this include asking a student for clarity of their understanding using open ended questions in a matter-of-fact tone such as ″What are you doing?″ or ″Where do you plan to start?″ Be ready for unique answers, and validate those answers. Offer students supports as needed, such as giving options or a field of two or more to choose from.′ Oral/verbal language is not easy or natural for many students on the spectrum. Helping the student organize their thoughts through this type of exercise can be very helpful in the moment.

Ensure that directions are understood in how they are meant to be followed. The author's daughter with ASD was instructed on an exam in high school, to write a brief explanation of a particular concept. When she got her grade, she came home upset. Her answer was marked wrong for not including certain items. She knew the information, but she did not add it so that her answer remained brief. Having students repeat back the directions as they understand them can help avoid these type of situations. Using more definitive language can help as well such saying a brief answer is required, but must include ...The daughter is bright, so her difference in processing went unnoticed in the classroom. However, once the teacher understood the daughter's learning needs, it was addressed. The teacher had an open mind to the difference the daughter had in her neurodevelopmental. This support from the teacher validated the daughter and her confidence within the class grew. To maintain a positive attitude, educators "must have a good understanding of ASD and be prepared to respond to the characteristic behavioral manifestations of the disorder" (Lindsay et al., 2014, p. 102).

The power of pausing

A part of the variation of neurodevelopment for individuals with ASD includes the processing of sensory inputs differently as mentioned earlier in this article. The behavior of students with ASD, may reflect this. However, the student may not be able to articulate their needs. The student may just be using what she or he knows at the time to cope with the sensory challenges around him which could include hitting, biting, screaming, hiding, or shutting down.

The author's son's Sunday school teacher pulled the author aside when the son was about 4 years old. The teacher explained that the son spent most of his time under the table holding a toy car, while the rest of the students were in a circle on the carpet listening to the story. The teacher let him stay there. Then, she noticed that when she asked questions to the group about the story she had read, she could hear the son say softly the answers. She knew he was paying attention to the lesson in a way that worked best for him. This teacher paused before she responded, and read the needs of the child accurately and validated those needs.

Pausing and taking a slow deep breath, helps the adult to think clearly, but also models for the student a healthy coping skill. The pause also provides the student with ASD think time. A student may need time under a table to manage the level of sensory input at that time. Pause and maintain an attitude of discovery and validate the neurodevelopmental difference of students with ASD. The difference is that, a difference. It is not less or wrong.

Consider the Environment

The third component to a solid inclusion foundation is considering the environment**:**
To make the learning environment one that meets the needs of students with ASD, so they can assess learning, consider the students' with ASD unique sensory processing needs. Knowing the sensory needs of their students with ASD, will help the teacher and administration to prepare the learning environment to appropriately support the students, providing them access to the curriculum, and minimize the occurrence of maladaptive behaviors on the part of the student.

A lot of the behaviors that students with ASD display, particularly in the younger years is in response to sensory overload, and social-emotional and communication frustration. Not being able to process sensory input at the rate it is coming in and not having the skills to respond in an effective or efficient manner with expressive language with limited social and emotional coping skills, often results in the student with ASD displaying maladaptive behaviors. A lot of the behaviors can be managed or mitigated if not eliminated by properly addressing first the students' sensory processing needs and then providing them with effective instruction in social skills (particularly pragmatic communication) and emotional regulation.

"Sensory processing is a term that refers to the way the nervous system receives sensory messages and turns them into responses. Sensory processing disorder (SPD) exists when sensory signals are not organized into appropriate responses; as a result, a child's daily routines and activities are disrupted. Atypical responses to sensory messages can be behavioral, emotional, or attention related or they can manifest as problems with motor abilities or organization. Other problems that typically result include poor social participation, problems with self-regulation, and impaired self-esteem" (Miller, 2014, p. 6). Dr. Miller (2014), author of *Sensational Kids* and founder the STAR Foundation, suggests that "most (perhaps all) children with ASD have sensory issues" (p. 314).

Beyond the five senses of taste, hearing, touch, sight, and smell there are three other senses. These senses are called the 'hidden senses by Dr. Miller (2014, p.7) She defines them as: (a) Proprioceptive: the awareness of speed/movement, of pressure on joints and muscles, and the position of body parts (e.g., if their hand is raised and how high it is); (b) Vestibular: awareness of balance and body position in relation to gravity, upright or not. (inner ear); (c) Interoceptive: the awareness of the "sensations you feel from your internal organs" such as when you need to use the bathroom, or the sense of being hungry or full. (Miller, 2014, p. 7)

All eight of these senses need to work in concert for a fun day at the beach or to survive in a classroom. Now how does this translate to the classrooms or school? Acknowledge this challenge for the students who struggle with this. Validate their feelings and offer some relief (e.g., to wear a cap to block bright lights, ear plugs when doing independent work, a break to step outside the classroom). The teacher's response will be unique to each student's specific sensory needs. What is important is for the teacher to be open to address and meet these needs.

When planning, consider the sensory aspects of the lesson and how it might impact the student. Can the student be given a warning, materials adjusted, or having an alternative activity ready? If a student is showing signs of anxiety or protest, pause, take a deep breath, and ask yourself what might be behind the behavior. For the student with ASD, acting out is often their attempt to cope with a sensory challenge that they may not be able to articulate what the challenge is or that they are overloaded.

An occupational therapist, may be helpful to have a sensory profile completed on the students with ASD. However, the teacher can learn the students by keeping a positive attitude of discovery and avoid typical development assumptions. Students with ASD are over represented in the use of suspensions, however by establishing an empathetic mindset toward your students with ASD, Okonofua et al. (2016) found that the suspension rates were cut in half. 'the evidence from these studies suggests that by showing understanding, acknowledging and validating the needs of your students the risk of them acting out further or being suspended lessens by 50%.

The classroom

There are many ways to set up a classroom to promote the success of the students with ASD. Flexible seating is one option for students with ASD. Flexible seating options can be available to entire class, so students are not singled out. Flexible seating can include standing desks, chairs that rock, game chairs, or exercise balls. To help students with sensory challenges integrate their senses they may need more feedback from the environment to be at base for learning. This feedback will be unique to the child. Having seating where the student can rock or bounce their feet on band on the chair or desk legs can offer this feedback. Other students may find holding a fidget toy or stress ball helpful. Chew gum could help a student focus. Be open to discovery what will work for the individuals with ASD.

Be mindful of how you decorate your room, it does not need to be bare, but avoid too much input and unnecessary materials on the walls or dangling items from the ceiling. Soft lighting can be very helpful. Think about movement in the room and position the students with ASD away from where there is a lot of traffic. Sometimes a student with ASD wants to be all the way in the back with no one behind them and another one may want to sit right up front. Consider the unique needs of each individual student with ASD, using a positive attitude of discovery in the process of designing the learning environments.

Many students with ASD find deep pressure very soothing. There is a variety of equipment to add to a classroom to give students the opportunity to apply deep pressure for soothing. This could be as simple as laying over top of an exercise ball or rolling tight into a blanket that is controlled by the student. Heavy work is another way to provide deep pressure to joints and muscles. A spare backpack could be loaded with books. A student could wear or carry the bag to a given destination, such as the school library. A chart of chair exercises could provide easy as needed movement breaks to give the required deep pressure feedback for the student to self-calm.

Students may need a low sensory location to reboot during the school day. Designating a space in the room or school can offer a student with ASD a safe place to go to reboot when feeling overloaded. First, students with ASD need to learn to identify when they are getting overloaded and need a break. This often requires explicit teaching of recognizing the signals their body gives them. Then, the students need to learn how to best use these calming spaces to come to base or an emotional state to return to learning and engagement with their class. Explicit teaching of deep breathing, relaxing muscles using positive self-talk and being still is often required for students with ASD in order to learn and effectively use regulation skills.

Collaboration and Communication

The fourth component to creating a solid foundation for inclusion is collaboration and communication. Collaboration between the special education teacher and the general education teacher to include working together in the planning process and sharing ownership of the success of the all the students with ASD and without ASD during direct teaching moments. Inclusion is about success in the general education setting alongside their typical peers, working in the general education classroom, and avoiding pull out time. Teachers, both general education and special education with other stake holders need time to meet and plan so that they are working in a manner to coherently support the needs of the students with ASD. Principals could schedule planning times so general education and special education teachers have the time needed to plan together for the inclusion classes.

When both general education and special education teachers model acceptance and belonging of all students, it sets up an attitude of acceptance and understanding for all the students to follow. All students whether with or without ASD know when they belong and when they are being left on the outside of the class culture. Tony Attwood (2007, p.59) shared, two adults' with ASD description of their experience with inclusion in their teenage years: the first stated "I wasn't rejected but did not feel completely included." The other stated "I was supported and tolerated but not liked" Without the feeling of genuine belonging over a period of time, students with ASD can struggle emotionally. For this author, the struggle from months of exclusion and bullying from colleagues in the workplace, resulted in acute adjustment disorder with anxious mood and severe depression.

Students with ASD level 1 or what is also known as Asperger's syndrome will have average to above average intelligence, but from a medical diagnostic point of view be developmentally behind in pragmatic skills, theory of mind and often have monotone prosodics. "Pragmatic skills involve the use of language to communicate, as opposed to the content or form of language" (Goldstein et al., 2009). Examples are "turn taking, offering greetings, and maintaining or changing a conversational topic" (p. 181). Tony Attwood (2007) defined Theory of Mind as: The ability to recognize and understand thoughts, beliefs, desires and intentions of other people in order to make sense of their behavior and predict what they are going to do next. (p. 350)

Going back to Dr. Catherine Crompton's experiment, issues of 'theory of mind' were not present within the groups that consisted of participants all with autism and the other with participants of all without autism. It is also noted that issues of pragmatics of language were not present within these same groups. Perhaps thinking of autism as a culture that has a "different way of perceiving and thinking about the world" (Attwood, 2007, p. 77) is a healthier approach to take toward individuals with autism than one that focusses on the deficits and 'odd' characteristics that those who are not autistic want to change or extinguish. Just as society once wanted to force individuals who were left-handed to become right-handed.

In regards to "prosody, or the musical aspects of speech (i.e., rate, volume, melody, and rhythm patterns)" (Goldstein et al., 2009), the "trouble with modulating volume in speech and unusual intonation patterns "... leave these children with ASD vulnerable to seeming odd and "unapproachable, or unpleasant to others. In addition, teachers may interpret prosodic difficulties as defiant or passive-aggressive behavior" (p.190). Again, this is another reason for teachers to remember to pause, take a deep breath, and give themselves time to think, before responding with quick or harsh judgement.

Pedagogy: Methods and Tools

The fifth component to creating a solid foundation for inclusion is the pedagogy: methods and tools used within the schools and classrooms. There are many evidence-based practices for teaching students with ASD. In this article, the examples of pedagogy, the methods and tools listed are based on what is currently known in research (Odom et al., 2010; Oliver-Kerrigan et al.,

2021) and from the teaching success of this author on meeting the specific learning needs of students with ASD in respect to their variation of neurodevelopment.

Social emotional learning

Students with ASD may be able to successfully socially interact with others on the spectrum, but the reality is that they need to function in a world that is designed for the those not on the spectrum. To survive in this world, those on the spectrum need to be taught explicitly the skills of social emotional learning (Bierman & Sanders, 2021; Danker et al., 2019). “Social intelligence is more closely linked to success late in life than is academic achievement” (Van Brummelen, 2009, p.237). It is important to teach all children “emotional skills such as how to control impulses and how to read social situations accurately” (p.237). Social skills can be embedded in mainstream curriculum or class routine and explicitly taught in general education classrooms meeting the needs of both general education and special education students.

Use lessons in reading, English, social studies and history to emphasize skills in social linguistics in reading facial and body posture and tone through dialogic teaching which is an evidence-based practice that enhances students’ receptive and expressive competencies (Towson et al., 2016). Dialogic teaching is collective, reciprocal, supportive, cumulative, and purposeful (Hammond, 2016). This means this style of teaching is interactive between the teachers and the students. It incorporates a reciprocal form of communication and an exchange of ideas in a supportive environment without fear of embarrassment or of being wrong. The conversation builds or cumulates on the ideas presented and new understanding of the initial information results. The teacher knows the purpose of the discussion and uses dialogic teaching to meet that end (Hammond, 2016). The purpose here would be to build the students’ social understanding and application of that understanding.

Dialogic teaching could be used in combination with a role-play style activity such as a freeze frame activity. Freeze frame activity is done with a group of students or an individual student. The student(s) are given a moment in history or scene from a story and they have to create that scene as a group and freeze. Students would need to consider the actions within scene and how to express them with their body posture and facial expressions. The students would take a position, so that together as a group the scene comes to life in a freeze frame. Within this style of lesson, the teacher can take the time to ask specific students questions to heighten their understanding and get them thinking. For example, “Susie, I see you are showing an expression of great sadness with your head down in your hands and your body slumped over. Why does your character have such great sadness in this scene?” Commenting for a student with ASD specifically on how she is portraying an emotion helps the student capture that understanding more explicitly in their memory. Giving the student an opportunity to verbalize where the emotion for the character is coming from helps the student with ASD put words to her understanding of the scene. If the student can give a reasonable justification to the emotion displayed, it ought to be accepted and validated. Creating a safe place to share ideas allows for students on the spectrum to gain confidence that their unique perspective matters, and contributes to the whole groups understanding of concepts.

Strategies for clear and understood expectations allowing for success

Students on the spectrum will often have difficulty envisioning what the outcome of an assignment is meant to look like. Unless, the outcome expected is something the student with ASD has experienced before and it is clearly explained as such. However, in most cases a student with ASD will have some level of anxiety when assignments are given until they envision the outcome themselves. This anxiety is often expressed through a series of questions in an effort to process what is expected of them. If the student on the spectrum continues to struggle to understand the expectation, then other behaviors may arise such as acting out or shutting down. When appropriate, offering students with ASD a visual of what you want them to accomplish can provide them a sense of confidence to move forward. This can be done by showing examples from previous years or a teacher made example.

Clearly defining the steps required for all assignments, routines, or especially large projects can support the learning of students with ASD (Attwood, 2007). There are several ways this could be done. Priming is preparing a student or class for an event (e.g., showing a video of or do a walkthrough of how a fire drill will run and what is expected of each student). Task analysis is a task broken down into smaller steps. How small each step is, depends on the needs of the student. Task analysis can be presented as steps written out or with a visual of each step.

Priming offers a set of steps or visual of what is expected to prepare the student for success before they start a task (Gengoux, 2015; Orelove et al., 2017). This can be provided to the student in a social narrative, or video story. To create a priming video, take short clips of the student when he is doing the required behavior or steps correctly. Then, put all the clips together creating a film of the student successfully completing the task. With the priming video, the student is able to see how all the steps fit together and what it is that is expected of him. The student watches this video before being asked to do the task to prepare him for success and develop his independence and confidence.

Develop a consistent routine and clear set of expectations for each class. It is often suggested to have no more than five rules. Within each class routine there is a schedule of the order of events for that class or for the school day. Providing students on the spectrum with a written or visual schedule has proven for this author to be a very useful tool in supporting student on the spectrum gain understanding of time passage and order of things. With the visual schedule a change in the day's events can be easily explained to and understood by the student with ASD. This is successful across age groups from 2 to 22 in the teaching experience of this author. For example, when there will be a change such as no recess because of rain, the schedule can be used to inform the student when in the day the change will take place, what the change will be and why if the student needs to know. Ensure, the student knows what they will be doing instead. Giving a warning gives the student time to process information.

Cueing, or giving a signal to a student that something is coming. This can be used during lessons to support students with ASD. For example, letting student know they will be answering the next question before it is time to ask it or giving him the question written down so he/she can read it and formulate an answer in time. Students with ASD may need extra processing time because their brain is wired differently, not because of cognitive delay.

Prompting is giving a sign or signal to a student of what they need to be doing (Orelove et al., 2017). This could be a gesture and/or pointing to a visual of the steps. Prompting is given to support a student in doing or completing a task once it is started or assigned. If using a prompting system to support a student's learning, have a plan to fade the prompt(s) as the student moves towards mastery of the skill. Think carefully about the prompts chosen to support a student as some prompts are easier to fade than others. Verbal prompting can feel like nagging when excessive. Verbal prompting is also the hardest to fade. If it is appropriate, avoid using verbal prompting. Gestures and visuals are easier to fade allowing the student to become more independent and confident. Even physical prompting is easier to fade than verbal prompting.

Cooperative learning groups

Putting students in to groups to complete tasks as a team or unit provides an opportunity for learning not just the academic concept being taught, but more importantly provides the setting for students to learn from one another. "In cooperative learning instructional methods, or peer-assisted learning students work together in small groups to help each other learn" (Slavin, 2015, p. 199). Having mixed-ability groups allows students to work with others within their zone of proximal development with slightly higher and lower levels of ability (Slavin, 2015). For the student with ASD, this provides a naturalistic setting to generalize and build their understanding of social interaction and cooperation skills required to communicate successfully with their typical peer, and for the typical peer to learn how best to communicate with their peer with ASD.

"Peer culture consists of those shared understandings, values, beliefs, and associated behaviors, activities, and relationship patterns that children construct out of their everyday experience with one another" (Buron & Wolfberg, 2014, p. 179). The structure of cooperative groups provides a platform for promoting a healthy peer culture, and the structure offers built in guidance for the student with ASD.

When applying the small group strategy, it is important that the roles within these groups are carefully defined and taught. An example of group roles: leader—makes sure the group stays on task and that everybody in the group has a chance to contribute; scribe—records what is needed (e.g., data, answers, etc.); time-keeper—makes sure the group keeps to time; equipment tech—makes sure the group has the equipment it needs; and speaker—presents the group's ideas to the class or other groups. The roles and their definition can vary. It is the clarity of the roles and the teaching of each role that support the success of group learning.

Executive function

Student with ASD often have executive function impairment at some level. "Executive functions: Higher-order cognitive skills that include organization, planning, problem solving, self-regulation, and inhibitory control" (Buron & Wolfberg, 2014, p. 451). Keep in mind that ASD is a neurological difference, it is not about leaving the student to sink or swim in the world of general education designed for students without ASD. All stake holders can support the student with ASD in keeping organized and in managing their workload. As this is a learning need for their neurodevelopment (Wallace et al., 2016). Getting mad at or nagging a student with ASD will only increase their level of anxiety and may lead to a meltdown. Repeated exposure over time to this type of negative response to their executive function challenges that are a result of their autism from adults, effects the student's wellbeing (Danker et al., 2019). Remember to pause, breathe deeply, remain calm and be positive.

Take the time to discover what works for this student with ASD. Avoid thoughts of what ought to work for this student.

Here are a few strategies to support the student with autism in the area organization. Monitor the amount of work being given the student. Ensure the student has the time they need to accomplish the tasks they are given. Students with ASD may need help with planning their study time so that work gets accomplished in a timely manner and also addresses specific learning and sensory needs. Teach and guide the use of organizational tools such as reminder and calendar apps in their devices. Maintain a consist form of communication between home and school regarding school work and overall how the student is going. Provide flexibility on the workload given depending on the emotional state of the student. Some days will be harder than others depending on many factors as a result of their neurodevelopmental difference in living and learning in a non-autistic world.

Students on the spectrum can learn to manage challenges as they come. Teaching skills such as flexible thinking can support this skill. An example of a program for school age student is *Unstuck and on Target* by Cannon, Kenworthy, Alexander, Werner, and Anthony (2011). One of the tools taught in this program is having a plan B if plan A does not work out. They can learn to develop plan C, D, and more if it is needed. Being calm, and offering logical explanations are key tools for teaching this skill.

In Conclusion

In conclusion, the five components to a strong foundation for inclusion programs for students with ASD are the following:

1. Sensitivity training to build understanding and empathy
2. Maintaining a growth mindset willing to pause/breathe, stay calm, be positive and have an attitude of discovery in addressing the educational, emotional, and behavioral needs of students with ASD within general education classrooms
3. Creating an environment within schools and classrooms that is inviting and safe for students with ASD in general education that addresses the sensory needs of the students with ASD and validates their unique perspective.
4. Working as a team. The special education and general education team need to collaborate and communicate and have time to plan the lessons together. The students with ASD need to know they belong as full members to the classroom.
5. Pedagogy: method and tools chosen from the evidence-based strategies based on your individual student's needs.

Without a firm foundation, inclusion for students with ASD will fall short of meeting the learning and emotional needs of these students. The author of this article implores educators and administrators to consider the ideas presented in this article for their inclusive practices. For this author, it is clear that there is a need for further research in the specific learning needs for students with an ASD neurodevelopment pathway. The author calls for universities and colleges with education or teacher preparatory programs, to require both general and special education candidates to have courses or incorporate within courses more intensive autism sensitivity training.

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